

IMPORTANT NOTICE

THIS OFFERING IS AVAILABLE ONLY TO INVESTORS WHO ARE EITHER (1) QUALIFIED INSTITUTIONAL BUYERS UNDER RULE 144A UNDER THE SECURITIES ACT (AS DEFINED BELOW) THAT ARE ALSO QUALIFIED PURCHASERS WITHIN THE MEANING OF SECTION 2(A)(51) OF THE INVESTMENT COMPANY ACT (AS DEFINED BELOW), OR (2) NON-U.S. PERSONS (AS DEFINED IN REGULATION S UNDER THE SECURITIES ACT) PURCHASING THE SECURITIES OUTSIDE OF THE UNITED STATES IN AN OFFSHORE TRANSACTION IN RELIANCE ON REGULATION S.

IMPORTANT: You must read the following before continuing. If you are not the intended recipient of this message, please do not distribute or copy the information contained in this electronic transmission, but instead, delete and destroy all copies of this electronic transmission including all attachments. The following applies to the offering memorandum following this page (the “**Offering Memorandum**”), and you are therefore advised to read this carefully before reading, accessing or making any other use of the Offering Memorandum. In accessing the Offering Memorandum, you agree to be bound by the following terms and conditions, including any modifications to them any time you receive any information from us as a result of such access.

NOTHING IN THIS ELECTRONIC TRANSMISSION CONSTITUTES AN OFFER OF SECURITIES FOR SALE IN THE UNITED STATES OR ANY OTHER JURISDICTION WHERE IT IS UNLAWFUL TO DO SO. THE SECURITIES HAVE NOT BEEN, AND WILL NOT BE, REGISTERED UNDER THE UNITED STATES SECURITIES ACT OF 1933, AS AMENDED (THE “**SECURITIES ACT**”), OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES OR OTHER JURISDICTION. NEITHER OF THE ISSUERS NOR THE GUARANTOR IS OR WILL BE REGISTERED UNDER THE INVESTMENT COMPANY ACT. THE SECURITIES MAY NOT BE OFFERED OR SOLD WITHIN THE UNITED STATES, OR TO, OR FOR THE ACCOUNT OR BENEFIT OF, U.S. PERSONS (AS DEFINED IN REGULATION S UNDER THE SECURITIES ACT (“**REGULATION S**”)) EXCEPT PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND APPLICABLE STATE OR LOCAL SECURITIES LAWS.

THIS OFFERING MEMORANDUM MAY NOT BE FORWARDED OR DISTRIBUTED TO ANY OTHER PERSON AND MAY NOT BE REPRODUCED IN ANY MANNER WHATSOEVER, AND IN PARTICULAR, MAY NOT BE FORWARDED TO ANY ADDRESS IN THE UNITED STATES. ANY FORWARDING, DISTRIBUTION OR REPRODUCTION OF THIS DOCUMENT, IN WHOLE OR IN PART, IS UNAUTHORIZED. FAILURE TO COMPLY WITH THIS DIRECTIVE MAY RESULT IN A VIOLATION OF THE SECURITIES ACT OR THE APPLICABLE LAWS OF OTHER JURISDICTIONS.

Confirmation of your Representation: In order to be eligible to view the Offering Memorandum or make an investment decision with respect to the securities, investors must be either (1) qualified institutional buyers (“**QIBs**”) within the meaning of Rule 144A under the Securities Act that are also qualified purchasers (“**QPs**”) within the meaning of section 2(a)(51) of the Investment Company Act of 1940, as amended (the “**Investment Company Act**”), or (2) non-U.S. persons eligible to purchase the securities outside the United States in an offshore transaction in reliance on Regulation S under the Securities Act. The Offering Memorandum is being sent at your request and by accepting the electronic transmission and accessing the Offering Memorandum, you will be deemed to have represented to us that (1) you and any customers you represent are either (a) QIBs that are also QPs or (b) non-U.S. persons eligible to purchase the securities outside of the United States in an offshore transaction in reliance on Regulation S under the Securities Act and that the electronic mail address that you gave us and to which the Offering Memorandum has been delivered is not located in the United States and (2) you consent to delivery of the Offering Memorandum by electronic transmission.

MIFID II PRODUCT GOVERNANCE/TARGET MARKET — The Pricing Supplement in respect of any Notes may include a legend entitled “MiFID II Product Governance” which will outline the target market assessment in respect of the Notes and which channels for distribution of the Notes are appropriate. Any person subsequently offering, selling or recommending the Notes (a “**distributor**”) should take into consideration the target market assessment; however, a distributor subject to Directive 2014/65/EU (as amended, “**MiFID II**”) is responsible for undertaking its own target market assessment in respect of the Notes (by either adopting or refining the target market assessment) and determining appropriate distribution channels.

A determination will be made in relation to each issue about whether, for the purpose of the Product Governance rules under EU Delegated Directive 2017/593 (the “**MiFID Product Governance Rules**”), any Dealer subscribing for any Notes is a manufacturer in respect of such Notes, but otherwise none of the Arrangers or the Dealers or any of their respective affiliates will be a manufacturer for the purpose of the MiFID Product Governance Rules.

IMPORTANT — EEA AND UK RETAIL INVESTORS — If the Pricing Supplement in respect of any Notes includes a legend entitled “Prohibition of Sales to EEA and UK Retail Investors,” the Notes are not intended to be offered, sold or otherwise made available to and should not be offered, sold or otherwise made available to any retail investor in the European Economic Area (“**EEA**”) or in the United Kingdom (the “**UK**”). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client as defined in point (11) of Article 4(1) of MiFID II; or (ii) a customer within the meaning of Directive (EU) 2016/97 (the “**Insurance Distribution Directive**”), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II. Consequently, no key information document required by Regulation (EU) No 1286/2014 (as amended, the “**PRIIPS Regulation**”) for offering or selling the Notes or otherwise making them available to retail investors in the EEA or in the UK has been prepared and therefore offering or selling the Notes or otherwise making them available to any retail investor in the EEA or in the UK may be unlawful under the PRIIPS Regulation.

Notification under Section 309B(1)(c) of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time (the “SFA”) — Unless otherwise stated in the Pricing Supplement in respect of any Notes, all Notes issued or to be issued under the Program shall be prescribed capital markets products (as defined in the Securities and Futures (Capital Markets Products) Regulations 2018 of Singapore) and Excluded Investment Products (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products).

You are reminded that the Offering Memorandum has been delivered to you on the basis that you are a person into whose possession the Offering Memorandum may be lawfully delivered in accordance with the laws of the jurisdiction in which you are located and you may not, nor are you authorized to, deliver the Offering Memorandum to any other person.

To the fullest extent permitted by law, none of the Dealers or the Arrangers (as defined below) accept any responsibility for the contents of the Offering Memorandum or for any other statements made or purported to be made by any Arrangers or Dealer or on their behalf in connection with the Issuers or the Guarantor (each as defined in the Offering Memorandum) or the issue and offering of any securities. The materials relating to the offering of securities to which the Offering Memorandum relates do not constitute, and may not be used in connection with, an offer or solicitation in any place where offers or solicitations are not permitted by law. If a jurisdiction requires that the offering be made by a licensed broker or dealer and the underwriters or any affiliate of the underwriters is a licensed broker or dealer in that jurisdiction, the offering shall be deemed to be made by the underwriters or such affiliate on behalf of the relevant Issuer in such jurisdiction.

The Offering Memorandum has been sent to you in an electronic form. You are reminded that documents transmitted via this medium may be altered or changed during the process of electronic transmission and consequently none of the Issuers, the Guarantor, BNP Paribas, Citigroup Global Markets Singapore Pte. Ltd., The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch and Standard Chartered Bank (Singapore) Limited as arrangers (the “**Arrangers**”), BNP Paribas, Citigroup Global Markets Inc., The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch and Standard Chartered Bank (Singapore) Limited as dealers (the “**Dealers**”), any person who controls any Arrangers or Dealer (as defined in the Offering Memorandum), any director, officer, employee or agent of the Issuers, the Guarantor or the Arrangers or any Dealer, or affiliate of any such person accepts any liability or responsibility whatsoever in respect of any difference between the Offering Memorandum distributed to you in electronic format and the hard copy version available to you on request from the Arrangers or the Dealers.

You are responsible for protecting against viruses and other destructive items. Your use of this electronic transmission is at your own risk and it is your responsibility to take precautions to ensure that it is free from viruses and other items of a destructive nature.

OFFERING MEMORANDUM



PTT PUBLIC COMPANY LIMITED

(registered in the Kingdom of Thailand as a public company with limited liability)

PTT TREASURY CENTER COMPANY LIMITED

(registered in the Kingdom of Thailand as a private company with limited liability)

U.S.\$2,000,000,000 Global Medium Term Note Program

Under the U.S.\$2,000,000,000 Global Medium Term Note Program (the “**Program**”) described in this offering memorandum (this “**Offering Memorandum**”), each of PTT Public Company Limited (the “**Company**” or, in its capacity as issuer, an “**Issuer**”) and PTT Treasury Center Company Limited (the “**Treasury Center**” or, in its capacity as issuer, an “**Issuer**”), subject to compliance with all relevant laws, regulations and directives, may from time to time issue notes (“**Notes**”). Each Series (as defined in “*Summary of the Program*”) of Notes shall be issued either by (i) the Company (“**Direct Issuance Notes**”); or (ii) the Treasury Center with the benefit of an unconditional and irrevocable guarantee by the Company (“**Guaranteed Notes**,” and the Company in its capacity as guarantor, the “**Guarantor**”).

Notes may only be issued in registered form. The aggregate nominal amount of Notes outstanding will not at any time exceed U.S.\$2,000,000,000 (or its equivalent in other currencies, subject to any duly authorized increase). The Notes may be issued on a continuing basis to one or more of the Dealers specified under “*Summary of the Program*” or any additional Dealer appointed under the Program from time to time by the Company or the Treasury Center (each a “**Dealer**” and together the “**Dealers**”), which appointment may be for a specific issue or on an ongoing basis. References in this Offering Memorandum to the “**relevant Dealer(s)**” shall, in the case of an issue of Notes being (or intended to be) purchased by more than one Dealer, be to all Dealers agreeing to purchase such Notes.

The guarantee of Guaranteed Notes (the “**Guarantee**”) constitutes a direct, unconditional, unsubordinated and (subject to Condition 5(a) (*Limitation on Liens*) of the Terms and Conditions of the Notes) unsecured obligations of the Guarantor, ranking at least *pari passu* with all other present and future unsecured and unsubordinated obligations of the Guarantor, save for such obligations as may be preferred by provisions of law that are both mandatory and of general application. In order to comply with applicable requirements of Thai law, the Indenture (as defined in “*Summary of the Program*”) will provide that, in the case of a Series of Guaranteed Notes, the Guarantor’s maximum liability under the Guarantee will be capped at an amount equal to 125% of the aggregate principal amount of the relevant Series of Guaranteed Notes (or such other level as may be specified in the relevant Pricing Supplement) outstanding as of the Issue Date or the issue date of any further Guaranteed Notes issued in accordance with Condition 19 (*Further Issuance*) of the Terms and Conditions of the Notes and consolidated and forming a single series therewith (the “**Maximum Guaranteed Amount**”). See “*Risk Factors — Risks Relating to the Guarantee*.”

No Notes or Guarantees have been, or are intended to be, registered under the Securities Act or the securities laws of any other jurisdiction. Furthermore, neither the Company nor the Treasury Center is or will be registered under the U.S. Investment Company Act of 1940, as amended (the “**Investment Company Act**”). Accordingly, the Notes and the Guarantee may be offered and sold only (i) in registered form and in minimum amounts of U.S.\$200,000 to persons who are both qualified institutional buyers within the meaning of Rule 144A (“**Rule 144A**”) under the Securities Act (“**QIBs**”) and qualified purchasers as defined in Section 2(a)(51) of the Investment Company Act (“**QPs**”), and/or (ii) to non-U.S. persons in offshore transactions in reliance on Regulation S under the Securities Act, and who are deemed to have made the representations set forth in the section “*Transfer Restrictions*.” Any Series of Notes may be subject to additional selling restrictions specified in the applicable Pricing Supplement in respect of such Series. See “*Subscription and Sale*” and the applicable Pricing Supplement.

Approval in-principle has been received from the Singapore Exchange Securities Trading Limited (the “**SGX-ST**”) for the establishment of the Program and the application will be made to the SGX-ST for permission to deal in and for the listing and quotation of any Notes which are agreed at or prior to the time of issue thereof to be so listed on the SGX-ST. Such permission will be granted when such Notes have been admitted to the Official List of the SGX-ST. Unlisted Series of Notes may also be issued pursuant to the Program. The relevant Pricing Supplement in respect of any Series of Notes will specify whether or not such Notes will be listed on the SGX-ST (or any other stock exchange). Any Notes listed on the SGX-ST will be traded in a minimum board lot size of U.S.\$200,000 (or its equivalent in foreign currencies) for as long as any of the Notes remain listed on the SGX-ST. There is no assurance that an application to the SGX-ST for the listing of the Notes of any Series will be approved. Admission to the Official List of the SGX-ST and quotation of any Notes on the SGX-ST is not to be taken as an indication of the merits of the Issuers, the Guarantor, their respective subsidiary companies (if any), their respective associated companies (if any) or such Notes. The SGX-ST assumes no responsibility for the correctness of any of the statements made, opinions expressed or reports contained herein.

The Notes of each Series to be issued in registered form and which are sold in an “offshore transaction” within the meaning of Regulation S (“**Regulation S**”) under the United States Securities Act of 1933, as amended (the “**Securities Act**”) (“**Unrestricted Notes**”) will initially be represented by a registered global certificate (each an “**Unrestricted Global Note Certificate**”) without interest coupons, which may, on the relevant issue date (a) in the case of a Series intended to be cleared through Euroclear Bank SA/NV (“**Euroclear**”) and/or Clearstream Banking S.A. (“**Clearstream, Luxembourg**”), be deposited with a common depository on behalf of Euroclear and Clearstream, Luxembourg or (b) in the case of a Series intended to be cleared through The Depository Trust Company (“**DTC**”), be registered in the name of Cede & Co. as nominee for DTC and (c) in the case of a Series intended to be cleared through a clearing system other than, or in addition to, Euroclear, Clearstream, Luxembourg and/or DTC, or delivered outside a clearing system, be deposited or registered as agreed among the relevant Issuer, (in respect of each Series of Guaranteed Notes) the Guarantor and the relevant Dealer(s). Notes which are sold in the United States to persons who are QIBs and QPs (“**Restricted Notes**”) will initially be represented by a registered global note certificate (each a “**Restricted Global Note Certificate**”) and, together with the relevant Unrestricted Global Note Certificate, the “**Global Note Certificates**”), without interest coupons, which may be deposited on the relevant issue date with a custodian (the “**DTC Custodian**”) for, and registered in the name of Cede & Co. as nominee for, DTC or with a common depository on behalf of Euroclear and Clearstream, Luxembourg. The provisions governing the exchange of interests in Global Note Certificates for individual Note Certificates in registered form are described in “*Summary of Provisions Relating to the Notes while in Global Form*.”

Notes issued under the Program may be rated or unrated. When an issue of Notes is rated, its rating will not necessarily be the same as the rating applicable to the Program. A rating is not a recommendation to buy, sell or hold securities and may be subject to suspension, reduction, revision or withdrawal at any time by the assigning rating agency.

Investing in Notes issued under the Program involves certain risks and may not be suitable for all investors. See “*Risk Factors*” beginning on page 24 for a discussion of factors that you should consider carefully before investing in the Notes.

Arrangers and Dealers

BNP PARIBAS

Citigroup

HSBC

Standard Chartered Bank

The date of this Offering Memorandum is July 8, 2020

NOTICE TO INVESTORS

This Offering Memorandum is being furnished by us on a confidential basis in connection with an offering exempt from the registration requirements under the Securities Act, solely for the purpose of enabling a prospective investor to consider the purchase of the Notes. The Notes may be offered in reliance upon the exemptions from registration under the Securities Act. Each purchaser of the Notes will be deemed to have made certain acknowledgments, representations and agreements regarding the Notes and the offer, sale, reoffer, pledge or other transfer of the Notes. See “*Transfer Restrictions.*”

Each Series (as defined herein) of Notes will be issued on the terms set out herein under “*Terms and Conditions of the Notes,*” as amended and/or supplemented by the Pricing Supplement specific to such Series. This Offering Memorandum must be read and construed together with any amendments or supplements hereto and, in relation to any Series of Notes, must be read and construed together with the relevant Pricing Supplement.

Distribution of this Offering Memorandum and any Pricing Supplement in whole or in part to any other person other than the prospective investor and any person retained to advise such prospective investor with respect to its purchase is unauthorized, and any disclosure of any of its contents, without our prior written consent, is prohibited. Each prospective investor, by accepting delivery of this Offering Memorandum and any Pricing Supplement, agrees to the foregoing and to make no photocopies of the whole or any part of this Offering Memorandum or any Pricing Supplement.

This Offering Memorandum and any Pricing Supplement do not constitute an offer to, and may not be used for the purpose of an offer to or a solicitation by, anyone in any jurisdiction or in any circumstances in which such an offer or solicitation is not authorized or is unlawful. No action has been or will be taken to permit a public offering of the Notes in any jurisdiction where action would be required for that purpose. The Notes may not be offered or sold, directly or indirectly, and neither this Offering Memorandum nor any Pricing Supplement may be distributed in any jurisdiction, except in accordance with the legal requirements applicable in such jurisdiction.

No person has been authorized to give any information or to make any representation in relation to an offer for sale of the Notes under the Program other than those contained in this Offering Memorandum or any Pricing Supplement, and we do not guarantee the reliability and accuracy for any such information or representation. Any information or representation not contained in this Offering Memorandum or a relevant Pricing Supplement must not be relied upon as having been authorized by BNP Paribas, Citigroup Global Markets Singapore Pte. Ltd., The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch and Standard Chartered Bank (Singapore) Limited (the “**Arrangers**”) or the Dealers of the Program. Neither the delivery of this Offering Memorandum or any Pricing Supplement nor any sale of the Notes pursuant to the Program shall, under any circumstances, constitute a representation or create any implication that the information contained herein is correct as of any time subsequent to the date hereof or that there has been no change in the affairs of any party mentioned herein since that date.

No representation, warranty or undertaking, express or implied, is made by any of the Arrangers and Dealers, Citicorp International Limited (the “**Trustee**”), Citibank, N.A., London Branch as principal paying agent, paying agent, exchange agent, transfer agent, calculation agent and registrar (each an “**Agent**,” together the “**Agents**”) and no responsibility or liability is accepted by any thereof, as to the accuracy, adequacy, reasonableness or completeness of the information contained in this Offering Memorandum or any other information provided by us in connection with the Issuers, the Guarantor or the Notes, their distribution or their future performance. The Arrangers and Dealers accordingly disclaim all and any liability whether arising in tort or contract or otherwise (save as referred to above) which they might otherwise have in respect of any such information.

Neither this Offering Memorandum, any Pricing Supplement nor any other information supplied in connection with the Notes should be considered as a recommendation by us, the Arrangers and Dealers and the Trustee that any recipient of this Offering Memorandum or any Pricing Supplement should purchase any of the Notes. Each investor contemplating purchasing any Notes should make its own independent investigation of our business, financial condition and affairs, and its own appraisal of our creditworthiness.

To the best of its knowledge, having made all reasonable enquiries, each of the Company and the Treasury Center confirms that (i) this Offering Memorandum (as may be supplemented from time to time) contains all information with respect to the Issuers, the Guarantor and the Notes which are material in the context of the offering of the Notes under the Program; (ii) the statements contained herein (as may be supplemented from time to time) relating to the Issuers, the Guarantor and the Notes are true and accurate in all material respects and not misleading; (iii) the opinions and intentions expressed in this Offering Memorandum (as may be supplemented from time to time) with regard to the Issuers and the Guarantor are honestly held, have been reached after considering all relevant circumstances and are based on reasonable assumptions; and (iv) there are no other facts in relation to the Issuers, the Guarantor or the Notes the omission of which would, in the context of the offering of the Notes under the Program, make any statement in this Offering Memorandum (as may be supplemented from time to time) misleading in any material respect.

THE NOTES HAVE NOT BEEN APPROVED OR DISAPPROVED BY THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION, ANY STATE SECURITIES AUTHORITY IN THE UNITED STATES OR ANY OTHER U.S. REGULATORY AUTHORITY, NOR HAVE ANY OF THE FOREGOING AUTHORITIES PASSED UPON OR ENDORSED THE MERITS OF THE OFFERING OF THE NOTES OR THE ACCURACY OR ADEQUACY OF THIS OFFERING MEMORANDUM. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE IN THE UNITED STATES.

In connection with the issue of any Series of Notes, the Dealer(s) (if any) named as the stabilizing manager(s) or persons acting on behalf of any stabilizing manager(s) (the “**Stabilizing Manager(s)**”) may over-allot the Notes or effect transactions with a view to supporting the price of the Notes at a level higher than that which might otherwise prevail for a limited period after the issue date of the Notes. However, there is no obligation on such Stabilizing Manager(s) to do this. Such stabilizing, if commenced, may be discontinued at any time, and must be brought to an end after a limited period. Such stabilizing shall be in compliance with all applicable laws, regulations and rules.

VOLCKER RULE

Final regulations implementing Section 619 of the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (commonly known as the “**Volcker Rule**”) became effective in July 2015. Among other things, the Volcker Rule restricts “banking entities” from the sponsorship of or the acquisition of “ownership interests” in “covered funds.” The definition of “covered fund” in the Volcker Rule includes (generally) any entity that would be an investment company under the Investment Company Act but for the exception provided by Section 3(c)(1) or 3(c)(7) thereunder. Although there may be other bases or exceptions under which the Issuers and the Guarantor are not required to register under the Investment Company Act, the Issuers and the Guarantor intend to offer the Notes and the Guarantee in a manner intended to preserve the availability of the exception provided by Section 3(c)(7), and therefore the Issuers and the Guarantor may be considered a “covered fund” for purposes of the Volcker Rule. Each prospective investor that is a banking entity should consult with its advisors regarding the Volcker Rule before making an investment in the Notes and the Guarantee.

DISCLOSURE OF INVESTORS IN COMPLIANCE WITH THAI SEC REQUIREMENTS

The Securities and Exchange Commission of Thailand (“**Thai SEC**”) will require the Dealers to disclose the identity of investors in the Notes in accordance with applicable regulation.

MIFID II PRODUCT GOVERNANCE/TARGET MARKET

The Pricing Supplement in respect of any Notes may include a legend entitled “MiFID II Product Governance” which will outline the target market assessment in respect of the Notes and which channels for distribution of the Notes are appropriate. Any person subsequently offering, selling or recommending the Notes (a “**distributor**”) should take into consideration the target market

assessment; however, a distributor subject to Directive 2014/65/EU (as amended, “**MiFID II**”) is responsible for undertaking its own target market assessment in respect of the Notes (by either adopting or refining the target market assessment) and determining appropriate distribution channels.

A determination will be made in relation to each issue about whether, for the purpose of the Product Governance rules under EU Delegated Directive 2017/593 (the “**MiFID Product Governance Rules**”), any Dealer subscribing for any Notes is a manufacturer in respect of such Notes, but otherwise none of the Arrangers or the Dealers or any of their respective affiliates will be a manufacturer for the purpose of the MiFID Product Governance Rules.

IMPORTANT — EEA AND UK RETAIL INVESTORS

If the Pricing Supplement in respect of any Notes includes a legend entitled “Prohibition of Sales to EEA and UK Retail Investors,” the Notes are not intended to be offered, sold or otherwise made available to and should not be offered, sold or otherwise made available to any retail investor in the European Economic Area (“**EEA**”) or in the United Kingdom (the “**UK**”). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client as defined in point (11) of Article 4(1) of MiFID I or (ii) a customer within the meaning of Directive (EU) 2016/97 (the “**Insurance Distribution Directive**”), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II. Consequently, no key information document required by Regulation (EU) No 1286/2014 (as amended, the “**PRIIPs Regulation**”) for offering or selling the Notes or otherwise making them available to retail investors in the EEA or in the UK has been prepared and therefore offering or selling the Notes or otherwise making them available to any retail investor in the EEA or in the UK may be unlawful under the PRIIPs Regulation.

NOTICE TO RESIDENTS OF THAILAND

THE NOTES HAVE NOT BEEN, AND WILL NOT BE, REGISTERED WITH THE THAI SEC. ANY OFFERING OR DISTRIBUTION, AS DEFINED UNDER THAI LAWS AND REGULATIONS, OF THE NOTES IN THAILAND IS NOT LEGAL WITHOUT SUCH PRIOR REGISTRATION. DOCUMENTS RELATING TO THE OFFERING OF THE NOTES, AS WELL AS INFORMATION CONTAINED THEREIN, MAY NOT BE SUPPLIED TO ANY PERSON IN THAILAND, AS THE OFFERING OF THE NOTES IS NOT AN OFFERING OF NOTES IN THAILAND, NOR MAY THEY BE USED IN CONNECTION WITH ANY OFFER FOR SUBSCRIPTION OR SALE OF THE NOTES TO ANY PERSON IN THAILAND.

NOTIFICATION UNDER SECTION 309B(1)(C) OF THE SECURITIES AND FUTURES ACT (CHAPTER 289) OF SINGAPORE, AS MODIFIED OR AMENDED FROM TIME TO TIME (THE “SFA”)

Unless otherwise stated in the Pricing Supplement in respect of any Notes, all Notes issued or to be issued under the Program shall be prescribed capital markets products (as defined in the Securities and Futures (Capital Markets Products) Regulations 2018 of Singapore) and Excluded Investment Products (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products).

SERVICE OF PROCESS AND ENFORCEMENT OF CIVIL LIABILITIES

The Company is a public limited liability company and the Treasury Center is a private limited liability company, both incorporated under the laws of Thailand. Substantially all of our directors and officers (and our auditor) are residents of Thailand and a substantial portion of our assets and the assets of our officers and directors are located in Thailand. As a result, it may not be possible for investors to effect service of process upon us or such persons outside Thailand, or to enforce judgments against us or them obtained in courts outside Thailand predicated upon civil liabilities of ours or such directors and officers under laws other than Thailand, including any judgment predicated upon United States federal securities laws.

We have been advised by Allen & Overy (Thailand) Co., Ltd., our Thai counsel, that a judgment or order, including actions or judgments under the civil liability provisions of the securities laws of foreign jurisdictions, obtained in a court outside Thailand would not be enforced as such by the courts of Thailand. Investors would have to bring a separate action or claim in Thailand and such judgment or order in the discretion of the courts of Thailand may be admitted as evidence of any obligation in new proceedings instituted in the courts of Thailand, which would consider the issue on the evidence before it. Although a non-Thai judgment could be introduced as evidence of an obligation in a new court proceeding in Thailand, a Thai court would be free to examine any new issues arising in the case. Thus, to the extent investors are entitled to bring a legal action against us or such persons, investors may be limited in their remedies and any recovery. To the extent Noteholders are entitled to any recovery with respect to the Notes or the Guarantee in any Thai proceedings, recovery might be limited to payments in Baht. See “*Risk Factors — Risks Relating to Our Business — Fluctuations in the value of the Baht could adversely affect our financial condition and results of operations.*”

CERTAIN DEFINED TERMS AND CONVENTIONS

As used in this Offering Memorandum, unless the context otherwise requires, the terms “we,” “us,” “our,” “ourselves,” and the “Group,” refer to PTT Public Company Limited and, unless otherwise indicated or required by context, its consolidated subsidiaries (including the Treasury Center). The terms the “Company” and “PTT” refer to PTT Public Company only.

The “Issuer” may refer to either of PTT Public Company Limited or PTT Treasury Center Company Limited, and “Treasury Center” refers to PTT Treasury Center Company Limited.

In this Offering Memorandum, references to “U.S.\$,” “\$” and “U.S. dollars” are to United States dollars, the legal currency of the United States and references to “THB,” “Baht” and “Thai Baht” are to the legal currency of the Kingdom of Thailand. This Offering Memorandum contains conversions of certain amounts into U.S. dollars at specified rates solely for the convenience of the reader. Unless otherwise specified, all U.S. dollar translations were calculated by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00. See “*Exchange Rate Information.*” No representation is made that the Baht or dollar amounts referred to herein could have been or could be converted into dollars or Baht, as the case may be, at this rate, at any particular rate or at all.

Unless otherwise specified or the context otherwise requires, all references to “Thailand” or “Thai” herein are references to the Kingdom of Thailand. All references to the “Government” herein are references to the government of Thailand, all references to the “Cabinet” herein are references to the Cabinet of Ministers of the Government, all references to the “Ministry of Commerce” herein are references to the Ministry of Commerce of Thailand, all references to the “Ministry of Energy” herein are references to the Ministry of Energy of Thailand, all references to “MOF” herein are references to the Ministry of Finance of Thailand, all references to the “Ministry of Industry” herein are references to the Ministry of Industry of Thailand and all references to the “DMF” are to the Department of Mineral Fuels of the Ministry of Energy.

Market data and certain industry forecasts used throughout this Offering Memorandum were obtained from internal surveys, market research, publicly available information and industry publications published by third party sources that we believe are reliable. Such information has been accurately reproduced herein and, as far as we are aware and are able to ascertain from information published by such third parties, no facts have been omitted that would render the reproduced information inaccurate or misleading. Industry publications generally state that the information that they contain has been obtained from sources believed to be reliable but that the accuracy and completeness of that information is not guaranteed. Similarly, internal surveys, industry forecasts and market research, while believed to be reliable, have not been independently verified, and none of the Company or the Arrangers or Dealers makes any representation as to the accuracy or completeness of this information. The industry in which we operate is subject to a high degree of uncertainty and risks due to a variety of factors, including those described under “*Risk Factors*” These and other factors could cause results to differ materially from the information contained in such publications, surveys, forecasts and market research.

PRESENTATION OF FINANCIAL AND OTHER INFORMATION

Presentation of Financial Information

This Offering Memorandum contains English language translations of:

- our audited consolidated and separate financial statements as of and for the year ended December 31, 2017, included herein solely for purposes of the audit opinion contained therein (as the financial information as of and for the year ended December 31, 2017 has been extracted from subsequent financial statements);
- our audited consolidated and separate financial statements as of and for the year ended December 31, 2018;
- our audited consolidated and separate financial statements as of and for the year ended December 31, 2019;
- our unaudited interim consolidated and separate financial statements as of and for the three-month period ended March 31, 2019; and
- our unaudited interim consolidated and separate financial statements as of and for the three-month period ended March 31, 2020;

in each case with comparative financial information for the corresponding prior period.

These financial statements, which are presented together with their respective reports elsewhere in this Offering Memorandum, have been prepared in accordance with Thai Accounting Standards and Thai Financial Reporting Standards (collectively, “**TFRS**”), which are aligned with, but are not identical to, International Financial Reporting Standards as issued by the International Accounting Standards Board (“**IFRS**”). See “*Summary of Principal Differences Between TFRS and IFRS.*”

Our audited financial statements were audited by the State Audit Office of the Kingdom of Thailand in accordance with State Audit Standards established by the State Audit Commission and Thai Standards on Auditing established by the Thailand Federation of Accounting Professions. Our unaudited interim financial statements have been prepared in accordance with Thai Accounting Standard (TAS) No. 34 *Interim Financial Reporting*. Our unaudited interim financial statements as of and for the three-month period ended March 31, 2019 were reviewed by the State Audit Office of the Kingdom of Thailand, and our unaudited interim financial statements as of and for the three month period ended March 31, 2020 were reviewed by EY Office Limited in each case in accordance with Thai Standard on Review Engagements 2410, *Review of Interim Financial Information Performed by the Independent Auditor of the Entity* established by the Thailand Federation of Accounting Professions.

The financial information presented in this Offering Memorandum has been extracted from the financial statements included elsewhere in this Offering Memorandum. As between certain periods, (i) the adoption of new financial reporting standards that went effective in subsequent periods and (ii) reclassifications and adjustments resulting from valuation of assets from business acquisitions and outcome of litigation affect the comparability of those periods with prior periods, although we do not believe that comparability is materially affected to an extent that would not permit assessment of our period-over-period performance. Specifically:

- Statement of Income Data and Statement of Cash Flows Data — the statement of income data and statement of cash flows data for the year ended December 31, 2017 were extracted from our audited financial statements for the year ended December 31, 2018 and are not directly comparable with the corresponding data for the years ended December 31, 2018 and 2019, which were extracted from our audited financial statements for the year ended December 31, 2019 and reflect certain TFRS effective on or after January 1, 2019. See note 3.1 to our audited financial statements for the year ended December 31, 2019 for details.

Our unaudited interim financial statements for the three-month period ended March 31, 2020 have been prepared on the same basis as our audited financial statements for the year ended December 31, 2019, except for the adoption of (i) a set of financial reporting standards related to financial instruments (i.e., TAS 32 *Financial Instruments: Presentation*, TFRS 7 *Financial Instruments: Disclosures*, TFRS 9, *Financial Instruments*, TFRIC 16 *Hedges of a Net Investment in a Foreign Operation*, TFRIC 19 *Extinguishing Financial Liabilities with Equity Instruments*, collectively the “**New Financial Instruments Standards**”) and (ii) TFRS 16 *Leases* (the “**New Leases Standard**”). We adopted the New Financial Instruments Standards and the New Leases Standard effective January 1, 2020 under the modified retrospective method of initial adoption. Amounts for the periods beginning on or after January 1, 2020 are presented under the New Financial Instruments Standards and the New Leases Standard, while prior period amounts are not adjusted and continue to be reported in accordance with the previous basis. We recognized the cumulative effect of the adoption of the New Financial Instruments Standards and the New Leases Standard as an adjustment to the opening balance of retained earnings as at January 1, 2020. Please refer to notes 3.1, 3.2 and 4 to our unaudited interim financial statements for the three-month period ended March 31, 2020 for further details.

- **Financial Position Data** — the financial position data as of January 1, 2018, December 31, 2018 and December 31, 2019 are presented on the same basis and were extracted from our audited financial statements for the year ended December 31, 2019. Our financial position data as of March 31, 2020, however, reflect the application of the New Financial Instruments Standards and the New Leases Standard, as described above, and were extracted from our unaudited interim financial statements for the three-month period ended March 31, 2020.

Except as otherwise indicated or the context otherwise requires, financial information in this Offering Memorandum is presented on a consolidated basis.

Non-TFRS Financial Measures

This Offering Memorandum contains certain financial measures and ratios, such as EBITDA and EBITDA margins that are not required by, or presented in accordance with, TFRS. These non-TFRS measures are presented in this Offering Memorandum because we believe that they and similar measures are widely used in the energy industry as a means of evaluating a company’s operating performance and financing structure. These measures may not be comparable to other similarly titled measures of other companies and are not measurements under TFRS or other generally accepted accounting principles, and you should not consider such items as alternatives to profit (loss) for the period, operating profit or any other performance measures derived in accordance with TFRS, and they may be different from similarly titled measures used by other companies. Our management believes this data, along with comparable TFRS measures, is useful to investors because it provides a basis for measuring the operating performance in the periods presented. These measures are used in the internal management of our business, along with the most directly comparable TFRS financial measures, in evaluating the operating performance.

You should also be aware that EBITDA, as we define and present it, includes adjustments for items other than interest, taxes, depreciation and amortization and may not be comparable to EBITDA or other similarly titled measures of other companies.

The Non-TFRS Measures have limitations as analytical tools, and you should not consider them in isolation or as a substitute for analysis of our results or any performance measures under TFRS as set forth in our financial statements. Some of these limitations are that:

- they do not reflect our cash expenditures or future requirements for capital commitments;
- they do not reflect changes in, or cash requirements for, our working capital needs;
- they do not reflect the interest expense or cash requirements necessary to service interest or principal payments on our debt;
- they do not reflect any cash income taxes that we may be required to pay;

- they are not adjusted for all non-cash income or expense items that are reflected in our consolidated statement of income statement;
- they do not reflect the impact of earnings or charges resulting from certain matters we consider not to be indicative of our ongoing operations;
- assets are depreciated or amortized over differing estimated useful lives and often have to be replaced in the future, and these measures do not reflect any cash requirements for such replacements; and
- other companies in the energy industry may calculate these measures differently than we do, limiting their usefulness as comparative measures.

Because of these limitations the non-TFRS measures should not be considered as measures of discretionary cash available to us to invest in the growth of our business or as measures of cash that will be available to us to meet our obligations. You should compensate for these limitations by relying primarily on our TFRS results and using these non-TFRS measures only supplementally to evaluate our performance. For a description of how our non-TFRS measures are calculated from our consolidated results from operations and a reconciliation of our non-TFRS measures to our results for the period presented in this Offering Memorandum, please see “*Summary Financial Data.*”

Rounding

Rounding adjustments have been made in calculating some of the financial information included in this Offering Memorandum. As a result, numerical figures shown as totals in some tables may not be exact arithmetic aggregations of the figures that precede them.

AVAILABLE INFORMATION

While any Notes remain outstanding, we will, during any period in which we are not subject to Section 13 or 15(d) of the U.S. Securities Exchange Act of 1934, as amended (the “**Exchange Act**”), or exempt from reporting pursuant to Rule 12g3-2(b) under the Exchange Act, make available to any QIB who is a holder and any prospective purchaser of a Note who is a QIB designated by such holder, upon the request of such holder or prospective purchasers, the information concerning us required to be provided to such holder or prospective purchaser by Rule 144A(d)(4) under the Securities Act.

PRESENTATION OF OIL AND GAS RESERVES DATA

This Offering Memorandum includes estimates that our subsidiary engaged in the exploration and production business, PTTEP, has made of its proved and probable reserves which reflect its working interest. PTTEP’s working interest includes its net working interest and the related host country’s interest pursuant to the relevant production sharing contract, if such contract is in effect. These estimates are based on PTTEP’s Petroleum Resources Definitions and Guidelines, which are substantially similar to the standards established by the Society of Petroleum Engineers (the “**SPE**”), the SPE Petroleum Resources Management System.

Investors should note, however, that different reserves reporting systems employ different assumptions, and that, in particular, the Guidelines may differ from the standards established by the United States Securities and Exchange Commission (the “**U.S. SEC Standards**”). Accordingly, the information relating to PTTEP’s estimated natural gas and crude oil reserves and resources included in this Offering Memorandum is not indicative of information that would be reported under U.S. SEC Standards. You should note that the magnitude of any difference between PTTEP’s proved and probable reserves estimates under its Guidelines and the U.S. SEC Standards could vary greatly. Each reservoir must be analyzed based on its individual situation. In some cases, the difference could be significant, whereas in other cases, there could be very little difference.

This Offering Memorandum includes PTTEP's most recent estimates of its proved and probable reserves, which are as of December 31, 2019, and there have been no subsequent material changes to its reserves.

Recoverable resources are production, reserves, contingent resources and prospective resources. Contingent resources are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations, but the applied project(s) are not yet considered mature enough for commercial development due to one or more contingencies. Prospective resources are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future development projects. The estimation of resources is subject to both technical and commercial uncertainties and may change as more data becomes available.

There are uncertainties inherent in estimating petroleum reserves and in the timing of development expenditures and the projection of future rates of production. However, proved and probable reserves data set out in this Offering Memorandum represents estimates with reasonable confidence, which according to both the SPE Petroleum Resources Management System, means that there is at least 90% chance that quantities actually recovered will equal or exceed the estimates of proved reserves, and there is at least a 50% chance that the quantities actually recovered will equal or exceed the sum of proved plus probable reserves estimates. These reserves are defined as those quantities which, by analysis of geological and engineering data, can be estimated with reasonable certainty to be commercially recoverable, from a given date forward, from known reservoirs and under current economic conditions, operating method and government regulation.

Proved reserves do not include reserves that may produce petroleum as a result of the introduction of new technology (unless proved successfully). PTTEP's reported proved reserves reflect its working interest, which includes its net working interest and the related host country's interest pursuant to the relevant production sharing contract, if such contract is in effect.

Proved developed reserves refer to that portion of proved reserves that PTTEP expects to recover through existing wells with existing equipment and operating methods and through improved recovery techniques from successful pilot projects or installed programs without any further significant investments required.

Proved undeveloped reserves are proved reserves that are expected to be recovered from new wells in undrilled acreage, or from deepening existing wells to a different reservoir, or where a relatively significant expenditure is required to recomplete an existing well or install production or transportation facilities for primary or improved recovery project.

Probable reserves are defined as quantities of petroleum obtained from an analysis of geological and engineering data similar to that of proved reserves but are less likely to be produced due to technology, government rules and regulations, or economic conditions. PTTEP's reported probable reserves reflect its working interest, which includes its net working interest and the related host country's interest pursuant to the relevant production sharing contract, if such contract is in effect.

There are numerous uncertainties inherent in estimating quantities of reserves and resources, including many factors beyond PTTEP's control. The reserves data set forth in this Offering Memorandum represents estimates determined by PTTEP according to industry practice. In general, estimates of commercially recoverable petroleum volumes are based upon a number of variable factors and assumptions, such as geological and geophysical characteristics of the reservoirs, historical production performance from the properties, the quality and quantity of technical and economic data, prevailing petroleum prices applicable to a company's production, engineering judgments, forward-looking commercial and market assumptions, the assumed effects of regulation by government agencies and future operating costs. All such estimates involve uncertainties. The classifications of reserves are attempts to define the degree of likelihood that the reserves will result in revenue for PTTEP. For these reasons, different engineers or the same engineers at different times may prepare substantially different: (i) estimates of the commercially recoverable petroleum volumes attributable to any particular group of properties, (ii) classification of such reserves based on uncertainty of recovery or (iii) estimates of future net revenues expected

therefrom. In addition, such estimates can be and will be subsequently revised as additional pertinent data becomes available prompting revision. Actual recoverable petroleum volumes may vary significantly from such estimates. See *“Risk Factors — Risks Relating to Our Business — There are uncertainties inherent in estimating PTTEP’s reserves, and if the actual amounts of such reserves are less than estimated, our financial condition and results of operations may be materially and adversely affected.”*

When converting natural gas volumes to BOE (barrels of oil equivalent), PTTEP uses a formula where the BOE conversion is “volume (MMBOE) = volume (Bcf) multiplied by the GCV (gross calorific value) of the petroleum divided by 6,000.” The gross calorific values used to convert gas volume to barrels of oil equivalent are different and vary in each project depending on reservoir fluids composition. The gross calorific value used for BOE conversion in reserves estimations and annual production volumes are also different. Those used for reserves estimations are the average GCV of each project throughout its field life. The GCVs used for production reports were the actual GCVs that were measured in each month. Generally, the assumed GCV is 1,000 BTU/SCF, so that 1 BOE is equal to 6 MSCF.

Unless otherwise indicated, references to liquid hydrocarbons also include liquefied petroleum gas and bitumen.

FORWARD-LOOKING STATEMENTS

This Offering Memorandum includes statements of future expectations, projections and forward-looking statements. Statements that are not historical facts, including statements about our beliefs and expectations, are forward-looking statements and can generally be identified by the use of forward-looking terminology such as the words “anticipate,” “believe,” “estimate,” “expect,” “intend,” “may,” “plan,” “probability,” “project,” “seek,” “should,” “target” and similar expressions. You are cautioned not to rely on these forward-looking statements.

These forward-looking statements include statements relating to:

- our expected performance and production volumes in 2020;
- the expected results of exploration, production and refining activities;
- our expected and targeted capital expenditures, investments and other cost commitments and revenues;
- the anticipated demand for, and ability to extract, crude oil or natural gas;
- our future overall business development and economic performance;
- our estimated financial information regarding, and the future development and economic performance of, our business;
- our future earnings, cash flow and financial position;
- our expansion plans;
- our business strategy;
- future prices and demand for natural gas, crude oil, condensate and refined petroleum and petrochemical products, including 2018 PDP (as defined herein) and our forecasts of gas demand in Thailand;
- estimates of our proved and probable reserves; and
- the liberalization of the Thai gas industry.

Although our management believes that our expectations, as reflected by such forward-looking statements, are reasonable based on information currently available to us, no assurances can be given that such expectations will prove to be correct. In addition, our exploration, production and development activities are subject to risks arising from the inherent difficulty of predicting the presence, yield or quality of petroleum, oil and gas reserves, as well as unknown or unforeseen difficulties in extracting or transporting any petroleum, oil or gas found, or doing so on a commercial basis.

The forward-looking statements included in this Offering Memorandum reflect our current views with respect to future events and are not a guarantee of future performance. A number of important factors could cause actual results or outcomes to differ materially from those expressed in any forward-looking statement. These factors include, but are not limited to, the following:

- volatility of prices for natural gas, crude oil, condensate and refined petroleum products and the cyclical nature of the petroleum industry;
- Government intervention in pricing, including any reduction in the tariffs that we are allowed to charge in our gas business;
- the continued availability of capital and financing on terms agreeable to us;
- gas liberalization developments in Thailand;
- our success in finding, acquiring, developing, and gaining access to or otherwise exploring additional reserves;
- changes in the estimates of PTTEP's reserves;
- challenges in managing or integrating our acquisitions;
- the achievement of development plans and targets in relation to our projects;
- general political, economic and business conditions globally, regionally and domestically;
- fluctuations in the value of the Baht against other currencies, especially the U.S. dollar;
- energy demand and supply in Thailand, Southeast Asia and elsewhere where we operate;
- epidemics, including the COVID-19 outbreak and its length and severity, natural disasters, war, civil disorder and other events of force majeure in Thailand or globally;
- the regulatory regimes in Thailand and other countries in which we conduct businesses;
- liability for remedial actions and other damages under environmental regulations or associated third-party claims; and
- other factors beyond our control.

Certain of these risks are more specifically described in "*Risk Factors*." If one or more of these risks or uncertainties materialize, or if the underlying assumptions prove incorrect, our actual results may vary materially from those expected, estimated or projected. We do not undertake to update our forward-looking statements or risk factors to reflect future events or circumstances.

TABLE OF CONTENTS

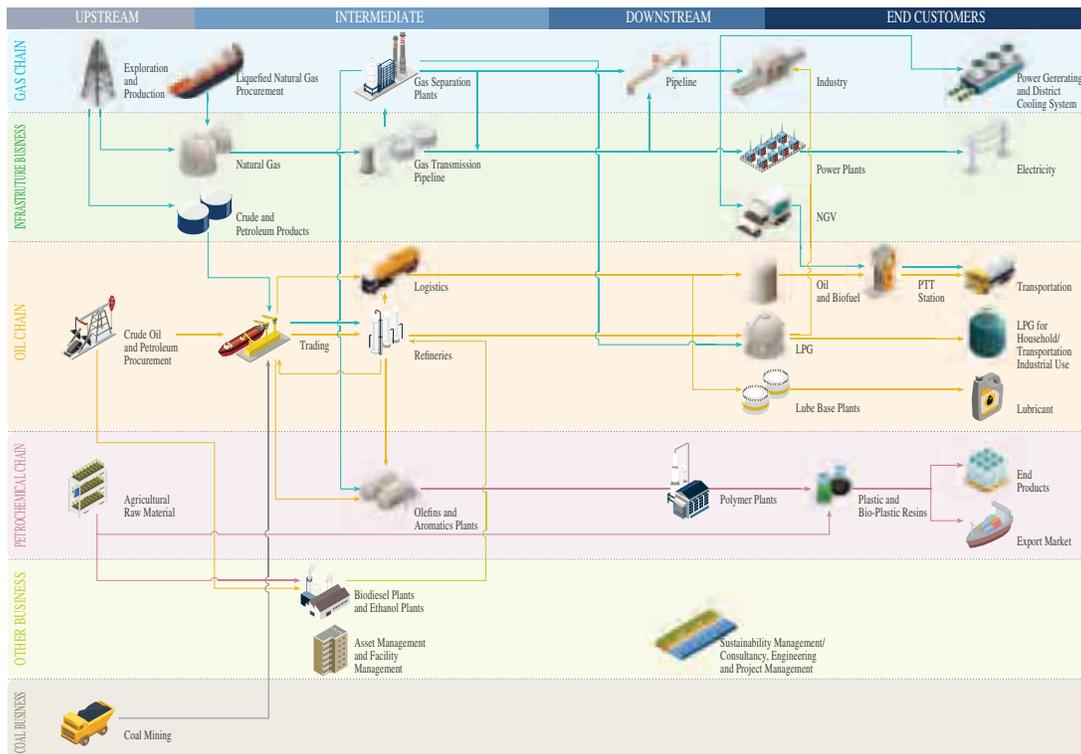
SUMMARY	1
SUMMARY OF THE PROGRAM	12
SUMMARY FINANCIAL DATA	18
RISK FACTORS	24
USE OF PROCEEDS	52
EXCHANGE RATE INFORMATION	53
CAPITALIZATION AND INDEBTEDNESS	54
SELECTED CONSOLIDATED FINANCIAL DATA	55
MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS	59
RELATIONSHIP WITH THE GOVERNMENT AND REGULATORY MATTERS ...	82
DESCRIPTION OF THE TREASURY CENTER	87
BUSINESS	88
MANAGEMENT	145
PRINCIPAL SHAREHOLDERS	167
RELATED PARTY TRANSACTIONS	168
FORM OF THE NOTES	169
TERMS AND CONDITIONS OF THE NOTES	171
SUMMARY OF PROVISIONS RELATING TO THE NOTES WHILE IN GLOBAL FORM	207
FORM OF PRICING SUPPLEMENT OF THE NOTES	210
CLEARANCE AND SETTLEMENT	223
TAXATION	227
SUBSCRIPTION AND SALE	237
TRANSFER RESTRICTIONS	244
SUMMARY OF PRINCIPAL DIFFERENCES BETWEEN TFRS AND IFRS	250
GENERAL INFORMATION	253
LEGAL MATTERS	254
INDEPENDENT AUDITORS	255
GLOSSARY	256
INDEX TO THE FINANCIAL STATEMENTS	F-1

SUMMARY

Overview

We are Thailand's fully integrated multinational petroleum and petrochemical company. Our operations cover the energy industry's entire business value chain, from upstream activities such as oil and gas exploration and production, to midstream activities such as gas distribution and LNG related business, to downstream activities such as petrochemical, refining and power generation. We conduct our business directly, through flagship subsidiaries and through associates and joint ventures. We and some of our flagship subsidiaries are listed on the SET. We derive the majority of our sales and service income from Thailand but have operations in over 35 other countries.

The following diagram illustrates the integration of our operations. We believe that our integrated business model allows our businesses to complement each other and enhances our ability to exercise greater control over the petrochemical value chain.



We assess our performance and allocate resources according to business groups, which are based on types of products and services and contain our various operating segments. As a general policy, transactions between the entities engaged in our various operating segments are conducted on an arm's length, market-pricing basis.

Upstream Business Group

- **Petroleum exploration and production.** We engage in oil and gas exploration and production primarily in Thailand, as well as in neighboring countries and elsewhere around the globe. We operate this segment through our 65%-owned subsidiary PTTEP. Most of our domestic projects are located in the Gulf of Thailand. Our overseas projects are located elsewhere in Southeast Asia, the Middle East, Australia, the Americas and Africa.
- **Natural gas.** Our gas business conducts procurement, transmission, distribution and separation of natural gas. We process natural gas through six GSPs with a total nameplate capacity of 2,870 MMSCFD. We sell the outputs from our GSPs to petrochemical facilities,

industrial and household users, and the transportation sector. Our LNG receiving terminal engages in storage and regasification for distribution to major power producers, industrial users and NGV businesses. We own substantially all of Thailand's natural gas transmission and distribution pipeline network.

- **Coal mining.** Our coal business involves overseas exploration, production and distribution of coal. Through our wholly-owned subsidiary PTTGM, we operate two coal mines in Indonesia, with an aggregate rate of production of approximately 7-8 MT per year.

Downstream Petroleum Business Group

- **Oil.** Our oil business primarily markets and distributes quality petroleum products such as fuel oil, diesel, gasoline, aviation fuel, LPG, lubricating oils and asphalt through retail, wholesale and export channels. This segment includes distribution of non-oil retail products for coffee shops and convenience stores in domestic and international markets.
- **International trading.** We engage in the procurement, import, export, and international trading of crude oil, condensate, LNG, LPG, petroleum and petrochemical products, solvents and chemicals through our international trading business. We also conduct price risk management and international chartering services through this segment, which has helped us become a leading one-stop international trading house.
- **Petrochemical and refining.** We are the largest petrochemical and refining group in Thailand, controlling in a majority of the country's petrochemical facilities and half of its refineries. Our operations represented 63% of the country's refining capacity. We engage in the petrochemical and refining business through our subsidiaries PTTGC, Thailoil, IRPC and PTT Tank, among others.

Technology and Engineering Group/Others Business Group

- **Technology and Engineering.** We recognized our technology and engineering business as a standalone operating segment from 2018 to improve our internal reporting and assessment of this business. The principal business in our technology and engineering group is power generation which we operate through GPSC. GPSC engages in the production and distribution of electricity, steam, industrial water, and public utilities. Our technology and engineering business also pursues integrated engineering services, real-estate development, R&D (technical and innovation), development of prototypes, and pursuit of new business opportunities.
- **Others.** This operating segment includes all of our other businesses that do not constitute a separately reportable segment.

The following table illustrates the business groups and segments comprising our operations and our interest in the entities engaged in these businesses as of March 31, 2020.

		Business Group	Entities Engaged in Business	PTT's Interest as of March 31, 2020	Activities
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px; width: 80px; text-align: center;">Businesses Operated Through Group Companies</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; margin-bottom: 5px; width: 80px; text-align: center;">Businesses Operated Directly by PTT</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; width: 80px; text-align: center;">Businesses Operated Through Group Companies</div> </div>	Upstream	Exploration and Production	PTTEP	64.79%	Exploration and production
		Coal	PTT Global Management	100%	Coal business
		LNG	PTT Global LNG	50% ⁽²⁾	LNG value chain
			PTT LNG	100%	LNG receiving terminal
	Downstream	Gas	Gas Pipeline	100%	Sole owner/operation of the transmission pipeline
			Supply and marketing	100%	Supply and marketing of natural gas
			Gas separation plants	100%	Extracting hydrocarbon contents in natural gas for petrochemical's feedstock
		Trading	Trading	100%	Import/export/offshore trading of petroleum and petrochemical products
		Oil Marketing	PTTOR ⁽¹⁾	100%	Retail service stations, commercial marketing and sales of petroleum products sales and non-oil businesses
		Petrochemical & Refining	PTTGC	47.92% ⁽²⁾	Petrochemical flagship: Largest integrated petrochemical and petroleum refining company in Thailand
Thaioil	47.03% ⁽²⁾		Refinery flagship: Largest complex refinery in Thailand by nameplate capacity		
IRPC	47.55% ⁽²⁾		Integrated refinery and petrochemical operations		
Technology & Engineering	Power	GPSC	21.81% ⁽³⁾	Power flagship: Power and other public utilities generation business	

Notes:

- (1) Assets transferred from PTT to PTTOR on July 1, 2018 pursuant to a spinoff. PTTOR currently is pursuing an IPO on the SET. See “*Business — Oil and Retail Business — Oil Business.*”
- (2) Consolidated in our results of operations as we directly or indirectly control these entities notwithstanding the Group’s ownership (on a consolidated basis) of less than a majority of the respective voting rights in these entities.
- (3) On a consolidated basis, the Group holds 75.23% of the voting rights in GPSC.

The following table sets forth our consolidated sales and services revenue for each of the periods indicated, in each case excluding intra-Group sales, which are substantial for certain of our operating segments, along with a breakdown of each operating segment's contribution by value and as a percentage of the corresponding consolidated amounts. For breakdowns of intra-Group sales, profit and loss, assets and liabilities by operating segment, refer to the notes to our financial statements included elsewhere in this Offering Memorandum.

	Year ended December 31,						Three months ended March 31,					
	2017		2018		2019		2019		2020			
	THB	%	THB	%	THB	USD ⁽¹⁾	%	THB	%	THB	USD ⁽¹⁾	%
	(in millions, except for percentages)						(unaudited)					
Sales and services revenue												
Upstream petroleum and natural gas												
Petroleum exploration and production	20,882	1.0%	24,849	1.1%	36,330	1,111.0	1.6%	5,839	1.1%	11,205	342.7	2.3%
Natural gas	316,730	15.9%	346,496	14.8%	349,411	10,685.7	15.7%	90,945	16.5%	80,958	2,475.9	16.7%
Coal	19,250	1.0%	20,527	0.9%	15,078	461.1	0.7%	4,216	0.8%	3,320	101.5	0.7%
Total	356,862	17.9%	391,872	16.8%	400,819	12,257.8	18.0%	101,000	18.4%	95,483	2,920.1	19.7%
Downstream petroleum												
Oil	539,952	27.0%	594,808	25.5%	575,777	17,608.4	25.9%	145,140	26.3%	129,466	3,959.3	26.8%
International trading	500,248	25.1%	661,512	28.3%	596,180	18,232.4	26.9%	141,503	25.7%	119,741	3,661.9	24.8%
Petrochemicals and refining	588,597	29.5%	673,932	28.8%	594,596	18,183.9	26.8%	157,136	28.5%	123,963	3,791.0	25.6%
Total	1,628,797	81.6%	1,930,252	82.6%	1,766,553	54,024.7	79.6%	443,779	80.5%	373,170	11,412.2	77.2%
Technology and engineering ⁽²⁾	—	—	13,896	0.6%	52,174	1,595.6	2.4%	6,062	1.1%	14,866	454.6	3.1%
Others	10,063	0.5%	135	—	193	5.9	—	33	—	48	1.5	0.0%
Total	1,995,722	100.0%	2,336,155	100.0%	2,219,739	67,884.0	100.0%	550,874	100.0%	483,567	14,788.4	100.0%

Notes:

- (1) U.S. dollar translations are calculated using an exchange rate of THB32.699 to U.S.\$1.00 solely for the convenience of the reader. See “Exchange Rate Information.”
- (2) We detached the technology and engineering operating segment from the others segment and reclassified and adjusted our reporting for the period beginning January 1, 2018 and subsequent periods.

On a geographic basis, we derived 61.7% of our sales and services income for 2019 from customers in Thailand, 33.6% from customers elsewhere in Asia and 4.7% from customers in other jurisdictions.

In 2017, 2018, 2019, our profit for the period was Baht 184,610 million, Baht 165,373 million and Baht 122,092 million (U.S.\$3,733.8 million), respectively. We sustained a loss of Baht 14,007 million (U.S.\$428.3 million) in the three months ended March 31, 2020, primarily as a result of lower oil prices and the economic impact of the COVID-19 pandemic. See “— Recent Developments.”

Competitive Strengths

Strategic importance to Thailand as the country's fully integrated multinational energy company with strong government support

As Thailand's fully integrated multinational energy company, our mission is to ensure the country's long-term energy security to support economic growth. The Government, acting through the MOF, owns a majority stake in PTT. The Government's Vayapuk funds and other instruments of the state, such as the Social Security Office and other national pension funds, hold additional stakes in our equity. We benefit from strong state support and are an important revenue contributor to the Government. Our strategic position in the country's energy sector and support from the Government provides us various benefits, including financial security and strategic advantages when negotiating transactions with foreign governments and other companies.

We are rated on par with Thailand’s sovereign rating by the three major credit agencies. The following table lists our long-term issuer credit ratings as of the date of this Offering Memorandum.

	Moody’s	Standard & Poor’s	Fitch
Foreign Currency	Baa1	BBB+	BBB+
Local Currency	Baa1	A-	BBB+

By participating across the energy supply chain, we are able to target and optimize returns and create value throughout our integrated operations. Our operations encompass all stages of the petroleum and petrochemical value chain. Our upstream operation, conducted through PTTEP, provides us with an attractive return in oil and natural gas exploration and production. Our midstream activities include gas separation, which is the process whereby we generate gas products that we sell at prices linked to petrochemical commodities. Our gas transmission and LNG receiving terminal provide us with stable and strong returns with a cost-plus pricing structure for transactions with customers in the power sector and commodity-linked pricing. In the downstream segment, we utilize our refining and petrochemicals expertise to enhance value of the upstream products and integrate with our international trading and oil and retail businesses. We also engage in innovation and development of energy and energy infrastructure, including power generation.

We have historically been and remain the largest company on the SET by market capitalization. The capitalization as of June 30, 2020 of the seven companies within our Group that are listed on the SET — namely PTT, PTTEP, PTTGC, Thaioil, IRPC, GPSC and GGC — amounted to Baht 2,011,255 million (U.S.\$65,766 million), representing 14% of the overall market capitalization of the SET, of which PTT contributed 54%, PTTEP contributed 18%, GPSC contributed 10%, PTTGC contributed 10%, Thaioil contributed 4%, IRPC contributed 3% and GGC contributed 1%.

Diversified international upstream business portfolios with a Southeast Asia and Middle East focus

We operate our upstream business through PTTEP, which was originally founded as our exploration and production arm, and we continue to majority own. PTTEP is one of the largest exploration and production companies in Southeast Asia by reserves and production. PTTEP’s large portfolio of exploration blocks offers a diversification of reserves, production and exploration opportunities and risks. As at December 31, 2019, PTTEP had proved reserves of 1,140 MMBOE and probable reserves of 507 MMBOE, with working interests in more than 40 petroleum exploration, development and production projects in 15 countries. In 2019, PTTEP produced one-third of Thailand’s petroleum production. PTTEP’s portfolio of proved reserves is geographically balanced, with approximately 50% of proved reserves located in Thailand and approximately 50% overseas.

Most of PTTEP’s producing projects are located in Thailand and elsewhere in Southeast Asia, in particular in Myanmar, Malaysia and Vietnam. PTTEP has continued to expand its portfolio and consolidate its position regionally. In March 2019, PTTEP acquired Murphy Oil Corporation’s business in Malaysia for approximately U.S.\$2,010.0 million. The acquisition added two producing projects, one development project and two exploration projects to PTTEP’s portfolio. PTTEP has also pursued expansion further afield. In November 2019, PTTEP completed the acquisition of Partex Holding B.V., which holds interests in seven oil and gas projects in five countries, including a major investment in large oil deposits in Oman, for a consideration of approximately U.S.\$660.7 million. This acquisition allowed PTTEP to expand strategically into the Middle East, a key low-cost barrel region.

Dominant position in an established and growing natural gas market that generates stable returns

We currently enjoy a favored position in Thailand in the gas transmission, processing and marketing segment of our business that has allowed us to operate in a low-competitive environment in this segment since our inception. We operated the gas business segment since

inception and have developed expertise in the segment throughout the years. We own and operate a transmission network of approximately 4,252 kilometers of pipeline across four main transmission pipelines. These pipeline networks represent substantially all of the offshore and onshore natural gas pipeline capacity in Thailand and link commercial gas fields and our LNG receiving terminal to local power producers, our GSPs and other industrial users. We generate a stable return as the owner and operator of substantially all of the transmission pipelines in Thailand. We mainly derive income from our gas business from the transmission tariff that we charge our customers, which is not subject to volatility in natural gas or oil prices. The transmission tariff, although regulated, provides us with an internal rate of average return on equity of approximately 14%. We are currently completing the construction of the fifth main onshore transmission pipeline in the eastern and central part of Thailand. We expect the commercial operation to begin in 2021.

We own and operate six GSPs, which separate hydrocarbons from natural gas and produce gas products such as ethane, propane, LPG and NGL. The GSPs currently have a combined processing capacity of approximately 2,870 MMSCFD. The gas processing business through our GSPs adds value from the gas procured from the Gulf of Thailand and produces feedstock for petrochemical plants, including our own. This is in line with our strategy to invest in infrastructure development to add value to our products.

In addition, our LNG receiving terminal provides us with a stable return through tariffs we charge to our customers, which, similar to the tariff we charge in our gas transmission business, is not subject to volatility in natural gas or oil prices. Currently, we are constructing a new LNG receiving terminal to bring our total capacity to 19 mtpa from 11.5 mtpa. We expect the construction to complete in 2022 and commercial operation to commence in the same year.

Our gas business is underpinned by a steady gas supply secured from PTTEP and other producers through natural gas purchase agreements for periods ranging from 25 to 30 years. We minimize our exposure to oil and gas price fluctuations via a combination of take-or-pay gas purchase arrangements and a cost-plus pricing structure with power producers offtakers, which accounted for approximately 60% of total gas sales volume in the first three months of 2020.

Thailand's revised 2018 power development plan for 2018-2037 (the "2018 PDP") forecasts that, by 2037, 53% of power generation in the country will use natural gas as fuel. From 2024, Thailand aims to push for natural gas to be the major fuel for power generation industry. In the shorter term, between 2019 and 2023, gas demand for industrial use is expected to increase despite stabilizing or slightly diminished demand for other uses. We believe that, with our dominant position in the LNG value chain, we are poised to capture the potential growth in this segment.

Largest refiner, petrochemical producer in Thailand with growing downstream operations

We are the largest refiner in Thailand, with interests in three of Thailand's six refineries. Thaioil serves as our refinery flagship, operating the largest complex refinery in Thailand with refining nameplate capacity of approximately 275,000 bpd. PTTGC, Thailand's largest integrated petrochemical and petroleum refining company, has distillation intake capacity of 280,000 bpd. IRPC, the third largest refinery in Thailand in terms of production capacity, has a refinery capacity of 215,000 bpd. Through our subsidiaries Thaioil, PTTGC and IRPC, we had a refining capacity of 770,000 bpd, representing 63% of the country's refining capacity as of March 31, 2020. Thaioil is currently replacing existing distillation units with higher refining capacity units, which is expected to increase its refining capacity to 400,000 bpd and improve the average complexity of its refinery from 9.8 to 12.0, based on its internal estimates using the Nelson Complexity Index methodology. We expect that this capacity upgrade project will commence commercial operations in 2023. PTTGC has also scored highly in its upgrading capability according to its internal assessment also pursuant to the Nelson Complexity Index methodology.

Our fully integrated petrochemical and refining businesses obtains feedstock from our midstream operations and our trading procurement to significantly add value to our upstream products. We remain the largest petrochemical producer in Thailand with total capacity of olefins, aromatics and styrenics production of more than 15 mtpa. PTTGC, our petrochemical flagship, operates the largest ethane cracker facility in Thailand with a competitive cost structure. IRPC operates Thailand's first integrated refinery and petrochemical manufacturing facility.

In other downstream businesses, with more than 1,900 service stations, we held a market share of approximately 40% of all petroleum retail sales in Thailand during the first three months of 2020. In the non-oil retail segment, as of March 31, 2020, we had over 2,900 Café Amazon outlets and over 1,800 convenience stores in Thailand. We also have a growing international presence, with 307 service stations, 244 Café Amazon outlets and 81 convenience stores abroad. The diversification into non-oil retail businesses has lessened our dependence on petroleum to generate income and has significantly enhanced our margins.

In our technology and engineering segment, our power and utilities production business generates stable returns. Through GPSC, our flagship power company, we have a portfolio of power plants with a total capacity of 5,026 MW as of March 31, 2020. We are currently the fourth largest power producer in Thailand and are aiming to increase our role and market share in power production in Thailand.

Track record of resilient credit metrics, prudent financial management and strong liquidity

We believe that we have adequate liquidity from ample cash generated from our operations supported by credit availability from relationship financial institutions and ready access to domestic and international capital markets. Our liquidity enables us to adjust spending and withstand the environment of low crude prices and slow demand.

We have a well-defined financial control policy to monitor our financial condition. We strive to maintain a net debt-to-EBITDA ratio of less than two and net debt-to-equity ratio of less than one at the Group level. Overall, our indebtedness has a well-structured debt maturity profile. In addition, our risk management practice balances foreign currency liabilities and assets allowing us to use a natural hedge to minimize the effects of foreign currency fluctuations. We also use derivative hedges to manage petroleum and petrochemical price and spread exposures to commodity price and foreign exchanges fluctuations. These risk management practices have proven to be effective to minimize the impact of such fluctuations on our cash flows and lessen profit volatility. Our risk management policy also extends to management of account receivables, account payables and investments.

Strategies

Continue to strengthen Thailand's national energy security sustainably and transparently, while adopting new technologies

We aim to strengthen Thailand's national energy security through coordination and integration across our upstream, midstream and downstream business operations. As Thailand's national energy organization, we intend to leverage our local and international assets across the energy value chain to meet the growing needs of the Thai economy. To better meet our objectives, we aim to use proven technologies that help to drive efficiency, reduce operational costs, and enhance oversight of our operations. We also aim to conduct our business operations in a transparent manner that inspires confidence among our customers, partners, and stakeholders.

In addition, we aim to be a leader in sustainable practices in the energy sector, including the development of alternative fuels and green energy. We have actively marketed green technology products, such as biofuels that use agricultural crops as a source of feedstock, as alternatives to gasoline and diesel. We aim to further improve our alternative fuel products to answer to the Government's initiative to increase the consumption of cleaner fuel and price of energy crops. We have been included in the Dow Jones Sustainability Index for eight consecutive years (2012-2019). We continue to support the United Nations' Sustainable Development Goals through various initiatives to help Thailand to achieve its greenhouse gas reduction target. These sustainable initiatives include implementing carbon pricing for new investments, increasing revenue contribution from low carbon products by 2023, reducing up to 20% of carbon dioxide emissions by 2030 and reducing greenhouse gas emissions by 20-25% by 2030.

Substantial investment in our core businesses to improve Thailand's national energy infrastructure across upstream, downstream and power portfolios

Our five-year committed capital expenditures plan, as approved by our board of directors in January 2020, contemplates a total of approximately Baht 180,814 million (U.S.\$5,529.6 million) in capital expenditures for projects by PTT and its wholly-owned subsidiaries, and a total of approximately Baht 865,000 million (U.S.\$26,453.4 million) in capital expenditures for projects by the Group as a whole between 2020 and 2024. As part of our response to the COVID-19 pandemic and ongoing low oil prices, we recently reduced our investment budget for 2020 by 22.23% from Baht 69,310 million (U.S.\$2,120 million) to Baht 53,901 million (U.S.\$1,648 million). However, we currently expect that a portion of the reduced 2020 spending will be delayed to later years in the current five-year committed capital expenditures plan.

Our upstream capital expenditure plans include:

- PTT's Fifth Transmission Pipeline Project to add 400 kilometers to the transmission pipeline network, construction of a second LNG receiving terminal to add 7.5 mtpa to the LNG receiving capacity and expansion of onshore gas pipeline system and infrastructure;
- PTT Tank's joint venture project to develop Map Ta Phut seaport phase III (Section 1) which includes seaport development and a construction of an LNG terminal with a capacity of not less than 5 mtpa; and
- investments in new energy projects.

We will use this investment plan to optimize the integration of our LNG value chain from gas exploration and production to power generation and enhance operational efficiencies. We believe these investments will position us as a regional LNG trading hub, which we view as a priority further to Thailand's national development plans. We will also continue to build our competitive capabilities around our natural gas businesses, and aim to be the leading operator for the region.

Our downstream and technology and engineering capital expenditures include:

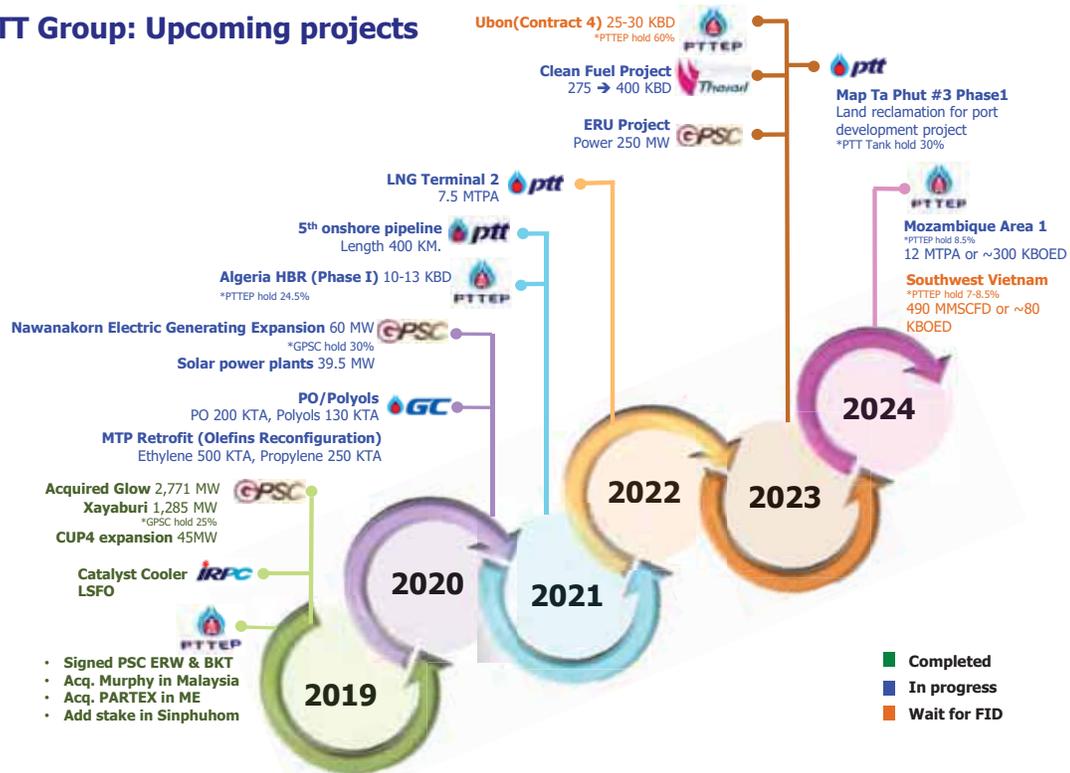
- PTTGC's proposed addition of 500 kta of ethylene, 250 kta of propylene, 130 kta of polyol, and 200 kta of propylene oxide production capacity to its facilities;
- Thai Oil's construction of new production units; and
- GPSC's investment in a 250 MW energy recovery unit.

We believe these investments could help us to operate more efficiently, sustainably and flexibly under changing business conditions. We believe these planned enhancements will also add to our value proposition to industrial customers of specialty petrochemical products.

We believe these investments will not only enable us to leverage upon our operational strengths ("inside-out" business strategy), but also help us to better respond to the demands of our customers across the region ("outside-in" business strategy).

The below graphic illustrates our recent and ongoing expansion projects and the years in which we expect such projects will be completed. See “Forward-Looking Statements.”

PTT Group: Upcoming projects



Strategically diversify our geographic presence

As part of our portfolio optimization, we regularly monitor and evaluate for potential acquisitions, divestments and farming in/out of various assets. We aim to maintain a balanced and diversified portfolio of local and international assets as a means of capturing growth while prudently managing risk.

Through PTTEP, we currently have participation interests in more than 40 petroleum exploration, development and production projects in 15 countries. In expanding our presence, we focus on areas where we have experience and expertise and on projects that have manageable risk and rapid commercialization opportunities, in particular in the ASEAN region. Examples of this include PTTEP’s recent acquisitions of: (i) a 22.2% participating interest in the Bongkot gas field in Thailand; (ii) Murphy Oil Corporation’s business in Malaysia, which holds partial interests in the SK309, SK311, Block K and Block H projects; and (iii) Partex Holding B.V., which invested in seven oil and gas projects covering both upstream and midstream assets in five countries — Oman, the UAE, Kazakhstan, Brazil and Angola. Each of these investments was at or near production phase at acquisition. In addition, PTTEP also pursued the opportunity to firmly establish its presence in Myanmar by venturing into the power business.

We also look to expand our international footprint through our other businesses. In our gas business, we strive to become a regional LNG hub. We have expanded our LNG distribution channel from the traditional pipeline supply to distribution to vessels for domestic customers. We plan to also use this distribution channel for offshore customers. In our trading business, we aim to be one of the world’s leading companies in energy trade by establishing additional subsidiaries and representative offices in strategic trading locations. Most recently, in 2020, we opened an additional trading office in the U.S. to complement our existing trading offices in other strategic locations such as Bangkok, Singapore and London. Furthermore, in our oil segment, which we undertake through PTTOR, we endeavor to maintain our market share in Thailand while expanding

its oil and non-oil businesses to international markets, particularly in neighboring countries. PTTGC aims to increase the percentage of its sales contributed by the international petrochemical market from 7% in 2019, to 30% by 2030. In the same vein, Thai Oil continues to consider investment opportunities in Indonesia, Vietnam and Myanmar, with a view to expand sales in the Indochina region, where our geographic proximity may provide a competitive advantage over other exporters.

Identify innovative “S-Curve” business opportunities and maintain a disciplined investment strategy

Through our technology and engineering business segment, we aim to identify and invest in “disruptive” technologies that can help us achieve rapid growth, contribute to Thailand’s economic competitiveness, and enhance the quality of life of the Thai people. We refer to these businesses as “New S-Curve” business opportunities. We focus on seeking innovative “New S-Curve” business opportunities in the areas of electricity value chain, life sciences, internet of things, artificial intelligence and robotic technologies. In particular, we intend to identify and develop businesses that leverage our existing assets and expertise to support the growth of our core businesses. Our investment activities in the new businesses will follow our well-defined investment strategies and risk management.

Corporate Information

PTT Public Company Limited’s principal executive offices are located at 555 Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900, Thailand. Its legal entity identifier is 549300QOGMPTKB6W7G56.

PTT Treasury Center Company Limited’s principal executive offices are located at 555/2 Energy Complex, Building B, 14th Floor, Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900, Thailand. Its legal entity identifier is 254900FBQLIN5XACCX50.

The investor relations page of our corporate website is located at <https://ptt.listedcompany.com/>. The information on our website is not part of this Offering Memorandum.

A number of our subsidiaries, namely PTTEP, PTTGC, Thairoil, IRPC, GPSC and GGC, are listed on the SET and regularly publish financial statements and other information required under the listing rules of the SET. That information is available to investors through the websites of the SET and the websites of those subsidiaries but is not incorporated by reference into this Offering Memorandum and should not be relied upon as if it were.

Recent Developments

Global oil supply and the COVID-19 pandemic

The disagreement on production cuts between the OPEC and Russia since the beginning of March 2020, followed by the decision of Saudi Arabia to reduce its sale oil prices and increase its production to gain market share, have to date negatively impacted the international reference prices for crude oil and refined products in 2020. The Brent crude oil price in the fourth quarter of 2019 was recorded at U.S.\$67.3 per barrel and significantly dropped to U.S.\$23.4 per barrel in the first quarter of 2020. Furthermore, as a result of the COVID-19 pandemic and measures put in place to slow its spread, including the imposition of quarantines, and medical screenings, travel restrictions, border closures, curfews, and the suspension of certain activities, we have seen and expect to continue to see substantial uncertainty in macro-economic conditions with regards to lower prices and demand for oil, natural gas and related products. These recent global developments have resulted in a significant drop in international reference prices such as Dubai crude prices.

As our business depends substantially on international prices for crude oil and refined products, the sharp decrease in oil prices and economic slowdown, and other factors such as the depreciation of the Thai Baht to the U.S. dollar, have materially negatively impacted our results of operations. In the first quarter of 2020, our petrochemical and refining business recorded a stock loss of US\$9.02 per barrel from the significant drop in crude oil price compared to a stock gain of

US\$0.89 per barrel in the fourth quarter of 2019. Our gross refinery margin (excluding the stock gain or loss) decreased from US\$2.19 per barrel in the fourth quarter of 2019 to US\$0.84 per barrel in the first quarter of 2020 due to lower spreads of jet, diesel and high sulfur fuel oil as well as the decrease in olefins and aromatics spreads. The first quarter of 2020 overall volume of our GSP products dropped 12.3% and the sales price of some of the GSP products such as naphtha also decreased from the fourth quarter of 2019. We also saw a slightly lower demand for natural gas from power plant customers during the COVID-19 pandemic as well as lower selling price of natural gas as a result of a drop in reference prices. The oil business also saw a higher stock loss and lower sales volume during the COVID-19 pandemic. Consequently, we recorded a loss of Baht 14,007 million (U.S.\$428.3 million) for the first quarter of 2020 compared to a profit of Baht 39,584 million for the first quarter of 2019.

At this time, we cannot forecast the duration of the effects of COVID-19 on our business or when international prices for crude oil, or refined and petrochemical products will stabilize. Our future business results will be affected by the extent and duration of these conditions and the effectiveness of responsive actions that we and others take, including (i) our actions to reduce or defer capital and operating expenses, as described below, (ii) in respect of oil supply, any cooperation between OPEC member countries, and (iii) in respect of COVID-19, new information that may emerge concerning the severity and duration of the outbreak, the pace of vaccine development, and the actions by national and international authorities to contain the outbreak or treat its impact, among other things.

We established the PTT Group Vital Center, a type of “war room”, to manage our response to the crisis by using strategies that we refer to as the 4R’s: resilience, restart, re-imagination and reform. We will continue to monitor market developments and evaluate the impacts of decreased demand on our production levels as well as impacts on project development and future production. Among measures that we have taken in response to the crisis, we have reduced our investment budget for 2020 by 22.23% from Baht 69,310 million (U.S.\$2,120 million) to Baht 53,901 million (U.S.\$1,648 million). The reduction was primarily in relation to planned but yet-to-commence projects of our wholly owned subsidiaries and our gas and technology and engineering business segments. We currently expect that a portion of the reduced 2020 spending will be delayed to later years in the current five-year committed capital expenditures plan. Other companies within the Group, including our listed subsidiaries, may also adjust portions of the Group’s five-year capital expenditures plan as appropriate.

We have also reduced our 2020 upstream oil and natural gas estimated sales volumes by 7% relative to our prior estimates, and we estimate that demand for natural gas will decrease by 5% to 10% mainly due to diminished demand in the industrial and transportation sector and that the utilization rate at our refineries and petrochemical business will decrease to an average of 90% to 100% compared to 2019. We also expect that 2020 sales volume in the international trading business will decrease by 5% from 2019 and that, in our oil business, sales volume for both oil and non-oil products will significantly decrease as the country’s GDP saw a significant contraction in the second quarter of 2020 and the economic outlook is uncertain for the remainder of the year. Our power business may also see reduced demand for electricity in the industrial sector. However, we do not foresee an adverse impact on demand volume from EGAT, Thailand’s electric utility and our primary customer in the gas business. As the situation develops, we may need to make further downward adjustments to our operating costs, investment plans and production targets. Any such changes may eventually lead to changes in our longer-term business plans.

SUMMARY OF THE PROGRAM

This summary must be read as an introduction to this Offering Memorandum and any decision to invest in the Notes should be based on a consideration of the Offering Memorandum as a whole, including any information incorporated by reference. Words and expressions defined in the “Terms and Conditions of the Notes” below or elsewhere in this Offering Memorandum have the same meanings in this summary.

Issuers	PTT Public Company Limited (in respect of Direct Issuance Notes) and PTT Treasury Center Company Limited (in respect of Guaranteed Notes).
Guarantor (in respect of Guaranteed Notes)	PTT Public Company Limited
Guarantee	The Guarantor will, in respect of a Series of Guaranteed Notes, fully, irrevocably and unconditionally guarantee the due and punctual payment of premium (if any) and interest in respect of or on, and all other amounts payable under, such Series of Guaranteed Notes, subject to the Maximum Guaranteed Amount and the indenture dated July 8, 2020 (the “ Indenture ”). The Guarantor’s maximum liability under the Guarantee will be capped at the Maximum Guaranteed Amount.
Program Size	Up to U.S.\$2,000,000,000 (or the equivalent in other currencies calculated as described in the Dealer Agreement (as defined in “ <i>Subscription and Sale</i> ”)) outstanding at any time. The Issuers and the Guarantor may increase the amount of the Program in accordance with the terms of the Dealer Agreement.
Arrangers	BNP Paribas, Citigroup Global Markets Singapore Pte. Ltd., The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch and Standard Chartered Bank (Singapore) Limited
Dealers	BNP Paribas, Citigroup Global Markets Inc., The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch and Standard Chartered Bank (Singapore) Limited and any other Dealer appointed from time to time by the Issuers or the Guarantor (as the case may be) either generally in respect of the Program or in relation to a particular Series of Notes.
Principal Paying Agent and Paying Agent	Citibank N.A., London Branch
Registrar and Transfer Agent	Citibank N.A., London Branch
Exchange Agent	Citibank N.A., London Branch
Trustee	Citicorp International Limited

Method of Issue

The Notes will be issued on a syndicated or non-syndicated basis. The Notes will be issued in series (each a “**Series**”) having one or more issue dates and on terms otherwise identical (or identical other than in respect of the first payment of interest or distribution and their issue price), and intended to be interchangeable with all other Notes of that Series. Each Series may be issued in tranches (each a “**Tranche**”) on the same or different issue dates. The specific terms of each Tranche (which will be completed, where necessary, with the relevant terms and conditions and, save in respect of the issue date, issue price, first payment date of interest or distribution and nominal amount of the Tranche, will be identical to the terms of other Tranches of the same Series) will be completed in the Pricing Supplement.

Clearing Systems

Euroclear, Clearstream, Luxembourg and/or DTC and such other clearing system as shall be agreed between the relevant Issuer, (in respect of each Series of Guaranteed Notes) the Guarantor, the Trustee, the Agents and the relevant Dealer(s).

Form of the Notes

Notes may only be issued in registered form.

Each Series of Notes that are sold outside the United States in reliance on Regulation S will, unless otherwise specified in the applicable Pricing Supplement, be represented by a Global Note Certificate (as defined in the “*Form of the Notes*”), which will be deposited on or about its issue date with a common depositary for, and registered in the name of a nominee of, Euroclear and Clearstream, Luxembourg or with a custodian for, and registered in the name of a nominee of, DTC for the accounts of Euroclear and Clearstream. With respect to all offers or sales by a Dealer of an unsold allotment or subscription, beneficial interests in a Global Note Certificate of such Series may be held only through Euroclear, Clearstream, Luxembourg, DTC for the accounts of Euroclear and Clearstream, Luxembourg. Unrestricted Global Note Certificates will be exchangeable for definitive Notes only upon the occurrence of an Exchange Event as described in “*Form of the Notes.*”

Each Tranche of Notes sold in the United States to persons who are QIBs in compliance with Rule 144A and subject to the restrictions described in “*Transfer Restrictions*” and “*Subscription and Sale*” and the applicable Pricing Supplement will, unless otherwise specified in the applicable Pricing Supplement, be represented by a Restricted Global Note Certificate, which will be deposited on or about its issue date with a custodian for, and registered in the name of a nominee of, DTC. Restricted Global Note Certificates will be exchangeable for definitive Note only upon the occurrence of an Exchange Event as described in “*Form of the Notes.*”

Application will be made to have Global Note Certificates of any Series accepted for clearance and settlement through the facilities of DTC, Euroclear and/or Clearstream, Luxembourg, as appropriate.

Currencies	Notes may be denominated in any currency or currencies, agreed between the relevant Issuer, (in respect of a Series of Guaranteed Notes) the Guarantor and the relevant Dealer(s) subject to compliance with all applicable legal and/or regulatory and/or central bank requirements. Payments in respect of Notes may, subject to such compliance, be made in and/or linked to, any currency or currencies other than the currency in which such Notes are denominated.
Denominations	Notes will be issued in such denominations as may be specified in the relevant Pricing Supplement, subject to compliance with all applicable legal and/or regulatory and/or central bank requirements.
Status of the Notes	The Notes constitute direct, unconditional, unsubordinated and (subject to Condition 5(a) (<i>Limitation on Liens</i>) of the Terms and Conditions of the Notes) unsecured obligations of the relevant Issuer which will at all times rank <i>pari passu</i> among themselves and at least <i>pari passu</i> with all other present and future unsecured and unsubordinated obligations of the relevant Issuer, save for such obligations as may be preferred by provisions of law that are both mandatory and of general application. See “ <i>Terms and Conditions of the Notes — Status.</i> ”
Status of the Guarantee	<p>The Guarantee will constitute a direct, unconditional, unsubordinated and (subject to Condition 5(a) (<i>Limitation on Liens</i>) of the Terms and Conditions of the Notes) unsecured obligation of the Guarantor and will rank at least <i>pari passu</i> with all other present and future unsecured and unsubordinated obligations of the Guarantor, save for such obligations as may be preferred by provisions of law that are both mandatory and of general application.</p> <p>Notwithstanding anything to the contrary, the Guarantor’s maximum liability under the Guarantee in respect of each Series of Guaranteed Notes will be capped at the relevant Maximum Guaranteed Amount.</p>
Issue Price	Notes may be issued at their nominal amount or at a discount or premium to their nominal amount. Partly Paid Notes may be issued, the issue price of which will be payable in two or more installments.
Maturities	Any maturity, subject, in relation to specific currencies, to compliance with all applicable legal and/or regulatory and/or central bank requirements.

	<p>Where Notes have a maturity of less than one year and either (a) the issue proceeds are received by the relevant Issuer in the United Kingdom or (b) the activity of issuing the Notes is carried on from an establishment maintained by the relevant Issuer in the United Kingdom, such Notes must: (i) have a minimum redemption value of £100,000 (or its equivalent in other currencies) and be issued only to persons whose ordinary activities involve them in acquiring, holding, managing or disposing of investments (as principal or agent) for the purposes of their businesses or who it is reasonable to expect will acquire, hold, manage or dispose of investments (as principal or agent) for the purposes of their businesses; or (ii) be issued in other circumstances which do not constitute a contravention of section 19 of the Financial Services and Markets Act 2000 (“FSMA”) by the relevant Issuer or the Guarantor.</p>
Redemption	<p>Notes may be redeemable at par or at such other Redemption Amount (detailed in a formula or otherwise) as may be specified in the relevant Pricing Supplement.</p> <p>Notes may also be redeemable in two or more installments on such dates and in such manner as may be specified in the relevant Pricing Supplement.</p>
Optional Redemption (Call)	<p>If specified in the relevant Pricing Supplement, Notes may be redeemed before their stated maturity at the option of the relevant Issuer (either in whole or in part) as described in Condition 10(c) (<i>Redemption and Purchase — Optional Redemption (Call)</i>) of the Terms and Conditions of the Notes.</p>
Tax Redemption	<p>Except as described in “Optional Redemption” above, early redemption of Notes at the option of the relevant Issuer will only be permitted for tax reasons as described in Condition 10(b) (<i>Redemption and Purchase — Optional Tax Redemption</i>) of the Terms and Conditions of the Notes.</p>
Put Option (Change of Control)	<p>If the Put Option (Change of Control) is specified in the relevant Pricing Supplement as being applicable, in the event that a Change of Control Triggering Event has occurred, each Noteholder shall have the right at such Noteholder’s option, to require the Issuer to repurchase all of such Noteholder’s Notes at a price equal to 100% of the unpaid principal amount thereof plus accrued interest to the Put Date as described in Condition 10(d) (<i>Redemption and Purchase — Put Option (Change of Control)</i>) of the Terms and Conditions of the Notes.</p>
Interest	<p>Notes may be interest-bearing or non-interest-bearing. Interest (if any) may accrue at a fixed rate or a floating rate or other variable rate and the method of calculating interest may vary between the issue date and the maturity date of the relevant Series. All such information will be set out in the relevant Pricing Supplement.</p>
Certain Covenants	<p>Each of the Issuers and the Guarantor has covenanted in Condition 5 (<i>Certain Covenants</i>) of the Terms and Conditions of the Notes with certain limitations and exceptions, not to incur certain liens or consolidate, merge or sell all or substantially all of its property or assets unless certain conditions are satisfied.</p>

Maximum Guaranteed Amount	In order to comply with applicable requirements of Thai law, the Guarantor's maximum liability under the Guarantee will be capped at an amount equal to 125% of the aggregate principal amount of the relevant Series of Guaranteed Notes.
Cross Acceleration	The Notes will contain a cross acceleration provision as further described in Condition 13 (<i>Events of Default</i>) of the Terms and Conditions of the Notes.
Withholding Tax	See Condition 10(b) (<i>Redemption and Purchase — Optional Tax Redemption</i>) and Condition 12 (<i>Additional Amounts</i>) of the Terms and Conditions of the Notes.
Listing and Trading	<p>Approval in-principle has been received from the SGX-ST for the establishment of the Program and application will be made to the SGX-ST for permission to deal in and for the listing and quotation of Notes that may be issued pursuant to the Program and which are agreed at or prior to the time of issue thereof to be so listed on the SGX-ST. The Notes may also be listed on such other or further stock exchange(s) as may be agreed between the relevant Issuer, (in respect of each Series of Guaranteed Notes) the Guarantor and the relevant Dealer in relation to each Series. Unlisted Series of Notes may also be issued pursuant to the Program. The relevant Pricing Supplement in respect of any Series of the Notes will specify whether or not such Notes will be listed and, if so, on which exchange(s) the Notes are to be listed. There is no assurance that an application to the Official List of the SGX-ST for the listing of the Notes of any Series will be approved. If approval in-principle is received from the SGX-ST in relation to the Notes of any Series to be listed on the SGX-ST, such Notes will be traded on the SGX-ST in a minimum board lot size of at least S\$200,000 (or its equivalent in foreign currencies) following listing, for so long as such Notes are listed on the Official List of the SGX-ST and the rules of the SGX-ST so require.</p> <p>For so long as any Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Issuers and the Guarantor shall appoint and maintain a paying agent in Singapore, where such Notes may be presented or surrendered for payment or redemption, in the event that the Global Note Certificates representing such Notes are exchanged for definitive Notes. In addition, in the event that the Global Note Certificates are exchanged for definitive Notes, an announcement of such exchange will be made by or on behalf of the relevant Issuer and the Guarantor through the SGX-ST and such announcement will include all material information with respect to the delivery of the definitive securities, including details of the paying agent in Singapore so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require.</p>
Governing Law	The Notes, the Guarantee and the Indenture will be governed by, and construed in accordance with, the laws of the State of New York.

<p>Rating</p>	<p>Notes issued under the Program may be rated or unrated, as specified in the applicable Pricing Supplement.</p> <p>A rating is not a recommendation to buy, sell or hold securities and may be subject to suspension, reduction, revision or withdrawal at any time by the assigning rating agency.</p>
<p>Selling Restrictions</p>	<p>For a description of certain restrictions on offers, sales and deliveries of Notes and on the distribution of offering materials, including in the United States of America, the European Economic Area, the United Kingdom, Hong Kong, Singapore and Thailand, see “<i>Subscription and Sale.</i>”</p> <p>In connection with the offering and sale of a particular Series of Notes, additional restrictions may be imposed which will be set out in the applicable Pricing Supplement.</p>
<p>Transfer Restrictions</p>	<p>There are restrictions on the transfer of Notes. The Notes and the Guarantee may be offered and sold only (i) in registered form and in minimum amounts of U.S.\$200,000 to persons who are both QIBs and qualified purchasers as defined in Section 2(a)(51) of the Investment Company Act (“QPs”), and/or (ii) to non-U.S. persons in offshore transactions in reliance on Regulation S under the Securities Act. See “<i>Transfer Restrictions.</i>” The Notes may not, either directly or indirectly, be resold, pledged or otherwise transferred in Thailand.</p>
<p>Initial Delivery of Notes</p>	<p>On or before the issue date for each Series, the Global Note Certificate representing Notes may be deposited with a common depository for Euroclear and Clearstream, Luxembourg or registered in the name of a nominee of DTC and deposited on or about the issue date or any other clearing system or may be delivered outside any clearing system provided that the method of such delivery has been agreed in advance by the relevant Issuer, (in respect of each Series of Guaranteed Notes) the Guarantor, the Trustee, the Principal Paying Agent and the relevant Dealer(s). Notes that are to be credited to one or more clearing systems on issue will be registered in the name of, or in the name of a nominee or a subcustodian for, such clearing systems.</p>
<p>Legal Entity Identifier</p>	<p>PTT Public Company Limited: 549300QOGMPTKB6W7G56</p> <p>PTT Treasury Center Company Limited: 254900FBQLIN5XACCX50</p>

SUMMARY FINANCIAL DATA

You should read the following summary consolidated financial information in conjunction with our financial statements, together with each of their related notes, “Presentation of Financial and Other Information,” “Selected Consolidated Financial Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included elsewhere in this Offering Memorandum. Our financial statements have been prepared and presented in accordance with TFRS, which differs in certain respects from IFRS. See “Summary of Principal Differences Between TFRS and IFRS.”

Summary Consolidated Financial and Other Information

The following tables set forth our summary consolidated financial information for the periods indicated therein.

Statement of Income Data

	For the year ended December 31,				For the three-month period ended March 31,		
	2017	2018 ⁽¹⁾	2019		2019	2020	
	THB	THB	THB	USD ⁽²⁾ (in millions)	THB	THB	USD ⁽²⁾
						(unaudited)	
Sales and service income	1,995,722	2,336,155	2,219,739	67,884.0	550,874	483,567	14,788.4
Cost of sales and services	1,688,461	2,023,039	1,967,529	60,170.9	481,512	466,216	14,257.8
Gross profit	307,261	313,116	252,210	7,713.1	69,362	17,351	530.6
Other income	28,268	16,935	19,980	611.0	5,826	5,108	156.2
Gain (loss) on derivatives	—	—	—	—	(3,780)	8,470	259.0
Gain (loss) on foreign exchange rates	13,651	6,354	15,313	468.3	3,875	(5,075)	(155.2)
Profit before expenses	349,180	336,405	287,503	8,792.4	75,283	25,854	790.6
Selling and distribution expenses	24,625	26,653	27,574	843.2	6,869	7,345	224.6
Administrative expenses	75,974	55,184	65,002	1,987.9	11,963	13,562	414.7
Petroleum royalties and remuneration	13,877	16,435	17,883	546.9	4,144	4,024	123.0
Operating profit	234,704	238,133	177,044	5,414.4	52,307	923	28.3
Share of profit from investments in joint ventures ⁽³⁾	5,462	6,462	3,991	122.0	—	—	—
Share of profit from investments in associates ⁽³⁾	1,848	2,053	2,017	61.7	—	—	—
Share of profit from investments in joint ventures and associates	—	—	—	—	1,536	643	19.7
Profit before finance costs and income taxes	242,014	246,648	183,052	5,598.1	53,843	1,566	48.0
Finance costs	29,086	27,628	27,971	855.4	6,888	6,955	212.7
Profit (loss) before income taxes	212,928	219,020	155,081	4,742.7	46,955	(5,389)	(164.7)
Income taxes	28,307	53,647	32,989	1,008.9	7,371	8,618	263.6
Profit from continuing operations	184,621	165,373	122,092	3,733.8	39,584	—	—
Loss from discontinued operations, net of tax	(11)	—	—	—	—	—	—
Profit (loss) for the period	184,610	165,373	122,092	3,733.8	39,584	(14,007)	(428.3)
Profit attributable to							
Owners of the parent	135,180	119,647	92,951	2,842.6	29,312	(1,555)	(47.5)
Non-controlling interests of the subsidiaries	49,430	45,726	29,141	891.2	10,272	(12,452)	(380.8)
	184,610	165,373	122,092	3,733.8	39,584	(14,007)	(428.3)

Notes:

* As between certain periods, the adoption of new financial reporting standards effective in subsequent periods, including our initial adoption of the New Financial Instruments Standards and the New Leases Standard effective January 1, 2020, under the modified retrospective method, affects the direct comparability of those periods with prior periods, although we do not believe that comparability is materially affected to an extent that would not permit assessment of our period-over-period performance. See “Presentation of Financial and Other Information” for further details.

- (1) The statement of income data for the year ended December 31, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2018. The auditor’s report in connection with the audited financial statements for the year ended December 31, 2018 was dated February 21, 2019 and is included on page F-374. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.
- (2) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00.
- (3) Combined into a single item for reporting periods starting from the three-months ended March 31, 2020.

Statement of Financial Position Data

	As of					
	January 1, 2018 ⁽¹⁾	December 31, 2018 ⁽²⁾	December 31, 2019		March 31, 2020	
	THB	THB	THB	USD ⁽³⁾	THB	USD ⁽³⁾
			(in millions)		(unaudited)	
Assets						
Current assets						
Cash and cash equivalents	166,189	292,184	292,542	8,946.5	254,345	7,778.4
Short-term investment in financial assets	—	—	—	—	73,587	2,250.4
Current investments	229,651	142,421	38,263	1,170.2	—	—
Trade accounts receivable	174,916	174,605	167,641	5,126.8	115,765	3,540.3
Other accounts receivable	50,603	78,827	49,612	1,517.2	49,212	1,505.0
Short-term lending loans	1,231	1,783	2,669	81.6	2,845	87.0
Inventories	121,872	125,280	117,747	3,601.0	88,125	2,695.0
Materials and supplies	28,942	28,871	34,379	1,051.4	34,844	1,065.6
Current derivative assets	1,998	5,098	3,687	112.7	17,594	538.0
Other current financial assets	—	—	—	—	5,763	176.2
Other current assets	6,768	7,894	10,559	322.9	5,287	161.7
Total current assets	782,170	856,963	717,099	21,930.3	647,367	19,797.6
Non-current assets						
Other long-term investments in financial assets	—	—	—	—	22,964	702.3
Available-for-sale investments	17,602	10,876	6,687	204.5	—	—
Investments in joint ventures	37,937	41,317	49,513	1,514.2	49,161	1,503.4
Investments in associates	21,980	24,368	25,670	785.0	25,592	782.7
Other long-term investments	27,669	26,971	17,932	548.4	—	—
Long-term lending loans	19,079	13,863	12,475	381.5	12,439	380.4
Investment properties	7,211	6,583	7,987	244.3	8,102	247.8
Property, plant and equipment	1,082,416	1,120,513	1,294,979	39,603.0	1,315,739	40,237.9
Right-of-use assets	—	—	—	—	70,404	2,153.1
Goodwill	51,695	53,896	111,933	3,423.1	117,532	3,594.4
Other intangible assets	32,108	34,200	79,968	2,445.6	68,751	2,102.5
Exploration and evaluation assets	100,902	100,360	80,268	2,454.8	87,594	2,678.8
Deferred tax assets	15,101	28,499	47,611	1,456.0	50,612	1,547.8
Non-current derivative assets	3,734	2,080	3,811	116.5	1,077	32.9
Other non-current financial assets	—	—	—	—	7,072	216.3
Other non-current assets	30,925	33,193	28,506	871.8	15,259	466.7
Total non-current assets	1,448,359	1,496,719	1,767,340	54,048.7	1,852,298	56,647.0
Total assets	2,230,529	2,353,682	2,484,439	75,979.0	2,499,665	76,444.6
Liabilities and Equity						
Current liabilities						
Bank overdrafts and short-term loans from financial institutions	18,127	25,562	44,441	1,359.1	28,485	871.1
Trade accounts payable	160,301	160,323	158,302	4,841.2	104,231	3,187.6
Other accounts payable	72,995	98,429	80,764	2,469.9	101,123	3,092.5
Current portion of long-term loans	66,434	63,109	51,782	1,583.6	54,606	1,670.0
Current portion of lease liabilities	—	—	—	—	7,432	227.3
Income tax payable	24,095	46,488	30,137	921.7	39,057	1,194.5
Short-term provision for decommissioning costs	—	1,090	1,289	39.4	1,388	42.4
Current derivative liabilities	4,955	2,546	2,522	77.1	4,852	148.4
Other current financial liabilities	—	—	—	—	1,550	47.4
Other current liabilities	8,958	10,802	10,548	322.6	8,225	251.5
Total current liabilities	355,865	408,349	379,785	11,614.6	350,949	10,732.7

	As of					
	January 1, 2018 ⁽¹⁾	December 31, 2018 ⁽²⁾	December 31, 2019		March 31, 2020	
	THB	THB	THB	USD ⁽³⁾	THB	USD ⁽³⁾
			(in millions)		(unaudited)	
Non-current liabilities						
Long-term loans	444,920	454,964	562,746	17,209.9	570,530	17,447.9
Lease liabilities	—	—	—	—	44,378	1,357.2
Deferred tax liabilities	33,438	30,528	56,674	1,733.2	58,600	1,792.1
Provisions for employee benefit	23,313	23,921	32,590	996.7	33,232	1,016.3
Long-term provision for decommissioning costs	74,866	73,632	90,600	2,770.7	99,710	3,049.3
Deposits on LPG cylinders	10,519	11,083	11,657	356.5	11,759	359.6
Non-current derivative liabilities	2,104	669	2,702	82.6	5,552	169.8
Other non-current financial liabilities	—	—	—	—	21,016	642.7
Other non-current liabilities	37,844	32,971	46,645	1,426.5	26,976	825.0
Total non-current liabilities	627,004	627,768	803,614	24,576.1	871,753	26,659.9
Total liabilities	982,869	1,036,117	1,183,399	36,190.7	1,222,702	37,392.6
Equity						
Share capital						
Authorized share capital 28,562,996,250 ordinary shares of Baht 1 each ⁽⁴⁾	28,572	28,563	28,563	873.5	28,563	873.5
Issued and paid-up share capital 28,562,996,250 ordinary shares of Baht 1 each ⁽⁵⁾	28,563	28,563	28,563	873.5	28,563	873.5
Premium on ordinary shares	29,211	29,211	29,211	893.3	29,211	893.3
Deficit from the change in the ownership interests in subsidiaries	(24,312)	(28,484)	(36,251)	(1,108.6)	(36,251)	(1,108.6)
Retained earnings						
Appropriated						
Legal reserve	2,857	2,857	2,857	87.4	2,857	87.4
Reserve for self-insurance fund	1,200	1,223	1,244	38.0	1,244	38.0
Unappropriated	775,209	837,422	869,016	26,576.2	835,394	25,548.0
Other components of equity	5,219	3,533	(16,036)	(490.4)	5,751	175.9
Total equity attributable to owners of the parent	817,947	874,325	878,604	26,869.4	866,769	26,507.5
Non-controlling interests	429,713	443,240	422,436	12,918.9	410,194	12,544.5
Total equity	1,247,660	1,317,565	1,301,040	39,788.3	1,276,963	39,052.0
Total liabilities and equity	2,230,529	2,353,682	2,484,439	75,979.0	2,499,665	76,444.6

Notes:

* As between certain periods, the adoption of new financial reporting standards effective in subsequent periods, including our initial adoption of the New Financial Instruments Standards and the New Leases Standard effective January 1, 2020, under the modified retrospective method, affects the direct comparability of those periods with prior periods, although we do not believe that comparability is materially affected to an extent that would not permit assessment of our period-over-period performance. See “Presentation of Financial and Other Information” for further details.

(1) The financial position data as of January 1, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2017. The auditor’s report in connection with the audited financial statements for the year ended December 31, 2017 was dated February 20, 2018 and is included on page F-561. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.

(2) The financial position data as of December 31, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2018. The auditor’s report in connection with the audited financial statements for the year ended December 31, 2018 was dated February 21, 2019 and is included on page F-374. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.

- (3) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00.
- (4) 2,857,245,725 ordinary shares of Baht 10 each as of January 1, 2018.
- (5) 2,856,299,625 ordinary shares of Baht 10 each as of January 1, 2018.

Statement of Cash Flows Data

	For the year ended December 31,				For the three-month period ended March 31,		
	2017	2018 ⁽¹⁾	2019		2019	2020	
	THB	THB	THB	USD ⁽²⁾ (in millions)	THB	THB	USD ⁽²⁾
							(unaudited)
Net cash provided by operating activities	306,100	269,405	265,107	8,107.4	69,937	61,243	1,872.9
Net cash used in investing activities	(180,525)	(35,752)	(188,218)	(5,756.1)	(77,150)	(69,218)	(2,116.9)
Net cash provided by (used in) financing activities.	(162,498)	(111,468)	(70,226)	(2,147.6)	57,080	(27,057)	(827.4)

Notes:

- (1) The statement of cash flows data for the year ended December 31, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2018. The auditor's report in connection with the audited financial statements for the year ended December 31, 2018 was dated February 21, 2019 and is included on page F-374. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.
- (2) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00

Other Consolidated Financial Data

Certain of the measures presented below, such as EBITDA and related ratios, are not required by, or presented in accordance with, TFRS or other generally accepted accounting principles. Non-TFRS measures have limitations as analytical tools, and you should not consider them in isolation or as a substitute for analysis of our results or any performance measures under TFRS as set forth in our financial statements. You should also be aware that EBITDA, as we define and present it, includes adjustments for items other than interest, taxes, depreciation and amortization and may not be comparable to EBITDA or other similarly titled measures of other companies. See "Presentation of Financial and Other Information — Non-TFRS Financial Measures."

The following table presents EBITDA and its reconciliation to profit and loss under TFRS for the periods indicated.

EBITDA Reconciliation to TFRS

	For the year ended December 31,				For the three-month period ended March 31,		
	2017	2018	2019		2019	2020	
	THB	THB	THB	USD ⁽²⁾ (in millions)	THB	THB	USD ⁽²⁾
							(unaudited)
Profit (loss) for the period⁽¹⁾	184,621	165,373	122,092	3,733.8	39,584	(14,007)	(428.3)
<i>Add:</i>							
Income taxes	28,307	53,647	32,989	1,008.9	7,371	8,618	263.6
Finance costs	29,086	27,628	27,971	855.4	6,888	6,955	212.7
Profit before finance costs and income taxes. . .	242,014	246,648	183,052	5,598.1	53,843	1,566	48.0
<i>Add/(Deduct):</i>							
Depreciation and amortization expenses	116,289	123,593	133,204	4,073.6	31,195	35,865	1,096.8
Share of (profit)/loss from investments in joint ventures and affiliates	(7,310)	(8,515)	(6,008)	(183.7)	(1,536)	(643)	(19.7)
(Gain)/Loss on foreign exchange rate	(13,651)	(6,354)	(15,313)	(468.3)	(3,875)	5,075	155.2
(Gain)/Loss on derivatives	(693)	2,369	417	12.8	3,780	(8,470)	(259.0)
Interest income	(8,630)	(9,436)	(7,837)	(239.7)	(2,795)	(1,250)	(38.2)
Others ⁽³⁾	17,376	3,091	1,457	44.5	(89)	240	7.3
EBITDA⁽⁴⁾	345,395	351,396	288,972	8,837.3	80,523	32,383	990.4

Notes:

* As between certain periods, the adoption of new financial reporting standards effective in subsequent periods, including our initial adoption of the New Financial Instruments Standards and the New Leases Standard effective January 1, 2020, under the modified retrospective method, affects the direct comparability of those periods with prior periods, although we do not believe that comparability is materially affected to an extent that would not permit assessment of our period-over-period performance. See “Presentation of Financial and Other Information” for further details.

- (1) Profit for the year in 2017 does not include a loss of Baht 11 million from discontinued operations, net of tax. Including this loss, profit for the year in 2017 was Baht 184,610 million.
- (2) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00.
- (3) Others consisted of dividend income, gain (loss) on disposal of investments, gain (loss) on disposal of other assets, loss on investments at fair value though profit and loss, reversal of allowance for doubtful accounts/expected credit loss of accounts receivable, loss on impairment of assets, gain on debt modification, reversal of bad debt, gain on bargain purchase, reversal of impairment of investments, and loss on contingent liabilities.
- (4) The term “EBITDA” refers to profit for the period before income tax and finance costs, depreciation and amortization, share of (profit)/loss from investments in joint ventures and affiliates, (gain)/loss on foreign exchange rate, (gain)/loss on derivatives, interest income and others.

The following table presents certain other consolidated financial data as of and for the periods indicated.

	As of/For the year ended December 31,			As of/For the three-month period ended March 31,	
	2017	2018	2019	2019	2020
Gross profit margin (%) ⁽¹⁾	15.4%	13.4%	11.4%	12.6%	3.6%
Net profit margin (%) ⁽²⁾	9.3%	7.1%	5.5%	7.2%	(2.9%)
EBITDA margin (%) ⁽³⁾	17.3%	15.0%	13.0%	14.6%	6.7%
Total debt (Baht millions) ⁽⁴⁾	529,480	543,635	658,969	—	705,431
Net debt (Baht millions) ⁽⁵⁾	133,640	109,030	328,163	—	377,499
EBITDA interest coverage ratio (times) ⁽⁶⁾	11.9	12.7	10.3	11.7	4.7
Interest coverage ratio (times) ⁽⁷⁾	11.0	11.2	13.0	12.0	9.0
Debt to equity (times) ⁽⁸⁾	0.4	0.4	0.5	—	0.6
Total debt to EBITDA (times) ⁽⁹⁾	1.5	1.5	2.3	—	2.9
Net debt to EBITDA (times) ⁽¹⁰⁾	0.4	0.3	1.1	—	1.6
Net debt to equity (times) ⁽¹¹⁾	0.1	0.1	0.3	—	0.3

Notes:

* As between certain periods, the adoption of new financial reporting standards effective in subsequent periods, including our initial adoption of the New Financial Instruments Standards and the New Leases Standard effective January 1, 2020, under the modified retrospective method, affects the direct comparability of those periods with prior periods, although we do not believe that comparability is materially affected to an extent that would not permit assessment of our period-over-period performance. See “Presentation of Financial and Other Information” for further details.

- (1) Calculated by dividing gross profit for the period by sales and service income for the same period.
- (2) Calculated by dividing profit/(loss) for the period by sales and service income for the same period.
- (3) Calculated by dividing EBITDA for the period by sales and service income for the same period.
- (4) Calculated by adding (i) bank overdrafts and short-term loans from financial institutions, (ii) current portion of long-term loans, (iii) long term loans and, for periods after our adoption of the New Leases Standard from January 1, 2020, (iv) current portion of lease liabilities and (v) lease liabilities at the end of the period.
- (5) Calculated by subtracting (x) cash and cash equivalents and current investments or short-term investments in financial assets from (y) total debt at the end of the period.
- (6) Calculated by dividing (x) EBITDA for the period by (y) finance costs in the same period.
- (7) Calculated by dividing (x) the sum of net cash flow from operating activities and taxes paid from operating activities for the period by (y) finance costs paid in the same period.
- (8) Calculated by dividing (x) the sum of bank overdrafts and short-term loans from financial institutions, current portion of long-term loans, long term loans and, for periods after our adoption of the New Leases Standard from January 1, 2020, current portion of lease liabilities and lease liabilities at the end of the period by (y) total shareholder’s equity at the end of the same period.

- (9) Calculated by dividing (x) total debt at the end of the period by (y) EBITDA for the same period. EBITDA for the three-month period ended March 31, 2020 was calculated on a last twelve months (LTM) basis to compute the ratio as of the end of that period.
- (10) Calculated by dividing (x) net debt at the end of the period by (y) EBITDA for the same period. EBITDA for the three-month period ended March 31, 2020 was calculated on a last twelve months (LTM) basis to compute the ratio as of the end of that period.
- (11) Calculated by dividing net debt at the end of the period by equity at the end of the same period.

RISK FACTORS

An investment in the Notes issued under the Program involves a high degree of risk. You should carefully consider all of the information in this Offering Memorandum and, in particular, the risks described below before deciding to invest in the Notes.

The following describes some of the significant risks that could affect us and the value of the Notes issued under the Program. Additionally, some risks may be unknown to us, and other risks, currently believed to be immaterial, may also impair our business operations, financial condition, results of operations and prospects, and could turn out to be material. All of these could materially and adversely affect our business, financial condition, results of operations and prospects. In general, investing in securities of issuers in emerging market countries such as Thailand involves risks not typically associated with investing in the securities of companies in countries with more developed economies. This Offering Memorandum also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks described below and elsewhere in this Offering Memorandum. You should also consider the information provided below in connection with the forward-looking statements in this Offering Memorandum and the disclaimer regarding forward-looking statements at the beginning of this Offering Memorandum.

Risks Relating to Our Business

The volatility of prices for natural gas, crude oil, condensate and refined petroleum products and the cyclical nature of the petroleum industry affect our results of operations.

Most of our revenues are attributable to the sale of natural gas, crude oil, condensate and refined petroleum and petrochemical products. Domestic and international prices for our products generally reflect price fluctuations in international markets and are sensitive to other factors outside our control, including changes in worldwide industry capacity and output levels, cyclical changes in regional and global economic conditions, the price and availability of substitute products and changes in consumer demand, all of which from time to time have had a significant impact on product prices. Prices of crude oil, condensate, natural gas and coal fluctuate widely, in response to many factors, including:

- global and regional economic and political (including military) developments in crude oil, condensate and natural gas producing regions, particularly in the Middle East and North Africa;
- the ability of the OPEC and other petroleum producing nations to set and maintain crude oil and natural gas production levels and prices;
- global and regional supply and demand for crude oil, condensate, coal, natural gas and refined petroleum products;
- the effect of worldwide environmental and/or energy conservation measures;
- the price and availability of alternative energy supplies;
- domestic and foreign government regulations, policies and taxes;
- significant accidents, such as explosions, affecting production capacities;
- currency exchange rates;
- the availability of transportation infrastructure; and
- weather conditions.

The price of energy, and in particular in the price of crude oil, has fluctuated in the recent past. Prolonged periods of low oil and gas prices could result in our upstream projects being delayed, deferred or cancelled, which in turn may, among other things, harm the viability of such projects and result in the impairment of related assets.

Our sale of natural gas, GSP and refined products and our downstream operations, particularly in the international trading segment, may also be affected by volatility in prices and the factors described above. In addition, there can be no assurance that we will be able to sell our refined products at prices that cover our costs of production (including the costs at which we purchase crude oil from our upstream operations or third parties). For example, during periods of peaking oil prices where our costs of production increase, we may not be able to sell our refined products at prices that result in the same profit margins or any profit on such sales, whether due to downstream market factors, regulatory restrictions on our sales volumes or prices, or otherwise.

For these reasons, volatility and any significant decreases in the price of crude oil, natural gas and other petrochemical products, or any market or operational developments that increase our costs of procuring crude oil and natural gas from our existing or future operations may have a material adverse effect on our business, financial condition and results of operations.

The Government may lower the tariff that we are allowed to charge or our permitted return on investment in the pipeline transmission business.

The natural gas price that we charge EGAT and private power producers in our pipeline transmission business is regulated by the Government. The gas price consists of (i) a gas charge and (ii) a transmission tariff. The gas charge is a pooled gas price (which reflects the weighted average price that we pay for natural gas) plus a marketing margin. The transmission tariff is calculated based on regulatory guidelines and is approved by the NEPC. The transmission tariff is made up of a demand charge and a commodity charge. The demand charge is a fixed fee which is intended to allow us to receive an agreed internal rate of return on equity and to cover our investment, operating and maintenance costs and the commodity charge is a variable cost based on utilization. The ERC reviews the demand charge every three to five years and the commodity charge annually. The demand charges approved by the ERC for the four existing main pipeline networks have historically been in line with an internal rate of return on equity that was agreed with us. However, we cannot assure you that future transmission tariffs approved by the ERC will not be lower than what has historically been set or be at the amount that we expect. Any transmission tariff rate lower than the agreed internal rate of return on equity could reduce our revenues and affect our profit margins.

Government intervention in pricing may have a material adverse effect on our business.

The Government also regulates pricing in our businesses to achieve social and policy objectives. For example, the price of LPG sold to low-income households has historically been capped to ease the financial burdens of these households. The price of NGV has also been capped to encourage its use as an alternative fuel in the transportation sector. While the Government has expressed an intention to restructure the pricing of NGV and LPG to reflect actual costs, reduce overconsumption and encourage efficiency, it is unclear when such restructuring will take place and what effect it will have on our results of operations. The persistence of capped pricing and any replacement or modification of the Government's policy or pricing structures to achieve social and policy objectives is beyond our control, subject to change and, depending on their nature, could have an adverse effect on our business, financial condition and results of operations.

Our development plans require significant capital expenditures and financing.

Our business, particularly our exploration, development and production segment, natural gas transmission systems, GSPs, refineries, petrochemical plants and power plants, requires significant capital investments. Our five-year committed capital expenditures plan, as approved by our board of directors in January 2020, contemplates a total of approximately Baht 180,814 million (U.S.\$5,529.6 million) in capital expenditures for projects by PTT and its wholly-owned subsidiaries, and a total of approximately Baht 865,000 million (U.S.\$26,453.4 million) in capital expenditures for projects by the Group as a whole between 2020 and 2024.

Although we closely monitor the implementation of these development projects, the actual amounts of capital required may deviate from our projections due to factors beyond our control such as unforeseen adverse developments in local and global economies and fluctuations in demand and prices of our products and feedstock. We intend to finance these capital expenditures primarily from cash flows from our operations and external financings, which are subject to various uncertainties, including:

- our future results of operations, financial condition and cash flows;
- the condition of the economy in Thailand, Southeast Asia and globally;
- the political situation in Thailand and the government's policies relating to foreign currency borrowings;
- the condition of the refining, petroleum and petrochemical industries globally, in Thailand and in the Southeast Asia region;
- the cost of financing and the condition of financial markets; and
- the projected risks associated with infrastructure development projects in Thailand.

Our inability to obtain sufficient funding on acceptable terms and conditions or to increase the capital requirements beyond expected levels for our development plans could have a material adverse effect on our business, financial condition and results of operations.

Our operations and those of our subsidiaries and associated companies may be adversely affected by significant operating risks, hazards and natural disasters, which are common to companies in the oil and gas industry.

Petroleum exploration and production, natural gas transmission, refined petroleum and petrochemical production, coal production, oil and retail business, and power plant operations involve many risks and hazards. These risks include: accidents, equipment failures and breakdowns or malfunctions, failure to follow operational best practices, explosions, oil spills, well blowouts, leakage, release of toxic fumes, flooding and other natural disasters, fires, terrorism, acts of war and malfunctions of information technology systems, among others. Any such incidents could result in severe injury, loss of life, property damage and destruction, environmental damage, impairment to producing oil and gas wells or underground geological formations, suspension of our operations and substantial costs. Such costs may not be covered by insurance. Water shortage in the Map Ta Phut Industrial Estate in Rayong province where the majority of our plants and facilities are located may significantly affect our operations as our plants rely on water supply for cooling. We may also be subject to potential prosecutions and claims by regulators and third parties or other legal proceedings and investigations. In the past, flooding has impacted our operations, including the procurement, production, storage, transportation and sales of our natural gas, petroleum and petrochemical products. In addition, we experienced difficulties with respect to land-based oil and gas exploration and production, delivery delays and reduced demand for our products as our facilities and various infrastructure were flooded.

Additionally, many of PTTEP's production facilities are located offshore and subject to dangers inherent in marine operations. These dangers include capsizing, sinking, grounding and damage from severe weather conditions, which could also result in injury and loss of life, severe damage to and destruction of property and equipment, pollution and other environmental damage and suspension of our operations.

We store our petroleum products in storage terminals comprising both above and below-ground tanks. We distribute our petroleum products through various modes of transportation, including pipelines, vessels, vehicles and trains. These storage terminals and transportation channels are subject to operational and business risks, the most significant of which include (i) outages, closures, accidents, interrupted operations or other obstacles resulting from weather-related or other natural causes; (ii) the expiration of the lease agreements for the locations of our storage terminals, or the agreements (such as throughput agreements) granting us rights to access or use

the storage terminals located in Thailand or abroad, where we may not be able to extend the terms of such agreements, or (iii) the lack of sufficient legal rights to gain access to or use the storage terminals outside Thailand in accordance with local laws. The occurrence of any of these or other events could impede efficient operations at our storage terminals, reduce our usable storage capacity, delay or prevent delivery and sales of our petroleum products or result in the temporary or permanent closure of our storage terminals, or could also impede or render impractical any of the modes of transportation on which our distribution network currently depends.

Although we maintain insurance coverage that we believe is in accordance with industry standards, we may not be fully protected by insurance against all risks either because adequate insurance is unavailable or is prohibitively expensive. In addition, there are certain types of losses, such as those due to hurricanes, other natural disasters, terrorism or acts of war, which although covered under our current insurance policies to varying degrees, may be uninsurable or not insurable at a reasonable premium in the future. Although we believe that our subsidiaries and associated companies, including PTTEP, likewise carry sufficient insurance based on industry standards, we have limited control over the amount of insurance which they maintain, and certain of these companies on which we rely to process petrochemicals and petroleum may not have adequate insurance. The occurrence of a significant event that we or our subsidiaries or associated companies are not fully insured against, or the insolvency of the insurer of such an event, could have a material adverse effect on our financial position, results of operations or prospects. We may fail to maintain effective quality control systems for our business operations and may be exposed to contractual and other claims or warranty expenses.

The quality of our products is critical to the success in our business. The effectiveness of our quality control system depends on a number of factors, including system design, related training programs and our ability to ensure that our employees adhere to our quality control policies and guidelines. Any negligence or mistake during the implementation of our quality control systems could result in defects in our products. As a result, we may be exposed to contractual and other claims or warranty expenses. Any such events could harm our reputation, incur significant costs and cause delays and disruptions to our operations and consequently could materially and adversely affect our business, financial condition, results of operations and prospects.

The development of our projects involves construction, financing, regulatory and operational risks that could lead to increased expenses and lost revenues.

The development and expansion of our projects involves significant risks relating to construction, financing, regulations and operations that could lead to increased expenses and lost revenues. These include:

- the breakdown or failure of plant equipment or processes or information technology systems;
- failure to obtain required government licenses, permits and approvals;
- work stoppages and other industrial actions by employees or contractors;
- opposition from local communities and special-interest groups;
- engineering and environmental problems;
- start-up and commission problems;
- construction and operational delays;
- inability to obtain capital to meet the capital expenditure requirements;
- unanticipated cost overruns; and
- adverse impact of economic, social and geo-political conditions.

If we experience any of these or other problems, we may not be able to derive income and cash flows from our projects and investments in a timely manner, in the amounts expected or at all, which could materially and adversely affect our business, financial condition, results of operations and prospects.

Our business and operations depend on various government licenses, permits and approvals

The Government, and other governments in jurisdictions where we have operations, regulate the health, safety and environmental management aspects of all of our operations, requiring us to obtain a variety of licenses, permits, authorization and approvals in order to conduct operations.

In Thailand, the Government owns all of Thailand's petroleum resources and awards concessions and other rights with respect to the exploration and production of such resources, which is one of our key business activities. Thailand's health, safety and environmental regulations, which are generally applicable to all our operations, are overseen by government agencies such as the Ministry of Industry, the Department of Industrial works, the Industrial Estate Authority of Thailand, the Ministry of Natural Resources and Environment, the Office of Natural Resources and Environmental Policy and Planning, and the Pollution and Control Department. Two of our oil and gas production sharing contracts are regulated by the MTJDA, a statutory body established under the laws of Malaysia and Thailand to regulate on behalf of the two governments certain oil and gas fields in the overlapping continental shelf area in the Gulf of Thailand. The Myanmar and other local governments regulate our concessions and other rights with respect to oil and gas exploration and production in their respective jurisdictions.

We are also required to maintain and renew certain licenses, permits and other authorizations, including business permits and permits concerning our oil and non-oil businesses. Significant licenses for our oil business include licenses under the Fuel Control Act B.E. 2542 (1999) (as amended) and the Fuel Trading Act, B.E. 2543 (2000) (as amended) (the "**Fuel Trading Act**") for the operation of oil and gas terminals and the operation of retail fuel service stations, as well as for trader and dealership status under the Fuel Trading Act.

Our licenses, permits and other authorizations contain various requirements that must be complied with to keep such licenses, permits and other authorizations valid. If we fail to obtain or meet the terms of the licenses, permits or other authorizations that are necessary for our operations, we may be subject to penalties or such licenses, permits or other authorizations may be suspended or terminated, leading to temporary or potentially permanent closure of certain operations or facilities, temporary cessation of our operations, imposition of penalties and fines or other adverse consequences. In addition, we cannot be certain that any given license, permit or authorization will be deemed sufficient by the relevant governmental authorities to fully cover the activities conducted in reliance on such license, permit or authorization. Also, our expansion plan relies significantly on our ability to secure new licenses, permits and authorizations. Our inability to renew or obtain such licenses, permits and authorizations would have a material adverse effect on our business, financial condition, results of operations and prospects.

Our financial statements include an emphasis of matter paragraph, but unqualified opinions in respect thereof, in relation to the submission of a complaint against us by the Ombudsman of Thailand regarding the transfer of certain Government assets to the MOF, including the revocation of preferential rights to establish Thailand's gas pipeline system, pursuant to a Cabinet resolution that was originally passed on December 18, 2007. Refer to notes 47 and 31 to our audited financial statements and our unaudited interim financial statements, respectively, included elsewhere in this Offering Memorandum, for additional details. See also "Business — Legal Proceedings."

We are subject to significant regulations governing health, safety and environmental matters

Our business is subject to laws and regulations relating to environmental and safety matters in the exploration for and development, construction, production, transmission and distribution of oil, natural gas and coal. Our petrochemical and refining interests are also subject to increasingly stringent product liability and environmental and safety regulations. We or one of our subsidiaries or associated companies may become involved in claims, lawsuits and administrative proceedings relating to past or future violations of these regulatory matters. Future environmental laws or

changes in enforcement policies could also result in a curtailment of production or a material increase in our costs of exploration, construction, production, development, transmission and distribution activities, or otherwise materially and adversely affect our business, results of operations, financial condition and prospects.

Rising climate change concerns have led and could lead to additional legal and/or regulatory measures that could result in project delays or cancellations, a decrease in demand for fossil fuels, potential litigation and additional compliance obligations.

The Paris Agreement, which was signed in 2015 and has been ratified or acceded to by 187 states as of January 1, 2020, aims to limit increases in global temperatures to well below two degrees Celsius above pre-industrial levels. As a result of this and other agreements and government actions, we expect continued and increased attention to climate change from all facets of society. This attention has led, and we expect it to continue to lead, to additional or more stringent regulations designed to limit sulfur content in fuels and reduce greenhouse gas emissions.

We expect that a growing share of our products and greenhouse gas emissions will be subject to regulation or environmental-friendly trends dictated by international conventions governing petroleum product standards, resulting in increased compliance costs and operational restrictions. If our greenhouse gas emissions rise alongside our ambitions to increase the scale of our business, our regulatory burden will increase proportionally. We also expect that greenhouse gas regulations and international conventions, as well as emission reduction actions by customers, will continue to focus more on suppressing demand for fossil fuels and high sulfur fuels, either through taxes, fees, incentives to promote the sale of electric vehicles or even through the future prohibition of sales of new diesel or gasoline vehicles, as have recently been enacted by several countries. Stricter emissions standards imposed by international organizations to reduce smog and other particles and permissible sulfur contents in petroleum products could affect the specifications required for our products, and therefore affect our investment plans. These and other measures to limit greenhouse gas emissions also could result in lower demand for many of our products or a loss in market share if we are unable to adapt our products to meet customers' increasing demand for more environmental-friendly products, which could lead to lower revenue and, in the long term, potential impairment of certain assets.

In 2017, the World Bank announced that it would no longer finance upstream oil and gas projects from 2019, except in limited circumstances. Additionally, some groups, particularly in Europe but increasingly elsewhere as well, are pressuring certain investors such as endowments and sovereign wealth funds to divest their investments in oil and gas companies. If this pressure were to continue, it could affect the trading price and liquidity of our securities, including the Notes, our cost of capital, and our ability to access the international capital markets. Similarly, according to press reports, other financial institutions also appear to be considering limiting their exposure to certain oil and coal projects. Accordingly, our ability to obtain financing for future projects may be adversely impacted. This could also adversely affect our potential partners' abilities to finance their portion of costs, either through equity or debt.

In addition, the physical effects of climate change, such as extreme weather events, rises in temperatures and sea-levels and fluctuations in water levels, could adversely impact both our operations and supply chains. If we are unable to implement economically viable and publicly acceptable solutions that reduce our greenhouse gas emissions and/or greenhouse gas intensity for new and existing projects or for the products it sells, we could experience additional costs or financial penalties, delayed or cancelled projects, and/or reduced production and reduced demand for our products, which could have a material adverse effect on our business, financial condition and results of operations.

Our operations depend on the adequate and timely supply of raw materials, equipment and components, water and energy at acceptable prices and quality.

The success of our operations depend on our ability to obtain sufficient raw materials, equipment, components, energy and water supplies and other commodities from suppliers at commercially acceptable prices and quality in a timely manner. The prices and availability of such materials may vary significantly from period to period due to factors such as consumer demand, production

capacity, market conditions and costs of raw materials. In particular, petroleum-based feedstock, which is the principal raw material required for our operations, is subject to substantial pricing cyclicality and is vulnerable to price wars. An increase in energy prices, including electricity, fuel or water prices, and any unavailability of or interruption in supply of such utilities could also impact our operations. Any failure to obtain adequate raw materials, equipment and components, energy or other utilities, or to do so on commercially acceptable terms or in a timely manner, could materially and adversely affect our business, results of operations and financial condition.

The Government is our majority shareholder and may have interests that conflict with those of PTT or yours as a holder of the Notes.

The Government, acting through the MOF, directly owns 51.1% of our outstanding ordinary shares, as of May 29, 2020. The Government also has a 12.2% indirect shareholding in us through the Vayupak Fund's shareholding. Accordingly, the Government currently has the ability to elect a majority of our directors and determine the outcome of most actions requiring shareholder approval, and its interests may not be aligned with ours or with yours as a holder of the Notes. The Government could also choose to implement social or policy goals through us, in which case our objectives might be different from those of an enterprise that seeks to maximize profit. The Government also has the ability to influence and control other Government-related entities with whom we conduct business and there can be no assurance that business transactions conducted with such parties will be as favorable for us as compared to those entered into with an unaffiliated independent party. We, as a state enterprise, are also subject to certain restrictions in the conduct of our business to which other companies in Thailand may not otherwise be subject. You should also be aware that, absent a contractual obligation, our financing obligations, including the Notes, do not constitute obligations of and are not guaranteed by the Government.

Our gas purchase agreements, through which we obtain all of our natural gas, require us to pay for natural gas even if we cannot take the delivery.

We purchase natural gas from producers in Thailand and Myanmar under GSA that contain take-or-pay provisions, which require us to pay for minimum quantities of natural gas each year whether or not we actually take delivery of that minimum quantity during that year (“**take-or-pay gas**”). Each GSA specifies a minimum annual contractual quantity we must purchase; otherwise, we must pay in advance for the volume not taken during that contract year under the take-or-pay condition. We may also take this prepaid gas in later years as take-or-pay gas if we have already paid the minimum contracted amount for a given contract year.

Additionally, we cannot assure you that:

- there will be a sufficient amount of natural gas to meet the demand, while conversely low demand may trigger the take-or-pay obligation on our part;
- the construction of our gas pipelines or downstream projects will be completed in a timely manner. Failure to complete these projects on time will prevent us from off-taking natural gas from producers at the specified start date and result in our paying the take-or-pay sum;
- there will not be any significant fluctuation in prices of crude oil which will directly impact the prices of natural gas. An increase in the price of natural gas may result in lower demand in the markets and cause us to suffer losses from these price fluctuations;
- we will be able to take deliveries of take-or-pay portions of gas if we encounter substantially decreased demand in Thailand;
- any such prepaid natural gas will be available for delivery at a future date; or
- there will not be an interruption in natural gas supplied from Myanmar or elsewhere.

Any of these future problems or any other problems with our take-or-pay obligations, or in financing or utilizing our prepaid gas, could materially and adversely affect our financial condition and results of operations.

We rely on EGAT as our primary customer for the sale of natural gas.

We sold to EGAT approximately 755 MMSCFD and 843 MMSCFD of natural gas, representing approximately 16% and 18% of our total volume of gas sold in 2019 and the first three months of 2020, respectively. We are dependent to a significant extent on our sales to EGAT to generate sufficient cash flows for us to make payments to our suppliers pursuant to our gas purchase agreements. In addition to EGAT's obligations under direct agreements with us, EGAT is also obligated to pay us for gas not taken by certain IPP under each IPP's individual gas sales agreement with us. Any significant reduction in our natural gas sales to EGAT, for example, due to a reduction in demand for electricity or financial difficulties at EGAT, could have a material adverse effect on our business, financial condition and results of operations. In addition, Thailand's reliance on natural gas as the primary source of feedstock for electricity generation, and on us as the main provider of such feedstock, may cause the Government to promote the introduction of alternative fuels to generate electricity. If EGAT and other power producers increasingly turn to alternative sources of feedstock, our financial condition and results of operations may also be adversely affected.

Gas liberalization policies in Thailand may adversely affect our business.

The Government has continuously aimed to liberalize the natural gas market in Thailand, particularly in the natural gas transmission and LNG segment. In line with the Energy Business Act of 2007 and ERC's notifications in relation to third-party access to connect to and use our pipeline, in 2016, we developed a third-party access code for natural gas supply license holders and wholesale or other licensed energy business operators to access and utilize our natural gas transmission pipeline systems. The transmission tariff for such access is required to be approved by the NEPC based on regulatory guidelines. We expect that when third parties are granted access to our pipeline system we will face competition from domestic and international power companies that are qualified to and may receive natural gas import licenses from the Government in the future. We believe that suppliers and end users may contract directly with each other, excluding us from the supply and marketing aspect of their transactions.

Since August 2019, we are no longer the only entity in Thailand that is licensed to import LNG. As one of the measures to liberalize the domestic gas market, the ERC granted a license for EGAT to import 1.5 mtpa of LNG. With the LNG import license, EGAT may access and use our LNG facilities, such as LNG receiving terminal, storage and regasification facility. In May 2020, the ERC granted additional licenses for LNG import and the ERC may further issue import licenses to additional players in the future to promote competition in the market. Despite the increasing number of LNG importers, as the importers will be required to use our LNG receiving terminal and storage facilities and transmission pipeline in their LNG imports and distributions and our third-party access code will only allow transmission of gas that strictly meets the required specifications, we expect that the increased competition landscape will be somewhat mitigated. To the extent we lose exclusivity in being the sole operators of LNG receiving terminal and storage facilities and transmission pipeline, competition will increase and our market share may thereby be reduced. These factors could have a material adverse effect on our business, financial condition and results of operations. See "*Business — Competition.*"

We may not be able to find, acquire or gain access to additional reserves or to develop existing reserves, replace existing reserves or develop additional reserves.

Our ability to achieve our growth aspirations depends upon our success in finding and acquiring or gaining access to additional reserves. Our future success will depend on our ability to develop undeveloped reserves in a timely and cost-effective manner. We must continue to find, acquire, explore and develop new reserves to replace those produced and sold in order to maintain or grow production at current levels. We face challenges in sustaining production growth due to the maturation and depletion of our proved reserves. There is no assurance that currently contemplated exploration, development and production activities will be successful. During the exploration phase, drilling activities are subject to numerous risks, including the risk that no commercially viable oil or natural gas accumulations will be discovered. The cost of drilling and operating wells is also often uncertain. Drilling may be curtailed, delayed or cancelled as a result of many factors, including weather conditions, government requirements and contractual conditions, shortages of or

delays in obtaining equipment and reductions in product prices or limitations in the market for products. Geological uncertainties and unusual or unexpected formations and pressures may result in dry wells, which may result in unprofitable efforts. In addition, we face substantial competition in the search for and acquisition of potential resources, which requires a substantial investment. The possibility of finding or being able to acquire additional resources is uncertain.

Our future drilling, exploration and acquisition activities may not be successful. If our drilling, exploration and acquisition activities are unsuccessful or have to be reduced to a smaller scale, future proved reserves will decline, which would have a material adverse effect on our business, financial condition, results of operations and prospects.

Fluctuations in the value of the Baht could adversely affect our financial condition and results of operations.

The fluctuations in the value of the Baht could adversely affect our financial condition and results of operations, as our revenues and costs are directly or indirectly linked to, or affected by, the U.S. dollar. Certain of our subsidiaries, such as PTTEP and certain of our subsidiaries in the coal and international trading segment use the U.S. dollar as their functional currency. As some of their costs are denominated in Baht, depreciation in the value of the Baht tends to reduce their costs, but appreciation in the value of the Baht tends to cause their costs to increase. In addition, adverse economic conditions in Thailand incidental to a depreciation of the value of the Baht could increase energy prices in Thailand and reduce overall demand for our products and those of our customers, which could offset the benefits of any Baht depreciation.

We face risks relating to our international operations.

As we have expanded our business internationally, we increasingly face risks relating our operations in international markets. These risks include regulatory uncertainty; political instability and civil war or unrest, in particular in Myanmar, the Middle East and Africa; governmental interference, such as expropriation or nationalization of assets, exchange controls and trade restrictions; undeveloped legal systems and legal uncertainty in seeking remedies in foreign courts; economic instability; inflation; commodity price, exchange rate and interest rate volatility and counterparty credit risk. Such risks may be more difficult to address as we expand into new and unfamiliar markets. Any of these factors could have a material adverse effect on our international operations and, therefore, our business, financial condition and results of operations.

Our customers and other contractual counterparties may not be able to fulfill their contractual obligations to us, which could negatively impact our business and results of operations.

We are subject to the risk that our customers may not be able to obtain sufficient funding to pay us in a timely manner, or at all. Many of our customers require bank financing for operations and therefore financing terms available in the market may affect operations, cash flows and ability to pay their suppliers, including us, on time. In addition, a significant reduction in product prices could result in customers being unwilling or unable to honor their contractual commitments to purchase products from us. We seek to reduce the risk of customer non-performance by requiring credit support from reputable financial institutions, where appropriate, and imposing limits on unpaid amounts in customer accounts. However, no assurance can be given that our attempts to reduce the risk of customer non-performance will be successful in every instance. Due to the continuing instability of the credit markets and capital markets around the world, particularly as caused by the COVID-19 outbreak, credit has continued to be relatively difficult or expensive to obtain in spite of governments' efforts to stabilize the credit and capital markets. This situation could negatively impact our customers' ability to fund their operations and, therefore, purchase and pay for our products under their contractual obligations. Accordingly, if our customers are unable to obtain financing in a timely manner or at a reasonable cost or are unwilling to honor contractual commitments with us, our sales and income levels may be adversely affected.

In addition, the counterparties to our credit agreements may go bankrupt if they suffer increased demand on their liquidity that will prevent them from fulfilling their obligations under the agreements. We also routinely enter into contracts with counterparties including vendors, suppliers, subcontractors and hedging counterparties that may be negatively impacted by events in the credit

and capital markets, global economies and volatility in petroleum and petrochemical product pricing. For example, a significant increase in petroleum product prices could result in suppliers being unwilling to honor their contractual commitments to sell products to us at pre-agreed prices. If those counterparties are unable to perform their obligations to us or our customers, we may be required to provide additional services or make alternate arrangements on less favorable terms with other parties to ensure adequate performance and delivery of services to our customers. These circumstances could also lead to disputes and litigation with our partners or customers as well as unintended, unmatched commodity price exposures, which could have a material adverse impact on our reputation, business, financial condition, and results of operations.

Our research and development efforts may not result in successful outcomes.

Our future success depends in part on our ability to keep pace with the rapid technological changes in industries in which we operate. In order to maintain and enhance our competitive position and to continue to grow our business, we need to design, develop and implement advanced and more cost-efficient products and services to meet growing market demands and changing technical standards. The development of new technologies requires considerable investment of time, resources and capital, but may not yield as much benefit as we anticipate.

Research and development activities are inherently uncertain, and the success of any new service will depend on a number of factors, including competition, customer acceptance, price, general market conditions, government incentives, our ability to integrate customer feedback, our ability to accurately assess technological trends and customer needs and the strength of our marketing and distribution capabilities. In addition, our competitors may adopt advanced technologies that are more effective or commercially attractive at an even lower cost than we do. If our research and development efforts are not successful or our competitors' research and development efforts are more effective than ours, our business, financial position and results of operations could be materially and adversely affected.

We are reliant on infrastructure development and equipment provided by third parties in Thailand and other countries in which we conduct our business.

The expansion of natural gas production in Thailand and neighboring countries is currently constrained by the capacity limits of existing transportation facilities. In Thailand, substantially all such facilities are owned and operated by us, and we are currently undertaking projects to expand Thailand's existing transportation capabilities. In addition, our ability to pursue opportunities to develop and produce natural gas resources in neighboring countries depends upon the development of adequate infrastructure for the transportation of natural gas in such countries. Our failure or that of the relevant companies in these other countries to complete proposed pipeline projects on a timely basis or to expand other natural gas infrastructure may adversely affect our business, financial condition, results of operations and prospects.

If we are unable to obtain the equipment that we need to carry out our development plans with respect to our production assets, we may have to delay or restructure our development plans, which may have an adverse effect on our ability to commercialize our oil and gas reserves, and our ability to secure anticipated quantities of oil and gas for our operations, on a timely basis. Furthermore, depending on the complexity of our development projects, the competitive dynamics of the market, movements in prices of raw materials such as steel, and the availability and prices of contractors and equipment, we may have to pay significantly more than we currently anticipate to implement our development plans.

From time to time, we may face interruptions in the functioning of our production and delivery infrastructure due to logistical complications outside our control. In the event of a disruption or delay in the availability of this infrastructure, we would be unable to sell our products until the problem is corrected or until we find alternative means to deliver our products to our customers. Such alternative means, if available, would likely result in increased costs to us, and could have a material adverse effect on our business, financial condition, results of operations and prospects. If we are unable to obtain the equipment or contractor we need for our operations and development plans, we may not be able to realize these plans and this could have a material adverse effect on our business, financial condition, results of operations and prospects.

Any acquisitions, dispositions or other investments may present risks or uncertainties.

In addition to organic growth through existing assets, we have made strategic acquisitions, and we may pursue additional acquisitions or dispositions of businesses, or investments in strategic business opportunities, particularly investments in alternative energy and new technologies. There can be no assurance that we will be able to locate suitable acquisitions or investments, or that we will be able to consummate any such transactions on terms and conditions acceptable to us, or that such transactions will be successful. Acquisitions may bring us into businesses and countries in which we have not previously conducted operations and expose us to additional business risks that are different from those we have traditionally experienced. We also may encounter difficulties identifying all significant risks during our due diligence activities or integrating acquisitions and successfully managing the growth we expect to experience from such acquisitions. In the case of a divestiture, we may not be able to successfully cause the buyer of such divested business to assume the liabilities of that business or, even if such liabilities are assumed, we may have difficulties enforcing our rights, contractual or otherwise, against the buyer. In terms of investments, we may invest in companies that fail, causing a loss of all or part of our investment. In addition, if we determine that an other-than-temporary decline in the fair value exists for a company in which we have invested, we may have to write down that investment to its fair value and recognize the related write-down as an investment loss. For cases in which we are required under the equity method or the proportionate consolidation method of accounting to recognize a proportionate share of another company's income or loss, such income or loss may impact our results of operations.

Furthermore, we are required to seek prior approvals from the relevant governmental authorities, such as the ERC, and comply with applicable antitrust laws if we are to acquire or merge with other businesses in Thailand or elsewhere. An inability to obtain such approval or comply with the applicable restrictions could delay or obstruct our operation expansion plans and, in turn, have a material adverse effect on our business, financial condition, results of operations and prospects.

We depend on third-party operators for a significant number of our projects.

We hold interests in the majority of our development and production projects through joint ventures with international oil and gas companies. We do not act as the operator of many of these joint ventures. Therefore, we have limited control over the manner in which operations are conducted and the safety and environmental standards used in connection with these joint ventures. The failure of any operator to perform its obligations could have a material adverse effect on the development of or production from a project, which in turn could have a significant adverse effect on our anticipated exploration and development activities and our business, financial condition, results of operations and prospects. See “*Business — Business Activities — Exploration and Production (PTTEP) — Joint Venture Agreements.*”

We participate in strategic joint ventures and other joint arrangements. These arrangements may not perform as expected and we may need to provide financial assistance to these entities.

We make investments in new projects, business expansion initiatives and operational development initiatives through newly established companies or joint ventures with our strategic partners or associated companies including our subsidiaries. These arrangements are intended to reduce risks in the business activities we engage or venture into. Our partners or associated companies in such arrangements may, as a result of financial or other difficulties, be unable or unwilling to fulfill their financial or other obligations under the agreements, threatening the viability of the relevant projects. In addition, our partners may have inconsistent or opposing economic or business interests and take action contrary to our policies or objectives, which could be to our overall detriment.

If our strategic partnerships, joint ventures and other joint arrangements do not perform as expected, we may need to provide financial support to these entities to alleviate difficulties such as weak financial condition in the start-up stage or otherwise to ensure that our strategic goals are met. Additional financial assistance from us could have a material adverse effect on our financial condition and results of operations. Further, we may be required to increase our equity interests in

entities within our Group or joint ventures to be above 50.0% or otherwise acquire control of these companies, in which case we will be required to consolidate the financial accounts of these companies, including their existing and contingent liabilities.

Our business plans depend upon the successful execution of major projects in a timely manner, and failure to deliver major projects successfully could adversely affect our financial performance.

The success of our businesses depends on complex, long-term, capital-intensive projects. Successful execution of these projects in turn requires a high degree of project management expertise and skilled employees to maximize efficiency by us and our joint venture partners. We will also be required to constantly develop and adjust management and administrative responsibilities to match market conditions and our growth and expansion. Specific factors that can affect the performance of major projects include the ability to negotiate successfully with joint ventures, partners, governments, suppliers, customers, or others; optimize reservoir performance; develop markets for products; manage changes in operating conditions and costs, and respond effectively to unforeseen technical difficulties that could delay project start-up or cause unscheduled project downtime. Additionally, where we are not the project operator, we may lack the ability to influence the performance of project operations. These challenges could disrupt our ongoing business, distract our management and employees and increase our expenses. A failure by us to manage these or other factors and to deliver major projects successfully could have a material adverse effect on its business, financial condition and results of operations.

There are uncertainties inherent in estimating PTTEP's reserves, and if the actual amounts of such reserves are less than estimated, our financial condition and results of operations may be materially and adversely affected.

This Offering Memorandum includes estimates of the proved and probable reserves of our subsidiary in the upstream business, PTTEP. These estimates reflect PTTEP's working interest in the relevant sites. PTTEP's working interest includes its net working interest and the related host country's interest pursuant to the relevant production sharing contract, if such contract is in effect. See "Presentation of Oil and Gas Reserves Data." These estimates are based on PTTEP's Petroleum Resources Definitions and Guidelines, which are substantially similar to the standards established by the SPE, the SPE Petroleum Resources Management System. PTTEP's Petroleum Resources Definitions and Guidelines differ from the U.S. SEC Standards. There are uncertainties inherent in estimating quantities of proved and probable reserves and in the timing of development expenditures and the projection of future rates of production. The proved and probable reserves data set out in this Offering Memorandum represents estimates with reasonable confidence, which according to the SPE Petroleum Resources Management System, means that there is at least 90% chance that quantities actually recovered will equal or exceed the estimates of proved reserves, and there is at least a 50% chance that the quantities actually recovered will equal or exceed the sum of proved plus probable reserves estimates. Adverse changes in economic conditions may render it uneconomical to develop certain reserves.

The reliability of reserves estimates depends on, among other things:

- the quality and quantity of technical and commercial data;
- the prevailing petroleum prices applicable to production;
- the production performance of the reservoirs;
- extensive reservoir and geological judgments; and
- the assumed effects of regulation by governmental agencies.

Determination of reserves estimates is an inexact, interpretative activity generally based upon the guidelines and definitions. There often exist various professional interpretative differences of guidelines and reserves classification between companies, other independent petroleum engineering consultants and operators. This is often evidenced by different reported reserves between

consortium members of the same exploration or producing block. Such differences may include assigning volumes to prove, probable or possible reserves categories or to contingent resources, based on the interpretation of guidelines or on views of the commercial viability of given petroleum reserves or resources, at a particular point in time. There is no assurance that we, other independent petroleum engineering consultants or other operators will not change their views on the interpretation of such guidelines or change their interpretation of the commercial viability of given reserves or resources, thus causing such resources or reserves to be reclassified into different classes or categories under SPE or other similar guidelines.

There are numerous uncertainties inherent in estimating quantities of reserves, including many factors beyond our control. The reserves data set forth in this Offering Memorandum represent estimates we have determined according to industry practice. In general, estimates of commercially recoverable petroleum volumes are based upon a number of variable factors and assumptions, such as geological and geophysical characteristics of the reservoirs, historical production performance from the properties, the quality and quantity of technical and economic data, prevailing petroleum prices applicable to a company's production, extensive engineering judgments, forward-looking commercial and market assumptions, the assumed effects of regulation by government agencies and future operating costs. All such estimates involve uncertainties, and classifications of reserves are attempts to define the degree of likelihood that the reserves will result in revenue for us. For these reasons, estimates of the commercially recoverable petroleum volumes attributable to any particular group of properties, classification of such reserves based on uncertainty of recovery and estimates of future net revenues expected therefrom, prepared by different engineers or by the same engineers at different times, may vary substantially. In addition, such estimates can be and will be subsequently revised as additional pertinent data becomes available prompting revision. Actual recoverable petroleum volumes may differ significantly from such estimates. To the extent actual recoverable petroleum volumes are significantly less than our estimates, our financial condition and results of operations are likely to be materially and adversely impacted. See "*Business — Business Activities — Exploration and Production (PTTEP) — Natural Oil and Gas Reserves.*"

Additionally, estimates of reserves based on uncertainty of recovery and estimates of future net revenues expected from those reserves may vary substantially. Finally, new drilling, testing and production after the date the estimates are made may cause substantial upward or downward revisions in the estimates. Our actual production, revenues, taxes and development and operating expenditures with respect to our reserves may vary materially from estimates.

The estimation of resources quantities for an accumulation is subject to both technical and commercial uncertainties and, in general, may be quoted as a range. The range of uncertainty reflects a reasonable range of estimated, potentially recoverable volumes. In all cases, the range of uncertainty is dependent on the amount and quality of both technical and commercial data that are available and may change as more data become available. There is no assurance that the actual recoverable volumes of our reserves will be in line with our estimates. If our actual recoverable volumes are below our estimates, we may not be able to produce the expected quantities of petroleum, which may have an adverse effect on our business, financial condition and results of operations.

Unfavorable results of legal proceedings could harm our business and result in substantial costs.

We are subject to various claims, suits and legal proceedings that arise from time to time. Additional legal claims or regulatory matters may arise and could involve shareholder, labor, intellectual property, tax and other matters. Disputes and legal proceedings in which we may be involved are subject to many uncertainties, and their outcomes are often difficult to predict. The defense of any such claims and any associated settlement costs can be substantial, even with respect to claims that have no merit. In addition, adverse judgments arising from litigation could result in restrictions or limitations on our operations or result in a material adverse impact on our reputation or financial condition. We have various disputes that are ongoing, including that concerning gas pipeline ownership with the Office of the Ombudsman of Thailand which may result in us having to transfer ownership of our gas pipeline network to the state and reimburse the state for the usage of the network, and a class action in connection with an oil and gas leak that

occurred in August 2009 at the Montara field northwest of Australia's Kimberley coastline. Refer to notes 46 and 47 and 30 and 31 to our audited financial statements and our unaudited interim financial statements, respectively, included elsewhere in this Offering Memorandum, for additional details. See also "Business — Legal Proceedings." Due to the inherent uncertainty of the litigation and dispute resolution process, there is no assurance that the resolution of any particular legal proceeding or dispute will not have a material adverse effect on our business operations, future cash flow, results of operations or financial condition.

Competition in the petroleum industry, particularly in the exploration and production business, may have significant effects on our business.

Our competitors for the acquisition, exploration, development and production of petroleum properties and for the capital to finance such activities include companies that have greater financial and other resources. Our ability to successfully bid on new concessions or otherwise acquire additional property rights, to explore for and develop reserves and to enter into commercial arrangements with customers will be dependent upon the continuation of our close working relationships with our joint venture partners and operators and our ability to select and evaluate suitable projects and consummate transactions in a highly competitive environment.

In addition, we compete with other petroleum companies for equipment and human resources, such as petroleum drilling rigs, which are a limited resource given the competitive market in the petroleum sector. An increase in demand for such equipment and personnel has resulted in increased competition for available resources and higher prices that we have to pay in order to secure our access to such equipment and human resources. If we are unable to obtain the equipment that we need to carry out our development plans with respect to our production assets, we may have to delay or restructure our development plans, which may have an adverse effect on our ability to commercialize our petroleum reserves on a timely basis. Our inability to successfully develop new and existing projects due to competition may have an adverse effect on our business, financial condition and results of operations.

Our hedging strategy may not always be effective and does not require all risks to be hedged.

Our business operations involve a significant number of purchase and sale transactions across multiple petroleum products. To the extent we purchase a product from a supplier and do not immediately have a matching contract to sell the product to a customer, a downturn in the price of the product could result in losses to us. Conversely, to the extent we agree to sell a product to a customer and do not immediately have a matching contract to acquire the product from a supplier, an increase in the price of the product could result in losses to us, as we then seek to acquire the underlying product in a rising market. In the event of disruptions in the product exchanges or markets on which we engage in these hedging transactions, our ability to manage product price risk may be adversely affected and this could in turn materially adversely affect our business, financial condition and results of operations. In addition, there are no traded or bilateral derivative markets for certain products that we purchase and sell, which limits our ability to fully hedge our exposure to price fluctuations for these products. In these instances, our ability to hedge our commodity exposure is limited to forward contracts for the physical delivery of a product or futures and swap contracts for a proxy product.

Our risk management policies and procedures may leave us exposed to unidentified or unanticipated risks.

Our operations are exposed to commodity price, foreign exchange, interest rate, counterparty (including credit), operational, regulatory and other risks. We have devoted significant resources to developing and implementing policies and procedures to manage these risks and expect to continue to do so in the future. Nonetheless, our policies and procedures to identify, monitor and manage risks have not been fully effective in the past and may not be fully effective in the future.

Some of our methods of monitoring and managing risk are based on historical market behavior that may not be an accurate predictor of future market behavior. Other risk management methods depend on evaluation of information relating to markets, suppliers, customers and other matters that are publicly available or otherwise accessible by us. This information may not in all cases be

accurate, complete, up to date or properly evaluated. Management of operational, legal and regulatory risk requires, among other things, policies and procedures to properly record and verify a large number of transactions and events, and these policies and procedures may not be fully effective in doing so. We use, among other techniques, Value-at-Risk, or VaR, as a key risk measurement technique for our marketing activities. VaR does not purport to represent actual gains or losses in fair value on earnings to be incurred by us, nor do we expect that VaR results are indicative of future market movements or representative of any actual impact on our future results. Failure to mitigate all risks associated with our business could have a material adverse effect on our business, results of operations and financial condition.

We may not be able to monitor and deploy internal control measures with respect to our business operations in an effective and timely manner.

The development of our management and internal control measures has largely coincided with the expansion of our business. As we expand, maintaining financial, operational and compliance control through the effective allocation of financial and management resources in our growing operations will become increasingly important. There can be no assurance that we will be able to implement or maintain internal control mechanisms that will promptly and adequately respond to issues we may face arising from our expanded operations or otherwise. Any deficiency in internal controls or resource allocation policies could impair our ability to accurately report our financial results and successfully execute our business strategies.

We rely on successful human resources development.

Our success in conducting our operations is highly dependent on our senior management for setting our strategic direction and managing our business, which are crucial to our success. Furthermore, our continued success also depends upon our ability to attract and retain qualified petroleum and chemical engineers, geologists, geophysicists and other technicians and managers with sufficient experience in the petroleum and petrochemical industries. We also use third-party contractors to undertake certain project tasks. There is a risk that key management and employees will resign or that third parties will not renew or continue their contracts with us and we will face difficulties in replacing them. Although we have been successful in the past in attracting qualified personnel and invest significant resources in training our personnel, shortages of trained engineers, geologists, geophysicists and other technicians and managers in Thailand and other countries where we operate may make it more difficult or costly for us to hire and retain adequate numbers of such personnel in the future.

Risks Relating to Thailand

We are subject to economic, legal, regulatory and other uncertainties relating to Thailand.

Economic, legal and regulatory conditions in Thailand differ in certain significant respects from those prevailing in other countries with more developed economies. There is no assurance that the Thai economy will stabilize, meet projections or improve in the future, especially in light of the ongoing COVID-19 pandemic. In April 2020, the World Bank revised Thailand's growth projections for 2020 down from 2.9% (in October 2019) to a range of -3.0% to -5.0%, reflecting a sharp economic contraction. The demand for energy is generally correlated with GDP, particularly in the power and industrial sector, and such a contraction in Thailand's GDP could lead to a reduction in the demand for energy. Downturn in the Thai economy is likely to have a material adverse effect on our business, financial condition, results of operations and prospects and the market price of the Notes. Furthermore, prior Governments have, in the past, intervened in the Thai economy and occasionally made significant changes in policy including, among other things, foreign exchange control, policies concerning wage and price controls (including energy price controls), capital controls and limits on imports, at times partially reversing such policies soon after the new policies were announced.

Thailand's sovereign foreign currency long-term ratings are currently rated "Baa1" with a stable outlook by Moody's, "BBB+" with a stable outlook by S&P and "BBB+" with a stable outlook by Fitch. Lowering of the credit ratings or changes in the outlook for Thai sovereign debt may make it more expensive for us to obtain additional debt financing for our working capital and capital expenditures, which could have an adverse effect on our financial condition.

Political stability in Thailand cannot be guaranteed, and any continued violence or instability could materially and adversely affect our business, cash flow, financial condition, results of operations and prospects.

Our business, financial condition, results of operations and prospects may be influenced in part by the political situation in Thailand. Thailand has experienced several periods of instability, including coups, anti-government protests and counter-protests, declarations of martial law and states of emergency in southern provinces in response to violence. The current coalition government faces increasing challenges in consolidating its power among more than ten political parties. There is no assurance that these political parties' interests will be aligned, forming a fragmented and uncertain political landscape.

As an entity which is majority-owned by the Thai government, there can be no assurance that our strategy and business operations will not be impacted by changes in government. Furthermore, there can be no assurance that any reforms introduced will promote growth and stability within Thailand. Additionally, no assurance can be provided that these events will not lead to further political demonstrations or slower economic growth. As a result, we can provide no assurance that the political environment in Thailand will be stable or that any future instability in Thailand will not materially and adversely affect our business, cash flow, financial condition, results of operations and prospects.

Non-enforceability of non-Thai judgments may limit your ability to recover damages from us in Thai courts.

We are a public limited company incorporated in Thailand. All of our directors and executive officers are residents of Thailand. Also, the assets of our directors and executive officers are primarily located in Thailand. As a result, it may be difficult for you to effect service of process upon us or these persons outside Thailand or enforce against us judgments obtained in courts outside of Thailand, including judgments based upon the federal securities laws of the United States.

Under Thai law, judgments entered by a United States court or any other non-Thai court, including actions or judgments based on the civil liability provisions of the federal securities laws of the United States including the U.S. Securities Act and the U.S. Exchange Act, are not enforceable in Thailand. Any judgment or order obtained in a court outside Thailand would not be enforced as such by the courts of Thailand, but such judgment or order in the discretion of a court in Thailand may be admitted as evidence in new proceedings instituted in such court, which would consider the issue on the evidence before it. See "*Service of Process and Enforcement of Civil Liabilities*" for a further discussion of enforceability matters.

Dispute in maritime boundaries could affect our operations and offshore exploration activities.

Thailand shares maritime boundaries with a number of countries including Myanmar, Malaysia, and Cambodia. From time to time, we and such countries may have overlapping claims over oil and natural gas resources located offshore. For example, Thailand and Cambodia have overlapping claims over hydrocarbon deposits in the Gulf of Thailand. This decades-long dispute has resulted in all exploration activities in PTTEP's G9/43 project in the Gulf of Thailand, where it is the sole owner and operator of the project, being suspended while waiting for the resolution of the boundary dispute between the governments of Thailand and Cambodia. There can be no assurance that Thailand's maritime boundaries can be delimited through peaceful means in a timely manner or at all. These disputes could affect our operations and oil and gas exploration activities.

Our prior auditors may not be considered independent under the International Standards on Auditing and the auditing standards issued by the Public Company Accounting Oversight Board (“PCAOB”).

Thai laws require that auditors of state-owned enterprises, such as us, be either the State Audit Office of the Kingdom of Thailand (the “SAO”) or auditors that are approved by the SAO. PTT’s prior auditors for the years ended December 31, 2017, 2018 and 2019 were the SAO. The SAO are an independent auditor with respect to us within the meaning of the standards established for independent auditors in Thailand. We cannot assure you, however, that they would be considered to be an independent auditor with respect to us within the meaning of the standards established under the International Standards on Auditing, the auditing standards issued by the PCAOB or otherwise.

Risks Relating to the Structure of a Particular Issue of Notes

A wide range of Notes may be issued under the Program. A number of these Notes may have features which contain particular risks for potential investors. Set out below is a description of certain such features.

Notes subject to optional redemption by us.

An optional redemption feature is likely to limit the market value of Notes. During any period when we may elect to redeem Notes, the market value of those Notes generally will not rise substantially above the price at which they can be redeemed. This may also be true prior to any redemption period. We may be expected to redeem Notes when our cost of borrowing is lower than the interest rate on the Notes. At those times, an investor generally would not be able to reinvest the redemption proceeds at an effective interest rate as high as the interest rate on the Notes being redeemed and may only be able to do so at a lower rate. Potential investors should consider reinvestment risk in light of other investments available at that time.

Partly-Paid Notes.

We may issue Notes where the issue price is payable in more than one instalment. Failure to pay any subsequent instalment on a Partly-Paid Note could result in an investor losing all of its investment.

Variable Rate Notes with a multiplier or other leverage factor.

Notes with variable interest rates can be volatile investments. If they are structured to include multipliers or other leverage factors, or caps or floors, or any combination of those features or other similar related features, their market values may be even more volatile than those for securities that do not include those features.

Notes carrying an interest rate which may be converted from fixed to floating interest rates, and vice-versa.

Fixed/Floating Rate Notes may bear interest at a rate that we may elect to convert from a fixed rate to a floating rate, or from a floating rate to a fixed rate. Our ability to convert the interest rate will affect the secondary market and the market value of such Notes since we may be expected to convert the rate when it is likely to produce a lower overall cost of borrowing. If we convert from a fixed rate to a floating rate, the spread on the Fixed/Floating Rate Notes may be less favorable than then prevailing spreads on comparable Floating Rate Notes tied to the same reference rate. In addition, the new floating rate at any time may be lower than the rates on other Notes. If we convert from a floating rate to a fixed rate, the fixed rate may be lower than then prevailing rates on its Notes.

Notes with floating interest rates can be volatile investments. If they are structured to include multipliers or other leverage factors, or caps or floors, or any combination of those features or other similar related features, their market values may be even more volatile than those for securities that do not include those features.

The benchmark rate for any Floating Rate Notes may not be available

The regulation and reform of “benchmarks” may adversely affect the value of Notes linked to or referencing such “benchmarks.”

Interest rates and indices which are deemed to be “benchmarks,” (including the London interbank offered rate (“**LIBOR**”) and the euro interbank offered rate (“**EURIBOR**”)) are the subject of recent national and international regulatory guidance and proposals for reform. Some of these reforms are already effective whilst others are still to be implemented. These reforms may cause such benchmarks to perform differently than in the past, to disappear entirely, or have other consequences which cannot be predicted. Any such consequence could have a material adverse effect on any Notes referencing such a benchmark.

Regulation (EU) 2016/1011 (the “**Benchmarks Regulation**”) was published in the Official Journal of the EU on June 29, 2016 and mostly applies, subject to certain transitional provisions, from January 1, 2018. The Benchmarks Regulation applies to the provision of benchmarks, the contribution of input data to a benchmark and the use of a benchmark within the EU. Among other things, it (i) requires benchmark administrators to be authorized or registered (or, if non-EU-based, to be subject to an equivalent regime or otherwise recognized or endorsed) and (ii) prevents certain uses by EU supervised entities of benchmarks of administrators that are not authorized or registered (or, if non-EU based, not deemed equivalent or recognized or endorsed).

The Benchmarks Regulation could have a material impact on any Notes linked to or referencing a benchmark in particular, if the methodology or other terms of the benchmark are changed in order to comply with the requirements of the Benchmarks Regulation. Such changes could, among other things, have the effect of reducing, increasing or otherwise affecting the volatility of the published rate or level of the relevant benchmark.

More broadly, any of the international or national reforms, or the general increased regulatory scrutiny of benchmarks, could increase the costs and risks of administering or otherwise participating in the setting of a benchmark and complying with any such regulations or requirements. Specifically, the sustainability of LIBOR has been questioned as a result of the absence of relevant active underlying markets and possible disincentives (including possibly as a result of benchmark reforms) for market participants to continue contributing to such benchmarks. On July 27, 2017, and in a subsequent speech by its Chief Executive on July 12, 2018, the United Kingdom Financial Conduct Authority (the “**FCA**”) confirmed that it will no longer persuade or compel banks to submit rates for the calculation of the LIBOR benchmark after 2021 (the “**FCA Announcements**”). The FCA Announcements indicated that the continuation of LIBOR on the current basis cannot and will not be guaranteed after 2021. In addition, on November 29, 2017, the Bank of England and the FCA announced that, from January 2018, its Working Group on Sterling Risk-Free Rates has been mandated with implementing a broad based transition to the Sterling Overnight Index Average (“**SONIA**”) over the next four years across sterling bond, loan and derivative markets, so that SONIA is established as the primary sterling interest rate benchmark by the end of 2021.

Separate work streams are also underway in Europe to reform EURIBOR using a hybrid methodology and to provide a fallback by reference to a euro risk-free rate (based on a euro overnight risk-free rate as adjusted by a methodology to create a term rate). On September 13, 2018, the working group on euro risk-free rates recommended Euro Short-term Rate (“**ESTR**”) as the new risk free rate. ESTR is expected to be published by the ECB by October 2019. In addition, on January 21, 2019, the euro risk free-rate working group published a set of guiding principles for fallback provisions in new euro denominated cash products (including bonds). The guiding principles indicate, among other things, that continuing to reference EURIBOR in relevant contracts may increase the risk to the euro area financial system. It is not possible to predict with certainty whether, and to what extent, LIBOR and EURIBOR will continue to be supported going forwards. This may cause LIBOR and EURIBOR to perform differently than they have done in the past, and may have other consequences which cannot be predicted. Such factors may have (without limitation) the following effects on certain benchmarks: (i) discouraging market participants from continuing to administer or contribute to a benchmark; (ii) triggering changes in the rules or methodologies used in the benchmark and/or (iii) leading to the disappearance of the benchmark.

Any of the above changes or any other consequential changes as a result of international or national reforms or other initiatives or investigations, could have a material adverse effect on the value of and return on any Notes linked to, referencing, or otherwise dependent (in whole or in part) upon, a benchmark. Investors should be aware that, if LIBOR or EURIBOR were discontinued or otherwise unavailable, the rate of interest on Floating Rate Notes which reference LIBOR or EURIBOR will be determined for the relevant period by the fallback provisions applicable to such Notes. Depending on the manner in which LIBOR or EURIBOR is to be determined under the Terms and Conditions, this may in certain circumstances (i) be reliant upon the provision by reference banks of offered quotations for LIBOR or EURIBOR which, depending on market circumstances, may not be available at the relevant time or (ii) result in the effective application of a fixed rate for Floating Rate Notes based on the rate which was last observed on the Relevant Screen Page. Any of the foregoing could have an adverse effect on the value or liquidity of, and return on, any Floating Rate Notes which reference LIBOR or EURIBOR.

Notes issued at a substantial discount or premium.

The market values of securities issued at a substantial discount or premium to their nominal amount tend to fluctuate more in relation to general changes in interest rates than do prices for conventional interest-bearing securities. Generally, the longer the remaining term of the securities, the greater the price volatility as compared to conventional interest-bearing securities with comparable maturities.

Index Linked Notes.

We may issue Notes with principal or interest determined by reference to an index or formula, to changes in the prices of securities or commodities, to movements in currency exchange rates or other factors (each, a “**Relevant Factor**”). Each potential investor should be aware that:

- the market price of such Notes may be volatile and may be linked to factors other than our credit;
- they may receive no interest;
- payment of principal or interest may occur at a different time or in a different currency than expected;
- they may lose all or a substantial portion of their principal;
- a Relevant Factor may be subject to significant fluctuations that may not correlate with changes in interest rates, currencies or other indices;
- if a Relevant Factor is applied to Notes in conjunction with a multiplier greater than one or contains some other leverage factor, the effect of changes in the Relevant Factor on principal or interest payable likely will be magnified; and
- the timing of changes in a Relevant Factor may affect the actual yield to investors, even if the average level is consistent with their expectations.

In general, the earlier the change in the Relevant Factor, the greater the effect on yield. The historical experience of an index should not be viewed as an indication of the future performance of such index during the term of any Index Linked Notes. Accordingly, each potential investor should consult its own financial and legal advisers about the risk entailed by an investment in any Index Linked Notes and the suitability of such Notes in light of its particular circumstances.

Dual Currency Notes.

We may issue Notes with principal or interest payable in one or more currencies which may be different from the currency in which the Notes are denominated. Each potential investor should be aware that:

- the market price of such Notes may be volatile;
- they may receive no interest;
- payment of principal or interest may occur at a different time or in a different currency than expected; and
- the amount of principal payable at redemption may be less than the nominal amount of such Notes or even zero.

Notes payable in more than one instalment.

We may issue Notes where the issue price is payable in more than one instalment. Failure by a potential investor to pay a subsequent instalment of partly-paid Notes may result in it losing all of its investment.

Risks Relating to the Guarantee

Certain provisions under the Guarantee may not be enforceable against the Guarantor in a Thai court.

A judgment of a foreign court will not be enforced by a Thai court but may, at the sole discretion of the court, be admissible as evidence in an action in a Thai court. Therefore, even if the Trustee and the Holders have already obtained a court judgment against the Guarantor in a foreign country, the Trustee and the Holders would still have to bring another action against the Guarantor in a Thai court. As the Guarantee is governed by New York law, in order for the Trustee and the Holders to enforce the Guarantee against the Guarantor in a Thai court, the Trustee and the Holders would be required to prove New York law to the satisfaction of the Thai court and such New York law must not be considered to be contrary to the public order or good morals of the people of Thailand. The scope of concept of public order and good morals of the people of Thailand has not been definitely established by the Thai Supreme Court. If the Thai court deems that the provisions of the Guarantee which the Trustee and the Holders are looking to enforce are contrary to the public order or good morals of the people of Thailand, such provisions will not be enforceable against the Guarantor. See “— *Risks Relating to the Guarantee — Thai guarantee law has imposed certain limitations and requirements which may adversely affect the Trustee’s and the Holders’ ability to enforce their rights under the Guarantee fully.*”

Thai guarantee law has imposed certain limitations and requirements which may adversely affect the Trustee’s and the Holders’ ability to enforce their rights under the Guarantee fully.

Even though the Trustee and the Holders may have certain rights as provided in the Guarantee, such rights may be limited under Thai guarantee law or not fully enforceable if certain procedures are not strictly followed. For instance, if an Event of Default (as defined under the “*Terms and Conditions of the Notes*”) shall occur and be continuing, the Trustee and the Holders may declare, among other things, the principal amount of the Notes and accrued and unpaid interest due and payable. However, under Thai guarantee law, the Guarantor may (in its absolute sole discretion) determine either to (i) pay in full the principal amount, together with accrued and unpaid interest to the date of payment or (ii) pay any amount under the Guaranteed Notes in accordance with the original payment schedule as if the Event of Default and acceleration had not occurred. If the Guarantor opts to make the payment in accordance with the original payment schedule rather than making the full payment in one lump sum, payment under the Guaranteed Notes will not be accelerated and the rights of the Holders may be inferior relative to the Guarantor’s other creditors. In such a scenario, the Maximum Guaranteed Amount might not be sufficient to cover the interest payable for the remaining term of the Guaranteed Notes and principal repayment at maturity (see “— *Risks Relating to the Guarantee — The Trustee and the Holders may not be able to recover any debt in excess of the Maximum Guaranteed Amount*”).

Thai guarantee law does not permit the Guarantor to waive or contract out of its rights to raise its own defenses and defenses of the Issuer against the Trustee and the Holders in connection with claims under the Notes and the Indenture. Therefore, the Guarantor is able to assert any defenses it

has and/or defenses of the Issuer against the Trustee and the Holders during the enforcement process of the Guarantee, which may materially and adversely affect the recovery of any amount claimed under the Guarantee from the Guarantor.

Thai guarantee law does not allow parties to contract out of the right of recourse of the guarantor against the debtor for principal and interest discharged by the guarantor including for losses and damages suffered or incurred by the guarantor by reason of its guarantee upon making either full or partial payment under the underlying obligations.

Thai guarantee law mandatorily releases the Guarantor from its obligations under the Guarantee if the Trustee or the Holders has granted the Issuer an extension of time to perform its obligations without consent of the Guarantor. Any pre-consent by the Guarantor in any agreements to an extension of time to perform the Issuer's obligations granted by the Trustee or the Holders is unenforceable.

In order to enforce the Guarantee against the Guarantor, the Trustee and the Holders have to strictly comply with the requirements and procedures provided under the Thai guarantee law, some of which are still not definitively established. Failure to do so could limit the amounts recoverable under the Guarantee.

Thai guarantee law requires that a creditor must send a written notice to a guarantor within 60 days of the date of the debtor's default, failing which the creditor shall not have the right to any interest or compensation that accrues after such 60-day period. Furthermore, the creditor shall not have the right to demand payment from the guarantor before such written notice reaches the guarantor. Therefore, if the Trustee or Holders gives a notice of default to the Guarantor later than 60 days from the date of the default, the Trustee and the Holders will not have the right to claim from the Guarantor interest, costs, damages or expenses accruing after such 60-day period. In addition, Thai guarantee law uses the term "default" the meaning of which has not been definitely established, particularly whether it would include both monetary and a non-monetary breach of an agreement by the debtor, without it being required to constitute a typical "event of default." The payment and non-payment defaults are much broader in nature than an event of default where usually a remedy period or grace period or a percentage voting requirement of creditors is provided for. Therefore, it is easier for the Issuer to trigger monetary and non-monetary breaches of the Indenture than an occurrence of an Event of Default. If the Thai court takes the view that a default includes payment and non-payment default, and if the Trustee or Holders fails to give a notice of such default to the Guarantor within 60 days from the date of the default, the Trustee and the Holders will not be entitled to claim from the Guarantor interest, costs, damages or expenses payable following such 60-day period.

The Trustee and the Holders may not be able to recover any debt in excess of the Maximum Guaranteed Amount.

Under Thai law, the Maximum Guaranteed Amount represents the absolute number which sets out the maximum liability of the Guarantor under the Guarantee. Moreover, in accordance with the terms of the Guaranteed Notes under the Indenture, the Guarantor's obligations are limited to a Maximum Guaranteed Amount in respect of each Series of Guaranteed Notes. Unpaid principal, premium (if any), interest or distributions on the relevant Series of Guaranteed Notes and other sums payable under the Notes may end up being greater than the Maximum Guaranteed Amount and, as a result, once the Guarantor has made payments under the Guarantee up to the Maximum Guaranteed Amount, the Trustee or Holders may not be able to claim against the Guarantor under the Guarantee for any shortfall between the amount already paid by the Guarantor under the Guarantee and the amount that has become due and payable under the Notes. Accordingly, the amounts in excess of the Maximum Guaranteed Amount may not be recoverable from the Guarantor or the Issuer.

The obligations of the Guarantor under the Guarantee will be released and discharged upon the obligations of the Issuer under the Indenture and the Notes having been extinguished.

Under Thai guarantee law, following the extinguishment of the obligations of the Issuer under the Indenture and the Notes by any cause whatsoever, the Guarantor will be released from its obligations under the Guarantee. Although there are no precedents in interpreting this provision of law, if all amounts payable by the Issuer under the Indenture and the Notes have been fully satisfied by the Issuer, but the Trustee and/or the Holders are subsequently ordered by any competent authority to return all or portion of such sum to the Issuer or its creditors for whatever reasons, it is likely that the Trustee and/or the Holders will no longer have any right of recourse against the Guarantor under the Guarantee for such returned amount because the obligations of the Guarantor under the Guarantee will have already been released and discharged when the obligations of the Issuer under the Indenture and the Notes have been fully satisfied.

In such event, the rights of the Trustee and the Holders to recover in full any amounts claimed against the Guarantor under the Guarantee may be materially and adversely affected.

Claims of the secured creditors of the Guarantor will have priority with respect to their security over the claims of unsecured creditors, such as the Holders, to the extent of the value of the assets securing such indebtedness.

Claims of the secured creditors of the Guarantor will have priority with respect to the assets securing their indebtedness over the claims of the Holders. Therefore, the Guarantee will be effectively subordinated to any secured indebtedness and other secured obligations of the Guarantor to the extent of the value of the assets securing such indebtedness or other obligations. In the event of any foreclosure, dissolution, winding up, liquidation, business rehabilitation or other bankruptcy or insolvency proceeding of the Guarantor that has secured obligations, holders of secured indebtedness will have prior claims to the assets of the Guarantor that constitute its collateral. The Holders will participate, pro rata, with all holders of the unsecured indebtedness of the Guarantor, and potentially with all of their other general creditors, based upon the respective amounts owed to each holder or creditor, in the remaining assets of the Guarantor. In the event that any of the secured indebtedness of the Guarantor becomes due or the creditors thereunder proceed against the operating assets that secure such indebtedness, the Guarantor's assets remaining after repayment of that secured indebtedness may not be sufficient to repay all amounts owing in respect of the Guarantee. As a result, while the Holders may receive the repayments pro rata, the Holders may receive less than holders of secured indebtedness of the Guarantor.

The Guarantee provided by the Guarantor will be subject to certain limitations on enforcement and may be limited by applicable laws or subject to certain defenses that may limit its validity and enforceability.

The Guarantee given by the Guarantor provides Holders with a direct claim against the Guarantor in respect of an Issuer's obligations under the Notes, subject to the Terms and Conditions of the Notes. Enforcement of the Guarantee would be subject to certain generally available defenses. Local laws and defenses may vary, and may include, but are not limited to, those that relate to corporate benefit (*ultra vires*), fraudulent conveyance or transfer (*action pauliana*), voidable preference, corporate purpose, liability in tort and subordination or similar laws and concepts. They may also include regulations or defenses which affect the rights of creditors generally.

If a court were to find the Guarantee given by the Guarantor, or a portion thereof, void or unenforceable as a result of such local laws or defense, or to the extent that agreed limitations on guarantees apply, holders would cease to have any claim in respect of the Guarantor and would be creditors solely of the Issuer(s) and, if payment had already been made under the Guarantee, the court could require that the recipient return the payment to the Guarantor.

The bankruptcy law of Thailand differs from the laws of other jurisdictions with which the Holders may be familiar.

The Guarantor is incorporated under the laws of Thailand, and principal assets of the Guarantor are located in Thailand. As such, any insolvency proceedings by or against the Guarantor would most likely be based on the bankruptcy law of Thailand, which may differ in significant respects from and may not be as favorable to holders of the Notes as compared to similar provisions under the laws of other jurisdictions with which the holders of the Notes may be familiar. For example, the bankruptcy law of Thailand clearly provides that insolvency proceedings under a foreign law has no impact on the assets of a debtor in Thailand and so the courts of Thailand may not recognize the jurisdiction of the courts of foreign countries. Accordingly, the Holders may have difficulties in administering a bankruptcy case involving a Thai debtor in the courts of a foreign jurisdiction with property located outside of that jurisdiction, and any order or judgment of a court in the foreign jurisdiction may not be enforceable in Thailand. See “*Service of Process and Enforcement of Civil Liabilities*” and “— *Risks relating to the Guarantee — The Guarantee provided by the Guarantor will be subject to certain limitations on enforcement and may be limited by applicable laws or subject to certain defenses that may limit its validity and enforceability.*”

Risks Relating to the Notes and the Guarantee Generally

The Treasury Center has limited assets and is dependent on intercompany loans from the Company and its subsidiaries.

The Treasury Center is a subsidiary of the Company and is its designated corporate treasury center. The Treasury Center will on-lend the proceeds from the sale of the Notes to the Company or its subsidiaries. The Treasury Center will depend on payments from these inter-company loans and other similar loans to provide it with funds to meet its obligations under the Notes.

The Treasury Center has limited assets and no subsidiaries. See “*Description of the Treasury Center.*” The only significant assets of the Treasury Center are receivables under intercompany loans and the Treasury Center’s material liabilities will be the Notes and other securities and loans. As such, the Treasury Center will be dependent upon payments under intercompany loans to make any payments due on the Notes. Should any of the companies that the Treasury Center lends to be unable to fund their payments under their respective loans, the Treasury Center may be unable to meet its obligations under the Notes.

The Notes and the Guarantee are unsecured obligations.

The Notes and the Guarantee are unsecured obligations of the Issuers and the Guarantor, respectively. The repayment of the Notes and payment under the Guarantee may be adversely affected if:

- the Issuers or the Guarantor enters into bankruptcy, liquidation, business rehabilitation or other winding-up proceedings;
- there is a default in payment under either of the Issuers’ or the Guarantor’s future secured indebtedness or other unsecured indebtedness; or
- there is an acceleration of any of the Issuers’ or the Guarantor’s indebtedness.

If any of these events were to occur, the Issuers’ or the Guarantor’s assets may not be sufficient to pay amounts due on the Notes or the Guarantee.

The Notes will be unsecured obligations of the Issuer and, in respect of any Guaranteed Notes, the Guarantor, and will be structurally subordinated to the claims of creditors of PTT’s subsidiaries.

The claims of all existing and future third-party creditors of PTT’s subsidiaries as to the cash flows and assets of such companies will have priority over the claims of the shareholders of such subsidiaries, including PTT, and the creditors of such shareholders (such as holders of the Notes).

The Indenture does not restrict the incurrence of additional debt, other than certain secured debt and sale leasebacks in excess of a specified threshold.

The Indenture does not contain any restrictions on the ability of PTT or its subsidiaries to incur additional indebtedness, other than with respect to certain Sale Leasebacks and External Indebtedness secured by any Security Interest on any Principal Property owned by the Company or any Restricted Subsidiary or on any shares of stock of any Restricted Subsidiary that exceed 10% of the Consolidated Net Tangible Assets. See “Terms and Conditions” for the definitions of these capitalized terms and further details.

Outward remittance of payments under the Indenture

The purchase and remittance of foreign currency by the Guarantor for payment of any sum payable pursuant to the Guarantee to the Trustee or Holders is subject to applicable exchange control regulations. The Guarantor is required to obtain a routine approval from a commercial bank in Thailand, which is an authorized agent of the BOT to grant such approval, to purchase foreign currency from, and make foreign currency payments through, such commercial bank. While an approval would typically be granted upon the Guarantor’s submission of the required supporting documents to the authorized agent, there can be no assurance that the authorized agent will not exercise its discretion to request for additional supporting documents, which may affect or delay the outward remittance. Furthermore, there can be no assurance that the BOT will not amend the exchange control regulations in the future to impose additional or stricter requirements in relation to outward remittance of foreign currency.

The Notes may not be a suitable investment for all investors.

Each potential investor in any Notes must determine the suitability of that investment in light of its own circumstances. In particular, each potential investor should:

- have sufficient knowledge and experience to make a meaningful evaluation of the relevant Notes, the merits and risks of investing in the relevant Notes and the information contained in this Offering Memorandum or any applicable supplement;
- have access to, and knowledge of, appropriate analytical tools to evaluate, in the context of its particular financial situation, an investment in the relevant Notes and the impact such investment will have on its overall investment portfolio;
- have sufficient financial resources and liquidity to bear all of the risks of an investment in the relevant Notes, including where principal or interest is payable in one or more currencies, or where the currency for principal or interest payments is different from the potential investor’s currency;
- understand thoroughly the terms of the relevant Notes and be familiar with the behavior of any relevant indices and financial markets; and
- be able to evaluate (either alone or with the help of a financial advisor) possible scenarios for economic, interest rate and other factors that may affect its investment and its ability to bear the applicable risks.

Some Notes are complex financial instruments. Sophisticated institutional investors generally do not purchase complex financial instruments as stand-alone investments. They purchase complex financial instruments as a way to reduce risk or enhance yield with an understood, measured and appropriate addition of risk to their overall portfolios. A potential investor should not invest in Notes which are complex financial instruments unless it has the expertise (either alone or with the help of a financial advisor) to evaluate how the Notes will perform under changing conditions, the resulting effects on the value of such Notes and the impact this investment will have on the potential investor’s overall investment portfolio. Investors may also be subject to investment laws that constrain their ability to invest in the Notes. Investors should consult their own legal advisors before making an investment in the Notes.

Notes issued under the Program have no current active trading market and may trade at a discount to their initial offering price and/or with limited liquidity.

Notes issued under the Program will be new securities which may not be widely distributed and for which there is currently no active trading market (unless in the case of any particular Tranche, such Tranche is to be consolidated with and form a single series with a Tranche of Notes which is already issued). If the Notes are traded after their initial issuance, they may trade at a discount to their initial offering price, depending upon prevailing interest rates, the market for similar securities, general economic conditions and our financial condition. If the Notes are trading at a discount, investors may not be able to receive a favorable price for their Notes, and in some circumstances investors may not be able to sell their Notes at all or at their fair market value. In addition, the market for investment grade and crossover grade debt has been subject to disruptions that have caused volatility in prices of securities similar to the Notes issued under the Program. Accordingly, we cannot assure you as to the development or liquidity of any trading market, or that disruptions will not occur, for any particular Tranche of Notes.

Foreign exchange rate risks and exchange controls may result in investors receiving less interest or principal than expected.

We will pay principal and interest on the Notes in the currency specified in the relevant Pricing Supplement (the “**Specified Currency**”). This presents certain risks relating to currency conversions if an investor’s financial activities are denominated principally in a currency or currency unit (the “**Investor’s Currency**”) other than the Specified Currency. These include the risk that exchange rates may significantly change (including changes due to devaluation of the Specified Currency or revaluation of the Investor’s Currency) and the risk that authorities with jurisdiction over the Investor’s Currency may impose or modify exchange controls. An appreciation in the value of the Investor’s Currency relative to the Specified Currency would decrease (a) the Investor’s Currency equivalent yield on the Notes, (b) the Investor’s Currency equivalent value of the principal payable on the Notes and (c) the Investor’s Currency equivalent market value of the Notes. Government and monetary authorities may impose (as some have done in the past) exchange controls that could adversely affect an applicable exchange rate. As a result, investors may receive less interest or principal than expected, or no interest or principal.

Changes in market interest rates may adversely affect the value of Fixed Rate Notes.

We expect that the trading price of Fixed Rate Notes will depend on a variety of factors, including, without limitation, the interest rate environment. Each of these factors may be volatile, and may or may not be within our control. If interest rates, or expected future interest rates, rise during the term of the Fixed Rate Notes, the trading price of the Fixed Rate Notes will likely decrease. Because interest rates and interest rate expectations are influenced by a wide variety of factors, many of which are beyond our control, we cannot assure you that changes in interest rates or interest rate expectations will not adversely affect the trading price of the Fixed Rate Notes.

The credit ratings assigned to the Notes may not reflect all risks and may be lowered or withdrawn.

One or more independent credit rating agencies may assign credit ratings to an issue of Notes and/or the Program. The ratings may not reflect the potential impact of all risks related to structure, market, additional factors discussed above and other factors that may affect the value of the Notes and/or the Program. Furthermore, we cannot assure you that a given credit rating will remain in effect for any period of time or that such rating will not be lowered, suspended or withdrawn. A downgrade or potential downgrade in a rating may reduce the number of investors in the Notes and adversely affect the price and liquidity of the Notes. A credit rating is not a recommendation to buy, sell or hold securities and may be revised or withdrawn by the rating agency at any time.

The right to receive payments on the Notes is junior to certain tax and other liabilities preferred by law.

The Notes will be subordinated to certain liabilities preferred by law such as claims of the Government on account of taxes, certain liabilities owed to employees and certain liabilities incurred in the ordinary course of our business. In particular, in the event of bankruptcy, liquidation or winding up, our assets will be available to pay obligations on the Notes only after all liabilities that rank senior to these Notes have been paid. In the event of a bankruptcy, liquidation or winding up, there may not be sufficient assets remaining, after paying amounts relating to such proceedings, to pay amounts due on the Notes.

The book-entry registration system of the Notes may reduce the liquidity of any secondary market for the Notes and may limit the receipt of payments by the beneficial owners of the Notes.

Because transfers of interests in the global notes and securities to be issued in the offering can be effected only through book entries at DTC with respect to the global notes and securities to be issued in reliance on Rule 144A and only through book entries at Clearstream, Luxembourg or Euroclear in the case of the global notes and securities to be issued in reliance on Regulation S, for the accounts of their respective participants, the liquidity of any secondary market for global notes or securities may be reduced to the extent that some investors are unwilling to hold Notes in book-entry form in the name of DTC, Clearstream, Luxembourg or Euroclear. The ability to pledge interests in the global notes or securities may be limited due to the lack of a physical certificate. Beneficial owners of global notes or securities may, in certain cases, experience delay in the receipt of payments of principal and interest since such payments will be forwarded by the paying agent to DTC, Clearstream, Luxembourg or Euroclear, as applicable, who will then forward payment to their respective participants, who (if not themselves the beneficial owners) will thereafter forward payments to the beneficial owners of the interests in the global notes or securities. In the event of the insolvency of DTC, Clearstream, Luxembourg or Euroclear or any of their respective participants in whose name interests in the global notes or securities are recorded, the ability of beneficial owners to obtain timely or ultimate payment of principal and interest on global notes or securities may be impaired.

There are uncertainties in the enforcement of civil liabilities

All or a substantial portion of our assets and the assets of our directors and officers are located outside the United States. As a result, it may not be possible for investors to enforce against us or such persons in the United States, the federal securities laws of the United States, or to enforce judgments obtained in the United States courts predicated upon the civil liability provisions of the federal securities laws of the United States, including the Securities Act and the Exchange Act. We have been advised by Allen & Overy (Thailand) Co., Ltd., our Thai counsel, that Thailand is not a party to the Hague Convention on the Recognition and Enforcement of Foreign Judgments in Civil and Commercial Matters and it has no bilateral treaties with other countries for the reciprocal recognition and enforcement of court judgments. Moreover, there is no statutory basis in Thai law to apply the principle of comity to judgments from foreign courts.

Under Thai law, judgments entered by a United States court or any other non-Thai court, including actions under the civil liability provisions of the U.S. securities laws, are not automatically enforceable in Thailand. In order to pursue a claim against us, an investor would have to bring a separate action or claim in Thailand within the prescribed period of time to bring such actions under Thai law. While a non-Thai judgment could be introduced as evidence in a court proceeding in Thailand, a Thai court would be free to examine new issues arising in the case. Thai counsel has advised that in a court proceeding in Thailand, a Thai court would base its judgment on New York law, the governing law of the Notes and Indenture, provided that evidence satisfactory to the court as to the relevant provisions of New York law is provided to the court and such provisions are not contrary to Thai public order or good morals. Thus, to the extent that investors succeed in bringing legal actions against us outside Thailand, their available remedies and any recovery in any Thai proceeding may be limited. To the extent investors are entitled to any recovery in a currency other than Baht with respect to the Notes in any Thai proceedings, recovery might be converted to payments in Baht. See “*Risks Factors — Risks Relating to Thailand — Non-enforceability of non-Thai judgments may limit your ability to recover damages from us in Thai courts.*”

Holders of the Notes will rely on DTC, Euroclear and Clearstream, Luxembourg procedures

Notes issued under the Program will be represented on issue by one or more Global Security Certificates that may be deposited with a common depository for Euroclear and Clearstream, Luxembourg or may be deposited with a nominee for DTC (each as defined under “**Form of the Notes**”). Except in the circumstances described in each Global Security Certificate, investors will not be entitled to receive Notes in definitive form. Each of DTC, Euroclear and Clearstream, Luxembourg and their respective direct and indirect participants will maintain records of the beneficial interests in each Global Security Certificate held through it. While the Notes are represented by a Global Security Certificate, investors will be able to trade their beneficial interests only through the relevant clearing systems and their respective participants.

While the Notes are represented by Global Security Certificates, we will discharge our payment obligation under the Notes by making payments through the relevant clearing systems for distribution to their accountholders. A holder of a beneficial interest in a Global Security Certificate must rely on the procedures of the relevant clearing system and its participants to receive payments under the Notes. We have no responsibility or liability for the records relating to, or payments made in respect of, beneficial interests in any Global Security Certificate.

Holders of beneficial interests in a Global Security Certificate will not have a direct right to vote in respect of the Notes so represented. Instead, such holders will be permitted to act only to the extent that they are enabled by the relevant clearing system and its participants to appoint appropriate proxies.

Singapore Taxation

The Notes to be issued from time to time under the Program, during the period from the date of this Offering Memorandum to December 31, 2023 are intended to be “qualifying debt securities” for the purposes of the Income Tax Act, Chapter 134 of Singapore (“**ITA**”), subject to the fulfilment of certain conditions more particularly described in the section “Taxation — Singapore Taxation.”

However, there is no assurance that such Notes will continue to enjoy the tax concessions in connection therewith should the relevant tax laws be amended or revoked at any time.

Payments under the Notes may be subject to withholding tax under FATCA

Pursuant to certain provisions of the U.S. Internal Revenue Code of 1986, as amended, commonly known as FATCA, a “Foreign Financial Institution” (as defined by FATCA) may be required to withhold on certain payments it makes (“*foreign passthru payments*”) to persons that fail to meet certain certification, reporting or related requirements. The Issuers may be Foreign Financial Institutions for these purposes. A number of jurisdictions (including Thailand) have entered into, or have agreed in substance to Intergovernmental Agreements (“**IGAs**”) which modify the way in which FATCA applies to their jurisdictions. Under the provisions of IGAs as currently in effect, a foreign financial institution in an IGA jurisdiction would generally not be required to withhold under FATCA or an IGA with respect to payments that it makes. Certain aspects of the application of the FATCA provisions and IGAs to instruments such as the Notes, including whether withholding would ever be required pursuant to FATCA or an IGA with respect to payments on instruments such as the Notes, are uncertain and may be subject to change. Even if withholding would be required pursuant to FATCA or an IGA with respect to payments on instruments such as the Notes, such withholding would not apply prior to the second anniversary of the date on which final regulations defining the term “foreign passthru payments” are published in the U.S. Federal Register. Additionally, Notes issued on or prior to the date that is six months after the date on which final regulations defining “foreign passthru payments” are filed with the U.S. Federal Register generally would be “grandfathered” for purposes of FATCA withholding unless materially modified after such date. Holders should consult their own tax advisers regarding how these rules may apply to their investment in the Notes. In the event any withholding would be required pursuant to FATCA or an IGA with respect to payments on the Notes, no person will be required to pay additional amounts as a result of the withholding.

The Issuers and the Guarantor may be deemed a “covered fund” under the Volcker Rule, which could result in reduced interest in the Notes and the Guarantee from banking entities, and could potentially reduce the liquidity of the Notes and the Guarantee on the secondary market.

As the Issuers and the Guarantor intend to rely on the exclusion provided by Section 3(c)(7) of the Investment Company Act, the Issuers and the Guarantor may be deemed to fall within the definition of a “covered fund” for the purposes of the Volcker Rule. If any of the Issuers and the Guarantor is deemed to be a “covered fund” and the Notes and/or the Guarantee are determined to constitute “ownership interests” for purposes of the Volcker Rule, then a “banking entity” (as defined in the Volcker Rule) would generally be prohibited from acquiring or retaining the Notes or be only permitted to acquire or retain the Notes without having the benefits of the Guarantee, unless such “banking entity” could rely on an exclusion from the definition of “covered fund” or an exemption from the Volcker Rule’s covered fund-related prohibitions. These limitations could result in some “banking entities” being restricted in their ability to purchase or retain the Notes or to have the benefits of the Guarantee or prohibited from purchasing the Notes or having the benefits of the Guarantee in the absence of an applicable Volcker Rule exclusion or exemption, which, in turn, could reduce the liquidity of the Notes on the secondary market and negatively affect the market value of the Notes.

Investors that are “banking entities” should carefully review the Volcker Rule and conduct their own analysis, in consultation with their legal advisers, to determine whether the Treasury Center or the Company is a “covered fund” and whether the Notes and the Guarantee constitute “ownership interests” for the purposes of the Volcker Rule. Each investor is responsible for analyzing its own regulatory position as to the potential impact of the Volcker Rule, and none of the Issuers or the Guarantor makes any representation to any prospective investor or purchaser of the Notes regarding the treatment of the Issuers, the Guarantor, the Notes and the Guarantee under the Volcker Rule, or to such investor’s investment in the Notes and the Guarantee at any time in the future.

USE OF PROCEEDS

The net proceeds from the issue of any Tranche of Notes will be used for our general corporate purposes, including financing capital expenditures, working capital and on-lending to entities within the Group.

If, in respect of any particular issue, there is a particular identified use of proceeds, this will be stated in the applicable Pricing Supplement.

EXCHANGE RATE INFORMATION

Since 1997, the Bank of Thailand has maintained the value of the Baht through a managed float system, whereby the value of the Baht will be determined by market forces to reflect economic fundamentals. Under the managed float system, the Bank of Thailand intervenes in foreign exchange markets from time to time to achieve policy objectives and guard against excessive fluctuations.

In addition to government intervention in relation to the managed float system, in the past prior governments have intervened in the Thai economy and occasionally made significant changes in policy, including, among other things, foreign exchange control, policies concerning wage and price controls, capital controls and limits on imports, at times partially reversing such policies soon after the new policies were announced.

The following table sets forth, for the periods indicated, the means of the average buying (transfer) rates and the average selling rates published by the Bank of Thailand. The average buying (transfer) rates and average selling rates are calculated by averaging the foreign exchange counter rates quoted by commercial banks registered in Thailand. No representation is made that the Baht or U.S. dollar amounts set forth herein and referred to elsewhere in this Offering Memorandum could have been, or could be, converted into U.S. dollars or Baht, as the case may be, at the rates indicated, at any particular rates, or at all.

	Exchange Rates			
	Low	High	Average	Period End
			<i>(THB per US\$1)</i>	
2016	34.548	36.358	35.230	35.823
2017	32.511	35.923	33.763	32.552
2018	31.126	33.469	32.282	32.560
2019	29.967	32.257	31.040	29.667
2020				
January	30.140	31.163	30.454	31.163
February	30.923	31.865	31.323	31.560
March	31.333	32.970	32.107	32.798
April	32.325	32.978	32.618	32.353
May	31.845	32.446	32.042	31.845
June	30.838	31.661	31.151	30.868
July (through July 3, 2020)	31.021	31.124	31.077	31.124

Note:

- (1) Annual averages were calculated by using the average of the exchange rates on the last day of each month during the relevant year. Monthly averages or average for a period are calculated by using mean of the average of the daily rates during the relevant month or period.

CAPITALIZATION AND INDEBTEDNESS

The following table sets forth as of March 31, 2020, our capitalization and indebtedness, which has been derived from and should be read in conjunction with our unaudited interim financial statements for the three-month period ended March 31, 2020 included elsewhere in this Offering Memorandum.

	As of March 31, 2020	
	<i>THB</i>	<i>U.S.\$</i>
	<i>(in millions)</i>	
Short-term debt		
Bank overdrafts and short-term loans from financial institutions	28,485	871.1
Current portion of long-term loans	54,606	1,670.0
Current portion of lease liabilities	7,432	227.3
Long-term debt		
Long-term loans ⁽¹⁾	570,530	17,447.9
Lease liabilities	44,378	1,357.2
Total debt	705,431	21,573.5
Shareholders' equity		
Issued and fully paid-up share capital	28,563	873.5
Share premium	29,211	893.3
Deficit from the change in the ownership interests in subsidiaries	(36,251)	(1,108.6)
Retained earnings		
Appropriated		
Legal reserve	2,857	87.4
Self-insurance fund reserve	1,244	38.0
Unappropriated	835,394	25,548.0
Other components of shareholders' equity	5,751	175.9
Equity attributable to owners of the Company	866,769	26,507.5
Non-controlling interests of subsidiaries ⁽²⁾	410,194	12,544.5
Total shareholders' equity	1,276,963	39,052.0
Total capitalization⁽³⁾	1,891,871	57,857.1

Notes:

- (1) After March 31, 2020, members of the Group issued local currency senior notes in an aggregate amount of Baht 35,000 million and U.S. dollar senior notes in an aggregate amount of U.S.\$ 1,500 million. Members of the Group also incurred additional indebtedness in local currency loans in an aggregate amount of Baht 20,940 million.
- (2) On April 1, 2020, PTTGC declared interim dividends at the rate of Bath 1.00 Baht per share, totaling approximately Baht 4,487 million.
- (3) Total capitalization is equal to the sum of total long-term debt and total equity.

Apart from the above, there has been no material change in our capitalization and indebtedness since March 31, 2020.

SELECTED CONSOLIDATED FINANCIAL DATA

You should read the following selected consolidated financial data in conjunction with our financial statements, together with each of their related notes, “Presentation of Financial and Other Information,” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included elsewhere in this Offering Memorandum. Our financial statements have been prepared and presented in accordance with TFRS, which differs in certain respects from IFRS. See “Summary of Principal Differences Between TFRS and IFRS.”

The following tables set forth our selected consolidated financial information for the periods indicated therein.

Statement of Income Data

	For the year ended December 31,				For the three-month period ended March 31,		
	2017	2018 ⁽¹⁾	2019		2019	2020	
	THB	THB	THB	USD ⁽²⁾ (in millions)	THB	THB	USD ⁽²⁾
							(unaudited)
Sales and service income	1,995,722	2,336,155	2,219,739	67,884.0	550,874	483,567	14,788.4
Cost of sales and services	1,688,461	2,023,039	1,967,529	60,170.9	481,512	466,216	14,257.8
Gross profit	307,261	313,116	252,210	7,713.1	69,362	17,351	530.6
Other income	28,268	16,935	19,980	611.0	5,826	5,108	156.2
Gain (loss) on derivatives	—	—	—	—	(3,780)	8,470	259.0
Gain (loss) on foreign exchange rates	13,651	6,354	15,313	468.3	3,875	(5,075)	(155.2)
Profit before expenses	349,180	336,405	287,503	8,792.4	75,283	25,854	790.6
Selling and distribution expenses	24,625	26,653	27,574	843.2	6,869	7,345	224.6
Administrative expenses	75,974	55,184	65,002	1,987.9	11,963	13,562	414.7
Petroleum royalties and remuneration	13,877	16,435	17,883	546.9	4,144	4,024	123.0
Operating profit	234,704	238,133	177,044	5,414.4	52,307	923	28.3
Share of profit from investments in joint ventures ⁽³⁾	5,462	6,462	3,991	122.0	—	—	—
Share of profit from investments in associates ⁽³⁾	1,848	2,053	2,017	61.7	—	—	—
Share of profit from investments in joint ventures and associates	—	—	—	—	1,536	643	19.7
Profit before finance costs and income taxes	242,014	246,648	183,052	5,598.1	53,843	1,566	48.0
Finance costs	29,086	27,628	27,971	855.4	6,888	6,955	212.7
Profit (loss) before income taxes	212,928	219,020	155,081	4,742.7	46,955	(5,389)	(164.7)
Income taxes	28,307	53,647	32,989	1,008.9	7,371	8,618	263.6
Profit from continuing operations	184,621	165,373	122,092	3,733.8	39,584	—	—
Loss from discontinued operations, net of tax	(11)	—	—	—	—	—	—
Profit (loss) for the period	184,610	165,373	122,092	3,733.8	39,584	(14,007)	(428.3)
Profit attributable to							
Owners of the parent	135,180	119,647	92,951	2,842.6	29,312	(1,555)	(47.5)
Non-controlling interests of the subsidiaries	49,430	45,726	29,141	891.2	10,272	(12,452)	(380.8)
	184,610	165,373	122,092	3,733.8	39,584	(14,007)	(428.3)

Notes:

* As between certain periods, the adoption of new financial reporting standards effective in subsequent periods, including our initial adoption of the New Financial Instruments Standards and the New Leases Standard effective January 1, 2020, under the modified retrospective method, affects the direct comparability of those periods with prior periods, although we do not believe that comparability is materially affected to an extent that would not permit assessment of our period-over-period performance. See “Presentation of Financial and Other Information” for further details.

- (1) The statement of income data for the year ended December 31, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2018. The auditor’s report in connection with the audited financial statements for the year ended December 31, 2018 was dated February 21, 2019 and is included on page F-374. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.
- (2) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00
- (3) Combined into a single item for reporting periods starting from the three-months ended March 31, 2020.

Statement of Financial Position Data

	As of					
	January 1, 2018 ⁽¹⁾	December 31, 2018 ⁽²⁾	December 31, 2019		March 31, 2020	
	THB	THB	THB	USD ⁽³⁾	THB	USD ⁽³⁾
			(in millions)		(unaudited)	
Assets						
Current assets						
Cash and cash equivalents	166,189	292,184	292,542	8,946.5	254,345	7,778.4
Short-term investment in financial assets	—	—	—	—	73,587	2,250.4
Current investments	229,651	142,421	38,263	1,170.2	—	—
Trade accounts receivable	174,916	174,605	167,641	5,126.8	115,765	3,540.3
Other accounts receivable	50,603	78,827	49,612	1,517.2	49,212	1,505.0
Short-term lending loans	1,231	1,783	2,669	81.6	2,845	87.0
Inventories	121,872	125,280	117,747	3,601.0	88,125	2,695.0
Materials and supplies	28,942	28,871	34,379	1,051.4	34,844	1,065.6
Current derivative assets	1,998	5,098	3,687	112.7	17,594	538.0
Other current financial assets	—	—	—	—	5,763	176.2
Other current assets	6,768	7,894	10,559	322.9	5,287	161.7
Total current assets	782,170	856,963	717,099	21,930.3	647,367	19,797.6
Non-current assets						
Other long-term investments in financial assets	—	—	—	—	22,964	702.3
Available-for-sale investments	17,602	10,876	6,687	204.5	—	—
Investments in joint ventures	37,937	41,317	49,513	1,514.2	49,161	1,503.4
Investments in associates	21,980	24,368	25,670	785.0	25,592	782.7
Other long-term investments	27,669	26,971	17,932	548.4	—	—
Long-term lending loans	19,079	13,863	12,475	381.5	12,439	380.4
Investment properties	7,211	6,583	7,987	244.3	8,102	247.8
Property, plant and equipment	1,082,416	1,120,513	1,294,979	39,603.0	1,315,739	40,237.9
Right-of-use assets	—	—	—	—	70,404	2,153.1
Goodwill	51,695	53,896	111,933	3,423.1	117,532	3,594.4
Other intangible assets	32,108	34,200	79,968	2,445.6	68,751	2,102.5
Exploration and evaluation assets	100,902	100,360	80,268	2,454.8	87,594	2,678.8
Deferred tax assets	15,101	28,499	47,611	1,456.0	50,612	1,547.8
Non-current derivative assets	3,734	2,080	3,811	116.5	1,077	32.9
Other non-current financial assets	—	—	—	—	7,072	216.3
Other non-current assets	30,925	33,193	28,506	871.8	15,259	466.7
Total non-current assets	1,448,359	1,496,719	1,767,340	54,048.7	1,852,298	56,647.0
Total assets	2,230,529	2,353,682	2,484,439	75,979.0	2,499,665	76,444.6
Liabilities and Equity						
Current liabilities						
Bank overdrafts and short-term loans from financial institutions	18,127	25,562	44,441	1,359.1	28,485	871.1
Trade accounts payable	160,301	160,323	158,302	4,841.2	104,231	3,187.6
Other accounts payable	72,995	98,429	80,764	2,469.9	101,123	3,092.5
Current portion of long-term loans	66,434	63,109	51,782	1,583.6	54,606	1,670.0
Current portion of lease liabilities	—	—	—	—	7,432	227.3
Income tax payable	24,095	46,488	30,137	921.7	39,057	1,194.5
Short-term provision for decommissioning costs	—	1,090	1,289	39.4	1,388	42.4
Current derivative liabilities	4,955	2,546	2,522	77.1	4,852	148.4
Other current financial liabilities	—	—	—	—	1,550	47.4
Other current liabilities	8,958	10,802	10,548	322.6	8,225	251.5
Total current liabilities	355,865	408,349	379,785	11,614.6	350,949	10,732.7

	As of					
	January 1, 2018 ⁽¹⁾	December 31, 2018 ⁽²⁾	December 31, 2019		March 31, 2020	
	THB	THB	THB	USD ⁽³⁾	THB	USD ⁽³⁾
	(in millions)				(unaudited)	
Non-current liabilities						
Long-term loans	444,920	454,964	562,746	17,209.9	570,530	17,447.9
Lease liabilities	—	—	—	—	44,378	1,357.2
Deferred tax liabilities	33,438	30,528	56,674	1,733.2	58,600	1,792.1
Provisions for employee benefit	23,313	23,921	32,590	996.7	33,232	1,016.3
Long-term provision for decommissioning costs	74,866	73,632	90,600	2,770.7	99,710	3,049.3
Deposits on LPG cylinders	10,519	11,083	11,657	356.5	11,759	359.6
Non-current derivative liabilities	2,104	669	2,702	82.6	5,552	169.8
Other non-current financial liabilities	—	—	—	—	21,016	642.7
Other non-current liabilities	37,844	32,971	46,645	1,426.5	26,976	825.0
Total non-current liabilities	627,004	627,768	803,614	24,576.1	871,753	26,659.9
Total liabilities	982,869	1,036,117	1,183,399	36,190.7	1,222,702	37,392.6
Equity						
Share capital						
Authorized share capital 28,562,996,250 ordinary shares of Baht 1 each ⁽⁴⁾	28,572	28,563	28,563	873.5	28,563	873.5
Issued and paid-up share capital 28,562,996,250 ordinary shares of Baht 1 each ⁽⁵⁾	28,563	28,563	28,563	873.5	28,563	873.5
Premium on ordinary shares	29,211	29,211	29,211	893.3	29,211	893.3
Deficit from the change in the ownership interests in subsidiaries	(24,312)	(28,484)	(36,251)	(1,108.6)	(36,251)	(1,108.6)
Retained earnings						
Appropriated						
Legal reserve	2,857	2,857	2,857	87.4	2,857	87.4
Reserve for self-insurance fund	1,200	1,223	1,244	38.0	1,244	38.0
Unappropriated	775,209	837,422	869,016	26,576.2	835,394	25,548.0
Other components of equity	5,219	3,533	(16,036)	(490.4)	5,751	175.9
Total equity attributable to owners of the parent	817,947	874,325	878,604	26,869.4	866,769	26,507.5
Non-controlling interests	429,713	443,240	422,436	12,918.9	410,194	12,544.5
Total equity	1,247,660	1,317,565	1,301,040	39,788.3	1,276,963	39,052.0
Total liabilities and equity	2,230,529	2,353,682	2,484,439	75,979.0	2,499,665	76,444.6

Notes:

* As between certain periods, the adoption of new financial reporting standards effective in subsequent periods, including our initial adoption of the New Financial Instruments Standards and the New Lease Standard effective January 1, 2020, under the modified retrospective method, affects the direct comparability of those periods with prior periods, although we do not believe that comparability is materially affected to an extent that would not permit assessment of our period-over-period performance. See “Presentation of Financial and Other Information” for further details.

(1) The financial position data as of January 1, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2017. The auditor’s report in connection with the audited financial statements for the year ended December 31, 2017 was dated February 20, 2018 and is included on page F-561. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.

(2) The financial position data as of December 31, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2018. The auditor’s report in connection with the audited financial statements for the year ended December 31, 2018 was dated February 21, 2019 and is included on page F-374. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.

- (3) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00.
- (4) 2,857,245,725 ordinary shares of Baht 10 each as of January 1, 2018.
- (5) 2,856,299,625 ordinary shares of Baht 10 each as of January 1, 2018.

Statement of Cash Flows Data

	For the year ended December 31,				For the three-month period ended March 31,		
	2017	2018 ⁽¹⁾	2019		2019	2020	
	THB	THB	THB	USD ⁽²⁾ (in millions)	THB	THB	USD ⁽²⁾
Net cash provided by operating activities	306,100	269,405	265,107	8,107.4	69,937	61,243	1,872.9
Net cash used in investing activities	(180,525)	(35,752)	(188,218)	(5,756.1)	(77,150)	(69,218)	(2,116.9)
Net cash provided by (used in) financing activities.	(162,498)	(111,468)	(70,226)	(2,147.6)	57,080	(27,057)	(827.4)

Notes:

- (1) The statement of cash flows data for the year ended December 31, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2018. The auditor's report in connection with the audited financial statements for the year ended December 31, 2018 was dated February 21, 2019 and is included on page F-374. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.
- (2) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis are based upon the consolidated financial statements of the Group and should be read in conjunction with the selected consolidated financial data presented in "Selected Consolidated Financial Data" and the audited and unaudited consolidated financial statements of the Group and the notes thereto included elsewhere in this Offering Memorandum. Investors are advised that any evaluation of the Group's business should be made with reference to the information contained in this Offering Memorandum under the heading "Risk Factors." The financial statements presented in this Offering Memorandum are presented in accordance with TFRS, which differs in certain material respects from IFRS. For a description of certain differences between TFRS and IFRS, see "Summary of Principal Differences Between TFRS and IFRS."

Overview

We are Thailand's fully integrated multinational petroleum and petrochemical company. Our operations cover the energy industry's entire business value chain, from upstream activities such as oil and gas exploration and production, to midstream activities such as gas distribution and LNG related business, to downstream activities such as petrochemical, refining and power generation. We conduct our business directly, through flagship subsidiaries and through associates and joint ventures. Our company and several of our flagship subsidiaries are listed on the SET. We derive the majority of our sales and service income from Thailand but have operations in over 35 other countries.

Our recent results of operations have been negatively affected by the COVID-19 pandemic, the measures put in place to slow its spread, the sharp decrease in oil prices and the depreciation of the Thai Baht in relation to the U.S. dollar. For a discussion of this impact and the measures that we have taken to counteract its effect, including reductions in our 2020 investment budget and revisions to our expected production volumes and utilization of our refineries and petrochemical plants, see "*Summary — Recent Developments.*" We believe that we have adequate liquidity from ample cash generated from our operations supported by credit availability from relationship financial institutions and ready access to domestic and international capital markets. Our liquidity enables us to adjust spending and withstand the environment of low crude prices and slow demand.

Factors Affecting Our Results of Operations

Certain factors affecting our business and results of operations are described below. As a fully integrated energy company, we have a diversified revenue base that, in any period, may be influenced by changing economic, regulatory and political environments globally, in Thailand or in the various other countries in which we operate. The primary factors affecting our results of operations include a number of factors outside our control, including general economic conditions and energy demand in Thailand and globally, changes in the prices of natural gas, crude oil, coal and refined petroleum and petrochemical products, Government intervention in our pricing decisions and fluctuations in exchange rates. Our results have also been, and will continue to be, affected by our investment policies, the terms of our long-term natural gas purchase agreements and natural gas sales agreements and the performance of our associated companies. For a further description of these factors and certain other factors affecting our financial performance, see "*Risk Factors.*"

Prices of Natural Gas, Crude Oil and Refined Petroleum and Petrochemical Products

Our operating results are impacted by the international market prices for natural gas, crude oil and refined petroleum and petrochemical products. Higher prices for natural gas and crude oil generally have a positive effect on our operating profit in our upstream business, as our exploration and production business benefits from higher prices of the oil and gas that we produce and deliver. Lower prices generally have a corresponding negative effect in our upstream business. In our downstream segment, changes in the price of natural gas and crude oil affect the world

market prices for certain petrochemical and refinery feedstocks. The effect of changes in natural gas and crude oil prices on our refined petroleum products business depends on the rate and extent to which the prices of such products adjust to reflect those changes.

We use a substantial portion of the natural gas and crude oil that we produce via PTTEP as feedstock in petrochemicals business. We purchase substantially all of the natural gas produced in Thailand, as well as gas produced offshore in Myanmar, through long-term take-or-pay gas purchase agreements with our consolidated entities as well as various other natural gas producers. We use our international trading business segment to supply our additional crude oil and condensate requirements. See “*Business — Business Activities*” for detailed descriptions of our production volumes, sales/purchase arrangements (intra-Group and with external counterparties) and international trading activities.

Natural gas. The weighted average cost of natural gas (pooled gas price from the Gulf of Thailand, Myanmar and LNG import) per MMBtu for each of the years ended December 31, 2017, 2018 and 2019 and the three-month periods ended March 31, 2019 and 2020 was U.S.\$5.68, U.S.\$6.61, U.S.\$7.22, U.S.\$7.28 and U.S.\$7.26. By comparison, the average price per Bbl of certain high-sulfur fuel oils for each of the years ended December 31, 2017, 2018 and 2019 and the three-month periods ended March 31, 2019 and 2020 was U.S.\$50.9, U.S.\$66.8, U.S.\$58.7, U.S.\$64.1 and U.S.\$43.4 respectively.

Crude oil. In 2019 and in the first three months of 2020, we imported approximately 81% and 82% of Thailand’s total crude oil requirement, respectively, from major crude oil producers through our international trading business. The import prices are based on published reference commodity prices, which generally are subject to international commodity market conditions and are sensitive to factors outside our control. The imported crude oil is sold to our associated refineries at the purchase price plus an industry standard margin. We also purchase crude oil and condensate from domestic sources through our international trading business at the weighted average of a basket of international reference prices. We then resell domestic crude oil and condensate through our international trading business to companies in our petrochemicals and refining segment at the purchase price plus an industry standard margin. By comparison, the weighted average selling price per Bbl of Dubai Crude Oil for each of the years ended December 31, 2017, 2018 and 2019 and the three-month periods ended March 31, 2019 and 2020 was U.S.\$53.14, U.S.\$69.65, U.S.\$63.51, U.S.\$63.41 and U.S.\$50.41, respectively. In 2019, the price of Dubai Crude Oil price averaged US\$63.53 per barrel, representing an 8% decrease from the previous year’s average of US\$69.42 per barrel. This was primarily due to prolonged trade tensions between the U.S. and China which resulted in a global economic slowdown and lower demands for crude oil. As at March 31, 2020, the price of Dubai Crude Oil was U.S.\$20.24 per barrel. (Source: Platt).

Petroleum. The petroleum refining industry has experienced steady growth in demand for refinery products. However, cyclical margins due to periodic over-capacity and supply shortages in various markets persist along with seasonal fluctuations in the consumption of particular types of refinery products. For example, we see higher gasoline and diesel consumption during the summer season, when the use of vehicles is higher than the rest of the year and higher home heating oil consumption during the winter months. Global and domestic supply and demand conditions influence the price of crude oil, which in turn influences the prices of our refinery products.

Fluctuations in the price of crude oil and refined petroleum products. The difference between the cost of our crude oil feedstock and the prevailing global prices for refined petroleum products is the primary factor that impacts our gross refining margins. Further, while crude oil costs in general are a function of supply and demand, there are many types and grades of crude oil and their relative prices vary depending on various factors, including physical properties and availability. Therefore, even if the volume of crude oil we have purchased remains constant, our costs of production may vary significantly from time to time. The prices for refined petroleum products are also subject to frequent and significant fluctuations. As a result, our revenue from refined petroleum products will vary over time even if our sale volume remains constant, resulting in corresponding variations in our gross refining margins. Prevailing global prices for crude oil may fluctuate in the same or different direction as the prevailing global prices for refined petroleum products.

Petrochemicals. The historical operating results of our petrochemical interests reflect in part the volatile and cyclical nature of the petrochemical industry. Historically, the petrochemical industry has experienced alternating periods of tight supply, resulting in increased prices and profit margins, followed by periods of substantial capacity addition, resulting in oversupply and declining prices and profit margins. Overall, petrochemical prices in 2019 were considerably lower from their high price level of 2018 after the support from China's recycled plastic import ban faded as a result of reduced trade tensions between the U.S. and China. Petrochemical prices for olefins and aromatics decreased further in the first quarter of 2020 as a result of markedly lower demand, especially from China, stemming from the COVID-19 pandemic. The decline in demand led to higher inventory levels across the petrochemical supply chain in China, notwithstanding logistic restrictions such as shutdowns and reduced production rates at refineries and petrochemical plants.

We expect average selling prices for 2020 to decline or remain low by historical standards, in line with global crude oil prices, with our average selling prices for liquid products being more volatile than our average selling prices for natural gas. As a result, a decline in average selling prices may contribute to lower net sales and profit for the period in our upstream operating segment.

Size and Timing of our Investment Plans

Our five-year committed capital expenditures plan, as approved by our board of directors in January 2020, contemplates a total of approximately Baht 180,814 million (U.S.\$5,529.6 million) in capital expenditures for projects by PTT and its wholly-owned subsidiaries, and a total of approximately Baht 865,000 million (U.S.\$26,453.4 million) in capital expenditures for projects by the Group as a whole between 2020 and 2024. As part of our response to the Covid-19 pandemic and ongoing low oil prices, we recently reduced our investment budget for 2020 by 22.23% from Baht 69,310 million (U.S.\$2,120 million) to Baht 53,901 million (U.S.\$1,648 million). The reduction was primarily in relation to planned but yet-to-commence projects of our wholly owned subsidiaries and gas and technology and engineering business segments. We currently expect that a portion of the reduced 2020 spending will be delayed to later years in the current five-year committed capital expenditures plan.

As a general matter, the timing of our capital expenditures and of completion of the projects that we are investing in affect, in the short term, levels of cash, cash flows from investing activities, cash flows from financing activities and our leverage and liquidity profiles. In the longer term, our investment plans are expected to grow and diversify our revenue streams and increase the efficiency and profitability of our operations. We expect that our capital expenditures, and in particular their overall size and timing, will continue to have a significant effect on our financial condition and results of operations. See “*Summary — Recent Developments — Global oil supply and the COVID-19 pandemic*” and “*Risk Factors — Risk Relating to our Business — The volatility of prices for natural gas, crude oil, condensate and refined petroleum products and the cyclical nature of the petroleum industry affect our results of operations.*”

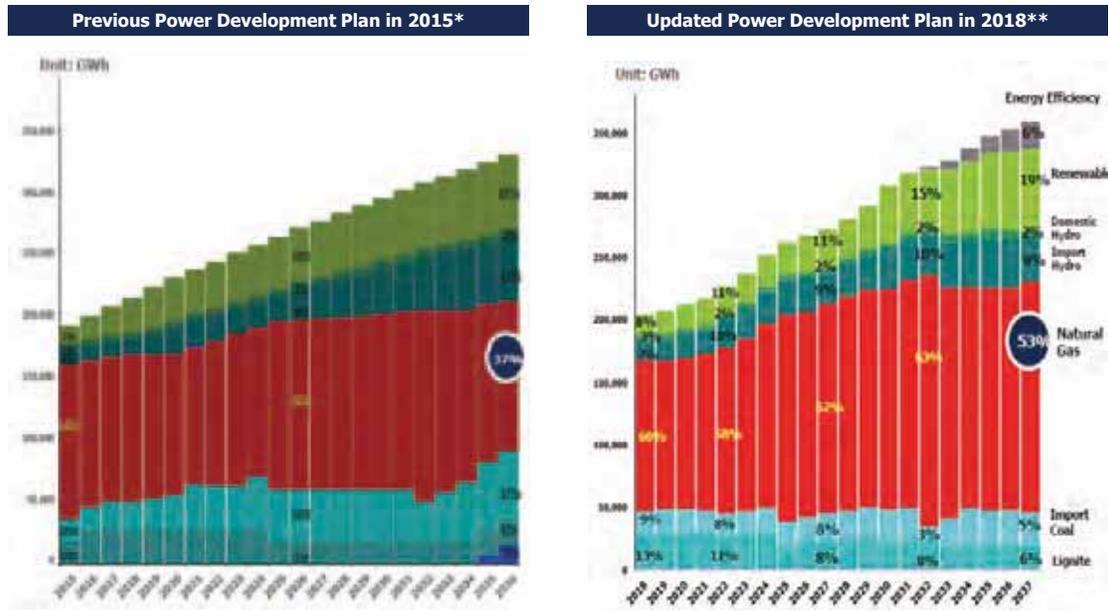
Energy Sources and Outlook in Thailand

The 2018 PDP was approved by the National Energy Policy Council on January 24, 2019 and by the Cabinet on April 30, 2020. The 2018 PDP calls for, among other things, the construction of additional power plants, promotion of low-cost power production, maintaining the level of retail pricing for electricity, stimulating renewable electricity generation and transitioning to a smart grid system in Thailand.

The 2018 PDP estimates that, by 2027, Thailand's reliable capacity will be lower than its power demand, and calls for the construction of 56,431 megawatts of new power generation capacity, including 25,310 megawatts to replace capacity from power plants expected to be decommissioned by 2037. The 2018 PDP proposes to reduce generation from coal-fired power plants, in accordance with Thailand's commitments under the Paris Agreement and as a matter of public policy. Specifically, the 2018 PDP sets a goal that, by 2037, 64% of the country's power generation will be sourced from fossil fuels (53% from natural gas and 11% from coal/lignite), with the balance being provided by non-fossil-fuel sources (11% from hydropower, 19% from other renewables and

6% from energy efficiency savings from the Government’s plans aimed at reducing electricity consumption and promoting green energy. The Government’s previous power development plan, from 2015, estimated that natural gas would make up 37% of total Thai energy by 2036.

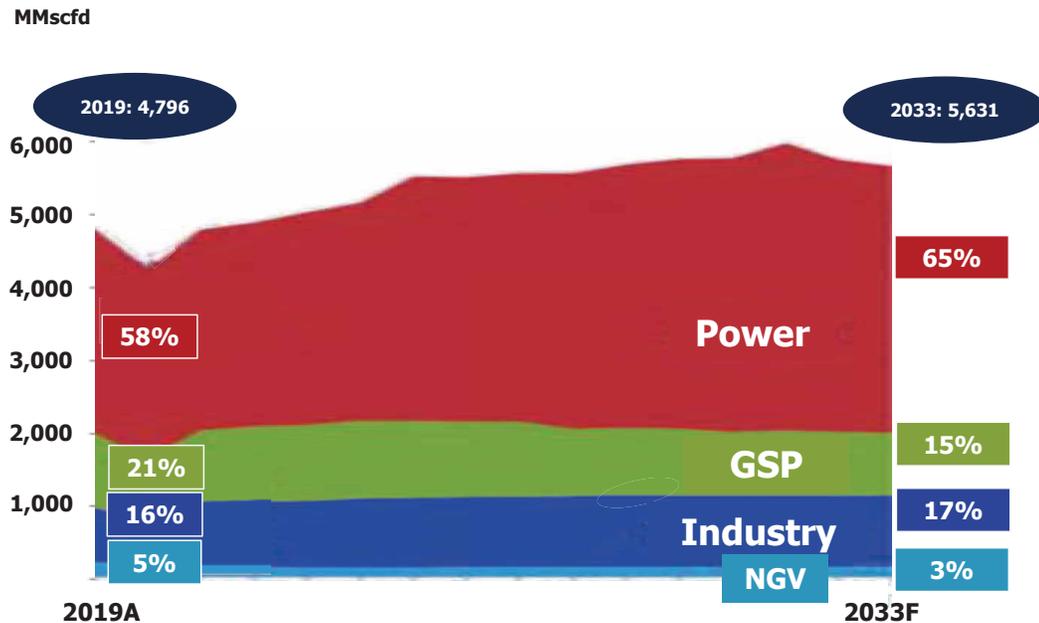
The following diagram depicts Thailand’s sources of energy forecasts in the 2015 Power Development Plan and the 2018 PDP.



Source: Ministry of Energy

The following diagram depicts Thailand’s actual gas demand in 2019 and estimated gas demand in 2033, based on our internal forecasts. Our internal forecasts are prepared based on judgments, estimates and assumptions that, when considered on an overall basis, we consider reasonable in light of current circumstances. We provide no assurance, however, that these forecasts will be realized. See “*Forward-Looking Statements.*” The primary assumptions underlying our forecast include continued GDP growth in Thailand at an annual growth rate of 3.8% through 2033, gas prices within historical or current consensus ranges, and the realization of 2018 PDP in its current form (except that we assume that our GSPs will maintain production over the long-term as the demand will continue to exist, whereas, for purposes solely of 2018 PDP, the Government assumes reduced demand from our GSPs after the expiry of certain gas concessions).

Thailand gas demand forecast



The Government's energy policies have a bearing on our positioning and business strategies, and therefore our financial position and results of operations. While natural gas will continue to be Thailand's predominant source of power production under the 2018 PDP, the country is continuing its transition toward increased use renewable energy sources, in particular solar energy. We expect this trend will increase as natural gas reserves in Thailand and neighboring countries are depleted and not replaced. We have started to adapt our business and our strategies for, over medium to long term, a lower-carbon energy mix in Thailand. That adaptation, however, will increase our participation in energy-related activities that are relatively new or, relative to our current operations, of limited scale for us. As the energy mix in Thailand changes and our business evolves to adapt, our sources of revenue and our areas of focus and investment will gradually change as well.

Our Capital Structure

A number of our subsidiaries are listed on the SET and have substantial minority/non-controlling interests. These subsidiaries include PTTEP, which is the sole entity within the Group that is engaged in the exploration and production business, PTTGC, Thairoil and IRPC, which are the principal consolidated entities in our petrochemicals and refining business, and GPSC, which is the principal consolidated entity in our power business. Moreover, we operate our oil and retail business through PTTOR, which we currently wholly-own but which is pursuing an IPO on the SET. See "*Business — Oil and Retail Business — Oil Business.*"

We consolidate entities as subsidiaries if we have direct or indirect control over them. Control exists when the parent company has the power over the subsidiaries so as to obtain variable returns from the involvement with the subsidiaries and has the ability to affect those returns through the power over the subsidiaries. Where we have less than half of the voting rights in a subsidiary, as is the case in relation to our principal subsidiaries engaged in the petrochemicals and refining business, we are required to reconsider the related facts and circumstances from time to time in order to determine whether we continue to have control over such subsidiaries.

Aside from the classification and reporting basis of our non-wholly owned subsidiaries, the existence of substantial minority/non-controlling interests can have consequences on our operations and financing. For example, having listed equity securities at various levels of its capital structure allows the Group to raise and allocate capital more efficiently and to benefit from more robust reporting and outside ownership and monitoring. On the other hand, accessing cash held at or below our listed subsidiaries may be subject to connected-person transaction rules or other requirements of the SET. If dividends are required to upstream cash, to the extent they are required to be paid pro rata to all shareholders of our non-wholly owned subsidiaries, the dividends would result in a reduction of cash held by the Group on a consolidated basis. In 2019, 26.9% of the Baht 82,092 million (U.S.\$2,510.5 million) in dividends paid on a consolidated basis were to non-Group shareholders of our subsidiaries.

Our financial statements included elsewhere in this Offering Circular include consolidated and standalone financial statements of PTT. Moreover, our consolidated statement of income and consolidated statement of comprehensive income separately report profit and loss attributable to equity holders of PTT and profit and loss attributable to non-controlling interests of our subsidiaries. Our consolidated statement of changes in shareholders' equity shows equity movements and dividends at the level of our subsidiaries. Prospective investors should study these items to gain a better understanding of our financial condition and results of operations.

Exchange Rates

Substantially all of our revenues and costs, although denominated in Baht, are directly or indirectly linked to or affected by the U.S. dollar or other foreign currencies. Depreciation in the value of the Baht tends to have a beneficial effect on our revenues and a detrimental effect on our costs in our reported results of operations (that is, in Baht terms). Adverse economic conditions in Thailand incidental to the depreciation of the value of the Baht could increase energy prices in Thailand and reduce overall demand for our products and our customers' ability to pay for them. In addition, any significant future depreciation in the value of the Baht against the U.S. dollar could adversely affect the financial condition. As a result, significant depreciation of the Baht against the U.S. dollar could have an adverse effect on our revenues and results of operations.

As of March 31, 2020, approximately 34.5% of our total debt of Baht 705,431 million were denominated in foreign currencies, and we expect that a substantial portion of our capital expenditures will be financed in foreign currencies. Certain of our gas purchase agreements provide for an adjustment if the Baht/U.S. dollar exchange rate has fluctuated by more than 5% in a given month. Such price adjustments operate as a partial hedging mechanism against fluctuations in the Baht/U.S. dollar exchange rate and have the effect of increasing or decreasing our expenses measured in Baht. We typically enter into cross-currency hedges to protect ourselves from fluctuations in exchange rates. Our hedging activities are designed to reduce, but do not eliminate, the effects of foreign currency fluctuations. Factors that could affect the effectiveness of our hedging activities include accuracy of revenue forecasts, volatility of currency markets and the availability of hedging instruments. Any uncovered depreciation in the Baht against the U.S. dollar would increase our financing costs or expansion costs, in Baht terms.

Critical Accounting Policies

We prepare our consolidated financial statements in accordance with TFRS, which requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, income and expenses. We base our estimates on historical experience and various other assumptions that are believed to be reasonable under the circumstances. Actual results could differ from our estimates. Estimates and underlying assumptions used in the preparation of financial statements are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

Information about significant assumptions and the sources of contingent estimates that might impact on the carrying amounts of assets and liabilities presented in the financial statements are as follows:

Provisions

We recognize a provision in our statements of financial position if, as a result of a past event, we have a present obligation that can be estimated reliably and it is probable that an outflow of economic benefits will be required to settle the obligation.

We record provisions for decommissioning costs when it is highly probable that a commitment will arise as a result of past circumstances and the amount can be estimated reliably. We recognize the provisions for decommissioning costs based on estimated amount of decommissioning of completed construction that is ready for its intended use. These costs are included as part of assets and are amortized using the units of production method based on estimated proved reserves and the straight-line method over the estimated useful lives of the assets. The provision for decommissioning costs is determined based on reviews and estimates by our engineers together with the management's judgment.

Provisions depend on various current circumstances such as laws and regulations, technologies and market prices. Therefore, the actual result is likely to be different from estimates and assumptions.

Income Tax

We are responsible for the payment of tax in various countries. When income tax payable is estimated, we use significant judgment due to the numerous transactions and calculations arising from our operations.

We recognize income tax payable based on estimated incremental tax payments. The difference between the actual tax paid and the estimate will affect income tax and deferred tax in the period the difference occurs.

A deferred tax asset will be recognized when it is highly probable that we will have sufficient net income against which to utilize the temporary difference. Assumptions related to future taxable income are uncertain and may change affecting the recognition of deferred tax assets.

Estimates of Petroleum Reserves

Petroleum reserves are of fundamental importance when assessing investments in various exploration projects and petroleum production businesses, including impairment testing. Changes in proved reserves will affect the present value of net cash flows and depreciation expenses which are calculated using the unit of production method.

The proved reserves are the volume of commercial petroleum production as of a certain date with a high probability of achievement under current economic conditions and production methods, as well as government's rules and regulations. The proved reserves will be checked and assessed annually by the Group's geologists and reservoir engineers.

Exploration Costs

The petroleum exploration and production business capitalizes drilling costs as assets. Drilling costs will be amortized as expenses in profit or loss, except where there is (1) a discovery of proved reserves, or (2) a discovery of commercially adequate reserves whilst having future exploration and assessment plans. The decision to amortize drilling petroleum costs recorded as assets should be made using the assumptions under current circumstances. In case those assumptions change in subsequent accounting periods, the petroleum drilling costs that are capitalized as assets will be written off as expenses in that accounting period.

Impairment of Assets

We consider recording an allowance for impairment of assets when an event or a circumstance indicates that the carrying amount of an asset is higher than its recoverable amount, which is the higher of the anticipated discounted cash flows from the continuing use of the asset or the fair value of the asset less any costs of disposal. As a result, the carrying amount of an asset is written

down immediately to its recoverable amount. The decrease is recorded in profit or loss. Thus, the loss on impairment of assets excluding goodwill recognized in the prior period will be reversed if the estimates for indicated recoverable amount changes.

Description of our Statement of Income

Sales and Service Income

The nature of our sales and service income varies by business segment. Sales and services figures include sales to third parties and to related parties, but not sales to entities within the Group.

Upstream Business Group

Our petroleum exploration and production business, through PTTEP, derives sales and services income from the sale of natural gas, crude oil and condensate products to domestic and international markets. It also includes revenue from certain pipeline transportation assets outside of Thailand.

Our gas business derives sales and services income from the sale of natural gas and all natural gas products, services tariff related to natural gas sales, and revenue from pipeline transportation in Thailand.

Our coal business derives sales and services income from the sale of coal that we produce.

Downstream Petroleum Business Group

Our oil business derives sales and services income from the sale of petroleum products such as fuel oil, diesel, gasoline, aviation fuel, LPG, lubricating oils and asphalt through retail, wholesale and export channels.

Our international trading business derives sales and services income from the procurement, import, export and international trading of crude oil, condensate, LNG, LPG, petroleum and petrochemical products, solvents and chemicals, including services income from chartering.

Our petrochemical and refining business derives sales and services income from the sale of a wide range of petrochemical products, including both olefins and aromatics sales. The sales of PTTGC, Thairoil and IRPC are consolidated in our results of operations, notwithstanding our ownership of less than half the voting shares of these entities, because we directly or indirectly control these entities.

Technology and Engineering Group/Others Business Group

Our technology and engineering group derives sales and services income from the production and distribution of electricity, steam, industrial water, and public utilities.

The remaining portion of our sales and services is *de minimis* and derived from our other businesses that do not constitute a separately reportable segment.

Cost of Sales

Our cost of sales comprises the purchase price for natural gas, production expenses, the cost of imported crude oil and the production cost of coal, petrochemical and petroleum products. Cost of sales includes depreciation and amortization expense primarily related to our plant and equipment.

Other Income

Other income primarily consists of transportation income, which is income from transporting products on barges. It also includes interest income, gain/losses on disposal of assets and investments, and gain/losses on derivatives, among other items.

Selling and Distribution Expenses; Administrative expenses

Selling and distribution expenses administrative expenses include, among other items, changes to inventories, personnel expenses, and depreciation and amortization.

Petroleum Royalties and Remuneration

Petroleum royalties and remuneration comprises the payments made to the Government under PTTEP's petroleum licenses and royalties made by our coal business to the relevant jurisdiction.

Share of Income from Investments in Joint Ventures and Associates

Our share of income from investments in joint ventures and associates comprises our interest in such entities under the equity method, including any gains or losses on foreign exchange or impairment losses.

Finance Costs

Our finance costs comprise interest expense for our long term and short term debt, including finance leases, and other fees related to financing activities.

Income Taxes

Income taxes comprises, among other items, petroleum income tax in Thailand, corporate income tax in Thailand and overseas, including in the MTJDA, a statutory body established under the laws of Malaysia and Thailand to regulate on behalf of the two governments certain oil and gas fields in the overlapping continental shelf area in the Gulf of Thailand.

Results of Operations

Performance by Operating Segments

We assess our performance and allocate resources according to business groups, which are based on types of products and services and contain our various operating segments. As a general policy, transactions between the entities engaged in our various operating segments are conducted on an arm's length, market-pricing basis. For a description of the business and operations of each of our operating segments, see "Business — Operating Segments."

The following table sets forth our consolidated sales and services revenue for each of the periods indicated, in each case excluding intra-Group sales, which represent a substantial amount for certain of our operating segments, along with a breakdown of each operating segment's contribution by value and as a percentage of the corresponding consolidated amounts.

	Year ended December 31,						Three months ended March 31,					
	2017		2018		2019		2019		2020			
	THB	%	THB	%	THB	USD ⁽¹⁾	%	THB	%	THB	USD ⁽¹⁾	%
	(in millions, except for percentages)											
	(unaudited)											
Sales and services revenue												
Upstream petroleum and natural gas												
Petroleum exploration and production	20,882	1.0%	24,849	1.1%	36,330	1,111.0	1.6%	5,839	1.1%	11,205	342.7	2.3%
Natural gas	316,730	15.9%	346,496	14.8%	349,411	10,685.7	15.7%	90,945	16.5%	80,958	2,475.9	16.7%
Coal	19,250	1.0%	20,527	0.9%	15,078	461.1	0.7%	4,216	0.8%	3,320	101.5	0.7%
Total	356,862	17.9%	391,872	16.8%	400,819	12,257.8	18.0%	101,000	18.4%	95,483	2,920.1	19.7%
Downstream petroleum												
Oil	539,952	27.0%	594,808	25.5%	575,777	17,608.4	25.9%	145,140	26.3%	129,466	3,959.3	26.8%
International trading	500,248	25.1%	661,512	28.3%	596,180	18,232.4	26.9%	141,503	25.7%	119,741	3,661.9	24.8%
Petrochemicals and refining	588,597	29.5%	673,932	28.8%	594,596	18,183.9	26.8%	157,136	28.5%	123,963	3,791.0	25.6%
Total	1,628,797	81.6%	1,930,252	82.6%	1,766,553	54,024.7	79.6%	443,779	80.5%	373,170	11,412.2	77.2%
Technology and engineering ⁽²⁾	—	—	13,896	0.6%	52,174	1,595.6	2.4%	6,062	1.1%	14,866	454.6	3.1%
Others	10,063	0.5%	135	—	193	5.9	—	33	—	48	1.5	0.0%
Total	1,995,722	100.0%	2,336,155	100.0%	2,219,739	67,884.0	100.0%	550,874	100.0%	483,567	14,788.4	100.0%

Notes:

- (1) U.S. dollar translations are calculated using an exchange rate of THB32.699 to U.S.\$1.00 solely for the convenience of the reader. See "Exchange Rate Information."
- (2) We detached the technology and engineering operating segment from the others segment and reclassified and adjusted our reporting for the period beginning January 1, 2018 and subsequent periods.

The following table sets forth EBITDA by operating segment by value, prior to elimination of intra-Group transactions, and as a percentage of total consolidated EBITDA for each of the periods indicated. EBITDA is not required by, or presented in accordance with, TFRS or other generally accepted accounting principles and is not a substitute for analysis of our results of operations under TFRS as discussed elsewhere in this Offering Memorandum and set forth in our financial statements. You should also be aware that EBITDA, as we define and present it, includes adjustments for items other than interest, taxes, depreciation and amortization and may not be comparable to EBITDA or other similarly titled measures of other companies. See “*Presentation of Financial and Other Information.*”

	Year ended December 31,						Three months ended March 31,					
	2017		2018		2019		2019		2020			
	THB	%	THB	%	THB	USD ⁽¹⁾	%	THB	%	THB	USD ⁽¹⁾	%
	<i>(in millions, except for percentages)</i>						<i>(unaudited)</i>					
EBITDA												
Upstream petroleum and												
natural gas												
Petrochemical exploration and												
production	105,468	30.5%	126,843	36.1%	136,854	4,185.3	47.3%	32,812	40.7%	33,315	1,018.8	102.9%
Natural gas	83,792	24.3%	94,084	26.8%	71,407	2,183.8	24.7%	17,948	22.3%	14,433	441.4	44.5%
Coal	6,114	1.8%	7,445	2.1%	3,731	114.1	1.3%	1,209	1.5%	1,174	35.9	3.6%
Total	195,374	56.6%	228,372	65.0%	211,992	6,483.2	73.3%	51,969	64.5%	48,922	1,496.1	151.0%
Downstream petroleum												
Oil	19,598	5.7%	15,271	4.4%	17,894	547.2	6.2%	5,954	7.4%	3,755	114.8	11.6%
International trading	527	0.1%	2,701	0.8%	(136)	(4.2)	(0.1)%	829	1.0%	(3,392)	(103.7)	(10.5)%
Petrochemicals and												
refining	123,835	35.9%	97,821	27.8%	45,282	1,384.8	15.7%	20,920	26.0%	(22,971)	(702.5)	(70.9)%
Total	143,960	41.7%	115,793	33.0%	63,040	1,927.8	21.8%	27,703	34.4%	(22,608)	(691.4)	(69.8)%
Technology and engineering ⁽²⁾	—	—	7,878	2.2%	18,489	565.4	6.4%	2,708	3.4%	5,668	173.3	17.5%
Others	4,538	1.3%	(2,225)	(0.6)%	(3,004)	(91.9)	(1.0)%	(599)	(0.7)%	(532)	(16.3)	(1.6)%
Eliminations ⁽³⁾	1,523	0.4%	1,578	0.4%	(1,545)	(47.3)	(0.5)%	(1,258)	(1.6)%	935	28.7	2.9%
Total	345,395	100.0%	351,396	100.0%	288,972	8,837.2	100.0%	80,523	100.0%	32,385	990.4	100.0%

Notes:

- (1) U.S. dollar translations are calculated using an exchange rate of THB32.699 to U.S.\$1.00 solely for the convenience of the reader. See “*Exchange Rate Information.*”
- (2) We detached the technology and engineering operating segment from the others segment and reclassified and adjusted our reporting for the period beginning January 1, 2018 and subsequent periods.
- (3) Eliminations removes transactions between our operating segments and non-operating transactions such as allowance for doubtful accounts, loss on impairment of assets and dividend income.

Comparison of the Three-months Period Ended March 31, 2020 and the Three-months Period Ended March 31, 2019

Sales and Service Income

Sales and services income decreased by 12.2%, to Baht 483,567 million (U.S.\$14,788.4 million), in the first quarter of 2020 compared to the prior period. This decrease was primarily attributable to lower product selling prices and total product sales volume in our natural gas, oil, international trading and, in particular, petrochemical and refining businesses. The decline in sales and services income from these business segments was partly offset by GLOW’s contribution for all of the first quarter of 2020, versus only a portion of the corresponding period in the prior year, as GPSC acquired it in March 2019. PTTEP also recorded higher sales and service income in the first quarter of 2020 compared to the corresponding period in the prior year, driven by an increase in sales volumes from projects from the Murphy acquisition and from the Partex acquisition. The Bongkot project also contributed to higher average sales volumes due to the decrease in shutdown days required for maintenance activities during this period.

Cost of Sales and Services

Cost of sales and services decreased by 3.2%, to Baht 466,216 million (U.S.\$14,257.8 million), in the first quarter of 2020 compared to the prior period. The decrease was attributable primarily to a decrease in the cost of goods purchased and raw materials used due to the decrease in purchase volume and lower average oil prices, reflecting lower reference prices for oil, natural gas, refining and petrochemical products.

Other Income

Other income decreased by 12%, to Baht 5,108 million (U.S.\$156.2 million), in the first quarter of 2020 compared to the first quarter of 2019. The decrease was primarily attributable a 55.3% decrease in interest income, to Baht 1,250 million (U.S.\$38.2 million), and a loss on investments at fair value through profit and loss of Baht 1,099 million (U.S.\$33.6 million), which offset a 44.8% increase in transportation income, to Baht 1,952 million (U.S.\$59.7 million).

Gain (Loss) on Derivatives

We recorded a gain on derivatives of Baht 8,470 million (U.S.\$259.0 million) in the first quarter of 2020, mainly from oil price hedging instruments and forward contracts. In the first quarter of 2019 we recorded a loss on such derivatives of Baht 3,780 million. These balances were the result of prevailing oil prices during the relevant periods.

Prior to our adoption of TFRS 9 Financial Instruments effective January 1, 2020, we reported gain (loss) on derivatives as part of the line item “other income.”

Gain (Loss) on Foreign Exchange Rates

The Baht depreciated against the dollar in the first quarter of 2020, while it appreciated against the dollar in the first quarter of 2019. Accordingly, we recorded a Baht 5,075 million (U.S.\$155.2 million) loss on foreign exchange rates in the first quarter of 2020, compared to a gain of Baht 3,875 million in the corresponding prior period.

Selling and Distribution Expenses; Administrative Expenses

Selling and distribution expenses increased by 6.9%, to Baht 7,345 million (U.S.\$224.6 million), and administrative expenses increased by 13.4%, to Baht 13,562 million (U.S.\$414.7 million), in the first quarter of 2020 compared to the prior period. This resulted from an increase in depreciation and amortization of assets of PTTEP from its acquisitions of Murphy Oil Corporation and Partex Holding B.V. and GPSC from its acquisition of GLOW.

Petroleum Royalties and Remuneration

Petroleum royalties and remuneration decreased by 2.9%, to Baht 4,024 million (U.S.\$123 million), in the first quarter of 2020 compared to the prior period. PTTEP’s increased sales volumes in the first quarter of 2020 from projects it acquired as part of the Murphy Oil Corporation and Partex Holding B.V. acquisitions, and from the Bongkot project, were offset by lower average selling prices in that quarter, resulting in lower petroleum royalties and remuneration notwithstanding the higher production.

Operating Profit

As a result of the items above, primarily led by lower product selling prices and total product sales volume in our natural gas, oil, international trading and, in particular, petrochemical and refining businesses, our operating profit for the first quarter of 2020 decreased by 98.2%, to Baht 923 million (U.S.\$28.3 million), compared to the prior period.

Share of Profit from Investments in Joint Ventures and Associates

Share of profit from investments in joint ventures and associates decreased by 58.1%, to Baht 643 million (U.S.\$19.7 million), in the first quarter of 2020 compared to the prior period. The decrease was primarily due to lower performance of joint ventures in petrochemicals and refining business resulting from decreased product spreads.

Finance Costs

Finance costs increased by 1%, to Baht 6,955 million (U.S.\$212.7 million) in the first quarter of 2020 compared to the prior period.

Income Taxes

Income taxes increased by 16.9%, to Baht 8,618 (U.S.\$263.6 million), in the first quarter of 2020 compared to the first quarter of 2019. The increase was primarily a result of PTTEP's higher tax expenses due to Thai Baht depreciation against the U.S. dollar, which was partially offset by lower tax expenses from petrochemicals and refining business' lower performance.

Profit (Loss) for the Period

As a result of the foregoing items, we recorded a loss of Baht 14,007 million (U.S.\$428.3 million) for the first quarter of 2020, compared to a profit of Baht 39,584 million for the first quarter of 2019.

Comparison of the Years Ended December 31, 2019, 2018 and 2017

Sales and Service Income

Sales and services income decreased by 5.0%, to Baht 2,219,739 million (U.S.\$67,884.0 million) in 2019 compared to the prior year. This decrease was primarily attributable to lower product selling prices and total product sales in our petrochemical and refining, international trading and oil businesses. In our natural gas business, sales and service income increased primarily due to higher average selling prices and sales volume from a rise in demand in the power sector resulting from a longer period of hot weather during the summer months in Thailand. Our technology and engineering segment recorded an increase of 275.5% of sales and services income (excluding intra-Group amount), to Baht 52,174 million (U.S.\$1,595.6 million), primarily as a result of sales and services income contributed from the acquisition of GLOW.

Sales and service income increased by 17.1%, to Baht 2,336,155 million, in 2018 compared to the prior year. The increase was primarily attributable to higher average product selling prices of most petroleum and petrochemical products following the rise of Dubai crude oil price. The average Dubai price increased 30.5%, from U.S.\$53.2 million in 2017 to per barrel to U.S.\$69.4 per barrel in 2018.

Cost of Sales and Services

Cost of sales and services decreased by 2.7%, to Baht 1,967,529 million (U.S.\$60,170.9 million), in 2019 compared to the prior year. The decrease was attributable primarily to a decrease in the cost of goods purchased and raw materials used due to the decrease in purchase volume and lower average oil prices, reflecting lower reference oil and natural gas product prices.

Cost of sales and services increased by 19.8%, to Baht 2,023,039 million, in 2018 compared to the prior year. The increase was attributable primarily to an increase in the cost of goods purchased and raw materials used due to higher average oil prices, reflecting higher reference oil and natural gas product prices.

Other Income

Other income increased by 18.0%, to Baht 19,980 million (U.S.\$611.0 million), in 2019 compared to the prior year. The increase was primarily attributable to a lower loss on derivatives, namely Baht 417 million (U.S.\$12.8 million) in 2019 compared to Baht 2,369 million in 2018, and lower loss on disposal of assets and investments, namely Baht 253 million (U.S.\$7.7 million) in 2019 compared to Baht 2,155 million in 2018.

Other income decreased by 40.1%, to Baht 16,935 million, in 2018 compared to the prior year. The decrease was primarily attributable to losses on the disposal of investments and on derivatives in 2018, as compared to gains on these items in 2017. In 2018, we lost Baht 2,155 million on disposal of investments and Baht 2,369 million on derivatives. In 2017, meanwhile, we gained Baht 2,614 million on disposal of investments and Baht 693 million on derivatives.

Gain (Loss) on Foreign Exchange Rates

Gain on foreign exchange rates increased by 141.0%, to Baht 15,313 million, in 2019 compared to 2018, mainly due to PTTEP's realized and unrealized gain on foreign exchange of accounts receivables and the increase in unrealized gain on foreign exchange from dollar-denominated loans and accounts payable of PTT and PTTGC resulting from the appreciation of the Baht.

Gain on foreign exchange rates decreased by 53.5%, to Baht 6,354 million, in 2018 compared to 2017. This resulted mainly from the decrease in unrealized gain on foreign exchange rate from foreign currency loans of PTT, Thaioil and PTTGC, together with realized and unrealized gain on foreign exchange rate from account receivables of PTTEP, due to a lower appreciation of the Baht against USD in 2018 compared to 2017.

Selling and Distribution Expenses; Administrative Expenses

Selling and distribution expenses increased by 3.5%, to Baht 27,574 million (U.S.\$843.2 million), and administrative expenses increased by 17.8%, to Baht 65,002 million (U.S.\$1,987.9 million), in 2019 compared to 2018. This resulted primarily from an increase in PTT and PTTOR's staff costs and outsourcing expenses and depreciation and amortization of PTTEP's exploration wells.

Selling and distribution expenses increased by 8.2%, to Baht 26,653 million, and administrative expenses decreased by 27.4%, to Baht 55,184 million, in 2018 compared to 2017. This resulted primarily from higher employee and external service expenses, including for transportation and advertising.

Petroleum Royalties and Remuneration

Petroleum royalties and remuneration increased by 8.8%, to Baht 17,883 million (U.S.\$546.9 million), in 2019 compared to 2018, and by 18.4%, to Baht 16,435 million, in 2018 compared to 2017, as a result of higher sales of petroleum products by PTTEP.

Operating Profit

As a result of the items above, our operating profit decreased by 25.7%, to Baht 177,044 million (U.S.\$5,414.4 million), in 2018 compared to 2017.

In 2018, our operating profit increased by 1.5%, to Baht 238,133 million, compared to 2017.

Share of Profit from Investments in Joint Ventures and Associates

Share of profit from investments in joint ventures and associates decreased by 29.4%, to Baht 6,008 million (U.S.\$183.7 million), in 2019 compared to 2018. The decrease resulted mainly from lower performance of PTT Asahi Chemicals Co., Ltd. ("PTTAC") as a result of a drop in acrylonitrile and methyl methacrylate product spreads, and lower dividend income from HMC Polymers Co., Ltd. as a result of lower polypropylene product spreads.

Share of profit from investments in joint ventures and associates increased by 16.5%, to Baht 8,515 million, in 2018 compared to 2017. The increase resulted mainly from the performance of PTTAC and NatureWorks LLC following the rise in average product selling prices.

Finance Costs

Finance costs increased by 1.2%, to Baht 27,971 million (U.S.\$855.4 million) in 2019 compared 2018.

Finance costs decreased by 5.0%, to Baht 27,628 million in 2018 compared to 2017.

Income Taxes

Income taxes decreased by 38.5%, to Baht 32,989 million (U.S.\$1,008.9 million), in 2019 compared to 2018. This was mainly due to a decrease in income from the overall lower performance in the Group and PTTEP's lower tax expenses resulting from Thai Baht appreciation against the U.S. dollar.

Income taxes increased by 89.5%, to Baht 53,647 million, in 2018 compared to 2017. This was mainly due to PTT's income tax expenses incurred in connection with a restructuring of the oil business in 2018 at the amount of Baht 6,033 million, expiration of tax privileges granted to the GSP business operation and PTTEP's increased tax expenses from higher profits.

Profit (Loss) for the Year

As a result of the foregoing items, profit for 2019 decreased by 26.2%, to Baht 122,092 million (U.S.\$3,733.8 million), compared to 2018.

Profit for 2018 decreased by 10.4%, to Baht 165,373 million, compared to 2017.

Liquidity and Capital Resources

Our primary sources of funding are cash provided by operating activities, short-term and long-term borrowings and equity funding at various levels of our capital structure. Our uses of funds are primarily for capital expenditures, repayment of short-term and long-term borrowings, the payment of dividends and investments in our subsidiaries and associates.

We plan to fund the capital and related expenditures described in this Offering Memorandum through cash provided by operating activities, short-term and long-term debt, including net proceeds we receive from the issuance of the Notes under the Program. Net cash provided by operating activities during the first three months of 2020 was Baht 61,243 million. As of March 31, 2020, we had cash and cash equivalents of Baht 254,345 million.

We believe that our future cash flows from operations, borrowing capacity and funds raised from our debt offerings will be sufficient to fund our present planned capital expenditures and investments, debt maturities and working capital requirements.

The following table sets forth our consolidated statements of cash flows for the periods indicated.

	For the year ended December 31,				For the three-month period ended March 31,		
	2017	2018 ⁽¹⁾	2019		2019	2020	
	THB	THB	THB	USD ⁽²⁾ (in millions)	THB	THB	USD ⁽²⁾
Cash flows from operating activities							
Profit attributable to owners of the parent ⁽³⁾	135,180	119,647	92,951	2,842.6	46,955	(5,389)	(164.7)
Adjustment of profit to net cash provided by (used in) operating activities							
Depreciation and amortization	116,289	123,593	133,204	4,073.6	31,195	35,865	1,096.8
(Gain) loss on disposal of assets	60	2,155	31	1.0	24	(31)	(0.9)
(Gain) loss on disposal of investments	(2,674)	—	221	6.8	—	(2)	(0.1)
Gain on bargain purchase	—	(1,355)	(31)	(1.0)	—	—	—
Loss on impairment of assets	25,410	17	291	8.9	—	3	0.1
Reversal of impairment of investments	(562)	—	(434)	(13.3)	—	—	—
Share of profit from investments in joint ventures ⁽⁴⁾	(5,462)	(6,462)	(3,991)	(122.0)	—	—	—
Share of profit from investments in associates ⁽⁴⁾	(1,848)	(2,053)	(2,017)	(61.7)	—	—	—
Share of profit from investments in joint ventures and associates	—	—	—	—	(1,536)	(643)	(19.7)
Profit attributable to non-controlling interests .	49,430	45,726	29,141	891.2	—	—	—
Provision for employee benefit	2,376	2,488	7,063	216.0	564	710	21.7
(Gain) loss on exchange rates	(6,422)	(809)	(8,259)	(252.6)	(1,901)	7,100	217.1
Unrealized (gain) loss on derivatives	(3,537)	(4,032)	3,124	95.5	4,151	(8,835)	(270.2)
Loss on investments at fair value through profit and loss	—	—	—	—	—	1,099	33.6
(Reversal of) allowance for doubtful accounts .	(150)	2,320	(77)	(2.3)	—	—	—
Expected credit loss of accounts receivable . .	—	—	—	—	(19)	(182)	(5.6)
Write-off exploration assets	858	21	2,369	72.4	—	839	25.7
(Reversal of) allowance for loss on decline in value of inventories	(394)	4,217	(3,079)	(94.2)	(3,918)	12,619	385.9
Allowance for obsolete materials and supplies .	490	157	453	13.9	159	603	18.4
Dividends income	(5,009)	(347)	(383)	(11.7)	(94)	(136)	(4.2)
Income taxes	28,307	53,647	32,989	1,008.9	—	—	—
Interest income	(8,630)	(9,436)	(7,837)	(239.7)	(2,795)	(1,250)	(38.2)
Finance costs	29,086	27,628	27,971	855.4	6,888	6,955	212.7
Others	495	93	4	0.1	—	169	5.2
Profit from operating activities before changes in operating assets and liabilities	353,293	357,215	303,704	9,287.8	79,673	49,494	1,513.6
(Increase) decrease in operating assets							
Trade accounts receivable	(31,209)	2,430	19,002	581.1	(3,464)	52,262	1,598.3
Other accounts receivable	(64)	(16,941)	19,904	608.7	4,535	1,766	54.0
Inventories ⁽⁴⁾	(5,059)	(5,503)	11,866	362.9	—	—	—
Materials and supplies ⁽⁴⁾	1,597	(339)	(513)	(15.7)	—	—	—
Inventories, material and supplies	—	—	—	—	(3,766)	15,507	474.2
Other current assets	(646)	(1,194)	(2,265)	(69.3)	751	(511)	(15.6)
Other non-current assets	9,774	(5,766)	6,910	211.3	3,532	(2,105)	(64.4)
Increase (decrease) in operating liabilities							
Trade accounts payable	10,340	(2,080)	(7,439)	(227.5)	5,428	(54,532)	(1,667.7)
Other accounts payable	13,313	(78)	(14,050)	(429.7)	(12,110)	(3,824)	(116.9)
Other current liabilities	1,237	2,861	(1,956)	(59.8)	(422)	(574)	(17.6)
Deposits on LPG cylinders	621	563	574	17.6	—	—	—
Other non-current liabilities	(13,139)	(16,392)	(5,370)	(164.2)	(2,346)	7,629	233.3
	(13,235)	(42,439)	26,663	815.4	(7,862)	15,618	477.6
Cash received from operating activities	340,058	314,776	330,367	10,103.2	71,811	65,112	1,991.2
Income tax paid	(33,958)	(45,371)	(65,260)	(1,995.8)	(1,874)	(3,869)	(118.3)
Net cash provided by operating activities	306,100	269,405	265,107	8,107.4	69,937	61,243	1,872.9

	For the year ended December 31,				For the three-month period ended March 31,		
	2017	2018 ⁽¹⁾	2019		2019	2020	
	THB	THB	THB	USD ⁽²⁾ (in millions)	THB	THB	USD ⁽²⁾
							(unaudited)
Cash flows from investing activities							
Payment of property, plant and equipment and investment properties	(110,593)	(108,747)	(144,336)	(4,414.1)	(33,260)	(42,148)	(1,289.0)
Payment of intangible assets	(2,468)	(2,398)	(2,861)	(87.5)	(626)	(681)	(20.8)
Payment of exploration and evaluation assets	(1,784)	(1,963)	(3,700)	(113.1)	(1,280)	(728)	(22.3)
Payment of long-term rental contracts on land and building	(1,205)	(105)	—	—	—	—	—
Cash payment of right-of-use assets	—	—	—	—	—	(116)	(3.5)
Cash payment for other long-term investments in financial assets	—	—	—	—	—	(200)	(6.1)
Payment for available-for-sale investments	(7,460)	(541)	(241)	(7.4)	(44)	—	—
Payment for business acquisition	—	(36,464)	(164,378)	(5,027.0)	(78,513)	(1,477)	(45.2)
Payment of investments in subsidiaries	—	—	—	—	—	—	—
Payment of investments in joint ventures ⁽⁴⁾	(26)	(155)	(4,072)	(124.5)	—	—	—
Payment of investments in associates ⁽⁴⁾	(1,720)	(1,368)	(784)	(24.0)	—	—	—
Cash payment of investments in joint ventures and associates	—	—	—	—	(514)	(457)	(14.0)
Payment of short-term lending loans	(96)	(1,984)	—	—	—	—	—
Payment of long-term lending loans	(9,222)	(119)	(837)	(25.6)	(251)	—	—
Payment of other long-term investments	(25,390)	(5,227)	(2,856)	(87.3)	(1,393)	—	—
Proceeds from disposals of property, plant and equipment, intangible assets and investment properties	235	4,647	930	28.4	133	50	1.5
Cash proceeds from disposals of other long-term investments in financial assets	—	—	—	—	—	1,927	58.9
Proceeds from disposals of available-for-sale investments	11,303	2,945	10,693	327.0	9,744	—	—
Proceeds from disposals of investments in joint ventures	13	34	276	8.4	—	—	—
Proceeds from disposals of investments in associates	51	—	213	6.5	—	—	—
Proceeds from short-term lending loans	—	1,660	270	8.3	45	—	—
Proceeds from long-term lending loans	3,159	4,294	3,490	106.7	438	141	4.3
Proceeds from disposal of other long-term investments	—	2,741	28	0.9	39	—	—
Proceeds from cancellation of leasehold in gas stations	—	5	17	0.5	—	—	—
(Increase) Decrease in current investments	(52,838)	93,820	108,719	3,324.8	26,295	—	—
Increase in short-term investments in financial assets	—	—	—	—	—	(27,515)	(841.5)
Interest received	7,502	8,359	6,424	196.5	1,858	869	26.6
Dividends received	10,014	4,814	4,787	146.4	179	1,117	34.2
Net cash used in investing activities	(180,525)	(35,752)	(188,218)	(5,756.1)	(77,150)	(69,218)	(2,116.9)

	For the year ended December 31,				For the three-month period ended March 31,		
	2017	2018 ⁽¹⁾	2019		2019	2020	
	THB	THB	THB	USD ⁽²⁾ (in millions)	THB	THB	USD ⁽²⁾
							(unaudited)
Cash flows from financing activities							
Proceeds from issuance of ordinary shares of subsidiaries	3,056	93	18,346	561.1	87	153	4.7
Proceeds from short-term loans	6,745	—	—	—	—	—	—
Proceeds from long-term loans	43,920	143,626	174,649	5,341.1	5,261	19,845	606.9
Proceeds from change in ownership in subsidiaries	1,469	4,671	4	0.1	—	—	—
Proceeds from issuance of subordinated capital debentures	28,985	—	—	—	—	—	—
Proceeds from (Payment for) treasury shares of subsidiaries	3,789	—	(1,188)	(36.3)	—	—	—
Repayment of short-term loans	(6,745)	—	(701)	(21.5)	—	—	—
Repayment of long-term loans	(94,936)	(136,795)	(101,518)	(3,104.6)	(9,315)	(19,718)	(603.0)
Repayment of finance lease instalments	(833)	(975)	(1,358)	(41.5)	(243)	(1,689)	(51.7)
Payment for change in ownership in subsidiaries	(1,169)	(13,873)	(40,806)	(1,247.9)	—	—	—
Payment for redemption of subordinated capital debentures	(29,652)	—	(30,751)	(940.4)	—	(965)	(29.5)
Increase (Decrease) in bank overdrafts and short-term loans from financial institutions . .	(12,400)	4,968	19,910	608.9	67,281	(16,841)	(515.0)
Finance costs paid	(30,893)	(28,148)	(25,462)	(778.7)	(5,989)	(7,257)	(221.9)
Dividend paid	(73,834)	(85,035)	(81,351)	(2,487.9)	(2)	(585)	(17.9)
Net cash used in financing activities	(162,498)	(111,468)	(70,226)	(2,147.6)	57,080	(27,057)	(827.4)
Effects of exchange rates on cash and cash equivalents	(750)	637	(3,075)	(94.0)	(8)	3,860	118.0
Currency translation differences	(11,704)	3,173	(3,230)	(98.8)	(1,880)	(7,026)	(214.7)
Net increase (decrease) in cash and cash equivalents	(49,377)	125,995	358	10.9	47,979	(38,198)	(1,168.1)
Cash and cash equivalents at the beginning of periods	215,566	166,189	292,184	8,935.6	292,184	292,543	8,946.5
Cash and cash equivalents at the end of periods.	166,189	292,184	292,542	8,946.5	340,163	254,345	7,778.4
Non-cash items							
Accounts payable from purchases of property, plant and equipment and investment properties	40,793	39,105	21,829	667.6	25,973	10,485	320.7
Accounts payable from purchases of intangible assets	281	268	212	6.5	17	25	0.8
Accounts payable from purchases of securities . .	50	—	—	—	24	—	—

Notes:

- (1) The statement of cash flows data for the year ended December 31, 2018 was extracted from our audited financial statements for the year ended December 31, 2019. Such data is different from the figures presented in our audited financial statements for the year ended December 31, 2018. The auditor's report in connection with the audited financial statements for the year ended December 31, 2018 was dated February 21, 2019 and is included on page F-374. The differences resulted from the reclassifications and adjustments due to valuation of assets from business acquisitions and outcome of litigation.
- (2) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00
- (3) Profit (loss) before income tax for reporting periods starting from the three-months ended March 31, 2020.
- (4) Combined into a single item for reporting periods starting from the three-months ended March 31, 2020.

Cash Flows from Operating Activities

Our net cash provided by operating activities was Baht 61,243 million for the first three months of 2020. This resulted from loss before income tax of Baht 5,389 million, adjusted primarily by depreciation and amortization expenses of Baht 35,865 million, allowance for loss on the decline in value of inventories Baht 12,619 million, loss on exchange rates of Baht 7,100 million, finance costs of Baht 6,955 million, gain on derivatives of Baht 8,835 million and interest income of Baht 1,250 million. These adjustments resulted in cash flows from profit from operating activities before changes in operating assets and liabilities of Baht 49,494 million, which was further adjusted by an increase in net operating assets of Baht 15,618 million and paid income tax in an amount of Baht 3,869 million.

Our net cash provided by operating activities was Baht 69,937 million for the first three months of 2019. This resulted from profit before income tax of Baht 46,955 million, adjusted primarily by depreciation and amortization expenses of Baht 31,195 million and finance costs of Baht 6,888 million. These adjustments resulted in cash flows from profit from operating activities before changes in operating assets and liabilities of Baht 79,673 million, which was further adjusted by a decrease in net operating assets of Baht 7,862 million and income tax that was paid in an amount of Baht 1,874 million.

Our net cash provided by operating activities in 2019 was Baht 265,107 million. This resulted from profit after income tax of Baht 92,951 million, adjusted primarily by depreciation and amortization expenses of Baht 133,204 million, income taxes of Baht 32,989 million, net profit attributable to non-controlling interests of Baht 29,141 million and finance costs of Baht 27,971 million. These adjustments resulted in cash flows from profit from operating activities before changes in operating assets and liabilities of Baht 303,704 million, which was further adjusted by an increase in net operating assets of Baht 26,663 million and income tax that was paid in an amount of Baht 65,260 million.

Our net cash provided by operating activities in 2018 was Baht 269,405 million. This resulted from profit after income tax of Baht 119,647 million, adjusted primarily by depreciation and amortization expenses of Baht 123,593 million, income taxes of Baht 53,647 million, net profit attributable to non-controlling interests of Baht 45,726 million and finance costs of Baht 27,628 million. These adjustments resulted in cash flows from profit from operating activities before changes in operating assets and liabilities of Baht 357,215 million which was further adjusted by a decrease in net operating assets of Baht 42,439 million and income tax that was paid in an amount of Baht 45,371 million.

Our net cash provided by operating activities in 2017 was Baht 306,100 million. This resulted from profit after income tax of Baht 135,180 million, adjusted primarily by depreciation and amortization expenses of Baht 116,289 million, net profit attributable to non-controlling interests of Baht 49,430 million, finance costs of Baht 29,086 million, income taxes of Baht 28,307 million and loss on impairment of assets and investments of Baht 24,848 million. These adjustments resulted in cash flows from profit from operating activities before changes in operating assets and liabilities of Baht 353,293 million, which was further adjusted by a decrease in net operating assets of Baht 13,235 million and income tax that was paid in an amount of Baht 33,958 million.

Cash Flows from Investing Activities

Our net cash used in investing activities was Baht 69,218 million for the first three months of 2020, primarily from cash paid for investments in property, plant and equipment, investment property, intangible assets, and exploration and evaluation assets of Baht 43,557 million mainly for additional investments in Thairoil's Clean Fuel Project, PTTEP's Mozambique Area 1 and S1 project, PTTGC's new olefins and propylene oxide plants and PTT's Fifth Transmission Pipeline Project and the extension of the first main onshore transmission pipeline. The net cash used in investing activities was also primarily attributable to cash paid for short-term investments in financial assets of Baht 27,515 million from PTT and Thairoil mainly for investments in fixed deposits.

Our net cash used in investing activities was Baht 77,150 million for the first three months of 2019, primarily from cash paid for other long term investments of Baht 70,681 million, mainly from GPSC's acquisition of 69.11% stake in GLOW and investments in property, plant and equipment, investment property, intangible assets, and exploration and evaluation assets of Baht 35,166 million mainly for additional investments in PTTEP's Zawtika and S1 project, PTTGC's new olefins, propylene oxide and polyols plants, PTT's Fifth Transmission Pipeline Project, Thairoil's Sriracha Building project, construction of new crude tanks and new jetty and Clean Fuel Project as well as PTTOR's retail station expansion and IRPC's construction of catalyst cooler. The cash outflow was partially offset by cash received from current investments of Baht 26,295 million which Thairoil, PTT, PTTGC and PTTEP received from fixed deposits that reached maturity during the year.

Our net cash used in investing activities in 2019 was Baht 188,218 million, primarily from cash paid for business acquisition of Baht 164,378 million, mainly in PTTEP's acquisition of 100% stake in Murphy Oil Corporation and Partex Holding B.V. and GPSC's acquisition of 69.11% stake in GLOW. The net cash used in investing activities was also primarily attributable to investments in property, plant and equipment, investment property, intangible assets, and exploration and evaluation assets of Baht 150,897 million for additional investments in Thairoil's Clean Fuel Project, PTTEP's Mozambique Area 1 and S1 project, PTTGC's new olefins and propylene oxide plants and PTT's Fifth Transmission Pipeline Project, Ratchabun — Wangnoi transmission pipeline and the extension of the first main onshore transmission pipeline. The cash outflow was partially offset by cash received from current investment of Baht 108,719 million which Thairoil, PTT, PTTEP and PTTGC received from fixed deposits that reached maturity during the year.

Our net cash used in investing activities in 2018 was Baht 35,752 million, primarily from cash paid for investments in property, plant and equipment, investment property, intangible assets, and exploration and evaluation assets of Baht 113,108 million for additional investments in PTTEP's Zawtika and S1 projects, PTTGC's new olefins and propylene oxide plants, PTT's Fifth Transmission Pipeline Project, Thairoil's Sriracha Building project, construction of new crude tanks and new jetties as well as IRPC's polypropylene compounding capacity enhancement and construction of catalyst cooler. The net cash used in investing activities was also primarily attributed to cash paid for other long-term investments of Baht 5,227 million, mainly in PTTEP's acquisition of additional stake in the Bongkot Project and PTTGC's acquisition of additional stake in affiliates in petrochemical business. The cash outflow was partially offset by cash received from current investments of Baht 93,820 million which PTT and PTTEP received from fixed deposits that reached maturity during the year.

Our net cash used in investing activities in 2017 was Baht 180,525 million, primarily from cash paid for investments in property, plant and equipment, investment property, intangible assets, and exploration and evaluation assets of Baht 114,845 million for additional investments in PTTEP's Contract 4 and Zawtika projects, PTT's onshore midline compressor and its Fifth Transmission Pipeline Project, PTTGC's metallocene low linear density polyethylene, olefin and methyl ester capacity augmentation and IRPC's performance chemicals capacity enhancement. The net cash used in investing activities was also primarily attributed to cash paid for current investments of Baht 52,838 million mainly from PTTEP, Thairoil and PTT's investments in fixed deposits, certificated of deposits and private funds and other long-term investments of Baht 25,390 million, mainly from PTT's investment in debt securities.

Cash Flows from Financing Activities

Our net cash used in financing activities was Baht 27,057 million for the first three months of 2020, primarily from cash paid for long-term loans repayment of Baht 19,718 million mainly by PTTEP, PTTGC, GPSC, IRPC and Thairoil, short-term loans repayment of Baht 16,841 million mainly by GPSC, finance costs paid in an amount of Baht 7,257 million mainly by PTTGC, PTTEP, Thairoil, PTT, GPSC and IRPC and PTTEP's redemption of subordinated capital debentures of Baht 965 million.

Our net cash generated by financing activities was Baht 57,080 million for the first three months of 2019, primarily from cash received from GPSC's short-term loan to finance its acquisition of a 69.11% stake in GLOW.

Our net cash used in financing activities in 2019 was Baht 70,226 million, primarily from cash paid for long-term loans repayment of Baht 101,518 million mainly by PTT, PTTGC, PTTEP, GPSC, IRPC and Thailoil, dividend paid to minority shareholders outside the Group of Baht 81,351 million mainly by PTT, PTTGC, PTTEP, Thailoil and GPSC, change in ownership in subsidiaries of Baht 40,806 million from GPSC's tender offer exercise to acquire a 30.72% stake in GLOW and PTTEP's redemption of subordinated capital debentures of Baht 30,751 million. The cash outflow was offset by cash received from proceeds of long-term loans of Baht 174,649 million mainly by PTTEP, GPSC, PTTGC, the Treasury Center, Thailoil and IRPC.

Our net cash used in financing activities in 2018 was Baht 111,468 million, primarily from cash paid for dividend paid to minority shareholders outside the Group of Baht 85,035 million mainly by PTT, PTTGC, PTTEP, Thailoil and IRPC and finance costs paid of Baht 28,148 million.

Our net cash used in financing activities in 2017 was Baht 162,498 million, primarily from cash paid for short-term loans and long-term loans repayment and the redemption of debentures of Baht 131,333 million by PTT, IRPC, PTTGC, and GPSC and dividend paid to minority shareholders outside the Group of Baht 73,834 million mainly by PTT, PTTGC, PTTEP, Thailoil and IRPC.

Contractual Obligations

The following table sets forth the timing of payments under certain of our contractual obligations as of December 31, 2019. The table does not reflect our lease commitments. We adopted the New Leases Standard effective January 1, 2020 under the modified retrospective method of initial adoption by recognizing the cumulative effect of the adoption of the standard as an adjustment to the opening balance of retained earnings as at January 1, 2020. Refer to notes 3.1, 3.2 and 4 to our unaudited interim financial statements for the three-month period ended March 31, 2020 for further details.

Contractual Obligations	Payments due by period				Total
	Within 1 year	Between 1 year and 5 years	Beyond 5 years		
		<i>(Baht in millions)</i>			<i>(USD in millions)⁽¹⁾</i>
Baht Currency Loans	20,797	71,904	46,566	139,267	4,259.1
Foreign Currency Loans	3,525	30,705	13,642	47,872	1,464.0
Baht Currency Debentures	26,118	137,687	66,338	230,143	7,038.2
Foreign Currency Debentures	—	66,340	121,836	188,176	5,754.8
Lease Liabilities	1,342	4,079	3,649	9,070	277.4
Total ⁽²⁾	<u>51,782</u>	<u>310,715</u>	<u>252,031</u>	<u>614,528</u>	<u>18,793.5</u>

Notes:

- (1) The U.S. dollar translations were calculated for convenience only by using the weighted-average interbank exchange rate as of March 31, 2020 as published by the Bank of Thailand: Baht/U.S.\$ = Baht 32.699 to U.S.\$1.00
- (2) We are subject to, and hedge a portion of our exposure to, foreign exchange, commodities price and interest rate risk. From time to time we are required to make payments under these hedging arrangements. Future payments (if any) under those arrangements are not reasonably estimable and, instead, gains or losses arising from these contracts are recorded in profit or loss at the maturity date of the contracts. See “— Results of Operations” for a discussion of historical movements in the relevant line items and “— Commodity Risks” and the notes to our financial statements included elsewhere in this Offering Memorandum for details. As described in “Business — Gas Business — Gas Procurement,” we also are subject to long-term take-or-pay gas purchase agreements with various natural gas producers.

Capital Expenditures

Our five-year committed capital expenditures plan, as approved by our board of directors in January 2020, contemplates a total of approximately Baht 180,814 million (U.S.\$5,529.6 million) in capital expenditures for projects by PTT and its wholly-owned subsidiaries, and a total of approximately Baht 865,000 million (U.S.\$26,453.4 million) in capital expenditures for projects by the Group as a whole between 2020 and 2024.

Among measures that we have taken in response to the COVID-19 crisis, we have reduced our investment budget for 2020 by 22.23% from Baht 69,310 million (U.S.\$2,120 million) to Baht 53,901 million (U.S.\$1,648 million). We currently expect that a portion of the reduced 2020 spending will be delayed to later years. Other companies within the Group, including our listed subsidiaries, may adjust their portions of the Group's five-year capital expenditures plan as appropriate.

The following table sets forth the expected timing of the capital expenditures for projects by PTT and its wholly-owned subsidiaries, including the original and as revised 2020 figures. See "Forward-looking Statements."

Category	2020 (Original)	2020 (Revised) ⁽¹⁾	2021	2022	2023	2024	Total ⁽²⁾	
				(Baht in millions)				(%)
Gas	5,799	3,461	4,774	1,019	40	40	9,334	5.7%
Transmission	9,579	9,005	3,396	5,624	6,461	6,665	31,151	18.8%
Downstream	44	30	3	183	402	242	860	0.5%
Technology and Engineering	5,836	3,722	2,850	1,924	1,444	1,167	11,107	6.7%
Head Office and Others	848	666	78	56	53	52	905	0.6%
Wholly Owned Subsidiaries ⁽³⁾	47,204	37,017	30,314	21,678	12,145	10,894	112,048	67.7%
Total	69,310	53,901	41,415	30,484	20,545	19,060	165,405	100.0%

Notes:

- (1) We reduced our investment budget for 2020 by 22.23% as part of our response to the COVID 19 and associated economic conditions. Some of the reduced expenditures may be postponed to later years. See "Summary — Recent Developments."
- (2) Calculated using revised 2020 figures.
- (3) Capital expenditures for PTT LNG accounted for (i) 19%, or Baht 8,796 million, of the original 2020 capital expenditures, (ii) 17%, or Baht 6,177 million, of the revised 2020 capital expenditures, (iii) 42%, or Baht 12,805 million, of the 2021 capital expenditures, (iv) 34%, or Baht 7,453 million, of the 2022 capital expenditures, and (v) nil of the 2023 and 2024 capital expenditures allocated for PTT's wholly-owned subsidiaries.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that we believe have or are reasonably likely to have a current or future material effect on our financial condition, change in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources.

Market Risks

Our primary market risk exposures are to fluctuations in the price of commodity, exchange rates and interest rates. See note 39 to our audited financial statements included elsewhere in this Offering Memorandum.

Commodity Price Risks

We are exposed to fluctuations in the prices of crude oil, natural gas, petrochemicals and refined products, all of which are subject to volatile price movement. We purchase and sell substantial volumes of natural gas and crude oil. Our subsidiaries engaged in the petrochemical and refined petroleum products business are especially exposed to fluctuations in the price of natural gas.

We enter various commodity hedging arrangements. As of December 31, 2019, we had hedged a volume of 40.8 million barrels of oil under contracts maturing during January to December 2020 (compared to 20.01 million barrels of oil hedged under contract maturing in 2019 and 16.4 million barrels of oil hedged under contract maturing in 2018).

We expect our average sales volume previously targeted for 2020 to decrease by about 7% in light of a decrease in oil demand as a result of the economic recession. While prices for liquids will continue to fluctuate according to global crude prices, our gas price formulas in our GSAs are partially linked to oil prices with reference to average historical prices ranging from the past 6 to

24 months. We expect the average gas price for 2020 to be at around 5.9 USD/MMBTU (based on the assumption that Dubai crude oil will be at U.S.\$37 per barrel in 2020). We expect to be able to maintain our unit costs at around U.S.\$30-31/BOE in 2020.

Foreign Exchange Rate Risk

We enter into cross-currency swap contracts to hedge our exposure to the dollar and to manage our exposure to movements in the U.S. dollar/Baht exchange rate. For information on the notional amounts and maturities of the cross-currency swaps that we have entered into, see note 39.3 to our audited consolidated financial statements as of and for the year ended December 31, 2019 included elsewhere in this Offering Memorandum.

Interest Rate Risk

We enter into interest rate swap contracts to hedge our exposure floating and/or fixed interest rates. For information on the notional amounts and maturities of the interest rate swaps that we have entered into, see note 39.4 to our audited consolidated financial statements as of and for the year ended December 31, 2019 included elsewhere in this Offering Memorandum.

RELATIONSHIP WITH THE GOVERNMENT AND REGULATORY MATTERS

General Overview

We were established on October 1, 2001 as a result of the corporatization of our predecessor, the Petroleum Authority of Thailand. Our predecessor was established by the Petroleum Authority of Thailand Act B.E. 2521 (1978) to serve as the national petroleum company. All of our predecessor's businesses, assets, rights, debts, and liabilities were transferred to us on October 1, 2001 under the State Enterprises Corporatization Act B.E. 2542 (1999). In an effort to increase efficiency, promote competition and reduce the Government's financial burden after the Asian financial crisis in 1997, the Government began the process of privatizing certain state-owned enterprises in 1998.

As a state enterprise, we are required to comply with certain government regulations not applicable to privately owned companies, including having its financial statements audited by the State Audit Office of the Kingdom of Thailand (SAO) or a third party auditor approved by the SAO under the Organic Act on State Audit B.E. 2561 (2018). Under current law, so long as the MOF and/or another agency of the Government own more than 50.0% of our issued and outstanding shares, we will be a state enterprise subject to such regulations. The MOF has the responsibility to monitor the financial condition and maintain the financial integrity of state enterprises. Our board of directors is elected by our shareholders at a general meeting of shareholders. Because the MOF controls a majority of our outstanding shares, the MOF will be able to substantially influence such elections. A representative of the MOF serves on the board of directors of all major state enterprises, including ours. The Public Debt Management Office of the MOF is required by the Public Debt Management Act B.E. 2548 (2005) (as amended) and the MOF Regulation on Public Debt Management B.E. 2549 (2006) (as amended) to provide a plan on public debt management, including debts incurred by state enterprises, to be proposed to the Cabinet annually. The Ministry of Energy was established in 2002 as part of a ministerial restructuring under the Act for Reorganizing Government Ministries B.E. 2545 (2002) (as amended). The establishment of the Ministry of Energy was aimed at achieving better integration and higher efficiencies in the formulation and implementation of the country's energy related policies. The majority of the departments under the Ministry of Energy were transferred from the Ministry of Industry with the key addition of the National Energy Policy Office, which was previously under the direct control of the Prime Minister.

The Ministry of Energy and its key offices, including the DMF, the Department of Energy Business, the Department of Alternative Energy Development and Efficiency and the EPPO, make up an instrumental government body with the authority to formulate, make recommendations on, and oversee the implementation of policies related to Thailand's present and future energy demand. Such policies include the management of Thailand's indigenous resources through the granting of concessions to explore and produce petroleum in Thailand. The NEPC is a committee set-up under the National Energy Policy Council Act B.E. 2535 (1992) (as amended) and chaired by the prime minister with several members from the Cabinet as committee members. It has primary responsibility for overseeing and approving energy policies in Thailand. NEPC resolutions are the definitive statement of the Government on energy policy and, once endorsed by the Cabinet, are binding. As a state energy company, we are required to cooperate with Ministry of Energy and EPPO on the implementation of such policies.

The ERC was established under the Energy Industry Act B.E. 2550 (2007) (as amended) to supervise and regulate both the power industry and the natural gas industry, including the granting, suspension or termination of licenses for energy sector operations. It is tasked with ensuring the separation of the activities of policy making, regulation and operations in Thailand's energy industry. One mandate of the ERC is to prevent abusive use of monopoly power and protect energy consumers and other segments of society that may be adversely affected by activities of the energy industry in part through a licensing regime. Our gas business provides its services under license of and in accordance with the standards established by the ERC.

Regulatory Matters

Regulation of Gas Pricing and Transmission

The Government of Thailand through NEPC and EPP0 (formerly the National Energy Policy Office, or “**NEPO**”) has regulated gas prices and tariffs charged to EGAT, IPPs and SPPs since 1996. A NEPC announcement dated October 24, 2001 (the “**Announcement**”) sets out the current regulatory structure. To reflect current economic and financial conditions, NEPC reviewed and updated the Announcement and such updates were approved by the Cabinet on March 1, 2011.

The updated Announcement sets out the following principles and procedures.

Principles of Governance

The gas price is composed of two components, a gas charge and a transmission tariff. The Announcement mandates that the determination of both components take into account the interests of various stakeholders, including gas users, pipeline users, and pipeline owners and operators. In addition, the Announcement provides that gas prices and transmission tariffs be clear and transparent, that gas price and transmission tariff calculations reflect efficient costs of service and that their methodology of calculation be clearly stated.

Gas Price

The Announcement confirms the existing gas price mechanism, including pool prices and tariff zoning, and provides for gas prices for contracted gas to be based on the gas purchase price plus a marketing margin. The gas purchase price is the average heating value cost of gas derived from one of two gas pools. The first pool is sourced from the Gulf of Thailand and is allocated to GSPs of PTT. The second pool is sourced from the remaining gas from the Gulf of Thailand, gas from Myanmar, and LNG. The second gas pool is allocated to EGAT, IPPs, SPPs and other users. The permitted marketing margin varies by customer, and is capped. See “*Business — Business Activities — Gas Business — Gas Marketing and Distribution — Pricing.*”

Transmission Tariff

The Announcement confirms the existing transmission tariff structure and approves the tariff structure to be applied to pipeline expansions and extensions. The tariff charged varies by the five zones, and consists of a demand and commodity charge. The demand charge is intended to reflect invested costs and fixed operating expenses of a pipeline system, and is based on the quantity of contracted gas volumes. The commodity charge is intended to reflect variable expenses and is based on the actual quantity of gas delivered. Both are expressed in Baht per MMBtu. See “*Business — Business Activities — Gas Business — Gas Marketing and Distribution — Pricing.*”

Review and Implementation

The tariff amount is to be reviewed every five years, and adjusted if there is any additional investment or expansion, or any material change in gas volume or gas heating value. Upon each review, the pipeline operator is required to submit to ERC a proposed tariff amount and assumptions for approval, calculated based on the established parameters of the tariff structure. Once approved, the operator must announce the tariff to the pipeline users. Within the five-year review process, ERC reserves the right to review tariff calculations in the event of any major economic or social changes.

Liberalization of the Gas Supply Industry

On February 16, 1999, the Cabinet endorsed a resolution approved by NEPC to liberalize the gas industry in Thailand (the “**Reform Plan**”). The Government has announced that the Reform Plan will focus on the supply and demand of new gas and should not impact our existing gas purchase and sales agreements. Under the Reform Plan, competition in the gas industry will be promoted by the new Third Party Access Arrangement (“**TPA**”), which will allow third parties to pipeline transmission access through new pipeline systems or when excess capacity is available on our

current pipelines. We also separated our gas transmission business segment from our gas supply and marketing business segment in response to the Reform Plan. After this separation, the gas transmission business will continue to be wholly owned by us.

The ERC issues the following four types of licenses for natural gas operator:

- a natural gas transmission system license;
- a natural gas procurement and wholesale license;
- a natural gas distribution system license; and
- a LNG storage and regasification license.

On February 19, 2009, we were granted the first three licenses; on December 27, 2010, our wholly owned subsidiary PTT LNG was granted the LNG Storage and regasification license.

The main aspects of the Government's plan for liberalization of the gas industry can be summarized as follows:

Gas Transmission

- allow third party access for new gas supply agreements through new pipeline systems or when excess capacity is available on our current pipeline;
- provide for load balancing;
- allow open concession bidding for new pipeline concessions, or joint ventures between the public and the private sectors for the construction and operation of new transmission pipelines (we will be allowed to participate in the bidding);
- ensure that we will be the single network operator of all pipeline networks connecting to our pipeline system to ensure stability of gas supply and gas quality as well as service efficiency;

Gas Supply and Marketing

- regulate the marketing margin for GSAs signed prior to the restructuring of the industry;
- allow the prices for supply and marketing of gas for new GSAs to be determined by market forces; and

Gas Distribution Pipeline System

- allow open concession bidding for the construction and operation of new distribution pipelines.

Pricing structure for NGV and LPG

The pricing structure for NGV and LPG has been regulated by the Government's aim to achieve social and policy objectives. For example, the retail price of NGV has been capped to minimize the impact from the rising global crude prices on end-users. The price of LPG sold to low-income households has also historically been capped to ease the financial burdens of these households.

In 2016, the Government increased the NGV price for private sector consumption to reflect the natural gas cost. However, such increased price still did not fully cover the operating cost; thus, in September 2017, the private sector NGV price was adjusted to reflect gas quality improvement cost. Likewise, in the past, NGV price sold to public transportation vehicles was capped at Baht 8.50-10.0 per kilogram. However, the price has been adjusted upward since May 2018. On November 6, 2017, the Committee on Energy Policy Administration ("CEPA") approved an adjustment to the pricing structure for LPG by replacing the reference basis for determining the

price of imported LPG from the monthly updated contract price (CP) to the LPG cargo price derived from the spot cargo rate (FOB Arab Gulf) announced by Platts on a bimonthly basis. This is to ensure that the costs of LPG supplied by all sources are similar and competitive in accordance with the free trade policy.

Exploration and Production

The Government owns all of Thailand's petroleum resources and has enacted the Petroleum Act B.E. 2514 (1971) and the Petroleum Income Tax Act B.E. 2514 (1971), as amended (the "**Petroleum Acts**") to govern the award of concessions, production sharing contracts and service contracts for petroleum exploration and production rights in Thailand. The Cabinet, upon the advice of the Petroleum Committee, shall have the power to award rights in relation to petroleum exploration and production. The Petroleum Acts have been amended over time into three different fiscal regimes, commonly referred to as "Thailand I," "Thailand II" and "Thailand III." Exploration and production of all petroleum resources by concession in Thailand in which PTTEP currently has a working interest is governed by Thailand I and Thailand III. Thailand I is applicable to concessionaires under the Petroleum Act B.E. 2514 (1971), No. 2 B.E. 2516 (1973) and No. 3 B.E. 2522 (1979), which applies to concessions granted from 1971 to August 1989 and provides for exploration periods of up to eight years, divided into phases of three years and five years, with an extension of up to four years at the discretion of the Minister as approved by the Cabinet. After five years, a concessionaire is required to relinquish exploration rights to 50.0% of the original concession area. Unless a concession period is renewed, the concessionaire must relinquish the right to explore the remaining area at the end of the exploration period. If renewed, the concessionaire must relinquish 25.0% of the original exploration area upon the commencement of the concession period.

Thailand I provides for an up to 30-year production period from the day following the date of termination of the exploration period, with one discretionary extension by the Minister, as approved by the Cabinet, of up to ten years. Thailand I provides for a fixed 12.5% royalty (in the case of payment in cash), payable quarterly, and a petroleum income tax of 50.0% of net profit derived from the petroleum business. For the purposes of determining the petroleum income tax due under Thailand I for any tax period, a taxpayer's Thailand I royalty, except for exported crude oil, is creditable against the corresponding petroleum income tax liability incurred in the tax period in which such royalty is incurred, but if the royalty exceeds the income tax liability in any year, the excess is not refunded and is not carried forward for use in a subsequent year. Thailand I royalty for exported crude oil is deductible as an expense.

Thailand III is applicable to concessionaires under the Petroleum Act No. 4 B.E. 2532 (1989), No.5 B.E. 2534 (1991), No. 6 B.E. 2550 (2007) and No. 7 B.E. 2560 (2017), which applies to all concessions granted since August 1989, and provides for exploration periods of six years, divided into two three-year phases, with an extension of three years (i) at the discretion of the Minister, as approved by the Cabinet (for the concessionaires under the Petroleum Act No. 4 B.E. 2532 (1989), or (ii) at the discretion of the Minister upon the advice of the Petroleum Committee (for the concessionaire under the Petroleum Act No.6 B.E. 2550 (2007)). Under Thailand III, after four years a concessionaire is required to relinquish exploration rights to 50.0% of the original concession area. Unless a concession period is renewed, the concessionaire must relinquish the right to explore the remaining area at the end of the exploration period. If renewed, the concessionaire must relinquish 25.0% of the original exploration area upon the commencement of the concession period. Thailand III provides for an up to 20-year production period from the day following the date of termination of the exploration period, with one discretionary extension (i) by the Minister, as approved by the Cabinet (for the concessionaires under the Petroleum Act No. 4 B.E. 2532 (1989), or (ii) by the Minister upon the advice of the Petroleum Committee, as approved by the Cabinet (for the concessionaire under the Petroleum Act No. 6 B.E. 2550 (2007)), of up to ten years. Thailand III provides for a royalty, payable monthly, at progressive rates of between 5.0% and 15.0%, based on the volume of sales, and a petroleum income tax of 50.0% of net profit derived from the petroleum business, as well as a special tax on annual petroleum profits exceeding a certain threshold at rates up to 75.0% of the petroleum profit of each year, known as "Special Remuneratory Benefit." A taxpayer's Thailand III royalty and Special Remuneratory Benefit are not creditable for purposes of determining the petroleum income tax liability due under Thailand III, but are deductible as expenses.

Under the Petroleum Act No. 1 B.E. 2514 (1971) enacted in April 1971, the Minister granted exploratory onshore blocks of 10,000 sq. km each, and each applicant could receive up to five exploration blocks in the aggregate containing no more than 50,000 sq. km. Under the Petroleum Act No. 4 B.E. 2514 (1971) enacted in August 1989, onshore blocks of up to 4,000 sq. km are granted. Therefore, from August 1989, each applicant could receive up to five exploration blocks, in the aggregate containing no more than 20,000 sq. km. However, after the Petroleum Act No.6 B.E. 2514 (1971) enacted in October 2007, there has been no limitation on the number of exploration block granted to each applicant, but the area of each onshore block must not be larger than 4,000 sq. km.

The Petroleum Acts impose price caps on prices charged for crude oil and condensate, natural gas and natural gas produced for domestic consumption. The price charged on crude oil or condensate produced for domestic consumption must not exceed the average price of exported crude oil or condensate realized by all concessionaires in the preceding calendar month. The difference in quality of crude oil and condensate, transportation cost, as well as any other relevant circumstances must be taken into account when determining the price that can be charged by a concessionaire.

The price of natural gas produced for domestic consumption must be as agreed between a concessionaire and the Petroleum Committee with the approval of the Minister of the Ministry of Energy and must not exceed the average price of exported natural gas, taking into account the difference in quality and transportation cost.

In addition to the concession, Thailand also entered into the Malaysia-Thailand Joint Authority Agreement with Malaysia and enacted the Malaysia-Thailand Joint Authority Act B.E. 2533 (1990) and the Petroleum Income Tax Act (No. 5) B.E. 2541 (1998) governing the MTJDA. Under these acts, subject to the prior approval from the governments of Malaysia and Thailand, the Malaysia-Thailand Joint Authority will enter into production sharing contracts with contractors who must (i) pay royalties equal to 10.0% of the gross petroleum production to the Malaysia-Thailand Joint Authority (“**MTJA Royalties**”); and (ii) share 50.0% of its profits with the Malaysia-Thailand Joint Authority. Its profits shall be calculated as gross petroleum production net of MTJA Royalties less allowable expenses. The income tax must be paid according to the following schedule:

- (i) the first accounting period to eighth accounting period at the rate of 0.0% of taxable income;
- (ii) the ninth accounting period to the fifteenth accounting period at the rate of 10.0% of taxable income; and
- (iii) the sixteenth accounting period onwards at the rate of 20.0% of taxable income.

Further, under the Petroleum Act No. 7 B.E. 2560 (2017), petroleum operations can be done in the form of a production sharing contract or a services contract. In the production sharing contract, all petroleum operation expenditures shall be responsible by the contractor where the contractor can recover such expenditure by deducting from the production. In this regard, the expenditure that can be deducted shall be the actual expenditure according to the work program and budget approved by the Director General of the DMF, but shall not exceed 50% of the overall production. The contractor shall pay the royalty to the Government of Thailand at the rate of 10% of the overall production. The remaining production after deducting the royalty and the recoverable expenditure shall be shared to the contractor, but not exceeding 50%, and petroleum income tax is prescribed at a rate not lower than 20% of the net profit from petroleum operation.

Services contracts can either be a hire for an exploration or a production of petroleum, or both. In this regard, the contractor shall be paid by the Government of Thailand according to the terms and conditions of each services contract and all petroleum operation expenditure shall be responsible by the contractor. Payment shall be made to the contractor after deducting royalties.

DESCRIPTION OF THE TREASURY CENTER

The Treasury Center was incorporated on May 11, 2018 with a registered capital of Baht 20,000,000. On July 31, 2018, the Treasury Center received a treasury center license from the MOF allowing it to operate corporate treasury center business under the supervision of the MOF and the BOT. As a corporate treasury center, the Treasury Center performs the cash and liquidity management activities for the Group. In addition, on September 20, 2019, the Treasury Center received an international business center license from the Revenue Department of Thailand, which confers certain tax privileges.

Directors

The board of directors of the Treasury Center, as of the date of this Offering Memorandum, consisted of the following three members:

1. Mr. Chienvit Udomwatwong
2. Ms. Pangpim Panutrakul
3. Ms. Pensri Pharnusopon

Principal Shareholders

The following table sets forth information about the shareholders of the Treasury Center, as shown on its share register as of the date of this Offering Memorandum.

<u>Name of Shareholder</u>	<u>Number of Shares Held</u>	<u>Percentage</u>
PTT Public Company Limited	199,998	99.999
Others	2	0.001
Total	200,000	100.00

Certain Financial Information

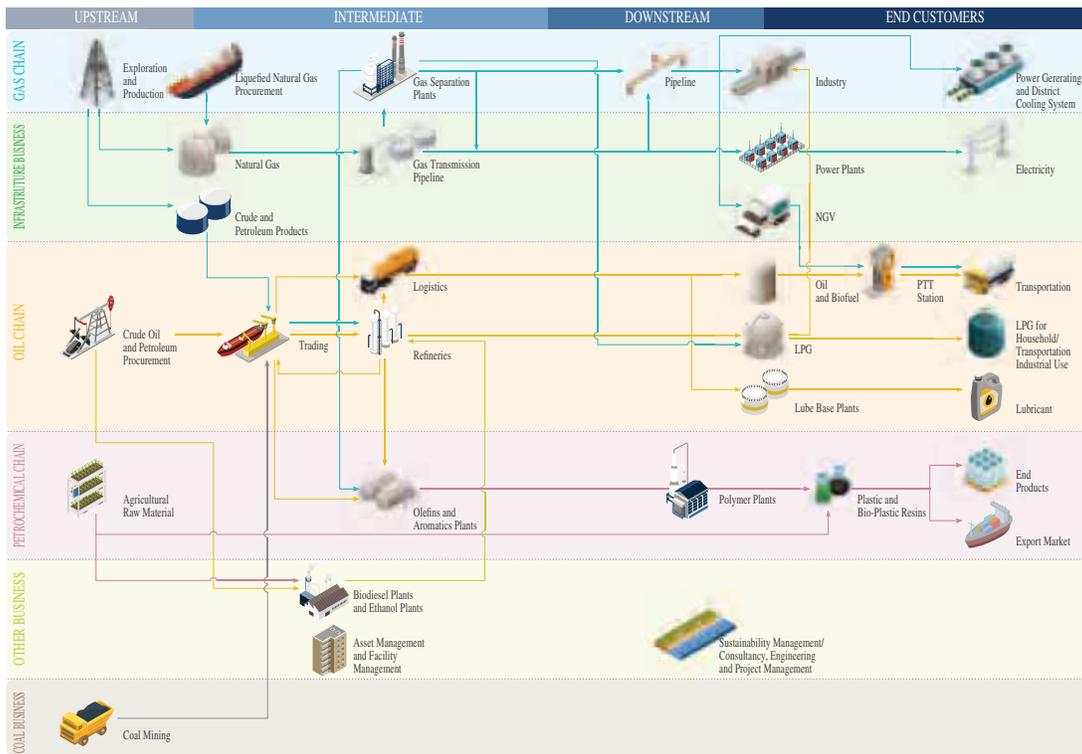
As of March 31, 2020, the Treasury Center had total liabilities of Baht 72,570 million (U.S.\$2,221.2 million), total assets of Baht 72,621 million (U.S.\$2,222.8 million) and total equity of Baht 51.09 million (U.S.\$1.6 million).

BUSINESS

Overview

We are Thailand's fully integrated multinational petroleum and petrochemical company. Our operations cover the energy industry's entire business value chain, from upstream activities such as oil and gas exploration and production, to midstream activities such as gas distribution and LNG related business, to downstream activities such as petrochemical, refining and power generation. We conduct our business directly, through flagship subsidiaries and through associates and joint ventures. We and some of our flagship subsidiaries are listed on the SET. We derive the majority of our sales and service income from Thailand but have operations in over 35 other countries.

The following diagram illustrates the integration of our operations. We believe that our integrated business model allows our businesses to complement each other and enhances our ability to exercise greater control over the petrochemical value chain.



We assess our performance and allocate resources according to business groups, which are based on types of products and services and contain our various operating segments. As a general policy, transactions between the entities engaged in our various operating segments are conducted on an arm's length, market-pricing basis.

Upstream Business Group

- Petroleum exploration and production.** We engage in oil and gas exploration and production primarily in Thailand, as well as in neighboring countries and elsewhere around the globe. We operate this segment through our 65%-owned subsidiary PTTEP. Most of our domestic projects are located in the Gulf of Thailand. Our overseas projects are located elsewhere in Southeast Asia, the Middle East, Australia, the Americas and Africa.

- **Natural gas.** Our gas business conducts procurement, transmission, distribution and separation of natural gas. We process natural gas through six GSPs with a total nameplate capacity of 2,870 MMSCFD. We sell the outputs from our GSPs to petrochemical facilities, industrial and household users, and the transportation sector. Our LNG receiving terminal engages in storage and regasification for distribution to major power producers, industrial users and NGV businesses. We own substantially all of Thailand's natural gas transmission and distribution pipeline network.
- **Coal mining.** Our coal business involves overseas exploration, production and distribution of coal. Through our wholly-owned subsidiary PTTGM, we operate two coal mines in Indonesia, with an aggregate rate of production of approximately 7-8 MT per year.

Downstream Petroleum Business Group

- **Oil.** Our oil business primarily markets and distributes quality petroleum products such as fuel oil, diesel, gasoline, aviation fuel, LPG, lubricating oils and asphalt through retail, wholesale and export channels. This segment includes distribution of non-oil retail products for coffee shops and convenience stores in domestic and international markets.
- **International trading.** We engage in the procurement, import, export, and international trading of crude oil, condensate, LNG, LPG, petroleum and petrochemical products, solvents and chemicals through our international trading business. We also conduct price risk management and international chartering services through this segment, which has helped us become a leading one-stop international trading house.
- **Petrochemical and refining.** We are the largest petrochemical and refining group in Thailand, controlling a majority of the country's petrochemical facilities and half of its refineries. Our operations represented 63% of the country's refining capacity. We engage in the petrochemical and refining business through our subsidiaries PTTGC, Thairoil, IRPC and PTT Tank, among others.

Technology and Engineering Group/Others Business Group

- **Technology and Engineering.** We recognized our technology and engineering business as a standalone operating segment from 2018 to improve our internal reporting and assessment of this business. The principal business in our technology and engineering group is power generation which we operate through GPSC. GPSC engages in the production and distribution of electricity, steam, industrial water, and public utilities. Our technology and engineering business also pursues integrated engineering services, real-estate development, R&D (technical and innovation), development of prototypes, and pursuit of new business opportunities.
- **Others.** This operating segment includes all of our other businesses that do not constitute a separately reportable segment.

The following table illustrates the business groups and segments comprising our operations and our interest in the entities engaged in these businesses as of March 31, 2020.

		Business Group	Entities Engaged in Business	PTT's Interest as of March 31, 2020	Activities
Businesses Operated Through Group Companies	Upstream	Exploration and Production	PTTEP	64.79%	Exploration and production
		Coal	PTT Global Management	100%	Coal business
		LNG	PTT Global LNG PTT LNG	50% ⁽²⁾ 100%	LNG value chain LNG receiving terminal
Businesses Operated Directly by PTT	Downstream	Gas	Gas Pipeline Supply and marketing Gas separation plants	100% 100% 100%	Sole owner/operation of the transmission pipeline Supply and marketing of natural gas Extracting hydrocarbon contents in natural gas for petrochemical's feedstock
		Trading	Trading	100%	Import/export/offshore trading of petroleum and petrochemical products
		Oil Marketing	PTTOR ⁽¹⁾	100%	Retail service stations, commercial marketing and sales of petroleum products sales and non-oil businesses
Businesses Operated Through Group Companies	Technology & Engineering	Petrochemical & Refining	PTTGC Thaioil IRPC	47.92% ⁽²⁾ 47.03% ⁽²⁾ 47.55% ⁽²⁾	Petrochemical flagship: Largest integrated petrochemical and petroleum refining company in Thailand Refinery flagship: Largest complex refinery in Thailand by nameplate capacity Integrated refinery and petrochemical operations
		Power	GPSC	21.81% ⁽³⁾	Power flagship: Power and other public utilities generation business

Notes:

- (1) Assets transferred from PTT to PTTOR on July 1, 2018 pursuant to a spinoff. PTTOR currently is pursuing an IPO on the SET. See “*Business — Oil and Retail Business — Oil Business.*”
- (2) Consolidated in our results of operations as we directly or indirectly control these entities notwithstanding the Group's ownership (on a consolidated basis) of less than a majority of the respective voting rights in these entities.
- (3) On a consolidated basis, the Group holds 75.23% of the voting rights in GPSC.

The following table sets forth our consolidated sales and services revenue for each of the periods indicated, in each case excluding intra-Group sales, which are substantial for certain of our operating segments, along with a breakdown of each operating segment's contribution by value and as a percentage of the corresponding consolidated amounts. For breakdowns of intra-Group sales, profit and loss, assets and liabilities by operating segment, refer to the notes to our financial statements included elsewhere in this Offering Memorandum.

	Year ended December 31,						Three months ended March 31,					
	2017		2018		2019		2019		2020			
	THB	%	THB	%	THB	USD ⁽¹⁾	%	THB	%	THB	USD ⁽¹⁾	%
	(in millions, except for percentages)											
	(unaudited)											
Sales and services revenue												
Upstream petroleum and natural gas												
Petroleum exploration and production	20,882	1.0%	24,849	1.1%	36,330	1,111.0	1.6%	5,839	1.1%	11,205	342.7	2.3%
Natural gas	316,730	15.9%	346,496	14.8%	349,411	10,685.7	15.7%	90,945	16.5%	80,958	2,475.9	16.7%
Coal	19,250	1.0%	20,527	0.9%	15,078	461.1	0.7%	4,216	0.8%	3,320	101.5	0.7%
Total	356,862	17.9%	391,872	16.8%	400,819	12,257.8	18.0%	101,000	18.4%	95,483	2,920.1	19.7%
Downstream petroleum												
Oil	539,952	27.0%	594,808	25.5%	575,777	17,608.4	25.9%	145,140	26.3%	129,466	3,959.3	26.8%
International trading	500,248	25.1%	661,512	28.3%	596,180	18,232.4	26.9%	141,503	25.7%	119,741	3,661.9	24.8%
Petrochemicals and refining	588,597	29.5%	673,932	28.8%	594,596	18,183.9	26.8%	157,136	28.5%	123,963	3,791.0	25.6%
Total	1,628,797	81.6%	1,930,252	82.6%	1,766,553	54,024.7	79.6%	443,779	80.5%	373,170	11,412.2	77.2%
Technology and engineering ⁽²⁾	—	—	13,896	0.6%	52,174	1,595.6	2.4%	6,062	1.1%	14,866	454.6	3.1%
Others	10,063	0.5%	135	—	193	5.9	—	33	—	48	1.5	—
Total	1,995,722	100.0%	2,336,155	100.0%	2,219,739	67,884.0	100.0%	550,874	100.0%	483,567	14,788.4	100.0%

Notes:

- (1) U.S. dollar translations are calculated using an exchange rate of THB32.699 to U.S.\$1.00 solely for the convenience of the reader. See “Exchange Rate Information.”
- (2) We detached the technology and engineering operating segment from the others segment and reclassified and adjusted our reporting for the period beginning January 1, 2018 and subsequent periods.

On a geographic basis, we derived 61.7% of our sales and services income for 2019 from customers in Thailand, 33.6% from customers elsewhere in Asia and 4.7% from customers in other jurisdictions.

In 2017, 2018, 2019, our profit for the period was Baht 184,610 million, Baht 165,373 million and Baht 122,092 million (U.S.\$3,733.8 million), respectively. We sustained a loss of Baht 14,007 million (U.S.\$428.3 million) in the three months ended March 31, 2020, primarily as a result of lower oil prices and the economic impact of the COVID-19 pandemic. See “— Recent Developments.”

Competitive Strengths

Strategic importance to Thailand as the country’s fully integrated multinational energy company with strong government support

As Thailand’s fully integrated multinational energy company, our mission is to ensure the country’s long-term energy security to support economic growth. The Government, acting through the MOF, owns a majority stake in PTT. The Government’s Vayapuk funds and other instruments of the state, such as the Social Security Office and other national pension funds, hold additional stakes in our equity. We benefit from strong state support and are an important revenue contributor to the Government. Our strategic position in the country’s energy sector and support from the Government provides us various benefits, including financial security and strategic advantages when negotiating transactions with foreign governments and other companies.

We are rated on par with Thailand’s sovereign rating by the three major credit agencies. The following table lists our long-term issuer credit ratings as of the date of this Offering Memorandum.

	Moody’s	Standard & Poor’s	Fitch
Foreign Currency	Baa1	BBB+	BBB+
Local Currency	Baa1	A-	BBB+

By participating across the energy supply chain, we are able to target and optimize returns and create value throughout our integrated operations. Our operations encompass all stages of the petroleum and petrochemical value chain. Our upstream operation, conducted through PTTEP, provides us with an attractive return in oil and natural gas exploration and production. Our midstream activities include gas separation, which is the process whereby we generate gas products that we sell at prices linked to petrochemical commodities. Our gas transmission and LNG receiving terminal provide us with stable and strong returns with a cost-plus pricing structure for transactions with customers in the power sector and commodity-linked pricing. In the downstream segment, we utilize our refining and petrochemicals expertise to enhance value of the upstream products and integrate with our international trading and oil and retail businesses. We also engage in innovation and development of energy and energy infrastructure, including power generation.

We have historically been and remain the largest company on the SET by market capitalization. The capitalization as of June 30, 2020 of the seven companies within our Group that are listed on the SET — namely PTT, PTTEP, PTTGC, Thaioil, IRPC, GPSC and GGC — amounted to Baht 2,011,255 million (U.S.\$65,766 million), representing 14% of the overall market capitalization of the SET, of which PTT contributed 54%, PTTEP contributed 18%, GPSC contributed 10%, PTTGC contributed 10%, Thaioil contributed 4%, IRPC contributed 3% and GGC contributed 1%.

Diversified international upstream business portfolios with a Southeast Asia and Middle East focus

We operate our upstream business through PTTEP, which was originally founded as our exploration and production arm, and we continue to majority own. PTTEP is one of the largest exploration and production companies in Southeast Asia by reserves and production. PTTEP’s large portfolio of exploration blocks offers a diversification of reserves, production and exploration opportunities and risks. As at December 31, 2019, PTTEP had proved reserves of 1,140 MMBOE and probable reserves of 507 MMBOE, with working interests in more than 40 petroleum exploration, development and production projects in 15 countries. In 2019, PTTEP produced one-third of Thailand’s petroleum production. PTTEP’s portfolio of proved reserves is geographically balanced, with approximately 50% of proved reserves located in Thailand and approximately 50% overseas.

Most of PTTEP’s producing projects are located in Thailand and elsewhere in Southeast Asia, in particular in Myanmar, Malaysia and Vietnam. PTTEP has continued to expand its portfolio and consolidate its position regionally. In March 2019, PTTEP acquired Murphy Oil Corporation’s business in Malaysia for approximately U.S.\$2,010.0 million. The acquisition added two producing projects, one development project and two exploration projects to PTTEP’s portfolio. PTTEP has also pursued expansion further afield. In November 2019, PTTEP completed the acquisition of Partex Holding B.V., which holds interests in seven oil and gas projects in five countries, including a major investment in large oil deposits in Oman, for a consideration of approximately U.S.\$660.7 million. This acquisition allowed PTTEP to expand strategically into the Middle East, a key low-cost barrel region.

Dominant position in an established and growing natural gas market that generates stable returns

We currently enjoy a favored position in Thailand in the gas transmission, processing and marketing segment of our business that has allowed us to operate in a low-competitive environment in this segment since our inception. We operated the gas business segment since

inception and have developed expertise in the segment throughout the years. We own and operate a transmission network of approximately 4,252 kilometers of pipeline across four main transmission pipelines. These pipeline networks represent substantially all of the offshore and onshore natural gas pipeline capacity in Thailand and link commercial gas fields and our LNG receiving terminal to local power producers, our GSPs and other industrial users. We generate a stable return as the owner and operator of substantially all of the transmission pipelines in Thailand. We mainly derive income from our gas business from the transmission tariff that we charge our customers, which is not subject to volatility in natural gas or oil prices. The transmission tariff, although regulated, provides us with an internal rate of average return on equity of approximately 14%. We are currently completing the construction of the fifth main onshore transmission pipeline in the eastern and central part of Thailand. We expect the commercial operation to begin in 2021.

We own and operate six GSPs, which separate hydrocarbons from natural gas and produce gas products such as ethane, propane, LPG and NGL. The GSPs currently have a combined processing capacity of approximately 2,870 MMSCFD. The gas processing business through our GSPs adds value from the gas procured from the Gulf of Thailand and produces feedstock for petrochemical plants, including our own. This is in line with our strategy to invest in infrastructure development to add value to our products.

In addition, our LNG receiving terminal provides us with a stable return through tariffs we charge to our customers, which, similar to the tariff we charge in our gas transmission business, is not subject to volatility in natural gas or oil prices. Currently, we are constructing a new LNG receiving terminal to bring our total capacity to 19 mtpa from 11.5 mtpa. We expect the construction to complete in 2022 and commercial operation to commence in the same year.

Our gas business is underpinned by a steady gas supply secured from PTTEP and other producers through natural gas purchase agreements for periods ranging from 25 to 30 years. We minimize our exposure to oil and gas price fluctuations via a combination of take-or-pay gas purchase arrangements and a cost-plus pricing structure with power producers offtakers, which accounted for approximately 60% of total gas sales volume in the first three months of 2020.

Thailand's 2018 PDP forecasts that, by 2037, 53% of power generation in the country will use natural gas as fuel. From 2024, Thailand aims to push for natural gas to be the major fuel for power generation industry. In the shorter term, between 2019 and 2023, gas demand for industrial use is expected to increase despite stabilizing or slightly diminished demand for other uses. We believe that, with our dominant position in the LNG value chain, we are poised to capture the potential growth in this segment.

Largest refiner, petrochemical producer in Thailand with growing downstream operations

We are the largest refiner in Thailand, with interests in three of Thailand's six refineries. Thairoil serves as our refinery flagship, operating the largest complex refinery in Thailand with refining nameplate capacity of approximately 275,000 bpd. PTTGC, Thailand's largest integrated petrochemical and petroleum refining company, has distillation intake capacity of 280,000 bpd. IRPC, the third largest refinery in Thailand in terms of production capacity, has a refinery capacity of 215,000 bpd. Through our subsidiaries Thairoil, PTTGC and IRPC, we had a refining capacity of 770,000 bpd, representing 63% of the country's refining capacity as of March 31, 2020. Thairoil is currently replacing existing distillation units with higher refining capacity units, which is expected to increase its refining capacity to 400,000 bpd and improve the average complexity of its refinery from 9.8 to 12.0, based on its internal estimates using the Nelson Complexity Index methodology. We expect that this capacity upgrade project will commence commercial operations in 2023. PTTGC has also scored highly in its upgrading capability according to its internal assessment also pursuant to the Nelson Complexity Index methodology.

Our fully integrated petrochemical and refining businesses obtains feedstock from our midstream operations and our trading procurement to significantly add value to our upstream products. We remain the largest petrochemical producer in Thailand with total capacity of olefins, aromatics and styrenics production of more than 15 mtpa. PTTGC, our petrochemical flagship, operates the largest ethane cracker facility in Thailand with a competitive cost structure. IRPC operates Thailand's first integrated refinery and petrochemical manufacturing facility.

In other downstream businesses, with more than 1,900 service stations, we held a market share of approximately 40% of all petroleum retail sales in Thailand during the first three months of 2020. In the non-oil retail segment, as of March 31, 2020, we had over 2,900 Café Amazon outlets and over 1,800 convenience stores in Thailand. We also have a growing international presence, with 307 service stations, 244 Café Amazon outlets and 81 convenience stores abroad. The diversification into non-oil retail businesses has lessened our dependence on petroleum to generate income and has significantly enhanced our margins.

In our technology and engineering segment, our power and utilities production business generates stable returns. Through GPSC, our flagship power company, we have a portfolio of power plants with a total capacity of 5,026 MW as of March 31, 2020. We are currently the fourth largest power producer in Thailand and are aiming to increase our role and market share in power production in Thailand.

Track record of resilient credit metrics, prudent financial management and strong liquidity

We believe that we have adequate liquidity from ample cash generated from our operations supported by credit availability from relationship financial institutions and ready access to domestic and international capital markets. Our liquidity enables us to adjust spending and withstand the environment of low crude prices and slow demand.

We have a well-defined financial control policy to monitor our financial condition. We strive to maintain a net debt-to-EBITDA ratio of less than two and net debt-to-equity ratio of less than one at the Group level. Overall, our indebtedness has a well-structured debt maturity profile. In addition, our risk management practice balances foreign currency liabilities and assets allowing us to use a natural hedge to minimize the effects of foreign currency fluctuations. We also use derivative hedges to manage petroleum and petrochemical price and spread exposures to commodity price and foreign exchanges fluctuations. These risk management practices have proven to be effective to minimize the impact of such fluctuations on our cash flows and lessen profit volatility. Our risk management policy also extends to management of account receivables, account payables and investments.

Strategies

Continue to strengthen Thailand's national energy security sustainably and transparently, while adopting new technologies

We aim to strengthen Thailand's national energy security through coordination and integration across our upstream, midstream and downstream business operations. As Thailand's national energy organization, we intend to leverage our local and international assets across the energy value chain to meet the growing needs of the Thai economy. To better meet our objectives, we aim to use proven technologies that help to drive efficiency, reduce operational costs, and enhance oversight of our operations. We also aim to conduct our business operations in a transparent manner that inspires confidence among our customers, partners, and stakeholders.

In addition, we aim to be a leader in sustainable practices in the energy sector, including the development of alternative fuels and green energy. We have actively marketed green technology products, such as biofuels that use agricultural crops as a source of feedstock, as alternatives to gasoline and diesel. We aim to further improve our alternative fuel products to answer to the Government's initiative to increase the consumption of cleaner fuel and price of energy crops. We have been included in the Dow Jones Sustainability Index for eight consecutive years (2012-2019). We continue to support the United Nations' Sustainable Development Goals through various initiatives to help Thailand to achieve its greenhouse gas reduction target. These sustainable initiatives include implementing carbon pricing for new investments, increasing revenue contribution from low carbon products by 2023, reducing up to 20% of carbon dioxide emissions by 2030 and reducing greenhouse gas emissions by 20-25% by 2030.

Substantial investment in our core businesses to improve Thailand's national energy infrastructure across upstream, downstream and power portfolios

Our five-year committed capital expenditures plan, as approved by our board of directors in January 2020, contemplates a total of approximately Baht 180,814 million (U.S.\$5,529.6 million) in capital expenditures for projects by PTT and its wholly-owned subsidiaries, and a total of approximately Baht 865,000 million (U.S.\$26,453.4 million) in capital expenditures for projects by the Group as a whole between 2020 and 2024. As part of our response to the COVID-19 pandemic and ongoing low oil prices, we recently reduced our investment budget for 2020 by 22.23% from Baht 69,310 million (U.S.\$2,120 million) to Baht 53,901 million (U.S.\$1,648 million). However, we currently expect that a portion of the reduced 2020 spending will be delayed to later years in the current five-year committed capital expenditures plan.

Our upstream capital expenditure plans include:

- PTT's Fifth Transmission Pipeline Project to add 400 kilometers to the transmission pipeline network, construction of a second LNG receiving terminal to add 7.5 mtpa to the LNG receiving capacity and expansion of onshore gas pipeline system and infrastructure;
- PTT Tank's joint venture project to develop Map Ta Phut seaport phase III (Section 1) which includes seaport development and a construction of an LNG terminal with a capacity of not less than 5 mtpa; and
- investments in new energy projects.

We will use this investment plan to optimize the integration of our LNG value chain from gas exploration and production to power generation and enhance operational efficiencies. We believe these investments will position us as a regional LNG trading hub, which we view as a priority further to Thailand's national development plans. We will also continue to build our competitive capabilities around our natural gas businesses, and aim to be the leading operator for the region.

Our downstream and technology and engineering capital expenditures include:

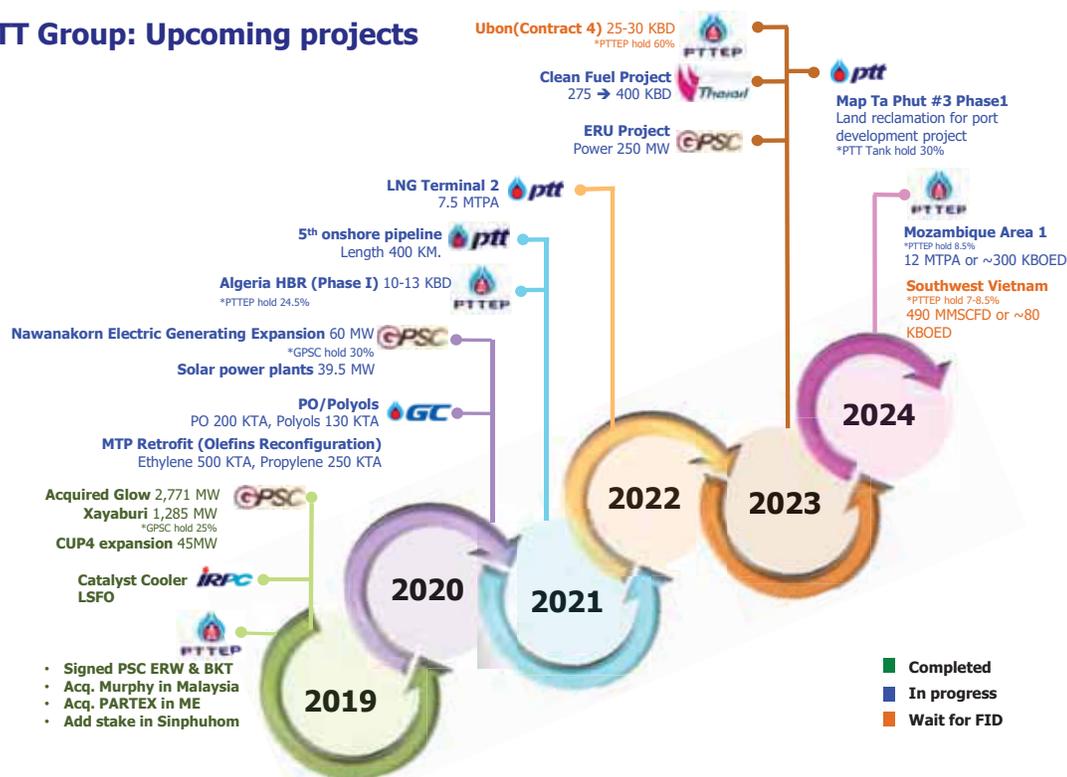
- PTTGC's proposed addition of 500 kta of ethylene, 250 kta of propylene, 130 kta of polyol, and 200 kta of propylene oxide production capacity to its facilities;
- Thai Oil's construction of new production units; and
- GPSC's investment in a 250 MW energy recovery unit.

We believe these investments could help us to operate more efficiently, sustainably and flexibly under changing business conditions. We believe these planned enhancements will also add to our value proposition to industrial customers of specialty petrochemical products.

We believe these investments will not only enable us to leverage upon our operational strengths ("inside-out" business strategy), but also help us to better respond to the demands of our customers across the region ("outside-in" business strategy).

The below graphic illustrates our recent and ongoing expansion projects and the years in which we expect such projects will be completed. See “Forward-Looking Statements.”

PTT Group: Upcoming projects



Strategically diversify our geographic presence

As part of our portfolio optimization, we regularly monitor and evaluate for potential acquisitions, divestments and farming in/out of various assets. We aim to maintain a balanced and diversified portfolio of local and international assets as a means of capturing growth while prudently managing risk.

Through PTTEP, we currently have participation interests in more than 40 petroleum exploration, development and production projects in 15 countries. In expanding our presence, we focus on areas where we have experience and expertise and on projects that have manageable risk and rapid commercialization opportunities, in particular in the ASEAN region. Examples of this include PTTEP’s recent acquisitions of: (i) a 22.2% participating interest in the Bongkot gas field in Thailand; (ii) Murphy Oil Corporation’s business in Malaysia, which holds partial interests in the SK309, SK311, Block K and Block H projects; and (iii) Partex Holding B.V., which invested in seven oil and gas projects covering both upstream and midstream assets in five countries — Oman, the UAE, Kazakhstan, Brazil and Angola. Each of these investments was at or near production phase at acquisition. In addition, PTTEP also pursued the opportunity to firmly establish its presence in Myanmar by venturing into the power business.

We also look to expand our international footprint through our other businesses. In our gas business, we strive to become a regional LNG hub. We have expanded our LNG distribution channel from the traditional pipeline supply to distribution to vessels for domestic customers. We plan to also use this distribution channel for offshore customers. In our trading business, we aim to be one of the world’s leading companies in energy trade by establishing additional subsidiaries and representative offices in strategic trading locations. Most recently, in 2020, we opened an additional trading office in the U.S. to complement our existing trading offices in other strategic locations such as Bangkok, Singapore and London. Furthermore, in our oil segment, which we

undertake through PTTOR, we endeavor to maintain our market share in Thailand while expanding its oil and non-oil businesses to international markets, particularly in the neighboring countries. PTTGC aims to increase the percentage of its sales contributed by the international petrochemical market from 7% in 2019, to 30% by 2030. In the same vein, Thai Oil continues to consider investment opportunities in Indonesia, Vietnam and Myanmar, with a view to expand sales in the Indochina region, where our geographic proximity may provide a competitive advantage over other exporters.

Identify innovative “S-Curve” business opportunities and maintain a disciplined investment strategy

Through our technology and engineering business segment, we aim to identify and invest in “disruptive” technologies that can help us achieve rapid growth, contribute to Thailand’s economic competitiveness, and enhance the quality of life of the Thai people. We refer to these businesses as “New S-Curve” business opportunities. We focus on seeking innovative “New S-Curve” business opportunities in the areas of electricity value chain, life sciences, internet of things, artificial intelligence and robotic technologies. In particular, we intend to identify and develop businesses that leverage our existing assets and expertise to support the growth of our core businesses. Our investment activities in the new businesses will follow our well-defined investment strategies and risk management.

Exploration and Production Business

Overview

Our exploration and production activities are conducted through our subsidiary PTTEP, a Thai public company listed on the SET. As of May 15, 2020, we held a 64.79% equity interest in PTTEP. PTTEP’s principal activity is the exploration, development and production of interests in oil and natural gas in Thailand and internationally. PTTEP distributes its outputs from domestic and regional projects primarily in Thailand through us, making PTT the major offtaker and processor of PTTEP’s products. We further distribute the processed products to customers in the power, petrochemical, transportation and industrial sectors and to household users. Prices and conditions of all of our transactions with PTTEP are negotiated on an arm’s length basis. Our relationship with PTTEP creates synergies in the natural gas value chain, providing us with ready access to oil and gas production and supply chain.

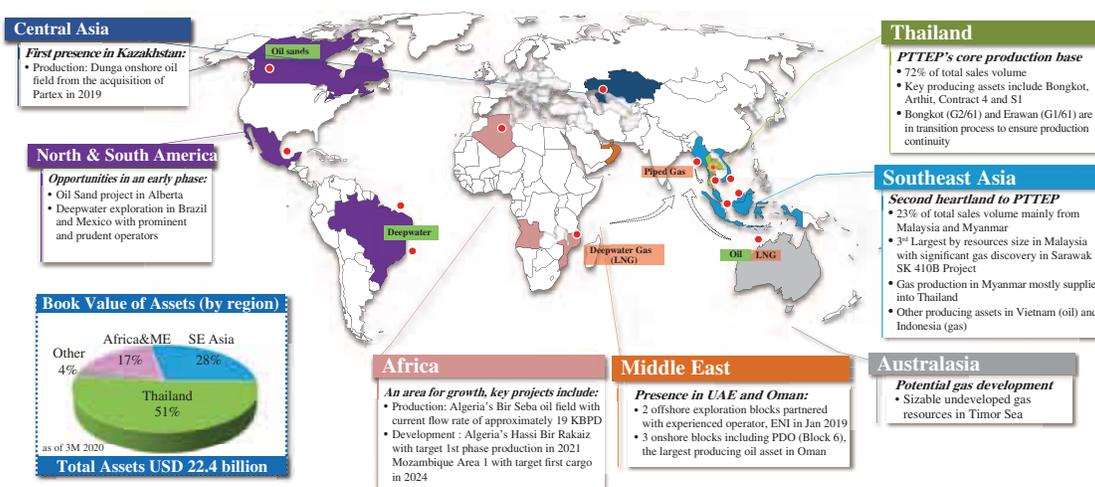
PTTEP conducts its exploration and production activities through its working interests in petroleum concessions owned and operated independently or through joint ventures with national and international oil and gas companies. Under the terms of these joint ventures’ agreements, at least one joint venture participant manages the concession on behalf of the joint venture as an operator. As at December 31, 2019, we had total proved and probable reserves of 1,647 MMBOE, which includes proved reserves of 1,140 MMBOE and probable reserves of 507 MMBOE. For the year ended December 31, 2019, we had a total production of 151 MMBOE, consisting of 41 MMBOE of crude oil and condensate and 110 MMBOE of natural gas. Based on this total production for 2019, as at December 31, 2019 our proved reserves had a reserves life of 7.5 years and our probable reserves had a reserves life of 10.9 years. For the three-month period ended March 31, 2020, we had a total production of 41 MMBOE, consisting of 12 MMBOE of crude oil and condensate and 29 MMBOE of natural gas.

As of March 31, 2020, PTTEP had participation interests in more than 40 petroleum exploration, development and production projects in 15 countries. Most of its producing projects are located in Thailand and Southeast Asia, specifically in Myanmar, Malaysia and Vietnam. More than 20 projects are operated directly by PTTEP. PTTEP has several projects in the development phase, including the Algeria Hassi Bir Rekaiz project, the Mozambique Area 1 project and the Malaysia-Block H project. Its projects in the production phase are as follows: Bongkot, Contract 4, S1, Yadana, Yetagun, Contract 3, B8/32 and 9A, PTTEP 1, E5, B6/27, Sinphuhorm, G4/43, Arthit, Vietnam 9-2, G4/48, MTJDA, Vietnam 16-1, L53/43 & L54/43, Natuna Sea A, Zawtika, L22/43, Malaysia-Sarawak SK309 and SK311, Malaysia-Block K and Algeria 433a and 416b projects. See

“— *Exploration and Business — Principal Properties.*” PTTEP also derives revenue from its proportionate interests in three gas pipeline transportation projects, namely Moattama Gas Transportation Company, Taninthayi Pipeline Company and Andaman Transportation Limited.

Principal Properties

The map below sets forth PTTEP’s diversified international portfolio of exploration, development and production projects as of March 31, 2020:



PTTEP classifies a property as “in production” when there are production activities. PTTEP classifies a property as “under development” when a final investment decision for the construction of the facilities, with a concrete plan for production capacity and timeline, has been made. PTTEP classifies a property as “under exploration” when there are exploration activities, but there are relatively minimal or no development or production activities.

The following table sets forth certain information regarding PTTEP’s exploration and production projects as of March 31, 2020.

Project	Location	Operator	Our Interest (%)	Phase
Thailand and JDA				
1. Bongkot	Gulf of Thailand	PTTEP	66.6667	Production
2. S1	Sukhothai, Phitsanulok and Kamphaengpet provinces	PTTEPS	100.0	Production
3. PTTEP 1	Suphan Buri and Nakhorn Pathom provinces	PTTEPI	100.0	Production
4. B6/27	Gulf of Thailand	PTTEPS	100.0	Production
5. Arthit	Gulf of Thailand	PTTEP	80.0	Production
6. L22/43	Phitsanulok and Pichit provinces	PTTEPI	100.0	Production
7. L53/43 and L54/43	Suphan Buri, Ayuthaya, Ang-Thong and Karnchana Buri provinces	PTTEPI	100.0	Production
8. E5 (Namphong)	Khon Kaen province	ExxonMobil	20.0	Production
9. Contract 3	Gulf of Thailand	Chevron	5.0	Production
10. Contract 4	Gulf of Thailand	Chevron	60.0	Production
11. G4/43	Gulf of Thailand	Chevron	21.375	Production

	Project	Location	Operator	Our Interest (%)	Phase
12.	Sinphuhorm (EU-1 and E5 North)	Udon Thani and Khon Kaen provinces	PTTEP	55.0	Production
13.	B8/32 & 9A	Gulf of Thailand	Chevron	25.001	Production
14.	G4/48	Gulf of Thailand	Chevron	5.0	Production
15.	G1/61	Gulf of Thailand	PTTEP ED	60.0	Exploration
16.	G2/61	Gulf of Thailand	PTTEP ED	100.0	Exploration
17.	Block A-18, B-17 and C-19 of the JDA (MTJDA)	Overlapping area between Thailand and Malaysia	CARIGALI-PTTEPI Operating Company Sdn Bhd	50.0	Production
18.	G9/43	Overlapping area between Thailand and Cambodia	PTTEPI	100.0	Exploration
Southeast Asia					
1.	Zawtika	Myanmar	PTTEPI	80.0	Production
2.	Yadana	Myanmar	Total	25.5	Production
3.	Yetagun	Myanmar	Petronas Carigali Myanmar (Hong Kong) Limited	19.31784	Production
4.	Myanmar M3.	Myanmar	PTTEPI	80.0	Exploration
5.	Myanmar M11	Myanmar	PTTEPI	100.0	Exploration
6.	Myanmar MD-7	Myanmar	PTTEP SA	50.0	Exploration
7.	Myanmar MOGE 3	Myanmar	PTTEP SA	77.5	Exploration
8.	Vietnam 9-2	Vietnam	Hoan-Vu Joint Operating Company	25.0	Production
9.	Vietnam 16-1	Vietnam	Hoang- Long Joint Operating Company	28.5	Production
10.	Vietnam B & 48/95	Vietnam	PetroVietnam	8.5	Exploration
11.	Vietnam 52/97	Vietnam	PetroVietnam	7.0	Exploration
12.	Natuna Sea A	Indonesia	Premier Oil	11.5	Production
13.	PTTEP Malaysia.	Malaysia		6.4-80.0	
	i. Sarawak SK410B		PTTEP HKO	42.50	Exploration
	ii. Sarawak SK417		PTTEP HKO	80.0	Exploration
	iii. Sarawak SK438		PTTEP HKO	80.0	Exploration
	iv. Sarawak SK309 and SK311		PTTEP SKO	59.5	Production
	v. Sarawak SK314A		PTTEP SKO	42.0	
	vi. Sarawak SK405B		PTTEP SKO	59.5	Exploration
	vii. Peninsular PM407.		PTTEP HKO	55.0	Exploration
	viii. Peninsular PM415.		PTTEP HKO	70.0	Exploration
	ix. Block K.		PTTEP SBO	56.0	Production
			Shell	22.4	
				6.4	
	x. Block H.		PTTEP SBO	56.0	Development
Middle East					
1.	Abu Dhabi Offshore 1	Abu Dhabi	ENI	30.0	Exploration
2.	Abu Dhabi Offshore 2	Abu Dhabi	ENI	30.0	Exploration
3.	PDO (Block 6) Project.	Oman	Petroleum Development Oman	2.0	Production
4.	Mukhaizna (Block 53) Project	Oman	Occidental Petroleum	1.0	Production
5.	Oman Onshore block 12 Project	Oman Total E&P Oman Block 12 B.V.	Total E&P Oman	20.0	Exploration
Others (International)					
1.	Algeria 433a & 416b	Algeria	Groupement Bir Seba	35.0	Production
2.	Algeria Hassi Bir Rekaiz	Algeria	PTTEP	24.5	Development
3.	Block 17/06 Project.	Angola	Total	2.5	Exploration

	Project	Location	Operator	Our Interest	Phase
				(%)	
4.	PTTEP AA	Australia		90.0-100.0	Exploration
	i. AC/L3, AC/RL7, AC/RL12 and AC/P54 . .		PTTEP Australasia (Ashmore Cartier) Pty Ltd.	100.00	
	ii. AC/RL10		PTTEP Australia Timor Sea Pty Ltd.	90.0	
	iii. AC/RL4, AC/RL5, AC/RL6		PTTEP Australia Timor Sea Pty Ltd.	100.0 42.0	
5.	Mariana Oil Sands	Alberta, Canada	PTTEP CA	100.0	Exploration
6.	Mozambique Area 1	Mozambique	Total S.A.	8.5	Development
7.	Potiguar	Brazil	PTTEP	50.0	Production
8.	Barreirinhas AP1	Brazil	BG Brazil	25.0	Exploration
9.	Brazil BM-ES-23	Brazil	Petrobras	20.0	Exploration
10.	Mexico Block 12 (2.4)	Mexico	PC Carigali Mexico	20.0	Exploration
11.	Mexico Block 29 (2.4)	Mexico	Repsol Mexico	16.67	Exploration
12.	Dunga Project	Kazakhstan	Total	20.0	Production

Reserves

Proved Reserves

The following table sets forth information about PTTEP's proved reserves as of December 31, 2017, 2018 and 2019. See "Presentation of Oil and Gas Reserves Data" and "Risk Factors — Risks Relating to Our Business — There are uncertainties inherent in estimating PTTEP's reserves, and if the actual amounts of such reserves are less than estimated, our financial condition and results of operations may be materially and adversely affected."

	Proved Reserves of Crude and Condensate ⁽¹⁾⁽²⁾			Proved Reserves of Natural Gas ⁽¹⁾			Proved Reserves of Crude Oil, Condensate and Natural Gas ⁽¹⁾⁽²⁾		
	Domestic ⁽³⁾	Foreign	Total	Domestic ⁽³⁾	Foreign	Total	Domestic ⁽³⁾	Foreign	Total
	(MMbbl)			(Bcf)			(MMBOE)		
2017									
Beginning of year	108	62	170	2,018	1,353	3,371	438	257	695
Revision of previous estimates.	11	(0)	11	77	(50)	27	24	(7)	17
Improved recovery	2	1	3	9	0	9	4	1	5
Extensions and Discoveries	4	3	7	109	111	220	22	19	41
Purchases/Sales of reserves in place.	—	—	—	—	—	—	—	—	—
Production	(26)	(9)	(35)	(389)	(189)	(578)	(90)	(37)	(127)
End of year	99	57	156	1,824	1,225	3,049	398	233	631
	Domestic ⁽³⁾	Foreign	Total	Domestic ⁽³⁾	Foreign	Total	Domestic ⁽³⁾	Foreign	Total
	(MMbbl)			(Bcf)			(MMBOE)		
2018									
Beginning of year	99	57	156	1,824	1,225	3,049	398	233	631
Revision of previous estimates.	19	5	24	108	51	159	36	14	50
Improved recovery	5	0	5	57	13	70	14	2	16
Extensions and discoveries.	14	1	15	368	3	371	72	1	73
Purchases/Sales of reserves in place.	6	(8)	(2)	249	—	249	47	(9)	38
Production	(27)	(7)	(34)	(425)	(187)	(612)	(97)	(34)	(131)
End of year	116	48	164	2,181	1,105	3,286	470	207	677

	Proved Reserves of Crude and Condensate ⁽¹⁾⁽²⁾			Proved Reserves of Natural Gas ⁽¹⁾			Proved Reserves of Crude Oil, Condensate and Natural Gas ⁽¹⁾⁽²⁾		
	Domestic ⁽³⁾	Foreign	Total	Domestic ⁽³⁾	Foreign	Total	Domestic ⁽³⁾	Foreign	Total
	<i>(MMbbl)</i>			<i>(Bcf)</i>			<i>(MMBOE)</i>		
2019									
Beginning of year	116	48	164	2,181	1,105	3,286	470	207	677
Revision of previous estimates.	13	(1)	12	160	(53)	107	41	(4)	37
Improved recovery	1	0	1	1	1	2	2	1	3
Extensions and discoveries.	2	45	47	21	954	975	5	207	212
Purchases/Sales of reserves in place.	21	106	127	816	582	1,398	153	206	359
Production	(30)	(11)	(41)	(475)	(212)	(687)	(107)	(43)	(150)
Share of reserves of equity companies	—	—	—	16	—	16	2	—	2
End of year	123	187	310	2,720	2,377	5,097	566	574	1,140

Notes:

- (1) The proved reserves are reported on a gross basis and reflect PTTEP's working interest. PTTEP's working interest includes its net working interest and the related host country's interest pursuant to the relevant production sharing contract, if such contract is in effect.
- (2) Includes the proved reserves and production of LPG.
- (3) Includes reserves from the MTJDA.

PTTEP's increase in proved reserves of natural gas and crude oil and condensate in 2019 was mainly attributable to PTTEP's acquisition of 100% of Murphy Oil Corporation's business in Malaysia, which added two producing projects, one development project and two exploration projects to PTTEP's portfolio. The acquisition was completed in July 2019 and resulted in incremental petroleum sales volume of approximately 48,000 BOED. PTTEP completed an additional significant acquisition in 2019, its acquisition of Partex Holding B.V., which has ownership interests in seven oil and gas upstream and midstream assets in five countries, namely, Oman, the UAE, Kazakhstan, Brazil and Angola. The acquisition includes a major investment in large oil deposits in Oman and resulted in incremental petroleum sales volume of approximately 16,000 BOED.

Proved Developed Reserves

PTTEP categorizes as "proved developed reserves" the portion of proved reserves that it expects to recover through existing wells with existing equipment and operating methods and through improved recovery techniques from successful pilot projects or installed programs without any further significant investments required. As of December 31, 2019, PTTEP had proved developed reserves of natural gas of 2,377 Bcf, while its proved developed reserves of crude oil, condensate and LPG was 1,140 MMbbl.

Probable Reserves

Probable reserves are unproved reserves, in which the analysis of geoscience and engineering data indicate that they are less likely to be recovered than proved reserves. PTTEP's reported probable reserves reflect its working interest. PTTEP's working interest includes its net working interest and the related host country's interest pursuant to the relevant production sharing contract, if such contract is in effect.

PTTEP's probable reserves of crude oil, condensate, LPG and natural gas were 400 MMBOE, 351 MMBOE and 507 MMBOE as of December 31, 2017, 2018 and 2019, respectively. As at December 31, 2019, approximately 39% of PTTEP's probable reserves were crude oil, condensate and LPG while approximately 61% were natural gas. As at December 31, 2019, approximately 53% of PTTEP's probable reserves were in domestic projects in Thailand, while approximately 47% were in overseas projects.

Sale of Natural Gas and Liquid Hydrocarbons

The following table sets forth certain natural gas, LPG, crude oil and condensate total sales information of PTTEP for the periods indicated. This information includes production purchased by us and other consolidated entities within our Group.

	For the years ended December 31,			For the three-month periods ended March 31,	
	2017	2018	2019	2019	2020
Natural gas (BOE/d)	209,011	219,603	248,537	232,343	249,905
Crude oil, condensate and LPG (BOE/d) .	90,195	85,919	102,114	86,887	113,506
Average volume (BOE/d)	299,206	305,522	350,651	319,230	363,411

The following table shows the weighted average selling prices (in the currency indicated) received by PTTEP per unit of production during the periods indicated. The weighted average selling prices have been computed on a basis that includes sales to us and other consolidated entities within our Group, all of which are conducted at prevailing market prices on commercial terms.

	For the years ended December 31,			For the three-month periods ended March 31,	
	2017	2018	2019	2019	2020
Gas (U.S.\$/MMbtu)	5.59	6.42	6.92	6.92	6.87
Liquid (U.S.\$/Bbl) ⁽¹⁾	52.26	67.40	61.18	58.82	52.75
Weighted avg. (U.S.\$/BOE)	39.20	46.66	47.24	46.21	44.81

Note:

- (1) Liquid comprise of crude oil, condensate, LPG, and from 2019 onwards, products from PTTEP’s midstream operations.

Our Purchases from PTTEP

Natural Gas

Consistent with current Government policy, we purchase a substantial portion of PTTEP’s natural gas production through long-term GSAs. PTTEP, together with its relevant joint venture partners, are party to the GSAs with us. The GSAs generally terminate at the earliest of (i) the expiration of the underlying concession, (ii) the depletion of reserves in the relevant field or (iii) a fixed period of time (generally 25 to 30 years) after commencement of production. These GSAs generally provide for the sale of all natural gas produced by the field or fields covered by the agreement. These GSAs are negotiated on an arm’s-length basis.

Oil

We have entered crude oil sales agreements with PTTEP with respect to its working interest in the PTTEP 1 project (the “**PTTEP 1 Agreement**”) and the S1 project (the “**S1 Agreement**”). The agreements provide for our purchase of all oil produced from the fields.

The PTTEP 1 Agreement provides for sales of crude oil from PTTEP to us at prices to be adjusted monthly based on the estimated yield of refined petroleum products per Bbl of crude oil produced at the PTTEP 1 project, multiplied by an average price per unit of refined product derived from certain internationally available published prices and adjusted to reflect refining costs.

The S1 Agreement provides for sales of crude oil from PTTEP to us at a price adjusted monthly to reflect the average price of a basket of a number of grades of crude oil. The formula can be amended, by mutual agreement, to reflect change in the quality of crude oil produced and under certain other circumstances.

Condensate and LPG

We, PTTEP and its relevant joint venture partners are parties to condensate sales agreements with respect to PTTEP's working interests in the Bongkot, Arthit, Contract 3, Contract 4 (formerly Pailin), MTJDA B-17 and Yetagun projects. We are also a party to an LPG sales agreement for the S1 project with PTTEP and its relevant joint venture partners. The Bongkot, Arthit, Contract 3 and Contract 4 condensate sales agreements provide for the sale to us of all the condensate from the respective fields. The price is adjusted monthly to reflect the daily changes in a specified quoted price of a basket of a number of grades of crude oil and condensate. The LPG price is set in the contract and is subject to revision by agreement of the parties or pursuant to a change in Government policy, such as in the event that the Government ceases to control the domestic prices of LPG.

PTTEP's Sales to Other Customers

Oil

PTTEP sells the crude oil produced from the Erawan project (Contract 3) under term sales and spot sales to the highest bidder. The crude oil produced from Vietnam 9-2 is co-mingled with Bach Ho crude oil and jointly sold on a term-sales basis to the Binh Son refinery. The crude oil produced from Vietnam Block 16-1 is sold on a "spot cargo" basis and under term sales to the highest bidder. The crude oil produced from the Algeria 433a & 416b project is sold under term sales to the highest bidder. The crude oil produced from the Malaysia project is sold under term sales and spot sales to the highest bidder.

Condensate

PTTEP sells condensate produced from the MTJDA B-17 on a "spot cargo" basis to the highest bidder. Condensate produced from the Yetagun field is sold to Myanmar Petrochemical Enterprise on a term sales basis to refine in Myanmar, referenced to Dated Brent, and is also sold for export on a "spot cargo" basis.

Exploration and Development Activities

PTTEP is involved in both exploration (the search for petroleum) and development (the drilling and bringing into production wells in addition to the discovery well in a field) activities. PTTEP's exploration operations include aerial surveys, geological and geophysical studies (such as seismic surveys), drilling of wildcat wells, core testing and well logging. Seismic surveys involve recording and measuring the rate of transmission of shock waves through the Earth with a seismograph. Upon striking rock formations, the waves are reflected back to the seismograph. The time lapse is a measure of the depth of the formation. The rate at which waves are transmitted varies with the medium through which they pass. Seismic surveys may either be three-dimensional or two-dimensional surveys, the former type generally giving a better detail picture and the latter a better overall picture.

Analysis of the data produced allows PTTEP to formulate a picture of the underground strata to enable it to form a view as to whether there are any "leads" or "prospects." "Leads" are preliminary interpretations of geological and geophysical information that may or may not lead to prospects and "prospects" are geological structures conducive to the production of petroleum. The actual existence of such petroleum must be confirmed, usually by the drilling of an exploratory well. If such a well confirms the prospect (it is considered "successful"), PTTEP may then drill a delineation (or appraisal) well to acquire more detailed data on the reservoir formation. Once the presence of hydrocarbons is proved to have commercially recoverable quantities or the delineation well is "successful," development wells may be drilled to prepare for production. An area is considered to be developed when PTTEP has a well on it and is capable of producing petroleum in paying quantities.

PTTEP did not drill any exploration wells in 2017 and 2018. In the first half of 2019, PTTEP AAA completed the drilling of the exploration well in the Orchid field (or otherwise known as AC/P54 field) located in Australia in which it holds concession rights. The result was successful as the well

encountered gas and condensate with a net pay thickness of approximately 34 meters. In the same year, as part of PTTEP's plan to accelerate exploration activities in projects located in Myanmar and Malaysia, PTTEP's Sarawak SK410B project completed the drilling of an exploration well located in offshore Sarawak, Malaysia and encountered 252 meters of net gas pay, indicating trillion cubic feet gas discovery. This marks the largest discovery in PTTEP's history.

Our five-year average proved reserves-replacement ratio calculated by dividing our proved reserves at the end of a given five-year period by the amount of reserves produced during such period, was 0.58x, 0.74x and 1.53x as at December 31, 2017, 2018 and 2019, respectively. The substantial increase in our reserves replacement ratio as at December 31 2019 to above 1x, which indicates that we can sustain current production levels, was in large part attributable to the addition of reserves through our acquisition in 2019 of Murphy Oil Corporation's business in Malaysia and Partex Holding B.V.

Key Projects

PTTEP's key projects include the following:

Projects in Southeast Asia

PTTEP's primary operational base is in Southeast Asia, with projects located in Thailand, Myanmar, Malaysia, Vietnam and Indonesia. In the first quarter of 2020, the average sales volume from projects in Thailand amounted to 262,331 BOED, accounting for 72% of the total sales volume. Average sales volume from other countries in the Southeast Asia region was 84,983 BOED, accounting for 23% of the total sales volume.

Projects in Thailand

The majority of PTTEP's projects in Thailand, located in the Gulf of Thailand and onshore, are in the production phase. Recent key activities of the main producing projects include:

- S1 Project maintained production volumes as planned.
- Bongkot Project, Contract 4 Project and Arthit Project delivered production volumes as required by the buyers.
- The Government has put certain blocks of the Bongkot Project the concession of which are due to expire in 2022 and 2023 up for bidding. In December 2018, PTTEP was awarded the petroleum exploration and production rights for the G2/61 Block of the Bongkot field and was appointed as operator. PTTEP has closely coordinated with the existing concessionaire and the DMF to ensure a smooth operational transition from the previous concession.
- G1/61 Block (Erawan field) and G2/61 Block (Bongkot field) commenced the preparation phase for exploration and production, which includes planning for exploration drilling, construction of production platform and gas pipelines and conducting feasibility study to ensure that gas production will meet the minimum volume as stated in the production sharing contract of 1,500 MMSCFD.

Projects in Myanmar

The key producing project in Myanmar is the Zawtika project, located in the Gulf of Moattama. The project maintained production volumes as planned.

For projects in the exploration phase, the Myanmar M3 Project obtained an approval from the government of Myanmar to extend the production sharing contract until January 2021. The project's field development plan is pending an approval the Myanmar government. The Myanmar MD-7 Project has completed the drilling of an exploration well in March 2020 and is currently evaluating the exploration results.

Projects in Malaysia

The producing projects in Malaysia include the Block K Project, consisting of Kikeh, Siakap North-Petai and Gumusut-Kakap fields which are located in the deep water of offshore Sabah. The Sarawak SK309 and Sarawak SK311 projects are oil and gas producing fields located in the shallow water of offshore Sarawak.

There is one development project in Malaysia, the Block H project. The project is located in the deepwater of offshore Sabah with a capacity of 270 MMSCFD. It is under development, with the first gas production expected in the second half of 2020.

Highlights from exploration projects in Malaysia include the Sarawak SK410B project, which is currently preparing for the drilling of an appraisal well to further evaluate potential upside in the second half of 2020. The field development plan is current being studied. The Sarawak SK417 Project, the Sarawak SK438 Project, the Sarawak SK405B Project, and the PM 415 Project are currently being evaluated for petroleum potential and preparing for exploration drilling between 2020 and 2021.

Other Malaysia projects are in the process of prioritizing exploration drilling plan.

Projects in Vietnam

The key producing project is the Vietnam 16-1 Project, located offshore in the south-eastern region of the country. The project is preparing to drill an appraisal well to maintain production plateau as planned. For exploration projects, the Vietnam B & 48/95 Project and the Vietnam 52/97 Project, located offshore, are finalizing the final investment decision. The projects are expected to have the first gas by the end of 2023 with production capacity gradually ramping up to 490 MMSCFD.

Projects in the Middle East

In the first of quarter of 2020, the average sales volume from projects in the Middle East was approximately 8,262 BOED, accounting for 2% of the total sales volume. PTTEP's projects in this region are located in Oman and the United Arab Emirates.

Projects under production phase in this region include the PDO (Block 6) Project, which is the largest potential onshore producing oil asset in Oman and the Mukhaizna (Block 53) Project, which is a large producing onshore oil field located in southern Oman. In the first of quarter of 2020, both projects maintained production volumes as planned.

For exploration projects, in February 2020, Oman Onshore Block 12 Project signed an exploration and production sharing agreement with Oman's Ministry of Oil and Gas for exploration and production rights in the central part of Oman. The project will carry out geological and geophysical studies and exploration drilling within the first three years of the exploration period.

Middle East projects under exploration phase are located offshore in the northwest of Abu Dhabi. The Abu Dhabi Offshore 1 Project is currently being evaluated for petroleum potential for future exploration. The Abu Dhabi Offshore 2 Project is currently being evaluated for petroleum potential to prepare for drilling of one exploration well in the third quarter of 2020.

Projects in the Americas

PTTEP's exploration projects in this region are located in Canada, Brazil and Mexico.

The Mariana Oil Sands Project, located in Alberta, Canada, is currently under evaluation for an appropriate project management plan.

Projects in Brazil include the Barreirinhas AP1 Project located in the Barreirinhas Basin, offshore of the northeastern region of Brazil, and the Brazil BM-ES-23 Project located offshore in the Espirito Santo basin, east of Brazil. Both projects are currently being evaluated for petroleum potential.

Projects in Mexico include the Mexico block 12 (2.4) Project located in the Mexican Ridges, western Gulf of Mexico. The project is currently being evaluated for petroleum potential. The Mexico block 29 (2.4) Project, located in the Campeche, southern Gulf of Mexico, is in process of drilling two exploration wells with expected completion in the second quarter of 2020.

Projects in Australia

PTTEP's projects in this region include only the PTTEP Australasia Project, which is located in Australia. The Cash Maple Field is currently under evaluation for the appropriate development plan. The AC/P54 in Orchid Field is in the exploration phase and it completed drilling of an exploration well in 2019 with successful results. The well encountered gas and condensate. The project is preparing a development plan along with the Cash Maple Field.

Projects in Africa

PTTEP's projects in this region are located in Algeria and Mozambique.

The Algeria 433a and 416b Project, both of which are in the production phase, are located onshore in the eastern part of Algeria. In the first quarter of 2020, the projects maintained production volumes as planned.

The Algeria Hassi Bir Rekaiz Project, which is in the development phase, is located onshore in the eastern part of Algeria. Development activities commenced in the first quarter of 2019. PTTEP expects the first oil production for the initial phase to be around 10,000-13,000 BPD in 2021 and production capacity to ramp up in the second phase to around 50,000-60,000 BPD in 2025.

The Mozambique Area 1 Project, which is in the development phase, is a large LNG project located in offshore Mozambique. In the first quarter of 2020, the project is conducting a detailed engineering design and sourcing for procurement of long lead equipment. The project also successfully tested the first flight landing at the newly constructed airstrip in the construction site (Afungi site) with the operation license obtained and ready to use. Currently, the project is sourcing LNG carriers. Project finance is at its final stage, with the plan for the first commercial cargo by 2024.

Other Business Activities

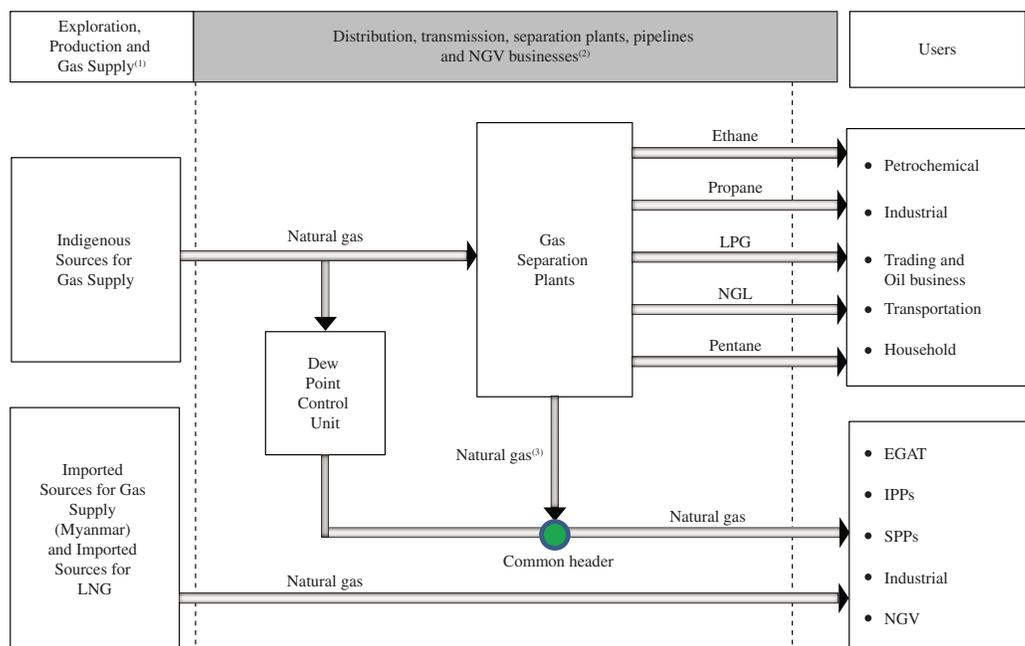
In addition to oil and gas exploration and production activities, PTTEP also engages in other businesses including jetty and warehousing in Songkla and Ranong provinces, gas transmission pipeline from Zawtika, Yadana and Yetagun Project, property development and management under the Energy Complex Development Project, LNG value chain including LNG production in Oman, information technology, providing floating storage and offloading unit vessels, airfield and airbase operations and GSPs in the UAE.

Gas Business

Overview

We operate our gas business directly and are the only fully-integrated gas company in Thailand. Our principal activities comprise natural gas procurement, transmission, processing, and marketing and distribution. We operate these businesses directly. We own substantially all of Thailand's natural gas transmission and distribution pipeline network. We also supply NGV to NGV service stations and engage in gas-related value added businesses in domestic and international markets. We purchase natural gas from onshore and offshore producers in Thailand and Myanmar, import LNG, transport the gas through our transmission network and sell it to EGAT and other power producers for use in electricity generation, to other industrial sectors and to NGV service stations. In addition, at our six GSPs, we extract gas products from natural gas which we sell to petrochemical facilities in our petrochemicals business or directly to our customers. We also sell LPG to household and industrial and transportation sectors. Our gas business also invests in LNG receiving terminals, storage and re-gasification services and engages in other ancillary gas businesses including pipeline asset management.

The following diagram illustrates the operations of our natural gas business.



Notes:

- (1) PTT operates exploration and production through PTTEP. PTT procures natural gas from both indigenous and imported sources and import LNG.
- (2) Operated by PTT.
- (3) Refers to a portion of natural gas which is left after other products have been separated. It mainly consists of methane.

Our gas pipeline network currently extends for approximately 4,252 kilometers, comprising approximately 2,119 kilometers of an onshore network (including pipelines to private power producers and power plants but excluding distribution pipeline) and approximately 2,133 kilometers of an offshore network. The volume of natural gas sold by us in each of the last three years was approximately 4,716 MMSCFD in 2017, 4,711 MMSCFD in 2018 and 4,796 MMSCFD in 2019. We sold approximately 4,623 MMSCFD of natural gas for the first three months of 2020.

Gas Procurement

Principal Sources of Supply

We purchase substantially all of the natural gas produced in Thailand, as well as gas produced offshore in Myanmar, through long-term take-or-pay gas purchase agreements with the various natural gas producers. The agreements range from 25 to 30 years. The agreements establish the obligation of a projects' relevant joint venture partners, including PTTEP, to deliver and our obligation to take delivery of specified minimum daily contract quantities and our obligation to pay for any volumes contracted for but not taken. Our gas purchase agreements provide for delivery of natural gas at specified pressures to us at the wellhead or another agreed location. We currently have 14 gas purchase agreements with producers in Thailand and Myanmar. Supply of natural gas in 2019 included approximately 70% from indigenous production (in the Gulf of Thailand and onshore) and 30% from Myanmar and from LNG imports. We currently have four long-term LNG purchase agreements with offshore vendors with a total supply capacity of 5.2 mtpa.

The following table sets forth our natural gas sources gas purchase agreements and provides volumes and percentages of gas purchased under each gas purchase agreement for the periods indicated. For a discussion concerning natural gas sources in Thailand, see “*Relationship with the Government and Regulatory Matters — Exploration and Production Concessions.*”

Natural Gas Procurement under Purchase Agreements	Year ended December 31,						Three months ended March 31,			
	2017		2018		2019		2019		2020	
	(MMS CFD) ⁽¹⁾	(%)	(MMS CFD) ⁽¹⁾	(%)	(MMS CFD) ⁽¹⁾	(%)	(MMS CFD) ⁽¹⁾	(%)	(MMS CFD) ⁽¹⁾	(%)
Domestic Agreements										
Unocal 1, 2, 3	1,305	27.6	1,287	27.3	1,286	26.8	1,258	26.5	1,247	27.0
Bongkot North and South . .	835	17.7	735	15.6	787	16.4	686	14.4	769	16.6
Pailin	353	7.5	405	8.6	408	8.5	410	8.6	374	8.1
B 8/32	103	2.2	79	1.7	76	1.6	80	1.7	57	1.2
Namphong/Phuhom	86	1.8	86	1.9	91	1.9	103	2.2	91	2.0
MTJDA	436	9.2	464	9.9	462	9.7	477	10.0	411	8.9
Sirikij	12	0.3	11	0.2	10	0.2	10	0.2	7	0.2
Arthit	212	4.5	209	4.4	220	4.6	234	4.9	220	4.7
Subtotal	3,342	70.8	3,276	69.6	3,340	69.7	3,258	68.5	3,176	68.7
International Agreements										
Yadana	420	8.9	440	9.3	419	8.7	432	9.1	377	8.1
Yetagun	204	4.3	141	3.0	99	2.1	119	2.5	59	1.3
Zawtika	224	4.7	224	4.8	218	4.6	211	4.4	239	5.2
LNG	530	11.2	627	13.3	716	14.9	734	15.5	772	16.7
Subtotal	1,378	29.2	1,432	30.4	1,452	30.3	1,496	31.5	1,447	31.3
Total supply	4,720	100.0	4,708	100.0	4,792	100.0	4,754	100.0	4,623	100.0

Notes:

(1) The volume of natural gas is determined at a heating value of 1,000 btu/cf.

The Gulf of Thailand continues to be our main source of natural gas and where most of our transmission pipeline is concentrated. In 2019, procurement of gas from domestic and foreign sources totaled 4,792 MMSCFD, an increase of 2% from the previous year. Of this, 3,340 MMSCFD was from domestic sources. Our transmission pipeline in the western region of Thailand extends from the border with Myanmar at Ban-I-Tong, Kanchanaburi province to the Ratchaburi power plant where it connects with our eastern pipeline system at Wangnoi.

Principal Terms of Gas Purchase Agreements

Pricing Mechanisms

Under the terms of our gas purchase agreements, we purchase natural gas from producers at an initially base price, agreed with the producers and periodically adjusted based on an agreed formula.

Under most of our contracts with producers in the Gulf of Thailand, our gas purchase prices are denominated in Baht and adjusted monthly, quarterly, biannually or annually, as specified in the relevant contract, to reflect:

- changes in the average price per barrel of high sulfur fuel oil ex-Singapore;
- certain changes in the foreign exchange rate; and
- various economic indices which generally measure inflation, including the Thai wholesale price index and a U.S. producer price index for oil and gas field machinery and tools.

Gas purchase prices under our gas purchase agreements with producers in Myanmar and for natural gas to be produced in the JDA are denominated in U.S. dollars and adjusted periodically to reflect changes in a U.S. producer price index. Payments for gas sold under the agreements are made monthly.

Our gas purchase price is passed through to power producers which are our main group of customers. This minimizes our exposure to fluctuation in gas price.

Purchase Volumes

Our gas purchase agreements generally require us to take delivery of annual minimum quantities of natural gas for periods ranging from 25 to 30 years, until depletion of the relevant gas fields or until expiration of the underlying concession. If we fail to take delivery of the annual minimum quantity, we are obligated to pay the producer for the untaken portion of the annual minimum quantity for that contract year under the take-or-pay condition. We may, however, take delivery of such prepaid natural gas in future contract years without expiration and an additional payment, provided that we have taken the annual minimum contract quantity in such year.

To the extent that producers are unable to meet their delivery obligations under our gas purchase agreements, they are generally required to supply the amount of shortfall in the succeeding period at a discount of 20-25% of the contracted price. Our gas purchase agreements also give us the right to require our suppliers to deliver additional quantities, up to a contracted maximum delivery quantity which is generally 5-25% above the daily contract quantity. We can take delivery of gas in excess of the daily contract quantity. These excess quantities can be applied against our annual minimum quantities for future years, up to a maximum of five years after the excess gas was purchased, provided that generally such credit carried forward shall be limited to 15% or 20% of the minimum off-take amount in the respective contract year.

Force Majeure

Our gas purchase agreements contain force majeure provisions that excuse us and the producers from performance of our respective obligations in certain circumstances. These circumstances, or force majeure, are generally defined as any happening, event or pernicious results which are beyond the control of the party claiming relief acting in a reasonable and prudent manner. Certain of the gas purchase agreements include within the definition of force majeure the inability of us to accept delivery of natural gas by reason of the inability of any of our customers to take natural gas, if such inability is caused by an event which would have constituted force majeure in relation to us. However, we are not entitled to such force majeure relief unless we require each of our suppliers to bear its proportionate share of the volume of natural gas we are unable to take.

Gas Transmission

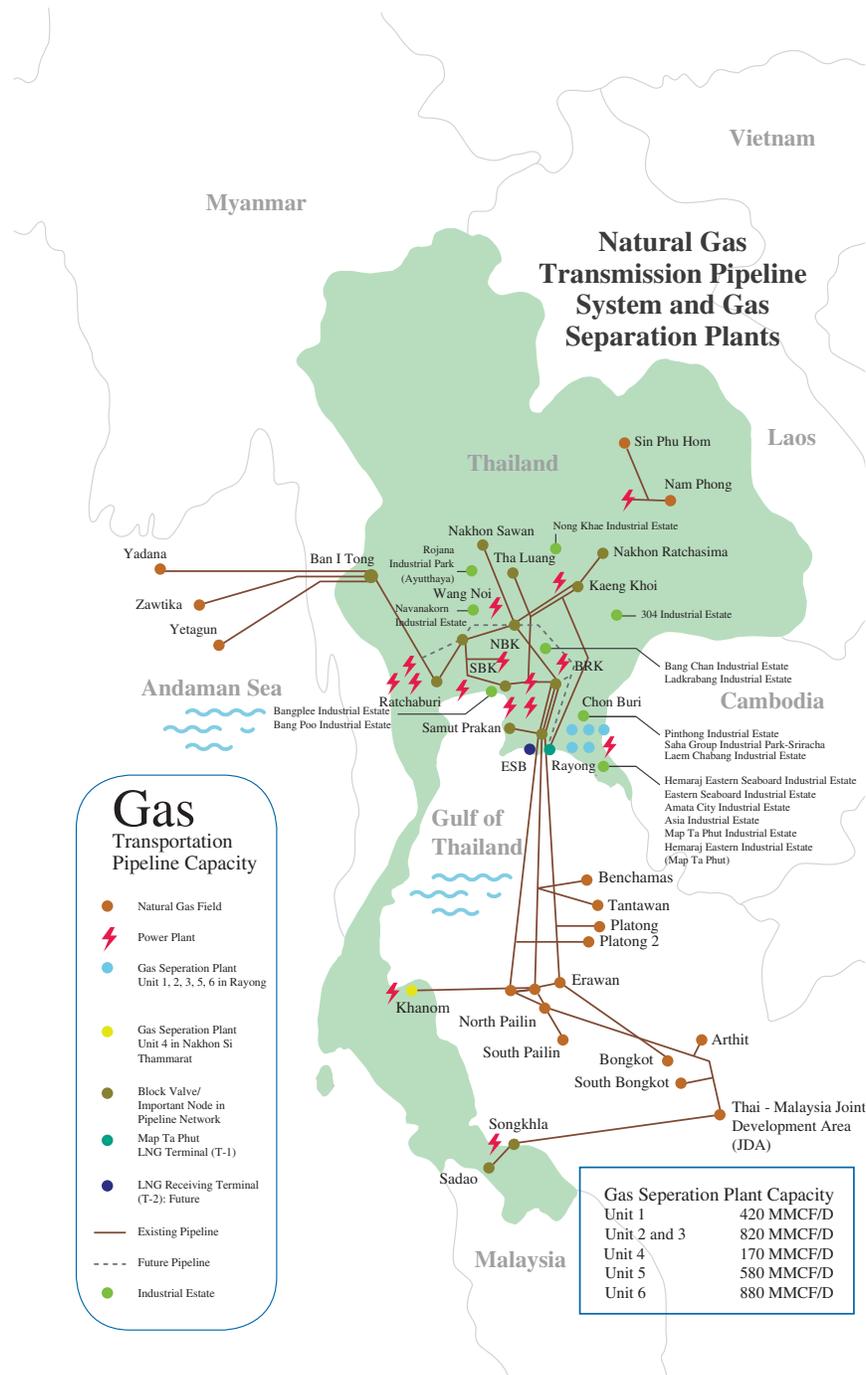
Existing Transmission Network

We own and operate a transmission network of approximately 4,252 kilometers of pipeline, which represents substantially all of the offshore and onshore natural gas pipeline in Thailand. Approximately 2,133 kilometers of our transmission system is offshore and approximately 2,119 kilometers is onshore.

Our Rayong offshore natural gas pipeline network connects gas fields in the Gulf of Thailand to our onshore natural gas pipeline network in Map Ta Phut, Rayong province, in the northern portion of the Gulf of Thailand. The Rayong offshore natural gas pipeline system includes feed pipelines from the Arthit, North Pailin, South Pailin, Bongkot, Benchamas, Tantawan, Platong and Platong 2 fields. Our Khanom offshore natural gas pipeline system connects the Erawan platform to our GSP Unit 4 and the Khanom power plant in Nakhon Si Thammarat province in the western portion of the Gulf of Thailand.

The onshore transmission pipeline system covers a distance of 2,119 kilometers and has two components, one in the western portion and one in the eastern portion of the country. The western pipeline receives gas transferred from the Yadana, Zawtika and Yetagun fields by Myanmar's offshore pipeline network at the Thai-Myanmar border in Kanchanaburi province. It supplies gas to the Ratchaburi power plant and also connects with our onshore pipeline system in eastern Thailand via a pipeline linking Ratchaburi with Wangnoi. The eastern pipeline network receives gas from our offshore pipeline in the Gulf of Thailand and the LNG receiving terminal at Map Ta Phut, Rayong province, and delivers it to our GSP Units 1, 2, 3, 5 and 6 and ESP Unit, the Rayong power plant and the power plants of EGAT, IPPs and SPPs as well as industrial customers in the eastern and central regions of Thailand. We leverage the interconnection of the western and eastern components of our onshore pipeline system to flexibly manage gas sourced from the Gulf of Thailand and Myanmar's Gulf of Martaban and LNG to meet demand in both regions.

The following map depicts our existing transmission pipeline network, including Myanmar's pipeline system connecting the Yadana, Zawtika and Yetagun fields to our pipeline system at the Thai-Myanmar border in Kanchanaburi province.



The following table sets forth certain details of our existing major transmission pipeline infrastructure in Thailand.

Pipeline	Length <i>(km)</i>	Diameter <i>(inch)</i>	Starting Year	Description
<i>Offshore Pipeline System</i>				
Erawan to Rayong GSP (Main Pipeline)	415	34	1981	Main pipeline from Erawan Platform to GSPs in Rayong province.
Bongkot to Erawan (Main Pipeline)	171	32	1996	Main pipeline from Bongkot to Erawan Platform.
Erawan to Rayong GSP (Parallel Pipeline)	413	36	1996/1997	Parallel pipeline from Erawan Platform to GSPs in Rayong province.
Arthit to GSP in Rayong province (Third Pipeline)	610	42	2007	Third pipeline from Arthit field to GSPs in Rayong province.
JDA to Arthit	95	42	2008	Third pipeline connecting the JDA gas field to Arthit field.
Erawan to Khanom Power Plant	161	24	1996	Pipeline from Erawan Platform to Khanom power plant in Khanom, Nakhon Si Thammarat province.
Chevron extension (Platong 2) field to third deep sea pipeline.	48	28	2011	Pipeline from Chevron extension (Platong 2) field to the third deep sea pipeline.
South Bongkot to third deep sea pipeline	38	24	2012	Pipeline from South Bongkot field to the third deep sea pipeline.
<i>Onshore Pipeline System</i>				
Rayong GSP to Bangpakong power plant (Main Pipeline)	104	28	1981	Main pipeline from GSPs in Rayong province to Bangpakong power plant in Chachoengsao province.
Bangpakong power plant to South Pranakorn power plant (Main Pipeline)	57	28	1981	Main pipeline from Bangpakong power plant to South Pranakorn power plant in Samut Prakarn province.
Bangplee to Saraburi (Main Pipeline)	99	24	1981	Main pipeline from Bangplee Samut Prakarn province to Siam Cement Plc.'s cement plants in Saraburi province.
Namphong to Namphong Power Plant	3.5	16	1990	Pipeline connecting Namphong gas field to Namphong power plant in Khon Kaen province.
Rayong GSP to Bangpakong power plant (Parallel Pipeline)	105	28	1996	Parallel pipeline from GSPs in Rayong province to Bangpakong power plant in Chachoengsao province.
Bangpakong to Wangnoi power plant (Parallel Pipeline)	101	36	1996	Parallel pipeline from Bangpakong pressure booster station, Chachoengsao province, to Wangnoi power plant in Ayudhya province.
Thai-Myanmar border to Ratchaburi power plant	238	42	1998	Pipeline starting from the gas delivery point at the Thai-Myanmar border to transmit natural gas from Yadana and Yetagun to Ratchaburi power plant in Ratchaburi province.

Pipeline	Length (km)	Diameter (inch)	Starting Year	Description
Ratchaburi to Wangnoi Pipeline	154	30	2000	Pipeline from Ratchaburi gas metering station to Wangnoi gas metering station in Ayuthaya province.
Rayong GSP to Bangpakong (Third Pipeline)	110	36	2006	Third pipeline from GSPs in Rayong to Bangpakong power plant in Chachoengsao province.
Wangnoi power plant to Kang Koy power plant	72	36	2006	Pipeline from Wangnoi power plant in Ayuthaya province to Kang Koy power plant in Saraburi province.
#RA6 Pressure Control Station to South Bangkok power plant	70	30	2007	Pipeline from #RA6 Pressure Control Station to South Bangkok power plant in Samut Prakan province.
Shore pipeline to Chana power plant	8	20	2007	Pipeline from the coast of Chana district, Songkhla province, to Chana power plant in Songkhla province.
Pipeline to North Pranakorn power plant	7	24	2009	Pipeline from South Bangkok power plant to North Bangkok power plant in Nonthaburi province.
Onshore pipeline from Thailand-Myanmar border to BVW#1	0.59	28	2014	Pipeline from Zawtika field in Myanmar to PTT's transmission pipeline in Kanchanaburi province.
Rayong to Kang Koy (fourth pipeline)	298	42	2015	Pipeline from Rayong province to Wangnoi and Kang Koy power plant.
Nakonsawan	192	28	2015	Pipeline from Wangnoi power plant in Ayudhaya province to Nakonsawan province.
Nakon Ratchasima	145	28	2018	Pipeline from Wangnoi-Kangkoy pipeline in Saraburi province to Nakon Ratchasima province.

Natural gas that we purchase from the Gulf of Thailand is transmitted through our pipeline network from offshore platforms and sent directly to our GSPs and combined with sales gas from GSPs at a common header facility. The resulting mixture of natural gas is then sent to customers who use it for petrochemical feedstock, industrial fuel, household consumption and transportation.

Natural gas that we purchase from Myanmar is transmitted from our pipeline at the Thai-Myanmar border directly to power producers, including the Ratchaburi power plant. LNG that we import via terminals at Map Ta Phut LNG Terminal in Rayong province is also transmitted directly to power producers, such as EGAT, industrial users and NGV stations.

Network Expansion

We continuously expand our gas transmission and distribution network. Our experience in the development, management and operation of our existing natural gas pipelines has enabled us to develop relatively advanced technologies and skills for long distance pipeline development and automated operational communications in Thailand.

Our expansion projects generally require our board of directors' approval; require us to obtain domestic and foreign debt financing; and are subject to the approval of an environmental impact assessment report prior to commencement of construction.

We have two ongoing pipeline expansion projects, as described below. Together, these two projects are expected to increase our pipeline network to approximately 4,702 kilometers from approximately 4,252 kilometers to accommodate gas flows between the eastern part and the western part of Thailand.

The Fifth Transmission Pipeline Project

We are constructing the fifth main onshore transmission pipeline (the “**Fifth Transmission Pipeline Project**”) in the eastern and central part of Thailand in order to provide gas supply to power plants in a loop linked network connecting between power plants in the east and west of the country. Other consumers along the pipeline route will also benefit from the project. The pipeline system under this project is designed to receive gas from the existing LNG receiving terminal located in Map Ta Phut, Rayong province and the future LNG receiving terminal in Nong Fab sub-district, Map Ta Phut, Rayong province, which is approximately 5.5 kilometers northwest of the existing terminal. The pipeline route will pass through eight provinces (Rayong, Chonburi, Chachoengsao, Prachinburi, Ayutthaya, Bangkok, Pathumthani, and Nonthaburi provinces). The Fifth Transmission Pipeline Project answers to the increasing demand in power supply and is expected to begin its commercial operation in 2021.

The Ratchaburi Pipeline (RA#6) Project

We are in the process of completing the construction of gas pipelines in the Ratchaburi Pipeline (RA#6) Project. The pipeline route will carry natural gas from Ratchaburi province to Wang Noi power plant in Ayutthaya province. The project is expected to begin its commercial operation in 2021.

Gas Processing

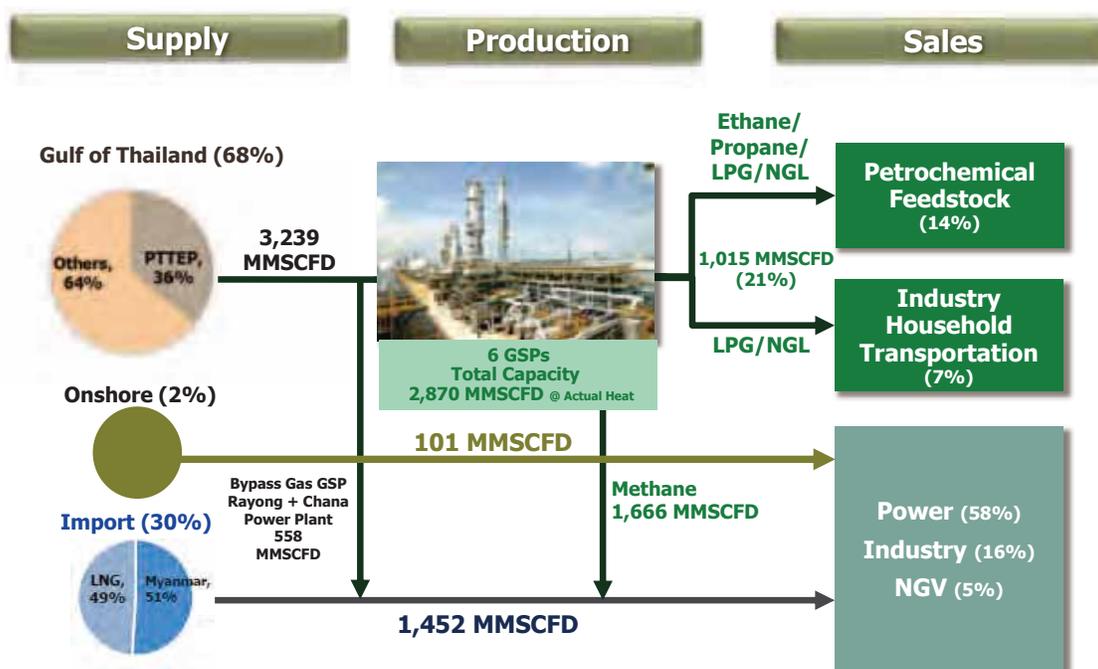
We currently operate six GSPs, which separate natural gas into gas products, including ethane, propane, LPG and NGL. These plants currently have a combined processing capacity of approximately 2,870 MMSCFD. GSP Units 1, 2, 3, 5, 6 and ethane separation plant are located in Map Ta Phut, Rayong province, while GSP Unit 4 is located in Khanom, Nakhon Si Thammarat province.

The following table sets forth details of the respective nameplate capacities for our GSPs.

GSP	Nameplate Capacity (MMSCFF)
Unit 1	420
Unit 2 and 3	820
Unit 4	170
Unit 5	580
Unit 6	880

In 2020, through March 31, 2020, approximately 56% of the natural gas that we purchased (including intra-Group purchases from PTTEP) was processed at our GSPs. These plants produced gas products equal in volume to approximately 6,739 thousand tons in the same period. The GSPs and ESPs’ production mainly consists of four products: ethane, propane, LPG and NGL. A majority of the output from our GSPs and ESP is used in our petrochemical facilities and the remainder is sold to non-affiliated petrochemical producers and industrial, transportation industry and household users. We also sell LPG to end users through our oil business. We remix the remaining natural gas from our GSPs, which is predominately methane, with our gas from the Gulf of Thailand, gas from Chana power plant, along with natural gas sourced from Myanmar and imported LNG, to be supplied to power producers, industrial users and NGV stations. The average utilization rate of our GSPs (inclusive of planned shutdowns for maintenance) was 97.1% in 2017, 95.6% in 2019 and 94.8% in 2020.

The following diagram depicts our gas separation operations and how they integrate with our gas transmission operations.



Notes:

- (1) MMSCFD = Million Cubic Feet @ Heating Value 1,000 btu/cf MMSCFD unit shown does not include the portion reserved for PTT's own use and inventory.
- (2) As of December 31, 2019.
- (3) Natural gas in gaseous form.
- (4) Natural gas in liquid form.

The following table sets forth the total volume of gas products produced at our GSPs for the periods indicated.

	Year ended December 31,			Three months ended March 31,	
	2017	2018	2019	2019	2020
	(Tons)				
Products					
LPG	2,760,648	2,795,800	2,744,868	509,386	550,652
Ethane	2,333,363	2,388,136	2,396,338	554,873	422,899
Propane	987,554	1,012,359	1,021,520	262,024	236,355
NGL ⁽¹⁾	562,931	549,158	576,023	243,981	362,985
Total	6,644,496	6,745,453	6,738,749	1,570,264	1,572,891

Notes:

- (1) Excludes NGL from dew point control units and includes Butane and Pentane (sales began in February 2015).

The following table sets forth gas sales volumes of our various processed gas products from our GSPs, including intra-Group sales, for the periods indicated.

	Year ended December 31,			Three months ended March 31,	
	2017	2018	2019	2019	2020
	(Tons)				
Products					
LPG	2,919,061	3,203,338	3,594,017	831,793	796,339
Ethane	2,333,234	2,389,118	2,397,704	555,281	551,961
Propane	826,526	907,028	891,923	241,799	199,397
NGL ⁽¹⁾	732,192	692,853	725,050	166,610	172,118
Total	6,811,013	7,192,337	7,608,694	1,795,482	1,719,815

Notes:

(1) Excludes NGL from dew point control units and includes Butane and Pentane (sales began in February 2015).

Gas Marketing and Distribution

The following table sets forth the volume and percentage of natural gas we sold to our customers, including intra-group sales, for the periods indicated.

	Year Ended December 31,						Three months ended March 31,			
	2017		2018		2019		2019		2020	
	(MMS CFD) ⁽²⁾	(%)	(MMS CFD) ⁽²⁾	(%)	(MMS CFD) ⁽²⁾	(%)	(MMS CFD) ⁽²⁾	(%)	(MMS CFD) ⁽²⁾	(%)
Customers										
EGAT	757	16.05	737	15.64	755	15.74	783	16.49	843	18.23
IPPs	934	19.80	739	15.69	750	15.64	711	14.98	624	13.50
SPPs	1,043	22.12	1,222	25.94	1,305	27.21	1,286	27.09	1,261	27.28
Industrial ⁽¹⁾	727	15.42	760	16.13	751	15.66	770	16.22	752	16.27
GSPs (intra-group)	996	21.12	1,015	21.55	1,015	21.16	963	20.29	949	20.53
Transportation	259	5.49	238	5.05	220	4.59	234	4.93	194	4.20
Total	4,716	100.00	4,711	100.00	4,796	100.00	4,747	100.00	4,623	100.00

Notes:

(1) Including sales of natural gas to PTT Natural Gas Distribution Co., Ltd.

(2) Volume is calculated at a heat value of 1,000 btu/cf.

Pricing

The price we charge power producers (EGAT, IPPs and SPPs) for natural gas is comprised of two major components — a gas charge and a transmission tariff. The gas charge is equal to a pool gas price derived from the weighted average of prices we pay various natural gas producers, plus a customer-specific marketing margin (capped at a certain amount depending on the type of power producer involved). Our transmission tariff is comprised of a demand charge intended to recover our cost of investment in the transmission pipeline and fixed operating and maintenance costs and a commodity charge intended to cover our variable maintenance and operating costs. The gas price formula can be summarized as follows:

$$\begin{aligned}
 \text{Total Gas Price} &= \text{Gas Charge} + \text{Transmission Tariff} \\
 \text{Gas Charge} &= \text{Pool Price} + \text{Marketing Margin} \\
 \text{Transmission Tariff} &= \text{Demand Charge} + \text{Commodity Charge}
 \end{aligned}$$

Gas Charge

Pool Price. The pool price is the weighted average of prices that we pay gas producers. The pool price mechanism establishes a common base price for the gas we sell to EGAT and private producers, allowing us to pass on changes in the gas purchase prices we pay gas producers.

Marketing Margin. The marketing margin, set as a percentage of the pool price, is intended to generate a return in excess of our cost of procuring and marketing our gas supply. We charge EGAT and IPPs a different marketing margin than we charge SPPs. The following table summarizes our current marketing margins, which are subject to price ceilings.

<u>Customer Type</u>	<u>Marketing Margin</u>
EGAT	1.75% of the pool price, but not exceeding 2.1525 Baht per MMBtu
IPPs	1.75% of the pool price, but not exceeding 2.1525 Baht per MMBtu
SPPs	9.33% of the pool price, but not exceeding 11.4759 Baht per MMBtu

Transmission Tariff

We charge our customers a transmission tariff for the transportation of the natural gas and is comprised of a demand charge and commodity charge. The principles for the calculation of transmission tariffs were approved by NEPC on October 18, 2007.

Demand Charge. The demand charge is intended to cover our investment costs and our fixed operating and maintenance expenses in the transmission pipeline (at an internal rate of return on equity approved by the Government at 18% for the first and second pipelines and 12.5% for the third and fourth pipelines or for existing pipelines whose useful lives have been extended). The demand charge for each customer is determined by the geographical location of the customer delivery point, categorized by zone. The transmission network is divided into five pipeline zones. Each pipeline zone has a different tariff charge.

The following table sets forth the coverage, demand charge approved by the ERC and customers for each zone in effect as of March 31, 2020.

<u>Coverage</u>	<u>Demand Charge</u>
	<i>(Baht per MMBtu)</i>
Zone 1 Offshore (Gulf of Thailand to Rayong province)	8.5899 ⁽¹⁾
Zone 2 Offshore (Gulf of Thailand to Khanom district)	14.2177 ⁽¹⁾
Zone 3 Onshore	12.0654 ⁽¹⁾
Zone 4 Onshore at Chana district	2.4855 ⁽²⁾
Zone 5 Onshore at Namphong district	1.1299 ⁽³⁾

Notes:

- (1) Effective from April 1, 2009.
- (2) Effective from June 2011.
- (3) Effective from July 2012.

The tariff amount is reviewed every five years by the regulator and may be adjusted to sustain our approved internal rate of return to account for significant changes in the energy value or volume of gas sold or increased investment in the pipeline network.

EGAT and IPPs pay a fixed amount of demand charge based on agreed monthly contract volumes, while SPPs pay a variable amount of demand charge according to the quantity of gas taken subject to a minimum amount.

Commodity Charge. The commodity charge is intended to cover our variable operating costs and maintenance expenses and is calculated by reference to the actual volume of gas purchased. The commodity charge can be adjusted annually based on adjustment index.

The following table sets forth the coverage and commodity charge approved by the Energy Regulatory Commission for each zone as of March 31, 2020.

Coverage	Commodity Charge
	<i>(Baht per MMBtu)</i>
Zone 1 Offshore (Gulf of Thailand to Rayong province)	1.1668 ⁽¹⁾
Zone 2 Offshore (Gulf of Thailand to Khanom district)	1.1668 ⁽¹⁾
Zone 3 Onshore	1.1668 ⁽¹⁾
Zone 4 Onshore at Chana district	0.1569 ⁽¹⁾
Zone 5 Onshore at Namphong district	0.0000 ⁽¹⁾

Note:

(1) Effective from July 2017.

Sales to EGAT

In 2019, sales to EGAT amounted to 755 MMSCFD, or 16% of total gas sales volume, representing an increase of 2.4% from 2018. The increase was due to higher demand resulting from a longer period of hot weather during the summer months.

We are a major natural gas supplier for EGAT. We supply natural gas to EGAT pursuant to a 10-year gas purchase agreement which covers sales of natural gas to EGAT to be supplied to the Bang Pakong, Wang Noi, North Bangkok, South Bangkok and Chana power plants. For the purposes of planning the delivery of gas, EGAT and we agree on the volume of gas expected to be delivered on each day of the following contract year.

Sales to IPPs

In 2019, sales to 13 IPPs amounted to 750 MMCSFD, or 16% of total gas sales volume, representing an increase of 1.49% from 2018. The increase was due to higher demand resulting from a longer period of hot weather during the summer months.

We enter into gas sales agreements with individual IPPs. We and EGAT also entered into a Master IPP Gas Sales Agreement. Under the Master IPP Gas Sales Agreement, EGAT has a minimum take-or-pay liability, pursuant to which it is obligated to pay us for gas not taken by the IPP under each IPP's individual gas sales agreement with us, provided that if a particular IPP cannot take delivery of its minimum quantity specified then EGAT may redirect such gas to another IPP or to another EGAT power plant, as specified in the applicable contract between us and the IPP. When EGAT has paid for a minimum take liability to us for a contract year, EGAT shall have the right to subsequently take the prepaid gas from us in any of the five succeeding contract years, after the IPPs and EGAT have fulfilled their annual minimum contract quantities for any such contract year. EGAT's right to take the prepaid gas is extinguished if the agreement expires or if the gas is not taken within the five succeeding contract years. When the volume of gas taken by all the IPPs in a given contract year is in excess of the sum of all the annual contract quantities, EGAT may carry forward such excess amounts to satisfy annual minimum contract quantity requirements for subsequent years, subject to certain limitations. This Master IPP Gas Sales Agreement continues until the termination of all power purchase agreements between EGAT and IPPs. Pursuant to the Master IPP Gas Sales Agreement, the quantity of gas to be purchased by each IPP in each contract year is determined according to the amount of gas required to achieve the production of such IPP's contractual capacity and contractual available hours under its power purchase agreement with EGAT.

Sales to SPPs

In 2019, sales to SPPs amounted to 1,305 MMCSFD, an increase of 6.79% from 2018 due to higher demand resulting from a longer period of hot weather during the summer months. As of December 31, 2019, we had gas sales agreements with 71 SPPs. Our agreements with SPPs are standard form agreements requiring each SPP to purchase a minimum quantity of natural gas. This take-or-pay obligation is equal to 85% of an annual contract quantity.

Sales to Industrial Customers

Sales to industrial customers totaled 751 MMSCFD in 2019, a decrease of 1% from 2018 due to an economic slowdown. Our gas sales agreements with industrial customers generally are entered into for five to ten years. Each agreement specifies the contracted amount to be delivered by us, however customers have the flexibility to adjust the volume by 15% per year.

Our industrial customers include ceramic companies, metal work and glass work manufacturers, petrochemical products manufacturers, refineries and other industrial customers. In 2019, we had approximately 373 industrial customers, which accounted for approximately 16% of our natural gas demand. The price we charge our industrial customers for gas is based on the quantity of gas taken by industrial customers in each month and the capacity charged and the market price they would have to pay for alternative fuel sources, principally fuel oil.

Sales of Natural Gas Products

In addition to our sales of natural gas, we also consume internally or sell various gas products from our GSPs to the petrochemical industry and other industries. PTTGC uses ethane as feedstock to produce ethylene and propane, used to produce propylene. LPG, which is a mixture of propane and butane, is used as household cooking gas, as automotive and industrial fuel and as a feedstock to produce olefins. NGL, which is mixed as gasoline, serves as feedstock for petrochemical producers and the solvent industry, and is also exported to the naphtha market. Carbon dioxide, which is a by-product, is used to make dry ice, artificial rain and fire extinguisher chemicals, and also in the iron molding and welding industry, the beer and soft drink industry and the food preservation industry.

The sales prices for GSP products to petrochemical customers are based on an agreed price formula for each customer. The formula mainly references to the published reference prices of petrochemical products. For PTTGC, which is consolidated in our results of operations and is our main petrochemical offtaker, the sales price of ethane is based on profit and loss sharing formula that takes into account the price of natural gas, conversion costs at our GSPs and petrochemical plants and the published reference prices of petrochemical products, namely, HDPE, LLDPE and LDPE. The sales prices for propane and LPG are based on market prices and the sales price for NGL is based on the market price of naphtha.

The sales price for LPG fuel that is sold domestically is regulated to be based on the imported LNG prices, which references to a bi-weekly average of Platt's FOB Arub Gulf price. The margin of our GSPs' sales of LPG fuel is capped at U.S.\$1 per ton. However, the Government will provide us with subsidy where we sustain a loss of more than U.S.\$1 per ton from the regulated sales price.

NGV

With the aim to minimize our exposure to fluctuation in crude oil and refined oil prices, reduce environmental impact and encourage the use of fuel produced domestically, we promote the use of natural gas as an alternative fuel for the transportation sector. As of March 31, 2020, there were approximately 361,280 natural gas vehicles in Thailand, with 439 NGV service stations, 207 of NGV stations are located in Bangkok and the vicinity and 232 stations are located in other provinces.

NGV mother stations, including those located in the compounds of regular gasoline service stations or LPG service stations, serve as key stations for compressing and filling tank trucks with NGV for delivery to retail stations operated by us or private owners. NGV is delivered to retail stations that are located beyond transmission pipeline routes by NGV tank trucks, while conventional stations are located along the transmission pipeline routes.

Our domestic pricing structure for NGV is regulated by the Government's policy to encourage the use of an alternative fuel in the transport sector. See "*Risk Factors — Risks Relating to Our Business — Government intervention in our pricing decisions may adversely affect our business.*" In the past, the retail price of NGV was regulated and capped to minimize the impact from the

rising global crude prices on end-users. Later in 2016, the Government increased the NGV price for private sector consumption to reflect the natural gas cost. However, the increased price still did not fully cover our operating cost. In September 2017, the private sector NGV price was adjusted to reflect gas quality improvement cost, which helped to reduce our subsidy on the price. Likewise, NGV price sold to public transportation vehicles was capped at Baht 8.50-10.0 per kilogram in the past. However, the price has been adjusted upward since May 2018. The gradual increase in NGV prices on both private and public transportation sector has contributed to a consecutive drop in our price subsidy portion.

Other Gas Businesses

PTT LNG

Our wholly-owned subsidiary PTT LNG owns and operates an LNG receiving terminal with LNG regasification and storage services. The receiving terminal, situated in Map Ta Phut, Rayong province, began commercial operations in September 2011 and has a capacity of 11.5 mtpa. Currently, we are utilizing approximately 47% of the terminal capacity.

The LNG receiving terminal is a key initiative to mitigate our dependence on petroleum to generate income. PTT LNG's operation provides us with stable cash flows through tariffs it charges to customers. The tariff is calculated based on regulatory guidelines and is approved by the NEPC. The tariff is made up of a demand charge and a commodity charge. The demand charge is a fixed fee which is intended to allow us to receive an agreed internal rate of return on equity and to cover our investment, operating and maintenance costs and the commodity charge is a variable cost based on utilization. Currently, the demand charge is fixed at Baht 18.3506/MMbtu. The ERC reviews the demand charge every three to five years and the commodity charge annually.

PTT LNG also services and manages the operations and maintenance of the facility's jetty, LNG storage terminal and regasification plant, and charges users throughput and service fees. Its terminal provides access to natural gas that has been discovered abroad, usually during the search for oil, and converted to a liquid state to facilitate transport in special purpose ships. Its terminal stores or converts the LNG to natural gas through a regasification process for domestic distribution.

PTT LNG is in the process of constructing a new LNG receiving terminal at Nong Fab sub-district, Rayong province, which is approximately 5.5 kilometers northwest of the existing terminal. We expect the construction to be complete in 2022 and commercial operation to commence in the same year. We expect the new LNG receiving terminal to bring our total capacity to 19 mtpa.

Additionally, we entered into a public private partnership contract with the Industrial Estate Authority of Thailand to develop Map Ta Phut seaport phase III (Section 1) through PTT Tank, one of our subsidiaries. This project allows us to construction an LNG receiving terminal with a capacity of not less than 5 mtpa with an investment value of approximately Baht 28,000 million (U.S.\$856 million). See “— *Business Activities — Petrochemicals and Refining Business — Description of Principal Consolidated Entity Engaged in Petrochemical Production — PTT Tank.*”

PTT NGD

Our subsidiary PTT NGD develops, owns and operates a natural gas pipeline distribution network connected to our transmission pipeline and supplies natural gas to customers located in industrial areas in the Bangkok Metropolitan area and Rayong. We own a majority stake in PTT NGD, with International Power S.A. of Belgium and CPB Equity Co., Ltd. owning the remaining interests in PTT NGD.

We supply all natural gas required by PTT NGD under a ten-year term sales agreement. We also assist PTT NGD in procuring land as well as the rights to use land to construct the natural gas pipeline distribution network of PTT NGD.

PTT NGD currently supplies natural gas to 13 industrial areas. Gas sales agreements entered into by PTT NGD and its customers have term ranging from five to seven years. The price PTT NGD charges its customers is based on the market price they would have to pay for alternative fuel sources, principally fuel oil or LPG.

The following table sets forth PTT NGD's sales volume and number of customers for the periods indicated.

Natural Gas	Year ended December 31,			Three months ended March 31,	
	2017	2018	2019	2019	2020
Volume (MMSCFD)	57.22	57.34	54.57	55.02	54.52
Number of Customers	249	253	253	256	253

PTT NGD expanded its channel for sales of natural gas by co-venturing (holding 80% of shares) in Amata Natural Gas Distribution Co., Ltd. to construct a natural gas pipeline distribution network for customers in Amata Industrial Estate and Amata City Industrial Estate.

Trans Thai-Malaysia Gas Pipeline and GSP Project

Through a joint venture with Petronas, we own a 50% interest in each of Trans Thai-Malaysia (Thailand) Limited and Trans Thai-Malaysia (Malaysia) Sdn. Bhd., which together operate a 425 MMSCFD gas treatment unit in Songkhla province, Thailand, 267 kilometers of offshore pipeline and 98 kilometers of onshore pipeline. These facilities process and transmit natural gas from the Malaysia-Thailand Joint Development Area to Thailand and Malaysia. The companies also own and operate 240 kilometers of LPG pipeline to transport LPG from its gas processing plant in Songkhla province, Thailand to Petronas's LPG depot in Prai, Penang, Malaysia.

The following table sets forth services provided by TTM (Thailand) and TTM (Malaysia).

Services	Quantity
Production of feed gas (A18)	845MMSCFD ⁽¹⁾
Production of feed gas (B17)	334 MMSCFD ⁽¹⁾
Delivery of sales gas	321 MMSCFD ⁽¹⁾
Delivery of LPG	149,778 tons ⁽²⁾
Delivery of NG:	54,842 tons ⁽²⁾

Notes:

- (1) Approximate production and sales as of March 31, 2020.
- (2) Approximate volume as of December 31, 2019.

Coal Business

We invested in the coal industry in 2009 to diversify our exposures in the energy industry and mitigate price volatility risk with respect to petroleum and natural gas. Through our subsidiary PTTGM and its subsidiaries, we hold interests in SAR which operates two coal mines in Indonesia, namely Jembayan and Sebuku.

The Sebuku project is located in Sebuku Island, South Kalimantan, Indonesia. This project produces 0.4-0.5 MT of coal per year. The Jembayan project is located in East Kalimantan, Indonesia. This project produces 7-8 MT of coal per year.

Through our indirect acquisition of 100% of the share capital of PT Sentika Mitra Persada and PT Multiara Kapuas, we have acquired additional coal mining licenses in Indonesia. The aim of the acquisition was to supplement coal reserves in our portfolio and enhance SAR group's quality adjustment capability.

The following table sets forth certain operating metrics for our coal business for the periods indicated.

	Year ended December 31,			Three months ended March 31,	
	2017	2018	2019	2019	2020
Volume sold (<i>mtpa</i>)	8.3	8.2	7.8	2.0	1.9
Average selling price (<i>US\$/ton</i>)	70.3	77.6	63.4	65.6	58.5

Since 2018, our mining business has focused on controlling operating expenses. We also have adjusted production, sales and marketing plans, including introducing coal blending to increase coal selling prices, accommodate market demands and maintain its competitiveness in the coal business. Currently, in line with the Power Development Plan (2018-2037) promulgated by Thailand’s EPPO, we are conducting a feasibility study of coal divestment.

International Trading Business

Overview

Our international trading business segment serves as an international commodities trading house and trades various commodities under the strategic framework of sustainable energy security for Thailand and worldwide trading base expansion. We operate fully-integrated international trading businesses, which include domestic trade, imports, exports, and international trade of products such as crude oil, condensate, petroleum and petrochemical products. Because of our large trading volumes, we are able to price a wide variety of products competitively. In addition, we also provide international chartering services, which has helped us become a leading one-stop international trading house. To diversify our portfolio and create a cleaner and greener energy future, we use our trading expertise and global network to capture demand for LNG and other green commodities.

We have subsidiaries and representative offices in Thailand and in major trading hubs around the world, including Singapore, China, the United Arab Emirates, the United Kingdom and the United States of America. Our presence in strategic trading locations allow our traders to trade and monitor the market 24 hours a day. We employ approximately 200 traders worldwide. We apply risk control best practices in our operations. Management panels set risk management policies and steer assorted risk management tasks and clearly divide the work structure and roles in the system for checks and balances. We apply digital technology to develop systems for operation and transaction risk controls to enable quick and transparent transactions along with an efficient audit.

In 2019, our total trade volume in the international trading segment was 82,854 million liters, an increase of 2,372 million liters or 2.95% from 2018, mainly due to an increase in offshore trading activities from international offices. In the first three months of 2020, our total trade in the international trading segment was 20,015 million liters, a drop of 357 million liters or 1.75% from the same period of 2019, mainly due to lower import volume of crude oil and petroleum products and lower offshore trading activities resulting from a severe global demand drop affected by the COVID-19 outbreak.

The following table sets forth sales volumes for our international trading business by product type for the periods indicated.

Products	For the year ended December 31,			For the three months ended March 31,	
	2017 ⁽¹⁾	2018 ⁽¹⁾	2019	2019	2020
	Volume	Volume	Volume	Volume	Volume
	<i>(Million Liters)</i>				
International Trading					
Crude oil and condensate	58,373	61,407	59,896	15,541	15,625
Petroleum products	13,080	14,092	19,143	3,986	3,502
Petrochemical products	4,132	4,026	3,815	845	888
Total	75,643	80,482	82,854	20,372	20,015

Note:

- (1) In 2017 and 2018, our international trading business also sold 57,000 tons and 58,000 tons, respectively, of products other than petroleum and petrochemical products such as crude palm oil, refined palm oil and palm kernel shell and non-ferrous metal.

Trading of Crude Oil and Condensate

In 2019, we purchased approximately 32.4 MMbbls of crude oil and approximately 34.5 MMbbls of condensate from domestic producers (including intra-Group purchases). We also purchased approximately 178.1 MMbbls of crude oil and approximately 13.5 MMbbls of condensate from international sources. We purchase crude oil mainly from foreign sources at prevailing market prices and/or official government sales prices and resell it to domestic refineries taking an industry standard margin. We also use crude oil from foreign sources for offshore trading. In 2019, our four largest foreign crude oil suppliers were the United Arab Emirates, Saudi Arabia, Oman and Azerbaijan. We purchase condensate mainly from domestic sources and distribute condensate to domestic refineries and petrochemical plants, including those within the Group. We supplement our condensate supply with imports from foreign sources such as Malaysia, Australia, Philippines and Indonesia.

The following table sets forth the amount of crude oil and condensate that we purchased from domestic sources (including intra-group purchases) and foreign sources and the amount of international trade of crude oil and condensate for the periods indicated.

	Year ended December 31,						Three months ended March 31,			
	2017		2018		2019		2019		2020	
	Quantity (MMbbls)	%	Quantity (MMbbls)	%	Quantity (MMbbls)	%	Quantity (MMbbls)	%	Quantity (MMbbls)	%
Crude Oil from Domestic										
Sources	29.4	9.4	28.6	8.7	32.4	10.5	7.8	9.4	7.2	9.4
Condensate from Domestic										
Sources	35.6	11.4	34.7	10.6	34.5	11.2	8.1	9.7	7.7	10.1
Crude Oil from Foreign										
Sources	184.9	59.1	192.3	58.7	178.1	57.7	50.0	60.0	42.7	56.1
Condensate from Foreign										
Sources	11.4	3.6	16.5	5.0	13.5	4.4	5.5	6.6	6.6	8.7
International Dealing of										
Crude Oil/Condensate	51.7	16.5	55.6	17.0	49.9	16.2	12.0	14.3	12.0	15.7
Total	313.0	100.0	327.7	100.0	308.4	100.0	83.4	100.0	76.2	100

Note:

- (1) Conversion rate from MMbbls to liters is 1 barrel equals to 158.984 liters.

Trading of Refined Petroleum and Petrochemical Products

We trade refined petroleum products and petrochemical products domestically and internationally. We bid on sales of refined petroleum and petrochemical products from associated and non-associated refineries and petrochemical facilities in Thailand with excess capacity and resell to customers, including end users, mainly outside of Thailand.

Our petrochemical trading business is the result of the vertical integration of our hydrocarbon value chain. We use our international trading business segment to supply all of PTTGC's crude oil and condensate requirements and to sell PTTGC's downstream products, including benzene, light naphtha, paraxylene and other by-products.

We are recognized by certain major global oil producers as a national oil company and therefore accorded open account status, which allows us to purchase crude oil from such producers without a letter of credit to secure the transaction. This results in a cost advantage for us.

Our petroleum and petrochemical trading business includes:

- purchasing crude oil and condensate from both the international and domestic markets for sales to both domestic and international refineries and crude oil traders;
- feedstock (such as gasoline base for gasohol production) and condensate sales to companies in our petrochemicals and refining business;
- purchasing refined petroleum and petrochemical products for export;
- operating a marine transport logistics business for transportation of petroleum products for international and domestic customers, including companies in our petrochemicals and refining business; and
- managing various informational aspects of our petroleum and petrochemical supply chain, including international market analysis and managing petroleum price exposure as a risk management function.

In 2019, we began LNG trading operations. This initiative follows our strategy to expand energy trading network while enhancing Thailand's national energy security.

In the first three months of 2020, we supplied 76.2 MMbbls of crude oil and condensate to companies in our refining segment. Crude oil is generally supplied through long-term agreements with these refineries. We are required under our agreements in respect of Thairoil, IRPC, and PTTGC to supply crude oil in proportion to our shareholdings, which are 47.03%, 47.55%, and 47.68%, respectively. However, we can supply crude oil to those companies in a higher proportion to our shareholdings or to other unaffiliated refineries, subject to bidding prices and commercial conditions. We are the sole supplier of crude oil feedstock and condensate to the PTTGC facilities. We also supply condensate in varying quantities to these refineries at higher margins than we obtain on sales of crude oil.

Each of PTTGC, Thairoil and IRPC refineries take delivery of crude oil directly at their storage facilities and distribute refined product through transmission pipelines, railways, tanking and barges. These transportation systems provide the refineries with secured supplies of crude oil and facilitate the distribution of the refined products to the domestic market.

Risk Management Services

Our international trading business segment also provides risk management services by monitoring overall trends and price movements in the oil industry and by managing petroleum price exposure to commodity price fluctuations. This is a valuable service for the management of the oil business and the petrochemicals and refining business. This market knowledge is also important for overall supply chain management because it helps us to identify projected and current inefficiencies in our supply chain and make corresponding changes in our strategies to address them.

We hedge our commodity exposures primarily through OTC swap transactions with major counterparties, such as large banks and international oil and gas firms. We also engage in a small number of futures and options transactions. The proportion of volume hedged per transaction depends on the hedging policy of the respective counterparty.

International Chartering

Our international trading business segment also provides services for transportation of various products in both domestic and international waters. We provide spot and time-chartered vessel services for other members of the PTT group and trading partners domestically and overseas with internationally-recognized standards and competitive charges.

Oil and Retail Business

We operate our oil and retail business through PTTOR, our wholly-owned subsidiary. We restructured the oil and retail business in a spinoff transaction in 2019 and established PTTOR. We transferred the assets and liabilities of the predecessor business unit, including share ownership in various companies operating in the oil business, to PTTOR.

On April 2, 2020, PTTOR filed with the Thai SEC an initial draft registration statement for its IPO. We currently expect to continue to consolidate PTTOR into our results of operations following the IPO.

PTTOR engages in petroleum products sales and other non-oil businesses. This includes distributing petroleum products and other products in retail and commercial markets, operating coffee shops, restaurants and convenience stores, and providing space management services. PTTOR's operations are organized into three core sub-segments: oil business, non-oil business and international business.

Oil Business

PTTOR sells fuel oil, lubrication products, petroleum products and other products through retail and commercial marketing channels. PTTOR sources petroleum products from refineries owned by the Group and third party refineries. Retail marketing channel distributes fuel oil and lubrication products to vehicle users and other retail customers at 1,922 retail service stations (as of March 31, 2019) and dealers. PTTOR's commercial marketing channel distributes petroleum and other products to commercial customers including airline businesses, marine shipping businesses, industrial customers, LPG users in households, transport sector customers and fuel traders. It also exports fuel oil to customers abroad as well as provides automotive services. The core products of PTTOR's oil business consist of gasoline (Gasoline 95, Gasohol 95, Gasohol 91, Gasohol E20 and Gasohol E85), diesel fuel, LPG, lubricant products and kerosene.

PTTOR's sales volume (including intra-Group sales) of petroleum products and other products under its oil business sub-segment was 28,243 million liters, 27,470 million liters and 27,627 million liters in 2017, 2018 and 2019, respectively.

The following table sets forth the proportion of sales volume of PTTOR's petroleum products and other products under its oil business in each specified period.

	Year ended December 31,		
	2017	2018	2019
Diesel	38.3%	38.6%	40.2%
LPG ⁽¹⁾ (2)	19.1%	17.3%	14.7%
Gasoline	18.9%	19.4%	21.4%
JET	15.3%	15.7%	15.8%
Fuel Oil	5.9%	6.1%	5.7%
Others ⁽³⁾	2.5%	2.9%	2.2%
Total	100.0%	100.0%	100.0%

Notes:

- (1) LPG sales volume is measured in kilograms and converted into liters for data presentation (1 liter equals to 0.5405 kilograms).
- (2) Includes LPG sales to households, industries (including propane (C3) and butane (C4)) and fuel traders.
- (3) Includes lubricants for asphalt, condensate, methanol and others

Thai Retail Business

PTTOR's non-oil business consists of Café Amazon, which sells coffee, other beverages, bakeries and snacks; restaurants (e.g. Texas Chicken and Hua Seng Hong Dim Sum); convenience stores; and space management business. PTTOR manages and grants leasehold of rental space in the compound of its retail service stations and other space under its management (such as rest areas) to third-party businesses and brand operators. As of March 31, 2020, we had over 2,900 Café Amazon outlets and over 1,800 convenience stores under the Jiffy and 7-eleven brands in Thailand.

The following table shows certain operational information of Café Amazons in Thailand and directly operated by PTTOR abroad in each specified period.

	Year ended December 31,		
	2017	2018	2019
Beverages Products Sold (Cups)			
Domestic	177,926,523	225,117,836	263,514,030
International ⁽¹⁾	107,696	187,616	484,093
Total	178,034,219	225,305,452	263,998,123
Growth Rate (%)	27.5	26.6	17.2

Note:

- (1) Includes Café Amazon stores in Japan, Oman, Myanmar and Malaysia that are operated directly by PTTOR.

International Retail Business

PTTOR's international business distributes various petroleum products abroad through its subsidiaries outside of Thailand. It also manages retail service station chains and non-oil retail chains, which include Café Amazon and "Jiffy" convenience stores, outside Thailand. Our service stations and other retail coffee shops, restaurants and convenience store chains have a growing international presence, with 307 service stations in Laos, Cambodia, Myanmar and the Philippines, 244 Café Amazon outlets and 81 Jiffy convenience stores abroad as of March 31, 2020.

The following table shows sales information of PTTOR's subsidiaries outside Thailand in each specified period.

	Year ended December 31,		
	2017	2018	2019
Sales Volumes			
Philippines			
Sales volume refined products (million liters) ⁽²⁾	892	900	936
Café Amazon's total cup sales	45,783	124,340	228,276
Cambodia			
Sales volume refined products (million liters) ⁽²⁾	250	317	483
Café Amazon's total cup sales	10,142,191	14,651,354	16,830,146
Others⁽¹⁾			
Sales volume refined products (million liters) ⁽²⁾	207	200	217
Café Amazon's total cup sales	1,946,349	3,331,354	4,430,520

Notes:

- (1) Includes Laos, China, and Singapore.
- (2) Sales volume before elimination of inter-company transactions.

Petrochemicals and Refining Business

Overview

We are the largest petrochemical and refining group in Thailand, with interests in three of Thailand's six refineries and most of Thailand's petrochemical facilities. We are one of Thailand's major petrochemical producers and a leading petrochemical producers in Southeast Asia. Our facilities have a refining capacity of 770 KBD, or 63% of the country's refining capacity as of March 31, 2020.

We participate in the petroleum petrochemical and refining industries through PTTGC, Thairoil and IRPC. Certain of these subsidiaries have fully integrated refinery and petrochemical production capabilities. PTTGC is our petrochemical flagship company, Thairoil is our refinery flagship, while IRPC has an integrated petrochemical and refinery operation.

Our petrochemicals and refining business focuses on enhancing operational synergies between our petrochemical and refining subsidiaries, associates and joint ventures and our significant position in the oil marketing and trading businesses in terms of feedstock supply and product offtake. Through strategic mergers and acquisitions, the upstream and downstream operations within our petrochemical and refining manufacturing operations are integrated. This enables us to add significant value to our petrochemical products, which commands a higher margin for us.

PTTGC's petrochemical production facilities are located close to our GSPs and are connected to the GSPs or one another by pipelines, which provides transportation and logistical cost savings. Our domestic oil and gas operations provide them with feedstock, minimizing production interruption. Most of the crude oil we purchase through our international trading business is consumed by our refining business as feedstock pursuant to long-term supply agreements with these refineries. We purchase most refined petroleum products from our associated refineries, resell it through our retail stations, and export the excess portion mainly to the neighboring countries. We coordinate the operation activities of our international trading business with the subsidiaries, associates and joint ventures in the refinery and petrochemical business. Our refinery and petrochemical facilities also coordinate with one another to achieve synergies in the upstream and downstream operations. This includes coordination in strategic supply and offtake agreements.

The following diagram depicts supply and demand in the crude oil value chain in Thailand in 2019.



Source: Petroleum Institute of Thailand

Terms of use: While the information contained in this graphic was obtained by the Petroleum Institute of Thailand ("PTIT") from various sources believed to be reliable, PTIT does not guarantee its accuracy, completeness or timeliness. PTIT shall not be liable to readers or any third party for any inaccuracy, error or omission, and does not assume any liability whatsoever for any direct or consequential loss arising from any use of this graphics or its contents or PTIT's source of which this graphic derives from or any decision made or taken in reliance on such information. The views presented are subject to change and PTIT has no obligation to update any content or information provided.

Notes:

- (1) Includes 993 KBD of refined products from refineries and 103 KBD of domestic supply of LPG from GSPs and petrochemical plants
- (2) Includes inventory

Description of Principal Consolidated Entities Engaged in Petrochemical and Refining Production

The following is a description of our principal consolidated entities that are engaged in petrochemical and refinery production: PTTGC, Thaioil, IRPC and PTT Tank. Even though we hold less than a majority stake in certain of these entities, we directly or indirectly control them, including through representation on the boards of directors and secondment of personnel. Refer to the notes to our financial statements included elsewhere in this Offering Memorandum for details.

PTTGC

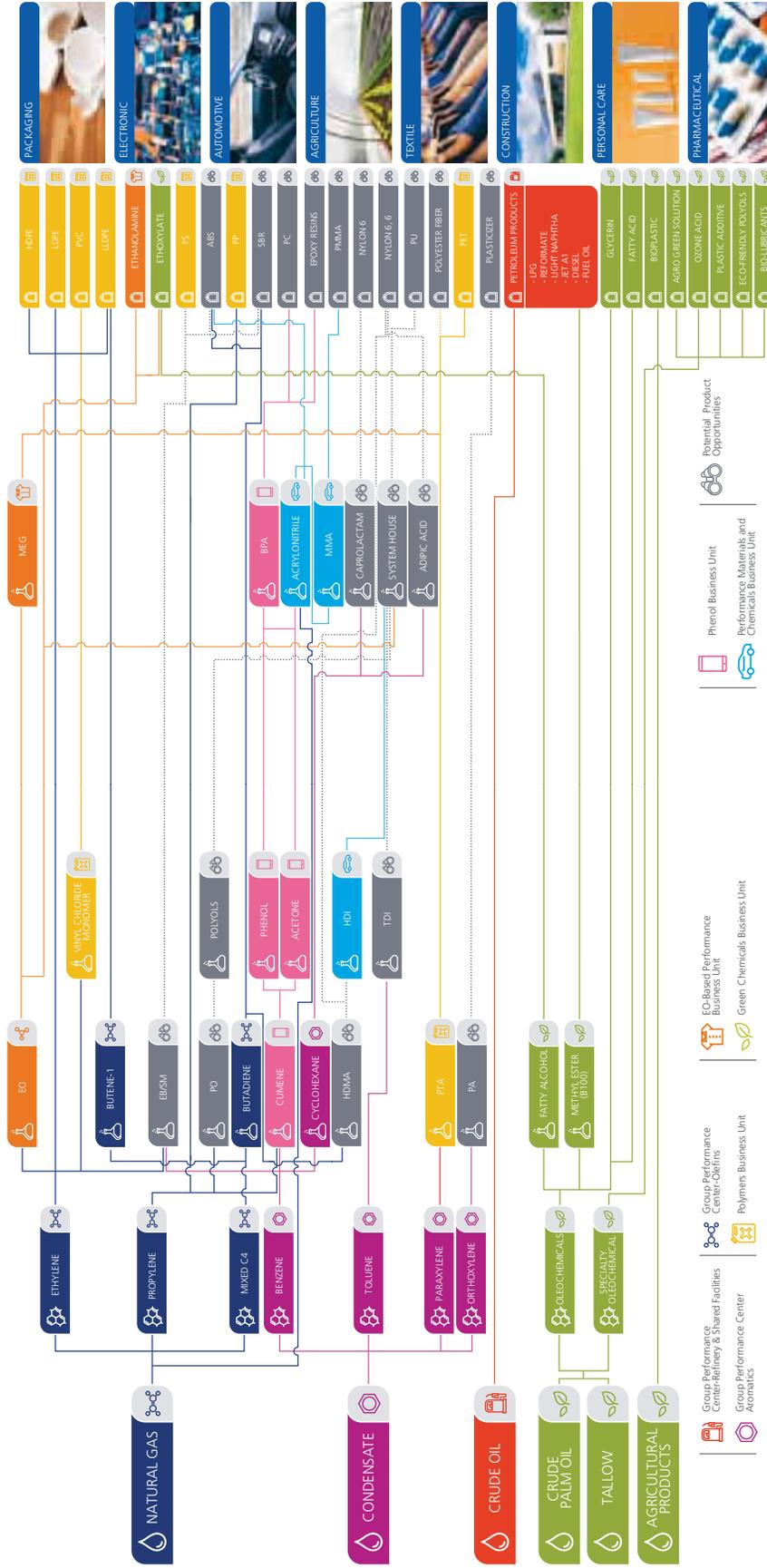
PTTGC was established in October 2011 through the amalgamation of PTT Chemical Public Company Limited and PTT Aromatics and Refining Public Company Limited. On July 3, 2017, PTT restructured its shareholding in companies within the Group that have operations associated with propane, bioplastic products and related service businesses, transferring those interests to PTTGC. The purpose of this restructuring was to enhance competitiveness, diversify into more varied industries, minimize redundancy and improve the efficiency in supply chain management for sustainable growth. PTTGC is Thailand's largest integrated petrochemical and petroleum refining company and the second largest in Southeast Asia measured by nameplate capacity. As of December 31, 2019, PTTGC had a distillation intake capacity of 280,000 bpd of crude oil and condensate and a combined petrochemicals nameplate capacity of 11.27 mtpa.

As of March 31, 2020, we held a 47.92% equity interest in PTTGC. PTTGC operates a refinery, two aromatics plants and four olefins plants, in addition to other plants producing polymers and other petrochemical products. PTTGC owns or has acquired the rights to use a pipeline transmission system in and near the Map Ta Phut Industrial Complex through which it delivers its refining, aromatics, olefins and other products in liquid form to its offtakers and its suppliers deliver feedstock. PTTGC takes and makes deliveries of substantially all of its feedstock and products sold domestically through its pipeline network, as a substantial majority of its customers' and suppliers' plants are also located in or near the Map Ta Phut Industrial Complex.

PTTGC's operations are organized into eight core business units: refinery, aromatics, olefins, polymers, ethylene oxide-based performance, green chemicals, phenol and performance materials and chemicals. PTTGC's main business involves petroleum refining and supply of petroleum products such as diesel, jet A1 and fuel oil from its refinery, PTTGC also engages in the production and distribution of aromatics products, consisting mainly of benzene and paraxylene, and olefins products, comprising ethylene, propylene and olefins by-products such as mixed C4, cracker bottom and tail gas. PTTGC also produces and distributes polymer products, using feedstock from its olefins production. In addition, PTTGC produces and distributes ethylene oxide-based performance products, including mono-ethylene glycol and ethanalamines. Through its subsidiaries and partnerships formed with joint venture partners, PTTGC also produces and distributes green chemicals and performance materials and chemicals. In addition, PTTGC produces phenols, such as phenol, acetone and bisphenol A, which are used as feedstock in the production of downstream products such as engineering plastics.

Apart from its eight core business units, PTTGC also engages in auxiliary businesses, including the provision of electricity, industrial water, steam and other utilities as well as the operation of production support facilities such as jetty and buffer tank farm services for plants in the Map Ta Phut Industrial Complex. We supply crude oil and blendstock of the types and quantities designated by PTTGC for use in the production of its refined and petrochemical products.

The following flow chart illustrates PTTGC's refining and petrochemical production process



Notes:

- (1) PTTGC secures feedstock through a number of long-term and short-term agreements with various suppliers.
- (2) A portion of ethylene oxide-based, green chemical and high volume specialties products are produced and distributed by PTTGC's subsidiaries and joint ventures.

The following table sets forth PTTGC's nameplate capacity by products as of December 31, 2019.

Products	Nameplate Capacity (mtpa, unless otherwise specified)
Refinery ⁽¹⁾	280,000
Aromatics	2,419,000
Olefins	2,988,000
Polymers ⁽²⁾	3,268,000
Ethylene oxide-based performance.	473,000
Green chemicals ⁽²⁾	917,000
Performance materials and chemical ⁽²⁾	250,000
Phenol.	954,000

Notes:

- (1) Refers to distillation intake capacity as measured in Bbls/d. Includes the sum of our intake capacities for our crude distillation unit (145,000 Bbls/d) and condensate splitter (135,000 Bbls/d).
- (2) A portion of polymers, green chemical and performance materials and chemicals is produced and distributed by PTTGC's joint venture partners. Nameplate capacities for these business segments are based on PTTGC's equity shareholdings in such joint venture partnerships.

The following table sets forth PTTGC's utilization rate of its facilities for the periods indicated.

	Year ended December 31,			Three months ended March 31,	
	2017	2018	2019	2019	2020
Refinery (%)	103	102	87	102	103
Aromatics plant (%)	80	93	88	94	97
Olefins plant (%)	96	101	102	101	81
Polymers (%)	N/A	100	102	100	89

Notes:

- (1) In the second quarter of 2019, PTTGC had planned a major shutdown of its refining units, Aromatics Complex Unit 1, for 49 days. Another planned shutdown of one of its refining units took place in the fourth quarter of 2019 for 52 days.

Procurement

The principal feedstock used in olefins plants is ethane, propane, LPG, NGL and light naphtha. PTTGC procures most of the feedstock from domestic sources, including other entities in the Group. We supply natural gas from our GSP to PTTGC under long-term supply agreements.

The principal feedstock used in for petroleum products and aromatics products is imported crude oil and condensate from domestic and international sources. We supply crude oil and condensate to PTTGC pursuant to a feedstock supply agreement. Pricing terms reference to the market prices.

Distribution

For the olefins product group, PTTGC is a party to long-term sales and purchase agreements with petrochemical plants within the Group and those operating under a joint venture arrangement with PTTGC. For polymers product group, PTTGC engages domestic agents and international trading partners to sell polyethylene and polystyrene resins under the trademarks "InnoPlus" and "Diarex," respectively. Most of the products are sold through GCM Marketing Solutions Co., Ltd., which was established to market and distribute polymer products both domestically and internationally for the Group. For aromatics, PTTGC distributes this product group under long-term purchase agreements with domestic and international customers, including us, at market price. PTTGC distributes refined products to PTTOR under product offtake agreement at market price.

Projects

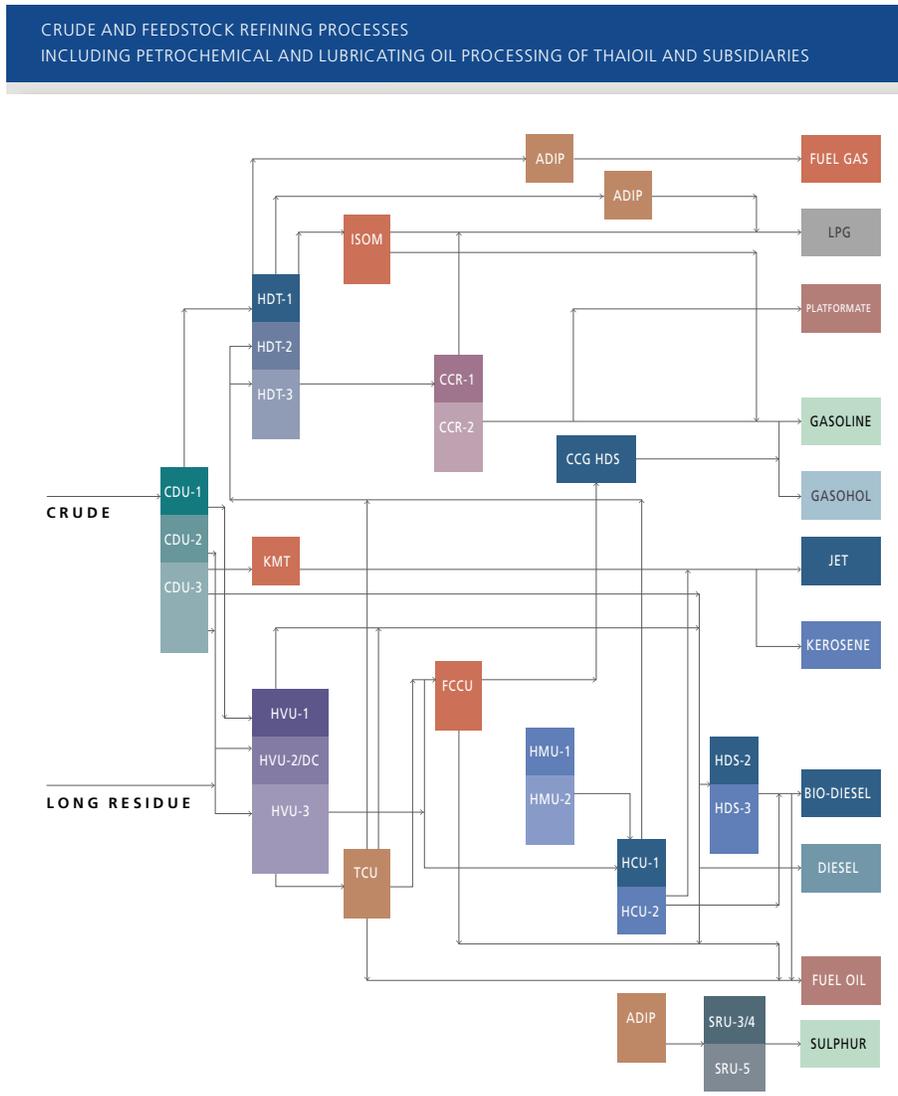
Olefins Reconfiguration: PTTGC is investing in a new olefins plant that will use naphtha and LPG as major feedstock. The plant is expected to add an ethylene production capacity of 500,000 tons per year, bringing PTTGC's total capacity for ethylene production to 3,738,000 tons per year from 2,988,000 tons per year. The plant will also add a propylene production capacity of 250,000 tons per year. It is expected that the plant will start commercial operation within 2020. The total investment for this project is U.S.\$985 million.

Propylene Oxide, Polyols and Polyurethane Production System: PTTGC is also expanding into the downstream polyurethane business, which we consider a high-value product line. In this project, PTTGC has established a wholly-owned subsidiary, GC Oxirane Company Limited, to produce propylene oxide with a capacity of 200,000 tons per year. Commercial operation is expected within 2020. PTTGC has also set up a joint venture, GC Polyols Company Limited, in which it holds 82.1% in the entity. The joint venture has polyols production capacity of 130,000 tons per year and polyurethane production system with a capacity of 20,000 tons per year. Both of the projects achieved 85% progress as of December 2019.

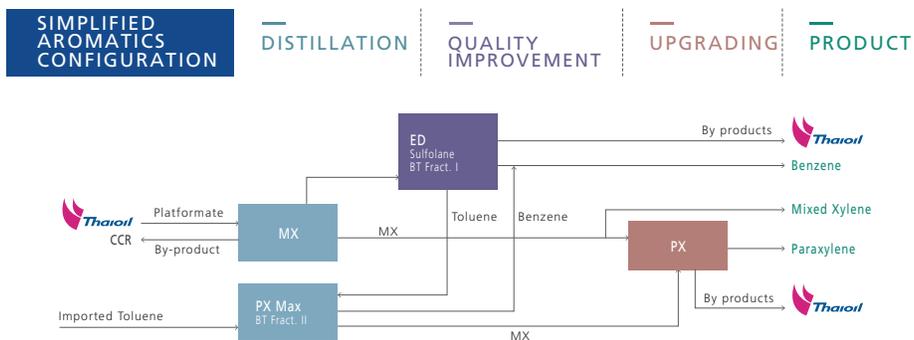
Thaioil

Our flagship refiner is Thaioil, which was established in 1964. As of March 31, 2020, we held a 47.03% equity interest in Thaioil. Thaioil has been a publicly listed company since 2004 and owns and operates the largest complex refinery in Thailand measured by nameplate capacity, producing a high proportion of light and middle distillate of refined petroleum products. Its refinery is also integrated with its petrochemical platform. As of March 31, 2020, Thaioil had a refining nameplate capacity of approximately 275,000 bpd of crude oil and other feedstock, representing approximately 22.3% of the total refining nameplate capacity in Thailand. Additionally, Thaioil indirectly owns and operates a petrochemical plant producing paraxylene and benzenem with a total distillation capacity of 838,000 tons per year. Thaioil's businesses are structured as an integrated operation of long value chains and organized into eight core business units: oil refinery, lube base oil refinery, petrochemical, power generation, marine transportation services, solvent, ethanol and other businesses.

The following diagram depicts Thaioil's refining and aromatic production process



Flow Diagram of Thaioil Refinery



Flow Diagram of TPX, with aromatics outputs as feedstock for the downstream petrochemical industry

The following table sets forth Thairoil's distillation capacity per day and the utilization rate for the periods indicated.

	Capacity	Utilization Rate (%)				
		Year ended December 31,			Three months ended March 31,	
		2017	2018	2019	2019	2020
Refinery	275 KBD	112	113	107	116	111
Aromatics	838 k.tons/annum	83	89	70	92	81

Note:

(1) In 2019, Thairoil had planned shutdowns of its refining units CDU-3 and TPX in the second and third quarter.

Procurement

Thairoil procures crude oil from both domestic and international sources. We supply crude oil to Thairoil under a crude supply agreement based on market price.

Distribution

Thairoil distributes its refined petroleum products to us based on market price under a product offtake agreement. On July 1, 2018, PTT's rights to receive distribution of Thairoil's products under the product offtake agreement was transferred to PTTOR, the main distributor of refined products for the Group. Thairoil distributes its products mostly domestically. The split between product distribution in domestic and international markets was 86% to 14%, 86% to 14% and 88% to 12% in 2017, 2018 and 2019, respectively.

Projects

Thairoil is currently implementing its Clean Fuel Project with an investment of approximately U.S.\$4,825 million. The project involves construction of new production units, with a view to improve its production and energy efficiency and increase oil refining capacity and capabilities, while aiming to minimize environmental impact.

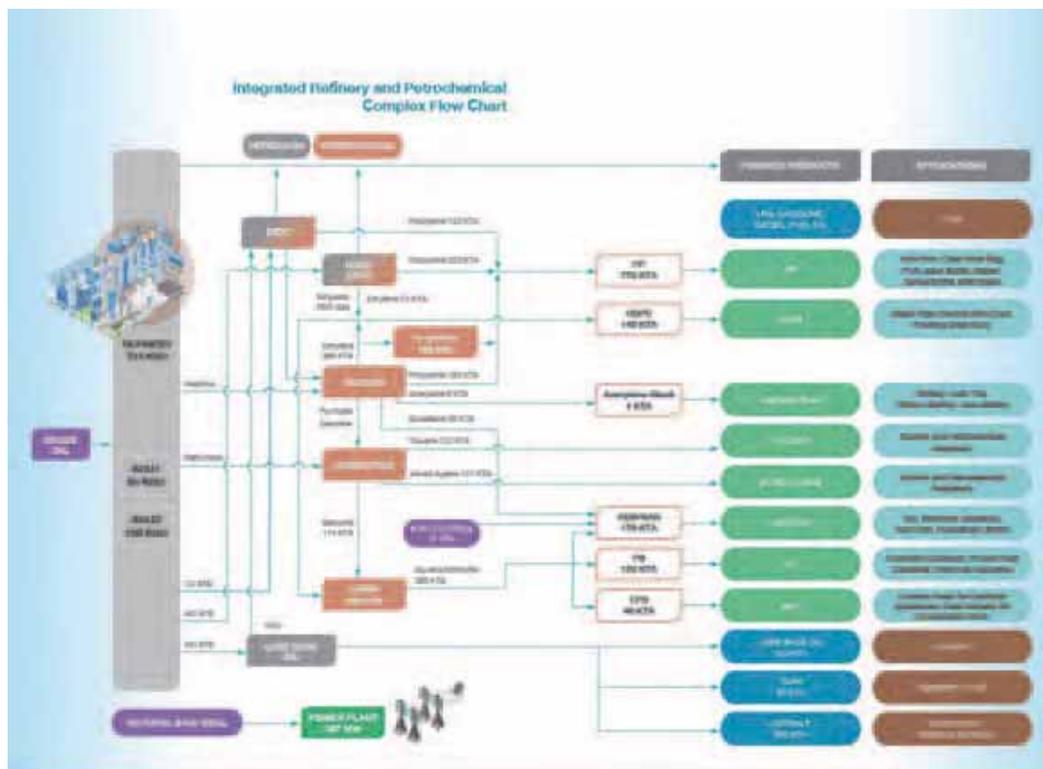
As part of the project, Thairoil plans to construct distillation units with a higher refining capacity to replace its current distillation units. With the new distillation units, Thairoil's refining capacity will increase from 275,000 Bbls/d to 400,000 Bbls/d and the average complexity of its refinery will improve from 9.8 to 12.0, based on its internal estimates using the methodology of the Nelson Complexity Index. Thairoil expects that the higher refining capacity will allow it to benefit from the economy of scale and enable its refineries to handle more types and greater quantities of crude oil. By improving the performance of its production process, Thairoil expects to increase its capacity to refine heavy crude oil, allowing it to reduce raw material cost as heavy crude oil generally cost less than light crude oil that it is currently using in its operations. The Clean Fuel Project will also increase Thairoil's capacity to produce lighter distillates that tend to provide higher margins. These lighter distillates include LPG, naphtha and gasoline. Light distillates currently constitute approximately 28% of Thairoil's petroleum products and are expected to comprise approximately 50% of Thairoil's petroleum products after the Clean Fuel Project is completed. It is expected that the Clean Fuel Project will be completed by the first quarter of 2023.

IRPC

IRPC, formerly known as Thai Petrochemical Industry Plc., has been listed on the SET since 1995. It began producing petroleum and petrochemical products in 1982. As of March 31, 2020, we held a 47.55% ownership interest in IRPC. IRPC is Thailand's first integrated refinery and petrochemical manufacturing company. IRPC's refinery has a capacity of 215,000 bpd, the third largest refinery in Thailand in terms of production capacity, accounting for 17.45% of the country's total refining capacity. IRPC sources the majority of its crude oil and feedstock from the Group.

IRPC's refinery produces a range of petroleum products including naphtha, gasoline, diesel, and LPG. IRPC also produces lubricating oils with a total capacity of 320,000 tons per year and asphalt with a total capacity of 600,000 tons per year. IRPC is a producer of upstream petrochemical products, olefins and aromatics, with a production capacity of 1,221,000 and 367,000 tons per year, respectively. These upstream products are used as feedstock for IRPC's downstream petrochemical plants. The downstream petrochemical plants has polyolefins (HDPE and PP) production capacity of 915,000 tons per year and styrenics (ABS, SAN, PS, and EPS) production capacity of 352,000 tons per year. These downstream petrochemical products are sold to producers of finished plastic products in Thailand and overseas. As one of its supporting businesses, IRPC provides electricity, steam and other infrastructure, including wastewater treatment and other related services, to industrial clients to support their operations.

The following diagram illustrates IRPC's refining and petrochemical production process



The following table sets forth IRPC's current distillation capacity per day and the utilization rate for the periods indicated.

	Current Capacity	Utilization Rate (%)				
		Year ended December 31,			Three months ended March 31,	
		2017	2018	2019	2019	2020
Refinery	215 Bbls/d	84	97	92	93	87
Olefins Group	1,611 KTA	87	94	95	89	95
Aromatics and Styrenics Group	1,194 KTA	90	101	93	82	94

Note:

- (1) In 2019, IRPC had planned shutdowns of its refining units, the residual deep catalyst cracking unit in the first quarter for 28 days and the atmospheric distillation unit in the third quarter for 18 days.

Procurement

IRPC's principal feedstock is crude oil, accounting for 81% of the total feedstock. Most of the crude oil is imported from the Middle East. At present, we supply crude oil for IRPC.

Distribution

IRPC distributes its oil products to the following customers: industrial customers, wholesales customers, oil traders, international customers, automotive diesel oil customers and deep seaport and oil depot customers.

Part of IRPC's refined products are distributed to us under a product offtake agreement at market price. On July 1, 2018, rights to receive product distribution from IRPC was transferred from PTT to PTTOR, the main distributor of refined products for the Group. In 2019, IRPC derived 56% of its petroleum product sales revenue from Thailand and 44% from offshore sales.

For petrochemical products, IRPC distributes these products through distributors and direct sales. Sales to offshore customers are made through trade agents. In 2019, IRPC derived 54% of its petrochemical products sales revenue from Thailand and 44% from offshore sales.

Projects

IRPC's Ultra Clean Fuel Project is in line with IRPC's policy to turn its plants into environmental-friendly facilities. The project aims to increase its refineries' efficiency and improve its diesel fuel quality to meet the European Union's emission standards, which Thailand plans adopt in 2024. The European Union's emission standards calls for low sulfur emission in diesel fuel. The Ultra Clean Fuel Project is expected to increase IRPC's competitiveness in response to the growing demand for low sulfur diesel both in Thailand and ASEAN countries. Currently, the project is under an engineering design phase and is expected to commence its commercial operation by 2022.

PTT Tank

PTT Tank is our wholly-owned subsidiary which was incorporated in 2009 to operate marine terminals which provides petroleum and petrochemical product receiving, storing, and offtaking services to companies in the Group. Currently, PTT Tank operates in the Map Ta Phut Industrial Estate in two ports, with a maximum cargo size of 60,000 DWT. Its operations can accommodate up to two million tons of various products per year with product throughput of approximately 800,000 tons per year. Its storage tank holds approximately 73,000 tons to accommodate sulfuric acid, propylene, methyl methacrylate, acrylonitrile, ammonia, LPG, NGL, and solvent.

In October 2019, PTT Tank entered into a joint venture with Gulf Energy Development Public Company Limited to establish Gulf MTP LNG Terminal Company Limited ("GMTP") to develop LNG value chain and logistics businesses. PTT Tank owns a 30% interest in GMTP. GMTP has entered into a public private partnership contract with the Industrial Estate Authority of Thailand to develop Map Ta Phut seaport phase III (Section 1). This project is a joint investment between the two parties. Investment includes land reclamation with an investment value of approximately Baht 12,900 million, and the right of construction of LNG terminal phase 1 with the capacity of not less than 5 mtpa with an investment value of approximately Baht 28,000 million.

Technology and Engineering Business

Overview

Our technology and engineering business engages in innovation and development of sustainable energy and in engineering, real estate, digital and technology activities to support our main businesses. Our principal subsidiary in this segment is GPSC, our flagship power company in which we, through PTTGC (22.7%), Thairoil (8.9%), Thairoil Power (20.8%) and PTT's direct holding (22.8%), owned an aggregate stake of 75.2% as of March 31, 2020. The technology and engineering business segment links our core business groups and provides an integrated service in

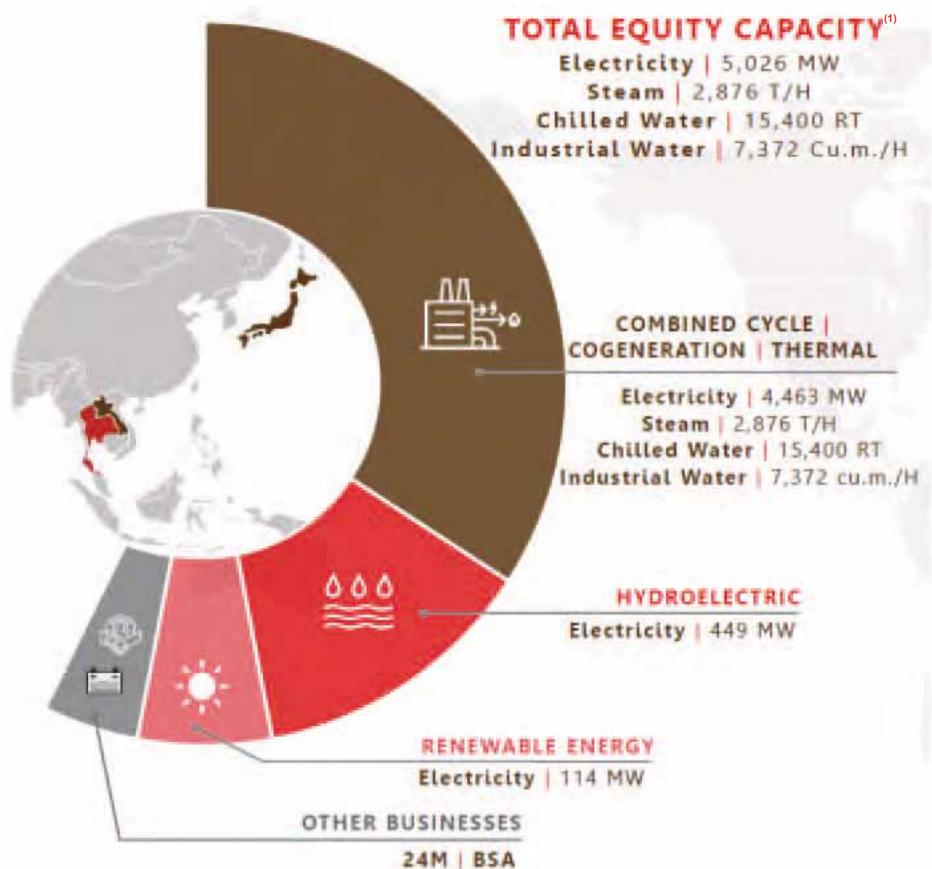
relation to asset management, real estate development, R&D and engineering in pursuit of new “S-Curve” business opportunities to support domestic and international growth in our core operations. The technology and engineering business consists of three sub-segments: Innovation and Digital, Engineering and Project Management and Wang Chan Valley Development Project.

GPSC and Other Power Producers

GPSC was established on January 10, 2013 and completed its initial public offering on the SET on May 18, 2015. GPSC conducts power generation business as well as production of public utilities, namely, steam and demineralized water for industrial users, and operates an IPP with EGAT. Additionally, GPSC invests in other companies that generate and distribute power, steam, utilities and other related businesses, both domestically and overseas. GPSC acquired a 69.11% stake in GLOW from a subsidiary of Engie SA in 2018. The transaction significantly expanded GPSC’s effective power production capacity by adding 2,771 MW to its portfolio and enlarged its industrial customer base. During 2019, GPSC acquired additional shares in GLOW via tender offers, increasing its stake to 99.83%, and GLOW was delisted from the SET effective December 13, 2019.

GPSC owns a portfolio of power plants with a total capacity of 5,026 MW of electricity, 2,876 tons per hour of steam, 15,400 refrigeration tons of chilled water and 7,372 cubic meters per hour of industrial water as of March 31, 2020.

The following diagram depicts GPSC’s business portfolio and total equity contracted capacity as of March 31, 2020.



Notes:

(1) Total equity contracted capacity before elimination of intra-Group transactions.

Procurement

GPSC's power and steam production use natural gas as a prime fuel in its operation. GPSC sources gas supply from us under a long-term gas supply agreement.

Distribution

GPSC supplies electricity generated from its power plants to EGAT, PEA, and MEA under long-term power purchase agreements and to local industrial customers, most of whom are in petrochemical business. In its distribution to EGAT, GPSC is also required to supply reserve power under reserve power agreements.

Projects

GPSC has invested in a number of power generation projects both in Thailand and overseas, ranging from natural gas fired power plants to hydropower plants and solar farms.

In 2019, three projects achieved commercial operations: Central Utility Plant 4, Xayaburi power plant and Nam Lik 1 power plant. Central Utility Plant 4 is a cogeneration power plant and gas-fired steam production unit in Rayong with a capacity of 45 MW of electricity and 70 tons per hour of steam. Xayaburi power plant is a hydropower plant located in Laos with an equity capacity of 321 MW. Nam Lik 1 power plant is a hydroelectric run-of-river power plant located in Laos with an equity capacity of 26 MW.

On March 27, 2020, GPSC acquired a portfolio of solar power plants. The portfolio consists of nine projects in Thailand with a combined capacity of 39.5 MW. These nine projects have entered into power purchase agreements with the PEA for a period of 25 years, expiring in 2039 or 2040.

Power plants in GPSC's portfolio that are under investment and construction phase as detailed below.

- The capacity expansion project of Nava Nakorn Electricity Generating power plant. The project will add 125 MW of electricity generation capacity, 30 tons per hour of steam generation capacity and 30 tons per hour of auxiliary boiler capacity to support the increasing industrial customers' demand of electricity and steam. We expect that the construction will be completed in 2020.
- Rayong Waste to Energy Management Project consists of two subprojects located in Rayong province. The project succeeded in producing refuse-derived fuel. The project is current constructing a power plant that will use the refuse-derived fuel as its feedstock. The power plant will have a capacity of 9.8 MW and its commercial distribution of power is scheduled for the second quarter of 2021.
- Energy Recovery Unit, designed to serve as a support unit for ThaiOil's Clean Fuel Project, has 250 MW of power generation capacity and 175 tons per hour of steam generation capacity. The Energy Recovery Unit's main fuel is by-products generated from ThaiOil's Clean Fuel Project. We expect the Energy Recovery Unit's commercial operation to begin in the third quarter of 2023.
- GPSC is constructing a new power plant in Map Ta Phut Industrial Estate in SPP Replacement Stage 1 project. The new power plant will have a total capacity of 192 MW for electricity generation and 300 tons per hour for steam generation. The power plant will supply electricity to EGAT under two power purchase agreements, and we expect the plant to commence commercial operation in 2020.

Additionally, GPSC is considering a construction plan for a lithium-ion battery plant. The investment will be carried out through its subsidiary 24M Technologies, Inc., whose main business objective is dedicated to research and development of lithium-ion battery production. This project provides an alternative power storage system for industrial users and is in line with our strategy to pursue business opportunities in electricity value chain.

Other of our subsidiaries are also engaged in power generation, such as our indirect subsidiary TP, which owns and operates a 118 MW natural gas-fired combined cycle co-generation power plant that produced electricity that we sell to EGAT. We also hold stakes in joint ventures engaged in power production. For example, we (35%), EGAT (35%) and the MEA (30%) own and operate the District Cooling System and Power Plant Co., Ltd., which generates and supplies electricity and chilled water to Suvarnabhumi Airport.

Other Technology and Engineering Sub-Segments

Innovation and Digital

PTT Innovation Institute engages in research and development activities in relation to petroleum, petrochemical and energy products. The activities ranges from formulation of directions and research planning, technological investigation, product analysis and product testing and developments. Researches cover processing and transport of petroleum, petrochemical and energy products, environmental technologies, cost reduction, productivity and innovation that would lead to commercial business expansion to ensure our competitiveness. In addition, in response to the fast-evolving technological changes, PTT Innovation Institute aims to develop new forms of “disruptive” businesses which can significantly alter the way that consumers, industries, or businesses operate while achieving rapid growth. We refer to these businesses as “S-Curve” business opportunities. PTT Innovation Institute focuses on seeking the new disruptive “S-Curve” business opportunities in the areas of electricity value chain, life sciences, internet of things, artificial intelligence and robotic technologies.

Engineering and Project Management

Engineering and project management business segment is tasked to provide services in relation to engineering and construction project management, land management, project assessment with respect to safety, impact on the environment, society and communities and developing terms of reference for our projects to ensure that we achieve goals and objectives for each project. In addition, engineering and project management business segment also engages in asset management function to seek for business opportunities that could arise from our assets.

Wang Chan Valley Development Project

The Wang Chan Valley Development Project was launched in response to the Government’s initiative to establish an innovation zone in Thailand’s Eastern Economic Corridor. We are the land developer for the Wang Chan Valley, a research and education park situated in Rayong province in the area of over 3,500 Rai (5,600,000 square meters). The Wang Chan Valley is expected to provide an innovation ecosystem that will involve collaboration from the Government, private-sector organizations, universities and local communities to nurture innovative research and development.

Other Businesses

This operating segment includes all other businesses that do not constitutes a separately reportable segment. Other businesses consist of business support services such as Business Services Alliance, which was established with the objective to manage the Group’s workforce to enable us to focus on core business operations. The Treasury Center is also operated under this business segment. See “*Description of the Treasury Center.*”

Competition

As a vertically integrated energy company, we face varying levels of competition in each of our operating segments. We compete in both the domestic market in Thailand and the international markets. We compete against a large number of companies, many of which have greater access to resources, better technologies or higher levels of integration than we do, are fully or partially state-owned. We consider Thailand to be our principal market, not only because we are a Thai company, but because of the strength of the strategic relationships within our group, including with respect to feedstock supply and offtake arrangements.

Our upstream operations compete with the international oil and gas majors and the state-owned enterprises of other nations. These competitors may be able to offer more attractive terms when bidding for concessions for exploratory prospects and secondary operations, to pay more for productive natural gas and oil properties and exploratory prospects, and to define, evaluate, bid for and purchase a greater number of properties and prospects than our financial, technical or personnel resources permit.

Until August 2019, we were the only entity licensed to import LNG to supply as fuel for EGAT's power plants and generally meet LNG demand in Thailand. As one of the measures to liberalize the domestic gas market, the ERC has allowed EGAT to import 1.5 mtpa of LNG at the Map Ta Phut LNG terminal. Between December 2019 and April 2020, EGAT imported a total of 1.3 million tons of LNG. However, this represents a relatively small portion of EGAT's LNG total demand and EGAT has been complying with its take-or-pay obligations under its global gas purchase agreement with us. Therefore, we remain a major liquid natural gas supplier for EGAT. In May 2020, the ERC granted additional licenses for LNG import. The ERC may further issue import licenses to additional players in the future. Despite the increasing number of LNG importers, as the importers will still be required to use our LNG receiving terminal, storage and regasification facilities and transmission pipeline in their LNG imports and distributions and our third-party pipeline access code will only allow transmission of gas that strictly meets the required specifications, we expect that the increased competition landscape will be somewhat mitigated.

Our gas transmission and processing business has a natural monopoly in Thailand and as such does not face direct competition. We are the sole transmission pipeline operator and GSP operator in Thailand. This may change, however, as the ERC has begun to take steps to deregulate the gas industry. In line with the Energy Business Act of 2007 and ERC's notifications requiring us to grant third-party access to connect with and use our pipeline, in 2016 we developed a third-party access code for natural gas supply license holders and wholesale license holders or other licensed energy business operators to access our pipelines. The ERC is considering measures that will control the pipeline fees for such access. To date, only EGAT has utilized our gas pipeline network pursuant to the third-party access. If and when third parties are granted access to our pipeline system we will face competition from domestic and international power companies, some of which may have experience in the gas marketing business. See *"Relationship with the Government and Regulatory Matters — Liberalization of the Gas Supply Industry."*

Downstream, we are the largest refining and petrochemical producer group in Thailand. Our consolidated entities own and operate three of six refineries in Thailand. Despite some overlapping product categories, companies in our refining and petrochemicals segment mostly have distinguished product lines, including speciality products and compete with domestic and international suppliers. As production capacity in Thailand is currently greater than domestic demand, upstream petrochemical companies must export a portion of their production to China and other neighboring countries, in competition with other petrochemical companies in the international market.

Because of the commodity nature of our petrochemical and refining products, competition in the Thai domestic and international spot markets for these products is based primarily on price and, to a lesser extent, on product quality and lead times to product delivery. A key competitive factor is the ability to manage costs and product yields successfully, which requires management focus on reducing unit costs and improving efficiency. The main drivers in this respect include technology, scale, feedstock access, asset utilization, logistics, level of integration, geographical location of feedstock, plants and customers, and the ability to execute capital projects efficiently.

We compete primarily with Shell (Thailand) Co., Ltd., Esso (Thailand) Co., Ltd., Chevron Offshore Thailand Ltd. and Bangchak Corporation Public Company Limited as well as independent operators in the commercial and retail markets for the sale of refined petroleum products. Market participants compete primarily on the basis of price, brand name, services offered, efficiency and proximity to customers. Because margins on the sale of gasoline and diesel are very low, competition has developed for higher margin products that can be sold at service stations, including high margin oil products such as lube and gasoline additives and non-oil goods and service facilities. Through PTTOR, have expanded our market for such higher margin products

through, among other venues, the development and marketing of our One Stop Service facility where our convenience stores, coffee shops, restaurants and pit stop service stations are located within our retail service station.

Employee Matters

As of March 31, 2020, the Group had 27,511 employees. The following table sets forth PTT's employees by major functions as of March 31, 2020.

Major Functions	Number of Employees	Percentage of Total
Natural gas	1,426	40
Oil	N/A	N/A
Petrochemicals and refining	258	7
International trading	142	4
Technology and engineering	414	12
Support staff and staff on secondment to companies within the Group	1,343	37
Total	3,583	100

We invest significant resources in an extensive employee training program and we regularly second employees to work with joint venture partners and subsidiaries so that they can gain experience in a number of technical areas, including training in gas processing and operations, reservoir engineering and management, production geology and petroleum geo-statistics. We conduct an extensive employee training program, including internal training programs and attendance at Thai and international technical institutes, as well as technical training of employees seconded to work with its joint venture operators.

Our employees are ranked by levels 4 through 20, with level 20 being the most senior and level 4 being the most junior. As of March 31, 2020, approximately 2,173 of our 3,369 employees in levels 4-13 were members of a voluntary employee union, which is affiliated with the national state enterprise employees union, and which participates in our affairs. A committee made up of management and union members reports to a national state enterprise employees union representative on a monthly basis. Levels 14-20 consist of management personnel, none of whom are members of the union. We have not experienced any strikes or other labor disturbances that have interfered with our operations and we believe that we have good relations with our employees.

The total remuneration to our employees includes salary, bonuses and allowances. Employees may also receive certain subsidies in housing, health services, education and other miscellaneous items. Remuneration also includes a monthly contribution of up to 15% of an employee's salary to a provident fund. Employees have the opportunity to contribute up to 15% of their annual salary to the fund. We believe that our remuneration levels are competitive within the Thai gas and petrochemical industry. We also have a comprehensive benefits package for our employees that includes, among other things, vacation, military leave, maternity leave, medical care, a child subsidy and a funeral subsidy.

Health, Safety, Environmental and Sustainability Matters

We and our subsidiaries have established numerous policies and procedures for quality, security, safety, health and environmental ("QSHE") management. We have created PTT Group QSHE policy (the "Group QSHE Policy"), PTT Group Security, Safety, Health and Environment Management Standard ("SSHE MS") and PTT Group Business Continuity Management System Standard ("BCMS") to define the operating practices for the Group in regards to these matters. In addition to regular internal audits conducted in each business unit and subsidiary, we are developing SSHE MS corporate audit framework and guideline to ensure the effective and efficient implementation of the SSHE MS across companies with the Group. Extensive SSHE MS corporate audits and gap assessments have been launched in pilot business units and subsidiaries since 2010.

As a foundation of our Group QSHE Policy and SSHE MS, we place a great emphasis on compliance with safety, security, health and environmental laws and regulations in Thailand and overseas in the operation of our oil and gas exploration and production and other activities. In particular, we comply with various laws and regulations as follows:

- the submission for approval of environmental impact assessments (“EIA”) and mitigation measures reports prior to the commencement of petroleum exploration and production projects and other prescribed projects that may impact the environment, natural resources and local communities. The EIAs conducted by us includes health, social and environmental impact assessments and public hearing participation;
- the submission of environmental monitoring and compliance audit reports, during and after the implementation of petroleum exploration and production projects and other prescribed project plans;
- the systematic management of hazardous substances to prevent the release of hazardous substances into the environment;
- limiting or prohibiting drilling activities on sites located within protected areas; and
- avoidance of criminal and civil liabilities for pollution resulting from oil and natural gas operations.

We comply with regulations concerning air emissions, discharges to surface and subsurface water resulting from operations that we own. In addition, our operations are subject to laws and regulations relating to the generation, handling, storage, transportation, disposal and treatment of waste materials.

Our Group QSHE Policy and SSHE MS provides for strict compliance with governing laws and regulations. We apply Group QSHE Policy and SSHE MS to all facets of operations, including the engineering, design, construction, installation, commissioning, operation and de-commissioning of production facilities. We also carefully consider the environmental impact in every step of our operations, including the design of production platforms, production processes, production control, and monitoring and control of hazards. Our QSHE Policy and SSHE MS are the highest level policies in our management system. To efficiently and effectively implement our policies across our organization as a whole, we regularly update our information and knowledge capabilities. We provide frequent training to enhance employees’ potential and educate them about accident prevention and safe work practices, as well as emergency responses through drills, including joint exercises with relevant external agencies.

As part of our QSHE Policy and SSHE MS, all of our facilities have achieved third-party certification for ISO 9001, ISO 14001, ISO/IEC 17025 and TIS/OHSAS 18001, as applicable. We also have implemented other applicable risk prevention and mitigation measures to achieve our objectives and sustainable business operation. Moreover, PTTEP’s safety, security, health and environmental management system is designed to be in line with the International Association of Oil and Gas Producers Guidelines and other international standards such as ISO 14001, OHSAS 18001 and ISO 9001.

We also commit to creating sustainable growth in our operations by adopting the “3P” approach, namely “prosperity,” “people,” and the “planet.” With respect to prosperity, we strive to create sustainable growth for the Thai economy and society by improving productivity, increasing technological capabilities, expanding our presence domestically and internationally across the value chain, identifying and developing the “S-Curve” business and developing technology and innovation capability. Some of the initiatives and achievements under the prosperity aspect include:

- expanding our LNG receiving capacity to 19 mtpa to ensure long-term national energy security;

- targeting to sell 250 million liters of B20 diesel domestically to promote palm oil usage and reduce pollution; and
- targeting to sell 40 million liters of PTT UltraForce Diesel premium which complies with the European Union's emission standards.

With respect to people, we focus on inclusive development of human resource capabilities and creating quality livelihoods for all in building our business growth while caring for the society. Some of the initiatives and achievements under the people aspect under the 3P approach include:

- achieving 38% and 42% of female employee ratio at the operational and management level, respectively;
- employing elderly and those with hearing disabilities at six Cafe Amazon branches;
- providing income between Baht 15,000 to Baht 30,000 to more than 160 coffee farmer households who participate in Cafe Amazon's Community Coffee Sourcing Project;
- implementing the Community Biogas System from Pig Farming Project where we educate 794 households to turn farm waste into biogas to replace cooking gas and charcoal. This project also introduces carbon credits through the Thailand Voluntary Emission Reduction Program. Participants are able to sell carbon credits on Thailand's voluntary carbon trading market for extra income; and
- our Vidyasirimedhi Institute of Science and Technology having been ranked number 1 institution in Thailand and number 3 in the ASEAN region on Chemical Science by the Nature Index.

With respect to the planet, we place great emphasis on conserving natural resources and care for the environment and the community. Some of the initiatives and achievements under the planet aspect under the 3P approach include:

- the Group having lowered the total direct and indirect absolute greenhouse gas emissions to 29.71 MtCO₂e and 1.32 MtCO₂e, respectively;
- committing to the three principles of circular economy: reduce, reuse and recycle. In 2019, the Group used 10.37 million cubic meters of water that has been recycled or reused. This represents 7.32% of the Group's water consumption;
- targeting to reduce water usage in production activities and office buildings by 12.6% and 10%, respective, by 2030 and desalinating seawater to reduce dependence on public water resources;
- having planted 395 hectares of forest bringing the total area of forest planted and maintained to 186,754 hectares;
- introducing carbon pricing as part of a consideration for new investments; and
- having a low percentage of 0.15% of routine hazardous waste to landfill in 2019 and planning to meet 0% target in 2020.

Insurance

Large international reinsurance brokers participate in engineering surveys annually to help determine our risk profile exposure so that we may apply our insurance resources in the most effective manner. We also help certain subsidiaries determine their insurance needs.

We have a comprehensive insurance policy covering all aspects of business operations and all main properties. Our coverage includes property damage, business interruption, third party liability and environmental damage. We consider our insurance coverage to be in accordance with industry

standards. See “*Risk Factors — Risks Relating to Our Business — Our operations and those of our subsidiaries and associated companies may be adversely affected by significant operating risks, hazards and natural disasters, which are common to companies in the oil and gas industry.*”

We also maintain a self-insurance fund, which we use to mitigate financial risk and for general risk management. We appropriate a percentage of net profit from operations and the interest income from the fund each year to the fund.

Legal Proceedings

We are involved in certain judicial proceedings concerning matters arising in the ordinary course of our business. For a description of these proceedings that arise to the level of contingent liabilities, refer to notes 46 and 30 to our audited financial statements and our interim financial statements, respectively, included elsewhere in this Offering Memorandum.

Our financial statements also include an emphasis of matter paragraph, but unqualified opinions in respect thereof, in relation to the submission of a complaint by the Ombudsman of Thailand against us. The complaint relates to the transfer of certain Government assets, including preferential rights to establish Thailand’s gas pipeline system, to the MOF pursuant to a Cabinet resolution that was originally passed on December 18, 2007. Refer to notes 47 and 31 to our audited financial statements and our interim financial statements, respectively, included elsewhere in this Offering Memorandum, for additional details.

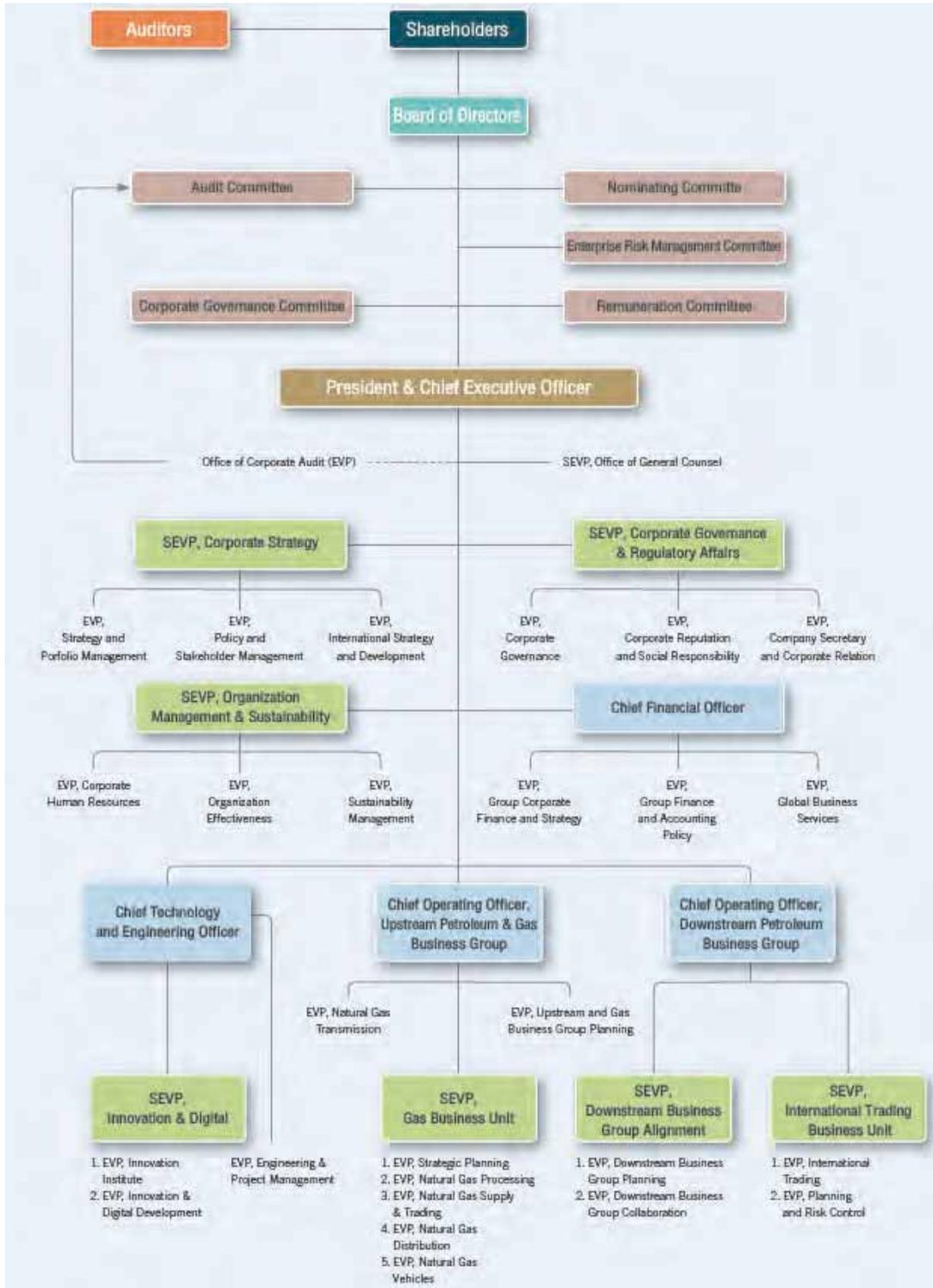
In January 2020, we received a whistleblowing complaint alleging that certain non-executive level employees of one of our subsidiaries (who previously were non-executive level employees of PTT) requested and received kickbacks from service providers whom PTT hired to hold promotional events. We investigated the matter and, in May 2020, referred the case to the National Anti-Corruption Commission of Thailand for further investigation. Pending the outcome of the investigation, these employees have been placed on leave of absence.

As of the date of this Offering Memorandum, there are no significant updates to these matters. Except as described above, we are not aware of any other legal proceedings or investigation that, if adversely determined, could have a material adverse effect on our business, financial condition, results of operations and prospects.

Under the Public Limited Companies Act B.E. 2535 (1992), we are required to appropriate not less than 5% of our annual net income as legal reserve until the reserve fund reaches 10% of our registered share capital. Our reserve has already reached the 10% limit, and as of March 31, 2020 stood at Baht 2,857.25 million (U.S.\$87.4 million). The reserve is non-distributable.

MANAGEMENT

The following diagram depicts our management structure.



Directors

Our board of directors has ultimate responsibility for the administration of the affairs of the company. The Articles of Association provide for a board of directors of between five and fifteen directors and one-third of the Board members are retired each year by rotation. According to our corporate governance policy, at least half of the Board members must be independent directors. Our board of directors currently comprises 14 members.

<u>Name</u>	<u>Position</u>	<u>Date appointed (latest term)</u>
Mr. Krairit Euchukanonchai	Independent director/Chairman of the Board	April 11, 2019
Mr. Vichai Assarasakorn	Independent director/Chairman of the Audit Committee	April 28, 2017
Mr. Don Wasantapruek	Independent director/Chairman of the Nominating Committee	April 11, 2019
Gen. Teerawat Boonyawat	Independent director/Chairman of the Remuneration Committee	April 11, 2019
Prof. Dr. Kittipong Kittayarak	Independent director/Chairman of the Corporate Governance Committee	April 28, 2017
Mr. Supattanapong Punmeechaow . . .	Director/Chairman of the Enterprise Risk Management Committee	October 1, 2019
Mrs. Nuntawan Sakuntanaga	Independent director/Member of the Audit Committee	April 12, 2018
Mr. Danucha Pichayanan	Independent director/Member of the Audit Committee	April 12, 2018
Prof. Dr. Supot Teachavorasinskun . . .	Independent director/Member of the Nominating Committee/Member of the Remuneration Committee	April 11, 2019
Prof. Dr. Surapon Nitikraipot	Independent director/Member of the Nominating Committee/Member of the Corporate Governance Committee	April 12, 2018
Mr. Thon Thamrongnawasawat	Independent director/Member of the Corporate Governance Committee/Member of the Enterprise Risk Management Committee	April 12, 2018
Mr. Chumpol Rimsakorn	Director/Member of the Remuneration Committee/Member of the Enterprise Risk Management Committee	April 11, 2019
Mr. Sarawut Kaewtathip	Director	December 16, 2019
Mr. Auttapol Rerkpiboon	Director and Secretary to the Board	May 13, 2020

Certain information with respect to our directors is set out below:

Mr. Krairit Euchukanonchai — Mr. Euchukanonchai, age 64, is an Independent Director and Chairman of PTT. His other relevant important positions include Vice Chairman, Chairman of the Executive Board and Chairman of the Risk Oversight Committee of Krungthai Bank Public Company Limited. Moreover, he is Chairman of the Audit and Risk Committee, Member of the Nomination and Corporate Governance Committee of Advanced Info Service Public Company Limited, a Director of Advanced Wireless Network Company Limited and also Chairman of V.Group Honda Cars Co., Ltd. and its Subsidiaries and Associates. In the five preceding years, he was Chairman, Mass Rapid Transit Authority of Thailand from 2017 to 2019. Moreover, he was Chairman of the Risk Management Committee of Krung Thai Asset Management Public Company Limited from 2006 to 2012, Director of the State Enterprise Policy Committee from 2010 to 2011, Director and Member of the Audit Committee from 2011 to 2012 and Director of PTT Exploration and Production Public Company Limited from 2011 to 2012.

Mr. Euchukanonchai earned a Bachelor of Science from Chulalongkorn University, Thailand, and a Master's degree in Business Administration in Banking and Finance from North Texas State University, Texas, USA. His certifications include: Director Certification Program (DCP 59/2005), Role of the Chairman Program (RCP 16/2007), Thai Institute of Directors Association (IOD); Citibank: Various Professional Training Courses; and Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class 12/2018), Thailand Energy Academy (TEA).

Mr. Vichai Assarasakorn — Mr. Assarasakorn, age 59, is an Independent Director and Chairman of the Audit Committee of PTT Public Company Limited. He is also an Independent Director, Chairman of the Audit Committee and Member of the Corporate Governance and Social Responsibility Committee of Krungthai Bank Public Company Limited. In the five preceding years, he was a Qualified Director of the Financial Institutions Policy Committee, Bank of Thailand from 2014 to 2017 and was Secretary-General of the Anti-Corruption Organization of Thailand from 2001 to October 2014.

Mr. Assarasakorn earned a Bachelor of Engineering from University of New South Wales, Australia. His certifications include: Director Certification Program (DCP 215/2016), Thai Institute of Directors Association (IOD); Top Executive Program (Class of 12th), Capital Market Academy (CMA); Diploma, The Joint State-Private Sector Course (Class of 22nd), National Defense College; Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class 7/2015), Thailand Energy Academy (TEA); Top Executive Program in Commerce and Trade (TEPCoT) (Class 8/2015), Commerce Academy, University of the Thai Chamber of Commerce; ASEAN Executive Management Program, Sasin Graduate Institute of Business Administration of Chulalongkorn University (Sasin); and Cybersecurity, Cyber Resilience & Privacy Risk in the Era of Digital Transformation Year 2018, ACIS Professional Center.

Mr. Don Wasantapruek — Mr. Wasantapruek, age 61, is an Independent Director and Chairman of the Nomination Committee of PTT Public Company Limited. He has also been an Independent Director of PTT Global Chemical Public Company Limited from 2015 to the present date. Moreover, he has been Chairman of the Nomination and Remuneration Committee of PTTGC since 2019 to the present date. He was a Director to the Corporate Governance Committee of PTTGC since 2015 to 2018.

Mr. Wasantapruek earned a Bachelor's degree and Master's degree in Industrial Engineering from University of New South Wales, Sydney, Australia. His certifications include: Director Accreditation Program (DAP 117/2015), Role of the Nomination and Governance Committee Program (RNG 7/2015) Thai Institute of Directors Association (IOD) and Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class 6/2015), Thailand Energy Academy (TEA).

Gen. Teerawat Boonyawat — Gen. Boonyawat, age 59, is an Independent Director and Chairman of the Remuneration Committee of PTT Public Company Limited. He is currently Chief of Staff of the Royal Thai Army and the Royal Guard, from 2012 to the present date. His other relevant important positions include Secretary General of the Internal Security Operations Command

(ISOC). In 2017, he was Deputy Chief of Staff of the Royal Thai Army. In 2015, he was Director of Civil Affairs of Directorate of Civil Affairs. In 2014, he was Director of the Operations Office and in 2012 he was Deputy Director of Joint Operations of the Directorate of Operations.

Gen. Boonyawat earned a Bachelor of Science Program from Chulachomkiao Royal Military Academy, Thailand and Master of Business Administration from Kasetsart University. His certifications include: Diploma, The National Defense Course (Class of 58th), National Defense College and Joint War College (Class of 41st).

Prof. Dr. Kittipong Kittayarak — Prof. Dr. Kittayarak, age 61, is an Independent Director and Chairman of the Corporate Governance Committee, PTT Public Company Limited. He is also an Independent Director, Chairman of the Corporate Governance and Social Responsibility Committee and Member of the Compliance Committee of Krungthai Bank Public Company Limited and also Independent Director, and Nomination, Remuneration and Corporate Governance Committee Member of Dusit Thani Public Company Limited. He is currently Executive Director of the Thailand Institute of Justice (TIJ). In the five preceding years, from 2016 to August 2018, he was an Audit Committee Member of Dusit Thani Public Company Limited. From 2014 to 2017, he was Chairman of the Audit Committee of Krungthai Bank Public Company Limited. From 2014 to 2015, he was Advisor to the Prime Minister Secretariat of the Prime Minister. From 2008 to 2014, he was Permanent Secretary of the Ministry of Justice.

Prof. Dr. Kittayarak earned a Bachelor of Law (Honors) from Chulalongkorn University, Thailand, a Master of Law (LL.M.) from Cornell University, USA (Royal Thai Government Scholarship), a Master of Law (LL.M.) from Harvard University, USA (Fulbright Scholarship) and Doctor of the Science of Law (J.S.D.) from Stanford University, USA (Fulbright Scholarship). His certifications include: Director Accreditation Program (DAP 112/2014), Advanced Audit Committee Program (AAP18/2015), Thai Institute of Directors Association (IOD); Barrister-at-Law, Institute of Legal Education, Thai Bar Association; Politics and Government in Democracy for Executives (Class of 5th), King Prajadhipok's Institute; Diploma, The National Defense Course (Class of 49th), National Defense College; Top Executive Program (Class of 8th), Capital Market Academy (CMA); Certificate, Executive Program in Energy Literacy for a Sustainable Future (Class of 1st), Thailand Energy Academy (TEA); Certificate in Rule of Law and Democracy (Class 1/2013), Office of the Constitutional Court; Top Executive Program in Justice Administration (Class 10/2006), Judicial Training Institute; and Cybersecurity, Cyber Resilience & Privacy Risk in the Era of Digital Transformation Year 2018, ACIS Professional Center.

Mr. Supattanapong Punmeechaow — Mr. Punmeechaow, age 60, is a Director and Chairman of the Enterprise Risk Management Committee of PTT Public Company Limited. He is also a Director and Director to the Risk Management Committee of PTT Global Chemical Public Company Limited and Chairman of Global Green Chemicals Public Company Limited. From October 2014 to September 2019, he was President and Chief Executive Officer of PTT Global Chemical Public Company Limited. His other relevant important positions include Commission Member of National Administration under the Framework of National Reform, Strategy, and Reconciliation, Prime Minister's Delivery Unity and Commission Member (Business Administration), Office of the Public Sector Development Commission (OPDC).

Mr. Punmeechaow earned a Bachelor of Engineering in Chemical Engineering from Chulalongkorn University, Thailand and a Master of Business Administration from Chulalongkorn University. His certifications include: Director Certification Program (DCP 131/2010), Role of Chairman Program (RCP 30/2013), Thai Institute of Directors Association (IOD); Advanced Management Program, INSEAD University, France; Diploma, The National Defense Course (Class of 50th), National Defense College; The Joint State-Private Sector Course (Class of 20th), National Defense College; Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class of 4th), Thailand Energy Academy (TEA); Corporate Governance for Directors and Senior Executives of State Enterprises and Public Organizations (Class 12/2014), Public Director Institute (PDI), King Prajadhipok's Institute; Rule of Law for Democracy Course (Class 3/2015), College of the Constitutional Court; Top Executives Program (Class 23/2016), Capital Market Academy and Business Revolution and Innovation Network "BRAIN" (Class 2/2018), The Federation of Thai Industries.

Mrs. Nuntawan Sakuntanaga — Mrs. Sakuntanaga, age 61, is an Independent Director and Member of the Audit Committee of PTT Public Company Limited. She is an Independent Director and Chairman of the Corporate Governance Committee of Asset World Corp Public Company Limited, the Commissioner of Securities and Exchange Commission, Thailand and also Chairman of The Gem and Jewelry Institute of Thailand (Public Organization). In the five preceding years, from October 2017 to September 2018, she was Permanent Secretary of the Ministry of Commerce. In October 2016, she was Director General, Department of Internal Trade of the Ministry of Commerce. In October 2015, she was Director General, Department of Intellectual Property of the Ministry of Commerce and, in October 2013, she was Director General, Department of International Trade Promotion of the Ministry of Commerce.

Mrs. Sakuntanaga earned a Bachelor of Accounting in Finance and Banking from Chulalongkorn University, Thailand and a Master of Business Administration in Marketing and International Business from University of Wisconsin at Madison (Wisconsin, USA). Her certifications include: Director Certification Program (DCP 166/2012), Audit Committee Program (ACP 43/2013), Financial Statements for Directors (FSD 31/2016), Boardroom Success through Financing and Investment (BFI 7/2019), Boards that Make a Difference (BMD 9/2019), Thai Institute of Directors Association (IOD); Certificate, The Civil Service Executive Program for Senior Civil Servants (Class 38/2003), Office of the Civil Service Commission; Diploma, The National Defense Course (Class of 49th), National Defense College; Leaders in Development Program — Managing Political & Economic Reform 2008, Kennedy School of Government, Harvard University, Boston, USA; Top Executive Program in Commerce and Trade (TEPCoT) (Class of 2/2009), Commerce Academy; Top Executive Program (Class 14/2012), Capital Market Academy (CMA); Corporate Governance Program for Directors and Executives of State Enterprises and Public Organization (Class 12/2013), Public Director Institute (PDI); and Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class 5/2014), Thailand Energy Academy (TEA).

Mr. Danucha Pichayanan — Mr. Pichayanan, age 49, is an Independent Director and Member of the Audit Committee of PTT Public Company Limited. He is currently Deputy Secretary — General National Economic and Social Development Council of Office of the National Economic and Social Development Council (NESDC). His other relevant important positions include: Director, Provincial Electricity Authority, Board Member, National Electronics and Computer Technology Center (NECTEC) and Member, Public Service Obligation Committee.

Mr. Pichayanan earned a Bachelor of Engineering from Chulalongkorn University, Thailand and a Master of Science in Engineering Management from George Washington University, USA. His certifications include: Director Certification Program (DCP 211/2015), Thai Institute of Directors Association (IOD); Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class of 10th), Thailand Energy Academy (TEA); and Certificate, The Civil Service Executive Program for Senior Civil Servants (Class 78/2013), Office of the Civil Service Commission and Senior Executive Certificate in Anti-Corruption Strategic Management (Class 7/2016), Office of the National Anti-Corruption Commission.

Prof. Dr. Supot Teachavorasinskun — Prof. Dr. Teachavorasinskun, age 55, is an Independent Director, Member of the Remuneration Committee and Member of the Nomination Committee, PTT Public Company Limited. He is currently Dean of Faculty of Engineering, Chulalongkorn University. In 2003, he was an Associate Professor in Department of Civil Engineering, Faculty of Engineering, Chulalongkorn University.

Prof. Dr. Teachavorasinskun earned a Bachelor of Engineering in Civil Engineering from Chulalongkorn University, Thailand and a Master's degree and Doctor of Engineering in Civil Engineering from University of Tokyo, Japan. His certifications include: Director Certification Program (DCP 269/2019), Financial Statements for Directors (FSD 38/2019), Thai Institute of Directors Association (IOD); and Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class of 10th), Thailand Energy Academy (TEA).

Prof. Dr. Surapon Nitikraipot — Prof. Dr. Nitikraipot, age 59, is an Independent Director, Member of the Nomination Committee and Member of the Corporate Governance Committee of PTT Public Company Limited. He is currently Professor of Public Law, Faculty of Law at Thammasat University. From 2014 to April 9, 2018 he was an Independent Director, Chairman of

the Corporate Governance Committee and Director to the Nomination and Remuneration Committee of PTT Global Chemical Public Company Limited. From 2014 to 2016, he was Chairman of the Krungthep Thanakom Company Limited (Community Enterprise of Bangkok). From 2010 to 2014, he was Honorary Board Member and Chairman of the Audit Committee of Mahidol Wittayanusorn School. From 2009 to 2012, he was an Independent Director and Chairman of the Corporate Governance Committee of PTT Public Company Limited. From 2009 to 2011, he was Chairman of MCOT Public Company Limited. From 2004 to 2010, he was Rector of Thammasat University.

Prof. Dr. Nitikraipot earned a Bachelor of Law (Second Class Honors), Thammasat University, Thailand, Diplôme d'études approfondies (D.E.A.) de droit Public, Strasbourg III, France, Doctorat en droit (mention très honorable), l'Université Robert Schuman de Strasbourg, France and Honorary Doctoral, Soka University, Japan. His certifications include: Director Certification Program (DCP 102/2008), Role of the Chairman Program (RCP 25/2011), Board Nomination and Compensation Program (BNCP 5/2018), Thai Institute of Directors Association (IOD); Barrister-at-Law (Class of 35th), Institute of Thai Bar Association of Thailand; Certificate, La Décentralisation et l'Administration Locale, Institut International d' Administration Publique (IIAP), Paris, France; Capital Market Academy Leadership Program (Class of 4th), Capital Market Academy; Diploma, National Defense Course for the Joint State-Private Sector (Class of 23rd), The National Defense College, 2010; and Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA) (Class of 7th), Thailand Energy Academy.

Mr. Thon Thamrongnawasawat — Mr. Thamrongnawasawat, age 53, is an Independent Director, Member of the Corporate Governance Committee and Member of the Enterprise Risk Management Committee of PTT Public Company Limited. He is currently Deputy Dean of Faculty of Fisheries, Kasetsart University. His other relevant important positions include Reform Commission of Thailand on Natural Resources and Environment Management, National Strategic Plan Committee and Honorary Board Member, Marine and Coastal Resources Policy Committee, Department of Marine and Coastal Resources.

Mr. Thamrongnawasawat earned a Bachelor's and Master's degree of Science in Marine Science from Chulalongkorn University, Thailand and Doctor of Philosophy (Ph.D) in Marine Science from James Cook University, Australia. His certifications include: Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class of 9th), Thailand Energy Academy (TEA).

Mr. Chumpol Rimsakorn — Mr. Rimsakorn, age 59, is a Director, Member of the Remuneration Committee and Member of the Enterprise Risk Management Committee of PTT Public Company Limited. He is currently Deputy Permanent Secretary of the Ministry of Finance. From 2011 to 2013, he was Deputy Director-General. From 2013 to 2014, he was Principal Advisor on Tax Development Administration and Chief Information Officer (CIO) of the Excise Department, Ministry of Finance. From 2014 to 2015, he was Chief Information Officer (CIO) of the Ministry of Finance. From 2014 to 2015, he was an Inspector General, Office of the Permanent Secretary, Ministry of Finance. His other relevant important positions include Director, Chairman of the Credit Committee, Member of the Board of Executive Directors and Member of the Nomination, Remuneration and Corporate Governance Committee of TMB Bank Public Company Limited, Director of Thanachart Bank Public Company Limited and also Director of Don Muang Tollway Public Company Limited.

Mr. Rimsakorn earned a Bachelor of Law, Ramkhamhaeng University, Thailand and a Master of Public and Private Management Program, National Institute of Development Administration (NIDA), Thailand. His certifications include: Director Certification Program (DCP 221/2016), Financial Statements for Directors (FSD 30/2016), Role of the Chairman Program (RCP 39/2016), Advanced Audit Committee Program (AACP 24/2016) and IT Governance and Cyber Resilience Program (ITG 9/2018), Thai Institute of Directors Association (IOD); National Defense College Program, The Joint State-Private Sector Course, Thailand National Defense College; Top Executive Program (Class of 19th), Capital Market Academy (CMA); Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class of 7th), 2015-2016, Thailand Energy Academy (TEA); Inspector General Program, The Prime Minister's Office; Senior Executive Program (Class of 60th), Office of the Civil Service Commission; Good Governance for Directors and Executives of State Enterprises and Public Organization (Class of 10th), King Prajadhipok's Institute;

Advanced Master of Management Program (AMM) (Class 1/2018), Graduate School of Public Administration, National Institute of Development Administration (NIDA); and Bangkok Sustainable Banking Forum 2018, Bank of Thailand.

Mr. Sarawut Kaewtathip — Mr. Kaewtathip, age 45, is a Director of PTT Public Company Limited. He is currently Director-General, Department of Mineral Fuels, Ministry of Energy. From April to November 2019, he was Deputy Permanent Secretary, Ministry of Energy. From 2016 to 2019, he was Deputy Director-General, Department of Mineral Fuels, Ministry of Energy. From 2014 to 2016, he was Director of Strategy Planning Division, Office of the Permanent Secretary, Ministry of Energy. From 2011 to 2013, he was Director, Office of Public Participation Promotion, Ministry of Energy.

Mr. Kaewtathip earned a Bachelor of Science in Chemical Engineering from California State Polytechnic University, USA and a Master and Doctor of Philosophy (Ph.D) in Chemical Engineering from University of Southern California, USA. His certifications include: Director Certification Program (DCP 267/2018), Thai Institute of Directors Association (IOD); Senior Executive Program in Energy Science (Class of 11th), Thailand Energy Academy (TEA); Strategist Course, National Defense Studies Institute; Senior Executive Program (Class of 83rd), Office of the Civil Service Commission (OCSC); LPG Economics and International Trading, Oxford Princeton Program, Oxford, UK; International Program for Development Evaluation Training by The World Bank and Carleton University, Ottawa, Canada; Public Utilities Regulations and Strategies by The World Bank and University of Florida, Gainesville, Florida, USA; and International Meeting: International Energy Forum, Doha, Qatar.

Mr. Auttapol Rerkpiboon — Mr. Rerkpiboon, age 54, is a Director and Secretary to the Board of PTT Public Company Limited. He is currently President and Chief Executive Officer of PTT Public Company Limited. He is a Director, Chairman of the Risk Management Committee and Member of the Nomination and Remuneration Committee of Thai Oil Public Company Limited and Chairman of PTT Oil and Retail Business Public Company Limited. From 2017 to 2020, he was Chief Operating Officer, Downstream Petroleum Business Group (October 1, 2017 to September 30, 2018 Acting Senior Executive Vice President, Downstream Business Group Alignment, PTT). From 2015 to 2017, he was Senior Executive Vice President, Oil Business Unit, PTT. From 2014 to 2015, he was Senior Executive Vice President, Sustainability Management and Project Engineering, PTT. From 2013 to 2014, he was Executive Vice President, Retail Marketing, PTT. From 2011 to 2013, he was Executive Vice President, Commercial and International Marketing, PTT.

Mr. Rerkpiboon earned a Bachelor of Engineering in Civil Engineering from Chulalongkorn University, Thailand, a Master of Economics Program from National Institute of Development Administration, Thailand and Diploma of Petroleum Management, College of Petroleum Studies, Oxford, England (British Council Scholarship). His certifications include: Director Certification Program (DCP 173/2013), Company Secretary Program (CSP 14/2005), Thai Institute of Directors Association (IOD); Executive Development Program (EDP), Class 1, Thai Listed Companies Association (TLCA); The National Defense Course (Class of 58th), National Defense College; Advanced Certificate Course in Politics and Governance in Democratic System for Executives (Class of 14th), King Prajadhipok's Institute; Capital Market Academy Leadership Program (Class of 20th), Capital Market Academy; Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class of 12th), Thailand Energy Academy (TEA); Executive Program on Rule of Law and Development: RoLD (Class of 2nd), Thailand Institute of Justice; and TIJ and NIDA-Wharton Executive Leadership Program 2009, The Wharton School of the University of Pennsylvania, USA.

Management Team

The members of the management team as of the date of this Offering Memorandum are as follows:

<u>Name</u>	<u>Position</u>
Mr. Auttapol Rerkpiboon	President and Chief Executive Officer
Mr. Atikom Terbsiri	Chief Operating Officer, Upstream Petroleum & Gas Business Group
Mr. Kris Imsang	Chief Operating Officer, Downstream Petroleum Business Group
Mr. Wittawat Svasti-xuto	Chief Technology and Engineering Officer
Ms. Pannalin Mahawongtikul	Chief Financial Officer
Mrs. Arawadee Photisararo	Senior Executive Vice President, Corporate Strategy
Mr. Preecha Pocatanawat	Senior Executive Vice President, Organization Management and Sustainability
Ms. Duangporn Thiengwatanatham	Senior Executive Vice President, Corporate Governance and Regulatory Affairs
Ms. Peangpanor Boonklum	Senior Executive Vice President, Office of General Counsel
Mr. Wuttikorn Stithit	Senior Executive Vice President, Gas Business Unit
Mr. Buranin Rattanasombat	Senior Executive Vice President, Downstream Business Group Alignment
Mr. Disathat Panyarachun	Senior Executive Vice President, International Trading Business Unit
Mr. Worawat Pitayasiri	Senior Executive Vice President, Innovation and Digital
Mr. Phongsthorn Thavisin	Senior Executive Vice President, seconded to be President and Chief Executive Officer of PTTEP
Mr. Kongkrapan Intarajang	Senior Executive Vice President, seconded to be Chief Executive Officer of PTTGC
Mr. Wirat Uanarumit	Chief Operating Officer, seconded to be President and Chief Executive Officer of ThaiOil
Mr. Noppadol Pinsupa	Senior Executive Vice President, seconded to be President of IRPC
Ms. Jiraphon Kawswat	Senior Executive Vice President, seconded to be Acting President and Chief Executive Officer of PTTOR
Mr. Chawalit Tippawanich	Senior Executive Vice President, seconded to be President and Chief Executive Officer of GPSC
Ms. Duangkamol Settanung	Senior Executive Vice President, seconded to be Executive Vice President, Finance and Accounting of PTTGC.
Mr. Yongyos Krongphanich	Executive Vice President, Group Corporate Finance & Strategy
Ms. Wilaiwan Kanjanakanti	Executive Vice President, Group Finance and Accounting Policy
Mr. Chienvit Udomwatwong	Executive Vice President, Global Business Services

Mr. Auttapol Rerkpiboon — see “— *Directors.*”

Mr. Atikom Terbsiri — Mr. Terbsiri, age 57, is Chief Operating Officer, Upstream Petroleum and Gas Business Group of PTT Public Company Limited. He is a Director and Member of the Risk Management Committee, PTT Exploration and Production Public Company Limited and also Chairman of PTT LNG Company Limited. From October 1, 2014 to August 31, 2019, he was Senior Executive Vice President, PTT, working on a secondment as President and Chief Executive Officer of Thai Oil Public Company Limited. From 2013 to September 30, 2014, he was Senior Executive Vice President, Petrochemicals & Refining Business Unit of PTT Public Company Limited. From 2011 to 2013, he was Senior Executive Vice President of PTT working on a secondment as President of IRPC Public Company Limited. From 2009 to 2011, he was Senior Executive Vice President, Corporate Strategy & Planning, and Acting Senior Executive Vice President, Port & Asset Management Business Unit of IRPC Public Company Limited.

Mr. Terbsiri earned a Bachelor of Business Administration from Assumption University, Thailand and a Master of Business Administration in Finance & International Business, High Distinction from Armstrong University, USA. His certifications include: Director Certification Program (DCP 125/2009), Risk Management Program for Corporate Leaders (RCL 4/2016), Role of the Chairman Program (RCP 41/2017), Thai Institute of Directors Association (IOD); The State, Private Sector and Political Sectors Course (Class of 5th), National Defense College; Advanced Security Management Program (Class of 1st), National Defense College; Capital Market Academy Leader Program (Class of 17th), Capital Market Academy; Executive Education Program, Harvard Business School, Harvard University, USA; and The Executive Program in Energy Literacy for a Sustainable Future (Class of 6th), Thailand Energy Academy.

Mr. Kris Imsang — Mr. Imsang, age 54, is Chief Operating Officer, Downstream Petroleum Business Group of PTT Public Company Limited. He is a Director and Member of the Nomination and Remuneration Committee of IRPC Public Company Limited. From November 1, 2019 to May 31, 2020, he was Senior Executive Vice President, Downstream Business Group Alignment. From October 1, 2018 to October 31, 2019, he was Senior Executive Vice President, Corporate Governance and Regulatory Affairs. From January 1, 2018 to September 30, 2018, he was Senior Executive Vice President, Organization Management and Sustainability.

Mr. Imsang earned a Bachelor of Engineering in Civil Engineering from Chulalongkorn University, Thailand. His certifications include: Director Certification Program (DCP 139/2010), Thai Institute of Directors Association (IOD); Leadership Development Program III (Class of 2nd), PTT Leadership and Learning Institute (PLLI); Certificate in Top Executives in the PoomPalungPandin Program, Chulalongkorn University; Top Executive Program (Class of 23rd), Capital Market Academy (CMA); and Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA) (Class of 9th), Thailand Energy Academy.

Mr. Wittawat Svasti-xuto — Mr. Svasti-xuto, age 58, is Chief Technology and Engineering Officer of PTT Public Company Limited, Director and Director to the Nomination and Remuneration Committee of PTT Global Chemical Public Company Limited and a Director, Chairman of the Nomination and Remuneration Committee and Member of the Risk Management Committee of Global Power Synergy Public Company Limited. From January 1, 2018 to September 15, 2018, he was Senior Executive Vice President, Innovation and Digital. From January 1, 2017 to December 31, 2017, he was Senior Executive Vice President, Sustainability Management and Project Engineering. From October 1, 2016 to December 31, 2016, he was Senior Executive Vice President, Sustainability Management. From January 1, 2016 to September 30, 2016, he was Executive Vice President, Downstream Business Group Alignment. From August 1, 2014 to December 31, 2015, he was Executive Vice President, Strategy Management, Downstream Business Unit.

Mr. Svasti-xuto earned a Bachelor of Engineering (Chemical Engineering) from Chulalongkorn University, Thailand and a Master of Science in Industrial Engineering from the University of Rhode Island, USA. His certifications include: Director Certification Program (DCP 146/2011), Financial Statements for Director (FSD 12/2011), Thai Institute of Directors Association (IOD); Capital Market Academy Leadership Program Class 27/2018, Capital Market Academy; Certificate,

Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 11/2018, Thailand Energy Academy; The National Defense Course (Class of 59th), National Defense College; and Strategy and Innovation for Business in Asia (SIBA) (Class 5/2016).

Ms. Pannalin Mahawongtikul — Ms. Mahawongtikul, age 55, is Chief Financial Officer of PTT Public Company Limited. She is also a Director and Member of the Risk Management Committee of Thai Oil Public Company Limited. From January 1, 2016 to September 30, 2018, she was Executive Vice President, PTT, working on a secondment as Executive Vice President, Finance and Accounting Group of PTT Exploration and Production Public Company Limited. From 2014 to 2015, she was Executive Vice President, Corporate Finance of PTT Public Company Limited. From 2012 to 2014, she was Vice President, Financial Strategy and Policy of PTT Public Company Limited.

Ms. Mahawongtikul earned a Bachelor of Accounting and a Master of Business Administration from Thammasat University, Thailand. Her certifications include: Director Certification Program (DCP 279/2019), Thai Institute of Directors Association (IOD); Capital Market Academy Leader Program (Class of 24th), Capital Market Academy; Leadership Succession Program (LSP) (Class of 6th), Institute of Research and Development for Public Enterprises; CMA-Greater Mekong Subregion (CMA-GMS) (Class of 1st), Capital Market Academy; PTT-HBS Leadership Development Program II, Harvard Business School; NIDA-Wharton Executive Leadership Program (ELP), The Wharton School, University of Pennsylvania; Executive Program for Senior Management (EX-PSM) (Class of 3rd), Fiscal Policy Research Institute Foundation; and Executive Development Program (EDP) (Class of 2nd), Thai Listed Companies Association.

Mrs. Arawadee Photisar — Mrs. Photisar, age 58, is Senior Executive Vice President, Corporate Strategy of PTT Public Company Limited. She is also a Director and Director to the Risk Management Committee of PTT Global Chemical Public Company Limited. From 2017 to September 30, 2018, she was Executive Vice President, PTT, working on a secondment as Managing Director, PTT Digital Solutions Company Limited. From 2016 to 2017, she was Executive Vice President, Strategy and Portfolio Management and Director of ExpresSo Project. From 2013 to 2016, she was Executive Vice President, Strategy and Portfolio Management of PTT Public Company Limited.

Mrs. Photisar earned a Bachelor of Accounting from Thammasat University and a Master of Business Administration (Management Information System) from the University of Dallas, USA. Her certifications include: Director Certification Program (DCP 253/2018), Thai Institute of Directors Association (IOD); Breakthrough Program for Senior Executives, International Leading Business School (IMD), Lausanne, Switzerland; Study Mission to a Nonmember Country on Regional Innovation Strategies and Knowledge Productivity, Office of Thailand Quality Award; Leadership Succession Program (LSP) (Class of 4th), Institute of Research and Development for Public Enterprises (IRDP); TLCA Executive Development Program (EDP) (Class of 5th), Thai Listed Companies Association; Mitsui-HBS Global Management Academy, Harvard Business School, USA; Top Management Program in Governmental Legal (Class of 3rd), Office of the Council of State; and Certificate, Executive Program on Energy Literacy for a Sustainable Future, Class 13, Thailand Energy Academy (TEA).

Mr. Preecha Pocatanawat — Mr. Pocatanawat, age 60, is Senior Executive Vice President, Organization Management and Sustainability of PTT Public Company Limited. He is also a Director of Thai Oil Public Company Limited, Chairman, Business Services Alliance Company Limited and Chairman, Business Professional Solutions Company Limited. From 2014 to September 30, 2018, he was Executive Vice President, Corporate Human Resources. In 2014, he was Vice President under the Office of Chief Financial Officer. From 2012 to 2015, he was Vice President, PTT, working on a secondment as Vice President, Accounting and Corporate Support of HMC Polymers Company Limited.

Mr. Pocatanawat earned a Bachelor of Law from Ramkhamhaeng University, Thailand, Barrister-at-Law from the Institute of Legal Education, Thai Bar Association and a Bachelor of Business Administration in Accounting from Ramkhamhaeng University, Thailand. His certifications include: Director Certification Program (DCP 261/2561), Thai Institute of Directors Association (IOD); Strategy and Innovation for Business in Asia (SIBA) (Class 4/2015), College

of Management, Mahidol University; Senior Executive Certificate in Anti-Corruption Strategic Management (Class 8/2017), Sanya Dharmasakti National Anti-Corruption Institute (SDI); and IRDP Leadership & Effective Corporate Culture Program 2018, Institute of Research & Development for Public Enterprises (IRDP).

Ms. Duangporn Thiengwatanatham — Ms. Thiengwatanatham, age 58, is Senior Executive Vice President, Corporate Governance and Regulatory Affairs of PTT Public Company Limited. She is also a Director of Thai Oil Public Company Limited and Chairman, Sarn Palung Social Enterprise Company Limited. From October 1, 2018 to October 31, 2019, she was Senior Executive Vice President, Downstream Business Group Alignment. From 2017 to September 30, 2018, she was Executive Vice President, Innovation Institute. From 2016 to 2017, she was Executive Vice President, Downstream Business Group Collaboration. In 2016, she was Executive Vice President, Downstream Business Group Planning. From 2013 to 2015, she was Executive Vice President, Subsidiary Planning and Management Petrochemical and Refining Business Unit of PTT Public Company Limited. From 2011 to 2013, she was Executive Vice President PTT, working on a secondment as Deputy CEO — Administration (DA) of Star Petroleum Refining Public Company Limited.

Ms. Thiengwatanatham earned a Bachelor of Engineering in Chemical Engineering from Chulalongkorn University, Thailand, a Master of Engineering in Chemical Engineering from the University of British Columbia, Canada and a Master of Management (Management) from Sasin Graduate Institute of Business Administration of Chulalongkorn University, Thailand. Her certifications include: Director Certification Program (DCP 135/2010) and Financial Statements for Directors (FSD 8/2010), Thai Institute of Directors Association (IOD); Leadership Development Program (LDP) III, PTT Leadership and Learning Institute (PLLI); PTT Executive Leadership Program, General Electric, New York, USA; Enterprise Risk Management Framework, PricewaterhouseCoopers; Strategic Marketing Management, Stanford Graduate School of Business, USA; and 2018 PTIT Annual Dinner: Clean Energy and Smart Transportation: Global Trend for Sustainable World.

Ms. Peangpanor Boonklum — Ms. Boonklum, age 54, is Senior Executive Vice President, Office of General Counsel of PTT Public Company Limited. She is Chairman of Energy Complex Company Limited, a Director, Member of the Nomination and Remuneration Committee and Member of the Enterprise Risk Management Committee, PTT Oil and Retail Business Public Company Limited. From July 1, 2017 to September 30, 2017, she was Executive Vice President, Office of Corporate Legal of PTT Public Company Limited.

Ms. Boonklum earned a Bachelor of Law (Second Class Honors) from Chulalongkorn University, Thailand, a Master of Law in Business Law from Chulalongkorn University, Thailand and a Master of Law (LL.M.), Columbia University School of Law, New York, USA. Her certifications include: Director Certification Program (DCP 7/2001), Anti-Corruption: The Practical Guide (ACPG 38/2017), Ethical Leadership Program (ELP 15/2019), Risk Management Program for Corporate Leaders (RCL 18/2019), Board Nomination and Compensation Program (BNCP 7/2019), Thai Institute of Directors (IOD); Leadership Development Program 3 (LDP3) (Class 4/2019), PTT Leadership and Learning Institute (PLLI); TIJ Executive Program on The Rule of Law and Development (TIJ RoLD 3/2019), Thailand Institute of Justice (TIJ); TIJ Workshop for Emerging Leaders on the Rule of Law and Policy (Class 3/2019), Thailand Institute of Justice (TIJ); Certificate in Anti-Corruption Strategic Management for Senior Executives (Class 9/2018), Office of the National Anti-Corruption Commission; and TLCA Executive Development Program (Class 1/2008), Thai Listed Companies Association (TLCA).

Mr. Wuttikorn Stithit — Mr. Stithit, age 55, is Senior Executive Vice President, Gas Business Unit of PTT Public Company Limited. He is also a Director of Global Power Synergy Public Company Limited, Chairman of PTT Natural Gas Distribution Company Limited and Chairman of PTT Global LNG Company Limited. From November 1, 2015 to January 31, 2019, he was Executive Vice President, Natural Gas Supply and Trading. From November 1, 2014 to October 31, 2015, he was Executive Vice President, Natural Gas Distribution. From July 1, 2011 to October 31, 2014, he was Vice President, Natural Gas Wholesale Marketing.

Mr. Stithit earned a Bachelor of Engineering in Electrical Engineering from King Mongkut's Institute of Technology Ladkrabang, Thailand, a Master of Science in Industrial & System Engineering from Ohio University, USA and a Master of Business Administration (Finance and Banking), Kasetsart University, Thailand. His certifications include: Director Certification Program (DCP 158/2012), Thai Institute of Directors (IOD); Leadership Development Program III (LDP III), PTT Leadership and Learning Institute (PLLI); Leadership Succession Program (LSP) (Class 9/2018), Institute of Research and Development for Public Enterprises (IRDP); Senior Executive Education Program, SIBA 2017, College of Management, Mahidol University; Power of the Kingdom (Class 4/2015) (Bhumipalung Phandin), Chula Unisearch, Chulalongkorn University; and Leadership Development Program II, PTT Leadership and Learning Institute and Senior Executive Program (SEP) 2011, Sasin Graduate Institute of Business Administration of Chulalongkorn University (SASIN).

Mr. Buranin Rattanasombat — Mr. Rattanasombat, age 53, is Senior Executive Vice President, Downstream Business Group Alignment of PTT Public Company Limited. From 2018 to May 31, 2020, he was Senior Executive Vice President, Corporate Strategy, Innovation and Sustainability and Chief Transformation Officer (CTO) of PTT Oil and Retail Business Company Limited. In 2015, he was Executive Vice President, Lubricants Business of PTT Public Company Limited. In 2014, he was Executive Vice President, Retail Marketing of PTT Public Company Limited. In 2011, he was Vice President, International Marketing Department of PTT Public Company Limited.

Mr. Rattanasombat earned a Bachelor of Science from Prince of Songkhla University, Thailand, a Master of Business Administration from Chulalongkorn University, Thailand and a Ph.D. (Management) from Silpakorn University, Thailand. His certifications include: Director Certification Program (DCP 174), Thai Institute of Directors Association (IOD); Top Executive Program (Class of 8th), Capital Market Academy (CMA); Public and Private Chief Innovation Leadership, National Innovation Agency (Public Organization); Advanced Security Management Program, Thailand National Defense College; Leadership Development Program for Sustainability (LDP3), PTT Leadership and Learning Institute, 2018; Senior Executive Education Program, School of Management, MIT, 2018; Leadership Succession Program LDP8, Institute of Research and Development for Public Enterprises, 2017; CMA-GMS International Program Capital Market Academy, 2016; Foreign Affairs Executive Program 7, Ministry of Foreign Affairs, 2015; and Advanced Certificate Course in Public Administration and Law for Executives, King Prajadhipok's Institute, 2013.

Mr. Disathat Panyarachun — Mr. Panyarachun, age 55, is Senior Executive Vice President, International Trading Business Unit of PTT Public Company Limited. He is also a Director and Director to the Corporate Governance Committee of PTT Global Chemical Public Company Limited, Chairman of PTT International Trading London Ltd. and Chairman of PTT International Trading Pte Ltd. From February 1, 2016 to September 30, 2018, he was Executive Vice President, International Trading. From August 1, 2015 to January 31, 2016, he was Vice President, acting as Executive Vice President, International Trading. From 2012 to 2015, he was Vice President, PTT, working on a secondment as Managing Director of PTT International Trading Pte Ltd.

Mr. Panyarachun earned a Bachelor of Social Science from Silpakorn University, Thailand and a Master of Public Administration (Political Science), National University, San Diego, USA. His certifications include: Director Certification Program (DCP 206/2015), Thai Institute of Directors Association (IOD); Leadership Development Program III, PTT Leadership and Learning Institute (PLLI); Certification of Oil Futures Program, College of Petroleum and Energy Studies, The Oxford Princeton Programme, UK, and Certificate, Executive Program on Energy Literacy for a Sustainable Future (Class of 14th), Thailand Energy Academy (TEA).

Mr. Worawat Pitayasiri — Mr. Pitayasiri, age 54, is Senior Executive Vice President, Innovation and Digital of PTT Public Company Limited, Chairman of PTT Digital Solutions Company Limited, Chairman of PTT RAISE Company Limited and Director of Alpha Com Limited. From October 1, 2016 to September 15, 2018, he was Executive Vice President, Downstream Business Group Planning. From March 31, 2016 to September 30, 2016, he was Executive Vice President under Senior Executive Vice President, Downstream Business Group Alignment. From July 1, 2015 to March 30, 2016, he was Executive Vice President, PTT, working on a secondment as President of PTT MCC Biochem Company Limited.

Mr. Pitayasiri earned a Bachelor of Engineering in Chemical Engineering from Chulalongkorn University, Thailand and a Master of Business Administration (Management) from Thammasat University, Thailand. His certifications include: Director Certification Program (DCP) (class of 2012), Thai Institute of Directors Association (IOD); Asia Petrochemical Industry Conference (APIC) (Class 2/2017), Japan Petrochemicals Industry Association; PTT Group VP Leadership Development Program, PTT Public Company Limited; NIDA-Wharton Executive Leadership Program (Class of 2009), The Wharton School of the University of Pennsylvania, USA; Senior Executive Program (Class 26/2012), Sasin Graduate Institute of Business Administration, Chulalongkorn University; and Democratic Politics and Governance for High-Level Administrators Program (Class of 22nd), King Prajadhipok's Institute.

Mr. Phongsthorn Thavisin — Mr. Thavisin, age 60, is Senior Executive Vice President, seconded to be President and Chief Executive Officer and a Director of PTT Exploration and Production Public Company Limited. From November 1, 2017 to September 30, 2018, he was President, Exploration and Production and Acting Executive Vice President, Business Transformation and Organization Group of PTT Exploration and Production Public Company Limited. From January 1, 2016 to October 31, 2017, he was Chief Operating Officer, Production Asset and Operations Support Group/Acting Executive Vice President, Operations Support Group of PTT Exploration and Production Public Company Limited. From January 1, 2015 to December 31, 2015, he was Executive Vice President, Technology and Sustainability Development Group of PTT Exploration and Production Public Company Limited. From 2012 to 2014, he was Executive Vice President, Engineering and Development Group of PTT Exploration and Production Public Company Limited.

Mr. Thavisin earned a Bachelor of Science in Petroleum and Natural Gas Engineering from the Pennsylvania State University, USA. His certifications include: Director Certification Program (DCP 223/2016), Thai Institute of Directors Association (IOD); Capital Market Leader Program (Class of 27th), Capital Market Academy; Energy Literacy Leadership Program (Class of 7th), Thailand Energy Academy; Senior Executive Program (SEP-19), Sasin Graduate Institute of Business Administration of Chulalongkorn University; Advanced Naval Studies Program (Class 40/2008), Institute of Advanced Naval Studies; PTT Group EVP Leadership Development, PTT; PTT Executive Leadership, General Electric, GE, New York, USA; Breakthrough Program for Senior Executives, IMD; and The National Defense Course (2013-2014), Thai National Defense College.

Mr. Kongkrapan Intarajang — Mr. Intarajang, age 53, is Senior Executive Vice President, seconded to be Chief Executive Officer, a Director/Secretary to the Board of Directors and Director to the Risk Management Committee of PTT Global Chemical Public Company Limited. He is also a Director of Global Green Chemicals Public Company Limited, a Director and Member of the Risk Management Committee of Global Power Synergy Public Company Limited, a Director of Thai Tank Terminal Limited, Chairman of PTTGC America LLC and Chairman of PTTGC America Corporation. From April 2017 to September 30, 2019, he was Chief Operating Officer, Upstream Petrochemical Business. From October 2014 to March 2017, he was Executive Vice President, International Business Operations.

Mr. Intarajang earned a Bachelor of Engineering in Chemical Engineering (2nd Class Honors) from Chulalongkorn University, Thailand and Doctor of Philosophy (Ph.D) in Chemical Engineering from University of Houston, USA. His certifications include: Director Certification Program (DCP 119/2009), Role of the Chairman Program (RCP 21/2009), Thai Institute of Directors Association (IOD); Breakthrough Program for Senior Executives, IMD Business School; Diploma, The National Defense College of Thailand (Class of 60th) (NDC 60); The Executive Program in Energy Literacy for a Sustainable Future (TEA) (class 14/2019), Thailand Energy Academy; and Leadership Development Program III (LDP 3) (Class 4/2019), PTT Leadership and Learning Institute (PLLI).

Mr. Wirat Uanarumit — Mr. Uanarumit, age 57, is Chief Operating Officer, seconded to be President and Chief Executive Officer, a Director/Secretary to the Board of Directors and Member of the Risk Management Committee of Thai Oil Public Company Limited. He is also a Director and Member of the Risk Management Committee of Global Power Synergy Public Company Limited, a Director of Thaioil Solvent Company Limited, a Director and Chairman of Labix Company Limited, a Director and Chairman of the Board of Thai Lube Base Public Company

Limited, a Director and Chairman of the Board of TOP SPP Company Limited, a Director and Chairman of the Board of Thai Paraxylene Company Limited, a Director and Chairman of the Board of Thairoil Power Company Limited and a Director and Chairman of the Board of Thairoil Marine Company Limited. From October 1, 2016 to August 31, 2019, he was Chief Operating Officer, Upstream Petroleum and Gas Business Group of PTT Public Company Limited. From May 1, 2014 to September 30, 2016, he was Chief Financial Officer of PTT Public Company Limited. From November 2011 to April 30, 2014, he was Executive Vice President, Corporate Finance of PTT Public Company Limited.

Mr. Uanarumit earned a Bachelor of Engineering in Electrical Engineering from Chulalongkorn University, Thailand and a Master of Business Administration, with emphasis on Financial Management, from Pennsylvania State University, USA. His certifications include: Director Certification Program (DCP 8/2001), Director Certification Program Update (DCPU5/2015), Audit Committee Program (ACP 38/2012), Ethical Leadership Program (ELP 7/2017), Thai Institute of Directors (IOD): GE Global Customer Summit Crotonville; Member, Beta Gamma Sigma (US National Scholastic Honour Society in Business); Advance Management Program, INSEAD Business School, Fontainebleau, France; Advanced Management Program (Class of 184th), Harvard Business School, USA; Capital Market Academy Leader Program (Class of 4th), Capital Market Academy; The Program for Senior Executives on Justice Administration (Class of 16th), Judicial Training Institute, National Justice Academy; Advanced Security Management Program (Class of 2nd), The National Defense College Association of Thailand (NDCAT); Executive Development Program (EDP) (Class of 1st), Thai Listed Companies Association (TLCA); The Joint State-Private Sector Course (Class 2013), National Defense College; Executive Management with Business Development and Investment (Class of 2nd), Institute of Business and Industrial Development (IBID); Advanced Certificate Course in Politics and Governance in Democratic Systems for Executives (Class of 20th), King Prajadhipok's Institute; The Rules of Law for Democracy (Class of 6th), College of the Constitutional Court; The Executive Program in Energy Literacy for a Sustainable Future (Class of 13th), Thailand Energy Academy; and Thailand CG Forum: Governance as a Driving Force for Business Sustainability, The Stock Exchange of Thailand.

Mr. Noppadol Pinsupa — Mr. Pinsupa, age 55, is Senior Executive Vice President, seconded to be President, a Director/Secretary of the Board, and Member of the Risk Management Committee of IRPC Public Company Limited. He is also a Director of PTT Energy Solutions Company Limited. From October 1, 2015 to January 31, 2019, he was Senior Executive Vice President, Gas Business Unit of PTT Public Company Limited. From October 1, 2014 to September 30, 2015, he was Executive Vice President, PTT, working on a secondment as President of Global Power Synergy Public Company Limited. From 2012 to 2014, he was Executive Vice President, Natural Gas for Vehicles of PTT Public Company Limited. From 2010 to 2012, he was Executive Vice President, Natural Gas Distribution, Gas Business Unit.

Mr. Pinsupa earned a Bachelor and Master of Engineering in Electrical Engineering from Chulalongkorn University, Thailand. His certifications include: Director Certification Program (DCP 146/2011), Financial Statements for Directors (FSD 12/2011), Thai Institute of Directors Association (IOD); Leadership Development Program III, PTT; Leadership and Learning Institute; Breakthrough Program For Senior Executives International Leading Business School (IMD), Lausanne, Switzerland; Assessor Training Program, Thailand Quality Award (TQA); Financial Statement for Directors, PTT Public Company Limited; Seminar "Briefing on International Anti-Corruption International Cases and Practices" (October 14, 2015), Thai Institute of Director Association (IOD); Mitsui-HBS Global Management Academy 2015 Japan — USA; G-20Y Summit 2015, France; Program for Senior Executive on Justice Administration (Class of 19th), Judicial Training Institute; Top Executives Program (Class 22/2016), Capital Market Academy; The National Defense Course (Class of 60th), National Defense College; Executive Program on Rule of Law and Development (RoLD Program), Thailand Institute of Justice (TIJ); and The Executive Program in Energy Literacy for a Sustainable Future (Class 14/2019), Thailand Energy Academy.

Ms. Jiraphon Kawswat — Ms. Kawswat, age 58, is Senior Executive Vice President, seconded to be Acting President and Chief Executive Officer, a Director and Secretary to the Board and Member of the Enterprise Risk Management Committee of PTT Oil and Retail Business Public Company Limited. From October 1, 2017 to June 30, 2018, she was Senior Executive Vice

President, Oil Business Unit of PTT Public Company Limited. From 2016 to September 30, 2017, she was Executive Vice President, PTT, working on a secondment as Managing Director of PTT Retail Management Company Limited. From 2012 to 2016, she was Executive Vice President, Planning, Oil Business Unit of PTT Public Company Limited. From 2006 to 2012, she was Vice President, Managerial Accounting.

Ms. Kawswat earned a Bachelor of Science in Accounting from Kasetsart University, Thailand, a Master of Accountancy in Cost Accounting from Chulalongkorn University, Thailand and a Master of Business Administration in Financial Management from Kasetsart University, Thailand. Her certifications include: Director Certification Program (DCP 180/2013), Director Certification Program Update (DCPU2/2014), How to Develop a Risk Management Plan (HRP 6/2014), Successful Formulation & Execution of Strategy (SFE 21/2014), Thai Institute of Directors Association (IOD); Senior Executive Program, London Business School, UK; Leadership Development Program III (Class 2/2015), PTT Leadership and Learning Institute; Strategic Thinking Through Case Studies; PTT Group VP Leadership Development Program; TLCA Executive Development Program (EDP), Thai Listed Companies Association; PTT Group PLLI 3 Leadership Greatness: Great Leaders, Great Teams, Great Results; Top Executive Program (Class 26/2018), Capital Market Academy (CMA); Executive Program on Energy Literacy for a Sustainable Future (Class 12/2018), Thailand Energy Academy (TEA); Executive Program on Rule of Law and Development (RoLD Program 3/2019), Thailand Institute of Justice; and Corporate Governance Program for Directors and Executives of State Enterprises and Public Organization (Class 20/2019), King Prajadhipok's Institute.

Mr. Chawalit Tippawanich — Mr. Tippawanich, age 57, is Senior Executive Vice President, seconded to be President and Chief Executive Officer, a Director/Secretary to the Board and Member of the Risk Management Committee of Global Power Synergy Public Company Limited. He is also a Director of Ratchaburi Power Company Limited, a Director of Xayaburi Power Company Limited, a Director of Glow Company Limited, a Director of Glow SPP2 Company Limited, a Director of Glow SPP3 Company Limited, a Director of Glow IPP2 Holding Company Limited, a Director of Glow SPP11 Company Limited and a Director of Glow IPP Company Limited. From 2017 to September 30, 2018, he was Executive Vice President, Downstream Business Group Alignment, PTT, working on a secondment as Executive Vice President, Organization Effectiveness of Thai Oil Public Company Limited. From 2015 to 2016, he was Executive Vice President, Downstream Business Group Alignment, PTT, working on a secondment as President of HMC Polymers Co., Ltd. (JV with LyondellBasell). From 2013 to 2015, he was Executive Vice President, Business Development and Project Management of PTT Public Company Limited.

Mr. Tippawanich earned a Bachelor of Engineering in Electrical-Telecommunication Engineering (Second-Class Honors) from King Mongkut's Institute of Technology, Ladkrabang, Thailand and a Master of Engineering in Industrial Engineering and Management from Asian Institute of Technology (AIT). His certifications include: Director Certification Program (DCP 152/2011), Thai Institute of Directors Association (IOD); Company Management Program; The Great Manager — Thailand Quality Award; GE Energy Customer Executive Leadership Program (GE: PTT Executive Leadership) — GE Global Learning Crotonville Leadership Institute, USA; Advance Management Program (AMP 187) — Harvard Business School, Executive Education, USA; Leadership Development Program III (Class of 2nd), PTT Leadership and Learning Institute (PLLI); The Joint State-Private Sector Course (Class of 5th), Police College; and Energy Literacy Leadership Program (Class of 12th), Thailand Energy Academy.

Ms. Duangkamol Settanung — Ms. Settanung, age 60, is Senior Executive Vice President, seconded to be Executive Vice President, Finance and Accounting of PTT Global Chemical Public Company Limited. She is also a Director and Chairperson of the Business Advisory Committee of Vinythai Public Company Limited, a Director of PTTGC International (USA) Inc., Chairperson of GC Treasury Center Company Limited, a Director of GC Polyols Company Limited, a Director of PTT Phenol Company Limited, a Director of Emery Specialty Chemicals Sdn. Bhd., a Director of Emery Oleochemicals (M) Sdn. Bhd., a Director of PTTGC America LLC, a Director of PTTGC America Corporation and a Director of PTTGC International Private Limited. From November 1, 2016 to November 30, 2018, she was Executive Vice President PTT working as Executive Vice

President, Finance and Accounting of PTT Global Chemical Public Company Limited. From October 2011 to November 2015, she was Senior Executive Vice President, Corporate Accounting and Finance of IRPC Public Company Limited.

Ms. Settanung earned a Bachelor of Science in Statistics (1st Class Honors) from Kasetsart University, Thailand and a Master of Business Administration from Thammasat University, Thailand. Her certifications include: Director Certification Program (DCP155/2012), Thai Institute of Directors Association (IOD); Certificate Program for GE: PTT Executive Program, GE USA, 2012; Certification Program for “Leadership Development Program III (LDP III),” PTT Leadership and Learning Institute, 2014; and Capital Market Academy Leadership Program (Class of 26th), Capital Market Academy.

Mr. Yongyos Krongphanich — Mr. Krongphanich, age 60, Executive Vice President, Group Corporate Finance and Strategy of PTT Public Company Limited. He is also Chairman, PTT Regional Treasury Center Pte. Ltd. From October 1, 2018 to December 31, 2018, he was Executive Vice President, Finance and Accounting Group and Acting Senior Vice President, Finance Division of PTT Exploration and Production Public Company Limited. From 2014 to September 30, 2015, he was Senior Vice President, Finance Division and Acting Senior Vice President, Accounting Division of PTT Exploration and Production Public Company Limited. In 2013, he was Senior Vice President, Finance and Strategic Information Technology Division of PTT Exploration and Production Public Company Limited. From 2011 to 2012, he was Senior Vice President, Accounting Division of PTT Exploration and Production Public Company Limited.

Mr. Krongphanich earned a Bachelor of Accounting from Chulalongkorn University, Thailand and a Master of Accounting from Thammasat University, Thailand. His certifications include: The Corporate Governance Regulation and Disclosure Training (2017), Thai Institute of Directors Association (IOD); and ICT Management for Non-ICT Executives (2013), NSTDA Academy, National Science and Technology Development Agency.

Ms. Wilaiwan Kanjanakanti — Ms. Kanjanakanti, age 53, is Executive Vice President, Group Finance and Accounting Policy of PTT Public Company Limited. She is also a Director of Dhipaya Insurance Public Company Limited, a Director of PTT Oil and Retail Business Public Company Limited and a Director of PTT Green Energy Pte. Ltd. From June 1, 2016 to October 31, 2016, she was Vice President, Treasury of PTT Public Company Limited. From September 1, 2014 to May 31, 2016, she was Vice President, Managerial Accounting. From January 1, 2012 to August 31, 2014, she was Vice President, Accounting Policy and Advisory.

Ms. Kanjanakanti earned a Bachelor of Accountancy from Chulalongkorn University, Thailand and Master of Science in Accounting Information Systems (M.S. in AIS), Faculty of Commerce and Accountancy from Chulalongkorn University, Thailand. Her certifications include: Director Certification Program (DCP 234/2017), Thai Institute of Directors Association (IOD); Leadership Development Program II (LDP 2), Harvard Business School, USA; Executive Development Program, The Stock Exchange of Thailand; Executive Development Program 2012 (Class of 8th) (EDP-MOF 2012), Fiscal Policy Research Institute Foundation; Advanced Management Program 3 (AMP 3), PTT Leadership and Learning Institute (PLLI); and Leadership Development Program III (LDP 3), IMD Singapore and Financial and Fiscal Management for Senior Executive Program (FME-MOF).

Mr. Chienvit Udomwatwong — Mr. Udomwatwong, age 60, is Executive Vice President, Global Business Services of PTT Public Company Limited. He is also a Director of PTT International Trading Pte. Ltd., Chairman of PTT Treasury Center Company Limited and Chairman of PTT Energy Solutions Company Limited. From June 1, 2016 to September 30, 2016, he was Vice President under Executive Vice President, Global Business Services of PTT Public Company Limited. From October 1, 2014 to May 31, 2016, he was Vice President, Treasury. From 2005 to 2014, he was Vice Present, PTT, working on a secondment as Vice President, Finance and Administration of PTT Natural Gas Distribution Company Limited.

Mr. Udomwatwong earned a Bachelor of Accountancy from Dhurakij Pundit University, Thailand and a Master of Business Administration in General Management from National Institute of Development Administration (NIDA), Thailand. His certifications include: Director Certification

Program (DCP 154), Thai Institute of Directors Association (IOD); TLCA Executive Development Program (EDP), Thai Listed Companies Association; PTT-HBS Leadership Development Program (Harvard Business School); and Leadership Development Program II, PTT Leadership and Learning Institute (PLLI). Continuing Professional Development includes: TFRS 9 Sharing Experience in Impairment of Financial Assets (Focus on Simplified Approach), Valuation of Financial Instruments and Hedging Accounting for Non-bank Business (Class 1/2019) — CPD (Accounting) 6 hours; The Challenge of auditing with AI Technology and Blockchain — CPD (Accounting) 6 hours; National e-Payment with Tax — CPD (Other) 7 hours.

Corporate Governance

We strive to be a role model in corporate governance. We recognize the importance of having good corporate governance and are committed to operate our business in a transparent manner, which we believe will inspire confidence among our customers, partners, and stakeholders and enhance our competitiveness for sustainable growth.

Board Committees

PTT has five committees investigating critical matters under the corporate governance principles, taking into account stakeholders’ concerns and interests, business ethics, transparency and accountability. Each of these committees consists of qualified, non-executive directors, as required by the SET, whose roles and responsibilities are clearly defined in a charter.

The Audit Committee

Each quarter, together with the Accounting Service Center and the external auditors, the Audit Committee reviews PTT’s financial reports and presents its findings to the Board. The Board is accountable for the Group’s consolidated financial statements, as well as other financial information presented in the annual report. The financial statements are prepared under generally accepted accounting principles, and are audited or reviewed and certified by the external auditors.

The Board established the Audit Committee on October 1, 2001, which consists of directors with the qualifications specified in securities and exchange laws and by the SET. The Committee must consist of at least three Members. As of the date of this Offering Memorandum, it consists of three independent directors as follows:

Name	Position	Remarks
1. Mr. Vichai Assarasakorn	Chairman	Independent Director
2. Mrs. Nuntawan Sakuntanaga	Member	Independent Director
3. Mr. Danucha Pichayanan.	Member	Independent Director

The main duties and responsibilities of the Audit Committee are as follows:

- Review and reassess the adequacy of the Audit Committee Charter annually in accordance with PTT strategic objectives. Final approval of the charter resides with the PTT Board of Directors.
- Review the effectiveness and efficiency of governance, risk management and control processes.
- Review and ensure that PTT financial statements are appropriate and in accordance with the accounting standards.
- Review and ensure that PTT business processes are in accordance with the Securities Law, the Stock Exchange’s regulations, policy, rules, ordinances, the Articles, the Cabinet Resolutions and the relevant laws.

- Review and ensure that the PTT internal audit system is appropriate including the sufficiency of internal audit budget, resource, and the organizational independence of the internal audit activity.
- Consider any connected or Conflict of Interest transaction or fraud occurrence that may affect PTT business in accordance with the Stock Exchange's regulations and rules.
- Recommend to the PTT Board of Directors, the Chief Audit Executive's appointment, removal and performance.
- Recommend to the PTT Board of Directors, the external auditor nomination, appointment or termination including its fee.
- Coordinate with the external auditor and may ask to review or assess any significant accounting and reporting issues.
- Report to the PTT Board of Directors, the Audit Committee performance at least once quarterly. For the fourth quarter, the Audit Committee Annual Report must be prepared and submitted to the Responsible Ministry of Government agencies and the Ministry of Finance.
- Report to the PTT Board of Directors, the Audit Committee performance on internal audit activity assessment at least once annually.
- Disclose the Audit Committee Annual Report and the external auditor annual fee in the PTT annual report.
- Either the Chairman or a member of the Audit Committee must attend the PTT annual general shareholder meeting.
- If competent advice or assistance is needed to perform internal audit activity or other Audit Committee tasks, the Audit Committee can ask the PTT Board of Directors to appoint any independent consultant or expert. The costs and expenses of such services or invitations shall be on PTT's account.
- Inform the CEO of any breach of the Securities Law, the Stock Exchange's regulations, policy, rules, ordinances, the Articles, the Cabinet Resolutions and the relevant laws to resolve the issue.
- Meet at least once quarterly and must hold a private meeting with the external auditor at least once annually.
- Officially meet with the management at least once annually.
- Perform any tasks designated by law or the PTT Board of Directors under the Audit Committee duties and responsibilities.

The Nominating Committee

The Board established the Nominating Committee on October 1, 2001, which consists of three of its directors. As of the date of this Offering Memorandum, it consists of three directors as follows:

<u>Name</u>	<u>Position</u>	<u>Remarks</u>
1. Mr. Don Wasantapruek	Chairman	Independent Director
2. Prof. Dr. Supot Teachavorasinskun	Member	Independent Director
3. Prof. Dr. Surapon Nitikraipot	Member	Independent Director

The main duties and responsibilities of the Nominating Committee are as follows:

- Define the methods and criteria for directors' nomination for transparency.
- Select director nominees to fill vacancies (due to resignation or term completion) for the Board's or the shareholders' consideration and appointment with due regard for the composition of the Board, expertise, competencies and experience useful to PTT in compliance with PTT's Board Skill Matrix and the Director's Pool of SEPO and IOD. Equally important, nominees must have no conflicts of interest with PTT. The qualifications of desirable directors must prove compatible with PTT's business strategies.
- Propose directors for committee duties with due regard for the committees' compositions, qualifications, expertise, and competencies. These names are then tabled for the Board's appointment. An exception is for the committee itself, which is to be appointed by the Board.
- Be directly accountable to the Board, while the Board is accountable for PTT's businesses to all stakeholders.
- Assess its own performance and report the outcomes to the Board for acknowledgment and disclose them in the annual report.
- Disclose its own performance in the annual report.
- Hold at least two meetings a year.
- Perform other Board-assigned tasks.

As a procedure for a recruitment, the committee defines the qualifications needed for replacements to ensure that new directors meet the criteria and qualifications required by applicable laws and regulations and align with PTT's strategy and operations. It also defines a procedure for nominating qualified candidates.

According to the CG Ethical Standards, and the Code of Business Ethics Handbook, the Board should consist of experts from a variety of disciplines needed for the administration of PTT businesses. Specifically, it should consist of at least three experts in the petroleum business, at least one expert in law, and at least one expert in finance and accounting. Currently, PTT's Board Skill Matrix consists of Accounting/Finance/Laws/Information Technology/Engineering/Marketing/Business Management/International Business/Economics/Science, Technology, Energy Innovation, Petrochemical, Biological Industries, Digital, Automation, Artificial Intelligence and Robotics/Political Science, Security, Risk Management/Social Enterprise, Natural Resources and environment and sustainability.

- The committee summarizes its recruitment results and presents to the Board a shortlist of qualified candidates along with supporting rationale.
- The Board appoints qualified candidates from the list prepared by the committee and submits their names to the shareholders' meeting for approval. The list must also be endorsed by SEPO in conformance to the Directive of the Prime Minister's Office on the Definition of Policy and Supervision of State Enterprises, B.E. 2557 (2014).

The Remuneration Committee

The Board established the Remuneration Committee on October 1, 2001, which consists of three directors. As of the date of this Offering Memorandum, it consists of three directors as follows:

<u>Name</u>	<u>Position</u>	<u>Remarks</u>
1. General Teerawat Boonyawat	Chairman	Independent Director
2. Mr. Chumpol Rimsakorn	Member	Director
3. Prof. Dr. Supot Teachavorasinskun	Member	Independent Director

The main duties and responsibilities of the Remuneration Committee are as follows:

- Define the criteria for compensation and propose fair, sensible compensation for directors and committee members for the Board's and the shareholders' approval.
- Propose guidelines for assessing performance outcomes and compensation for the President and CEO for the Board's approval.
- Acknowledge and comment on organization restructuring and job levels, and assess and decide compensation for senior executive vice presidents.
- Be accountable to the Board directly, while the Board is accountable for PTT's businesses to all stakeholders.
- Assess its own performance outcomes and report the findings to the Board for acknowledgment and disclose them in the annual report.
- Disclose its own performance in the annual report.
- Hold at least two meetings a year.

The Corporate Governance Committee

The Board established the Corporate Governance Committee on June 24, 2004, which consists of three directors. As of the date of this Offering Memorandum, it consists of:

<u>Name</u>	<u>Position</u>	<u>Remarks</u>
1. Prof. Dr. Kittipong Kittayarak	Chairman	Independent Director
2. Prof. Dr. Surapon Nitikraipot	Member	Independent Director
3. Mr. Thon Thamrongnawasawat	Member	Independent Director

The main duties and responsibilities of the Corporate Governance Committee are as follows:

- The duties and responsibilities on Corporate Governance, Operational Risk Management and Internal Control, and Compliance (GRC), Anti-Fraud and Corruption, Sustainability Management (SM) and Corporate Social Responsibility (CSR) include the following matters:
- Advise the Board and the Management on matters dealing with PTT Good Corporate Governance, Code of Conduct and Code of Business Ethics.
- Review and endorse strategies, objectives, and framework, including policies and guidelines annually to be aligned with PTT's strategies and objectives, as well as international practices.
- Monitor the implementation and report to the Board.
- Advise the Governance, Risk, Compliance Management Committee (GRCMC).

- Advise the Governance, Risk, Compliance Management Committee for implementation (GRCMC).
- Establish the policy of allowing minority shareholders to nominate directors and propose AGM agenda items.
- Establish the policies and define the scopes for supervising matters dealing with PTT's whistleblowing mechanism for complaints and anti-fraud and corruption practices.
- Perform other Board-assigned tasks.
- Hold at least one meeting each quarter.

The Enterprise Risk Management Committee

The Board established the Enterprise Risk Management Committee on October 25, 2013, which consists of at least three directors and one of whom must be an independent director. As of the date of the Offering Memorandum, it consists of:

<u>Name</u>	<u>Position</u>	<u>Remarks</u>
1. Mr. Supattanapong Punmeechaow	Chairman	Director
2. Mr. Thon Thamrongnawasawat	Member	Independent Director
3. Mr. Chumpol Rimsakorn	Member	Director

The main duties and responsibilities of the Enterprise Risk Management Committee are as follows:

- Define and review PTT's risk management and corporate stakeholder management policies and scopes.
- Supervise and support risk management and stakeholder management practices in line with strategies and business goals as well as prevailing circumstances.
- Provide recommendations, monitor, and evaluate risk management and stakeholder management for further implementation of the Corporate Plan and Risk Management Committee (CPRC) (management level).
- Review risk management outcome reports and provide recommendations on risks, including specification of control measures or mitigation plans and development of the risk management system to CPRC for continued efficiency.
- Review reports of corporate stakeholder management outcomes and provide recommendations on relevant plans to extend positive outcomes or minimize/offset potential impacts on stakeholders, including development of the stakeholder management system for CPRC to ensure continued efficiency.
- Support the Chief Risk Officer (CRO) and Chief Stakeholder Officer (CSO) in achieving PTT's corporate risk management and stakeholder management goals.
- Report risk management outcomes and stakeholder management outcomes to the Board. If factors or events might have potential significant impacts on PTT, the Board must be notified immediately.
- Screen and comment on, before presenting to the Board for approval, contractual items, which are complicated businesswise and contain risks potentially affecting PTT or potentially and significantly affecting PTT's stakeholders as endorsed by the Management Committee.
- Screen and comment on investment agenda:

- PTT's and PTT Group's wholly owned investment projects with investment value exceeding THB 5 billion and present to the Board for approval.
- PTT's investment projects where it holds less than 100% shares and not SET-listed, with investment value exceeding THB 5 billion, and present to the Board for approval before PTT's representative votes in shareholders' meetings or board meetings.
- Investment with risks potentially significantly affecting PTT or its stakeholders as endorsed by the Management Committee.
- Meet at least once a quarter.
- Perform other Board-assigned duties.

PRINCIPAL SHAREHOLDERS

The following table sets forth certain information about the Company's shareholders, as shown on its share register on May 29, 2020. See "*Relationship with the Government and Regulatory Matters.*"

Name of Shareholder	Number of Shares Held	Percentage
Ministry of Finance	14,598,855,750	51.11
Vayupak Fund 1 by MFC Asset Management Plc	1,736,895,500	6.08
Vayupak Fund 1 by Krung Thai Asset Management Plc	1,736,895,500	6.08
Thai NVDR Co., Ltd.	1,462,447,998	5.12
South East Asia UK (Type C) Nominees Limited	572,602,103	2.00
Social Security Office	538,355,200	1.88
State Street Europe Limited	387,927,495	1.36
The Federation of Savings and Credit Cooperatives of Thailand Limited	366,396,500	1.28
GIC Private Limited	218,951,400	0.77
The Bank of New York (Nominees) Limited	193,355,400	0.68
EGAT Saving and Credit Cooperative Limited	183,871,800	0.64
Others	6,566,441,604	23.00
Total	28,562,996,250	100.00

RELATED PARTY TRANSACTIONS

Transactions with Government Agencies and State Enterprises

We are party to a number of agreements with related parties such as government agencies and state enterprises. Sales and service income derived from government agencies and state enterprises amounted to Baht 105,423 million, Baht 111,937 million, Baht 132,609 million (U.S.\$4,055.5 million) for the years ended December 31, 2017, 2018, 2019, respectively.

Government regulation requires central and provincial government agencies and state enterprises (other than EGAT) procuring energy and natural resources in volumes in excess of 10,000 liters to do so either from PTT or through open tender.

Our related party transactions with government agencies and state enterprises consist primarily of sales of natural gas, fuel and petroleum products to customers such as EGAT, the Bangkok Mass Transit Authority, the State Railway of Thailand and the Transport Company Limited.

Transactions with Entities within the Group

In the ordinary course of business, PTT and its consolidated entities enter into transactions with each other for the supply and purchase of natural gas, crude oil and petroleum products, often with minimum annual production or offtake commitments. The transactions are negotiated on arm's-length basis and prices are referenced to global market prices or other standardized benchmark prices. These intra-Group transactions are intended to maximize benefits from our highly integrated operations, support national energy security and are regarded as normal business transactions.

Information regarding sales and outstanding balances arising from intra-Group are disclosed in note 38 to our audited financial statements and note 25 to our interim financial statements contained elsewhere in this Offering Memorandum.

Policy on Connected Transactions

Our future connected transactions will be conducted as part of the normal course of business with no special favors and no transfer of benefits between us, our subsidiaries, associated companies, related companies, or shareholders. Pricing will continue to be on an arm's length basis, and the prices of products supplied by our subsidiaries will be market-based. Disclosure of connected transactions is required under the rules of the Thai SEC, the SET and TFRS.

FORM OF THE NOTES

Notes may only be issued in registered form.

Each Tranche of Notes in registered form (“Notes”) will be represented by either:

- (i) individual note certificates in registered form (“**Individual Note Certificates**”); or
- (ii) one or more unrestricted global note certificates (“**Unrestricted Global Note Certificate(s)**”) in the case of Notes sold outside the United States to non-U.S. persons in reliance on Regulation S (“**Unrestricted Notes**”) and/or one or more restricted global note certificates (“**Restricted Global Note Certificate(s)**”) in the case of Notes sold to persons who are both QIBs under Rule 144A and QPs under the Investment Company Act (“**Restricted Notes**”),

in each case as specified in the relevant Pricing Supplement, and references in this Offering Memorandum to “Global Note Certificates” shall be construed as a reference to Unrestricted Global Note Certificates and/or Restricted Global Note Certificates.

Each Note represented by a Restricted Global Note Certificate will be registered in the name of Cede & Co. (or such other entity as is specified in the applicable Pricing Supplement) as nominee for DTC or, as the case may be, in the name of the common depository (or its nominee) for Euroclear and Clearstream, Luxembourg and the relevant Restricted Global Note Certificate will be deposited on or about the issue date with the custodian for DTC (the “**DTC Custodian**”) or a nominee of the common depository for Euroclear and/or Clearstream, Luxembourg. Beneficial interests in Notes represented by a Restricted Global Note Certificate may be held through DTC or, as the case may be, Euroclear and/or Clearstream, Luxembourg at any time.

Each Note represented by an Unrestricted Global Note Certificate will be registered in the name of a common depository (or its nominee) for Euroclear and/or Clearstream, Luxembourg and/or any other relevant clearing system or in the name of Cede & Co. as nominee for DTC, and the relevant Unrestricted Global Note Certificate will be deposited on or about the issue date with the common depository or the DTC Custodian.

If the relevant Pricing Supplement specifies the form of Notes as being “Individual Note Certificates,” then the Notes will at all times be represented by Individual Note Certificates issued to each Noteholder in respect of their respective holdings.

Global Note Certificate exchangeable for Individual Note Certificates

If the relevant Pricing Supplement specifies the form of Notes as being “Global Note Certificate exchangeable for Individual Note Certificates,” then the Notes will initially be represented by one or more Global Note Certificates, each of which will be exchangeable in whole, but not in part, for Individual Note Certificates:

- (i) on the expiry of such period of notice as may be specified in the relevant Pricing Supplement; or
- (ii) if the relevant Pricing Supplement specifies “in the limited circumstances described in the Global Note Certificate,” then:
 - (a) in the case of any Global Note Certificate held by or on behalf of DTC, if DTC notifies the relevant Issuer that it is no longer willing or able to discharge properly its responsibilities as depository with respect to any Global Note Certificate or DTC ceases to be a “clearing agency” registered under the Exchange Act or if at any time DTC is no longer eligible to act as such, and the relevant Issuer is unable to locate a qualified successor within 90 days of receiving notice of such ineligibility on the part of DTC;

- (b) in the case of any Unrestricted Global Note Certificate held by or on behalf of, Euroclear and/or Clearstream, Luxembourg and/or any other clearing system (other than DTC), if Euroclear, Clearstream, Luxembourg or any other relevant clearing system is closed for business for a continuous period of 14 days (other than by reason of legal holidays) or announces an intention permanently to cease business; and
- (c) in any case, if any of the circumstances described in Condition 13 (*Events of Default*) occurs in respect of any Note of the relevant Tranche and the Issuer has received a written request from a Noteholder.

Whenever a Global Note Certificate is to be exchanged for Individual Note Certificates, each person having an interest in a Global Note Certificate must provide the relevant Registrar (through the relevant clearing system) with such information as the relevant Issuer and the Registrar may require to complete and deliver Individual Note Certificates (including the name and address of each person in which the Notes represented by the Individual Note Certificates are to be registered and the principal amount of each such person's holding). In addition, whenever a Restricted Global Note Certificate is to be exchanged for Individual Note Certificates, each person having an interest in the Restricted Global Note Certificate must provide the relevant Registrar (through the relevant clearing system) with a certificate given by or on behalf of the holder of each beneficial interest in the Restricted Global Note Certificate stating either (i) that such holder is not transferring its interest at the time of such exchange or (ii) that the transfer or exchange of such interest has been made in compliance with the transfer restrictions applicable to the Notes and that the person transferring such interest reasonably believes that the person acquiring such interest is both a QIB and a QP and is obtaining such beneficial interest in a transaction meeting the requirements of Rule 144A. Individual Note Certificates issued in exchange for interests in the Restricted Global Note Certificate will bear the legends and be subject to the transfer restrictions set out under "*Transfer Restrictions*."

Whenever a Global Note Certificate is to be exchanged for Individual Note Certificates, the relevant Issuer shall procure that Individual Note Certificates will be issued in an aggregate principal amount equal to the principal amount of the Global Note Certificate within five business days of the delivery, by or on behalf of the Holder, the registered holder of the Global Note Certificate to the relevant Registrar of such information as is required to complete and deliver such Individual Note Certificates against the surrender of the Global Note Certificate at the specified office of the relevant Registrar.

Such exchange will be effected in accordance with the provisions of the Indenture and the regulations concerning the transfer and registration of Notes and, in particular, shall be effected without charge to any holder, but against such indemnity as the relevant Registrar may require in respect of any tax or other duty of whatsoever nature which may be levied or imposed in connection with such exchange.

Terms and Conditions applicable to the Notes

The terms and conditions applicable to any Individual Note Certificate will be endorsed on that Individual Note Certificate and will consist of the terms and conditions set out under "*Terms and Conditions of the Notes*" below and the provisions of the relevant Pricing Supplement which supplement, amend and/or replace those terms and conditions.

The terms and conditions applicable to any Global Note Certificate will differ from those terms and conditions which would apply to the Note were it in definitive form to the extent described under "*Summary of Provisions Relating to the Notes while in Global Form*" below.

TERMS AND CONDITIONS OF THE NOTES

The following is the text of the terms and conditions which, as supplemented, amended and/or replaced by the relevant Pricing Supplement, will be endorsed on each Note in definitive form issued under the Program. The terms and conditions applicable to any Note in global form will differ from those terms and conditions which would apply to the Note were it in definitive form to the extent described under “Summary of Provisions Relating to the Notes while in Global Form” below.

1. Introduction

- (a) **Program:** PTT Public Company Limited (the “**Company**”) and PTT Treasury Center Company Limited (“**Treasury Center**”) have established a Global Medium Term Note Program (the “**Program**”) for the issuance of up to U.S.\$2,000,000,000 in aggregate principal amount of Notes. Each Series (as defined below) of Notes shall be issued either by (i) the Company (in its capacity as issuer, an “**Issuer**”); or (ii) Treasury Center (in its capacity as issuer, an “**Issuer**”, and together with the Company in its capacity as issuer, the “**Issuers**”); in the case of (ii), the Notes shall be unconditionally and irrevocably guaranteed by the Company (in its capacity as guarantor, the “**Guarantor**”) in accordance with Condition 1(d). References to the “**Issuer**” in these Conditions shall be construed as to the Issuer specified in the relevant Pricing Supplement.
- (b) **Pricing Supplement:** Notes issued under the Program are issued in series (each, a “**Series**”) and each Series may comprise one or more tranches (each, a “**Tranche**”) of Notes. The terms and conditions applicable to any particular Series or Tranche of Notes are set out in the relevant pricing supplement (the “**Pricing Supplement**”) which supplements, amends and/or replaces these terms and conditions (the “**Conditions**”). In the event of any inconsistency between these Conditions and the relevant Pricing Supplement, the relevant Pricing Supplement shall prevail.
- (c) **Indenture:** The Notes are subject to, and have the benefit of, an indenture dated July 8, 2020 (as amended and/or supplemented from time to time, the “**Indenture**”) between the Issuers, the Guarantor and Citicorp International Limited as trustee (the “**Trustee**”, which expression includes all persons for the time being trustee or trustees appointed under the Indenture). Appointment, retirement and removal of the Trustee shall be in accordance with the terms prescribed in the Indenture. Noteholders (as defined below) are deemed to have accepted the appointment of the Trustee.
- (d) **Guarantee:** The Guarantor has, in accordance with the terms of the Indenture, unconditionally and irrevocably guaranteed the due and punctual payment of all sums from time to time payable in respect of Notes issued by Treasury Center in its capacity as Issuer (the “**Guarantee**”). The Guarantor’s maximum liability under the Guarantee in respect of each Series of Guaranteed Notes (as defined below) will be capped at an amount equal to 125 per cent. of the aggregate principal amount of the relevant Series of Guaranteed Notes (or such other level as may be specified in the relevant Pricing Supplement) outstanding as of the Issue Date or the issue date of any further Guaranteed Notes issued in accordance with Condition 19 (*Further Issuances*) and consolidated and forming a single series therewith. The Guarantor shall be liable for the obligations guaranteed in respect of any Series of Guaranteed Notes which are incurred from the date of issue of the relevant Series of Guaranteed Notes until the earlier of (i) the date falling ten years after the maturity date of the relevant Series of Guaranteed Notes or (ii) the date on which all sums expressed to be payable by Treasury Center under the relevant Series of Guaranteed Notes have been unconditionally and irrevocably paid and discharged in full; or, alternatively, upon a defeasance or discharge as provided in Condition 20 (*Defeasance and Discharge*).
- (e) **Agents:** Pursuant to a paying and transfer agent and registrar appointment letter dated July 8, 2020 (as amended and/or supplemented from time to time, the “**Paying and Transfer Agent and Registrar Appointment Letter**”), Citibank, N.A., London Branch is appointed as principal paying agent (the “**Principal Paying Agent**”, which expression includes any successor principal paying agent appointed from time to time in connection with the Notes),

Citibank, N.A., London Branch as exchange agent (the “**Exchange Agent**”, which expression includes any successor exchange agent appointed from time to time in connection with the Notes) and Citibank, N.A., London Branch as registrar (the “**Registrar**”, which expression includes any successor registrar appointed from time to time in connection with the Notes). In addition, the paying agents named therein (together with the Principal Paying Agent, the “**Paying Agents**”, which expression includes any successor or additional paying agents appointed from time to time in connection with the Notes) and the transfer agents named therein (together with the Registrar, the “**Transfer Agents**”, which expression includes any successor or additional transfer agents appointed from time to time in connection with the Notes) are appointed subject to these Conditions, the Indenture and the Paying and Transfer Agent and Registrar Appointment Letter. In these Conditions references to the “**Agents**” are to the Paying Agents, the Exchange Agent and the Transfer Agents and any reference to an “**Agent**” is to any one of them.

- (f) **The Notes:** The Notes may only be issued in registered form. References in these Conditions to “**Notes**” are to the Notes which are the subject of the relevant Pricing Supplement. Copies of the relevant Pricing Supplement are available for inspection at the Specified Office of the Principal Paying Agent by Noteholders during normal business hours (being between 9:00 a.m. and 3:00 p.m. (London time)) on any weekday (Saturdays and public holidays excepted) following prior written notice and proof of holding and identity satisfactory to the Principal Paying Agent.
- (g) **Summaries:** Certain provisions of these Conditions are summaries of the Indenture and are subject to their detailed provisions. Noteholders are bound by, and are deemed to have notice of, all the provisions of the Indenture applicable to them. Copies of the Indenture are available for inspection at the Specified Office of the Principal Paying Agent by Noteholders during normal business hours (being between 9:00 a.m. and 3:00 p.m. (London time)) on any weekday (Saturdays and public holidays excepted) following prior written notice and proof of holding and identity satisfactory to the Principal Paying Agent.

2. Interpretation

- (a) **Definitions:** In these Conditions the following expressions have the following meanings:

“**Accrual Yield**” has the meaning given in the relevant Pricing Supplement;

“**Additional Business Centre(s)**” means the city or cities specified as such in the relevant Pricing Supplement;

“**Additional Financial Centre(s)**” means the city or cities specified as such in the relevant Pricing Supplement and in the city where the relevant Paying Agent is located;

“**Attributable Debt**” means, as to any lease, at the date of determination, the lesser of (i) the fair market value of the property or asset subject to such lease and (ii) the total present value of the net amount of rent required to be paid under such lease during the remaining term thereof including renewal terms at the option of the lessor (excluding amounts on account of maintenance and repairs, insurance, taxes, assessments, water rates and similar charges and contingent rents), discounted at a rate per annum equal to the discount rate of a capital lease obligation with a like term in accordance with TFRS;

“**Authorized Officer**” means an authorized signatory of the Issuer or the Guarantor, as the case may be;

“**Business Day**”, means any day (other than a Saturday or a Sunday) on which commercial banks and foreign exchange markets are open for business in Bangkok, Singapore, London, Hong Kong and New York and, other than in Condition 3(e) (*Registration and delivery of Note Certificates*) and Condition 13 (*Events of Default*):

- (a) in relation to any sum payable in euro, a TARGET Settlement Day and a day on which commercial banks and foreign exchange markets settle payments generally in each (if any) Additional Business Centre;
- (b) in relation to any sum payable in a currency other than euro and Renminbi, a day on which commercial banks and foreign exchange markets settle payments generally, in the Principal Financial Centre of the relevant currency and in each (if any) Additional Business Centre; and
- (c) for the purposes of Notes denominated in Renminbi only, any day (other than a Sunday or a Saturday) on which commercial banks and foreign exchange markets are open for business and settle Renminbi payments in Hong Kong and are not authorized or obligated by law or executive order to be closed;

“**Business Day Convention**”, in relation to any particular date, has the meaning given in the relevant Pricing Supplement and, if so specified in the relevant Pricing Supplement, may have different meanings in relation to different dates and, in this context, the following expressions shall have the following meanings:

- (a) “**Following Business Day Convention**” means that the relevant date shall be postponed to the first following day that is a Business Day;
- (b) “**Modified Following Business Day Convention**” or “**Modified Business Day Convention**” means that the relevant date shall be postponed to the first following day that is a Business Day unless that day falls in the next calendar month in which case that date will be the first preceding day that is a Business Day;
- (c) “**Preceding Business Day Convention**” means that the relevant date shall be brought forward to the first preceding day that is a Business Day;
- (d) “**FRN Convention**”, “**Floating Rate Convention**” or “**Eurodollar Convention**” means that each relevant date shall be the date which numerically corresponds to the preceding such date in the calendar month which is the number of months specified in the relevant Pricing Supplement as the Specified Period after the calendar month in which the preceding such date occurred *provided, however, that*:
 - (i) if there is no such numerically corresponding day in the calendar month in which any such date should occur, then such date will be the last day which is a Business Day in that calendar month;
 - (ii) if any such date would otherwise fall on a day which is not a Business Day, then such date will be the first following day which is a Business Day unless that day falls in the next calendar month, in which case it will be the first preceding day which is a Business Day; and
 - (iii) if the preceding such date occurred on the last day in a calendar month which was a Business Day, then all subsequent such dates will be the last day which is a Business Day in the calendar month which is the specified number of months after the calendar month in which the preceding such date occurred; and
- (e) “**No Adjustment**” means that the relevant date shall not be adjusted in accordance with any Business Day Convention;

“**Calculation Agent**” means the Principal Paying Agent or such other Person, in each case as specified in the relevant Pricing Supplement as the party responsible for calculating the Rate(s) of Interest and Interest Amount(s) and/or such other amount(s) as may be specified in the relevant Pricing Supplement;

“**Calculation Amount**” has the meaning given in the relevant Pricing Supplement;

“**Change of Control**” means (i) the government of Thailand, directly or indirectly, ceases to own and control at least 50 per cent. of the Company’s issued and outstanding capital stock or (ii) in the case of Guaranteed Notes, the Guarantor ceasing to own and control, directly or indirectly, at least 99 per cent. of Treasury Center’s issued and outstanding capital stock;

“**Code**” means the U.S. Internal Revenue Code of 1986, as amended;

“**Consolidated Net Tangible Assets**” means the total amount of the assets of the Company and its consolidated Subsidiaries, including investments in unconsolidated Subsidiaries and associated companies, after deducting therefrom (i) all current liabilities (excluding any current liabilities constituting Long-term Debt by reason of their being renewable or extendible at the option of the Company), and (ii) all goodwill, trade names, trademarks, patents, unamortized debt discount and expense and other like intangible assets, all as set forth on the most recent balance sheet of the Company and its consolidated Subsidiaries and computed in accordance with TFRS;

“**Credit Ratings**” means the credit rating assigned to the senior unsecured External Indebtedness of an entity or corporation by each of (a) the Standard & Poor’s Ratings Services and (b) Moody’s Investors Service, Inc., or their respective successors and assigns. If either Standard & Poor’s Ratings Services or Moody’s Investors Services, Inc., or their respective successors and assigns is closed for business for a continuous period of 14 days (other than by reason of holidays, statutory or otherwise) or announces an intention to permanently cease business or does in fact do so, a successor ratings organization that is a nationally recognized statistical ratings organization as designated by the Commission from time to time shall be duly appointed by the Company within 30 days;

“**Day Count Fraction**” means, in respect of the calculation of an amount for any period of time (the “**Calculation Period**”), such day count fraction as may be specified in these Conditions or the relevant Pricing Supplement and:

- (a) if “**Actual/Actual (ICMA)**” is so specified, means:
 - (i) where the Calculation Period is equal to or shorter than the Regular Period during which it falls, the actual number of days in the Calculation Period divided by the product of (1) the actual number of days in such Regular Period and (2) the number of Regular Periods in any year; and
 - (ii) where the Calculation Period is longer than one Regular Period, the sum of:
 - (A) the actual number of days in such Calculation Period falling in the Regular Period in which it begins divided by the product of (a) the actual number of days in such Regular Period and (b) the number of Regular Periods in any year; and
 - (B) the actual number of days in such Calculation Period falling in the next Regular Period divided by the product of (a) the actual number of days in such Regular Period and (b) the number of Regular Periods in any year;
- (b) if “**Actual/365**” or “**Actual/Actual (ISDA)**” is so specified, means the actual number of days in the Calculation Period divided by 365 (or, if any portion of the Calculation Period falls in a leap year, the sum of (A) the actual number of days in that portion of the Calculation Period falling in a leap year divided by 366 and (B) the actual number of days in that portion of the Calculation Period falling in a non-leap year divided by 365);
- (c) if “**Actual/365 (Fixed)**” is so specified, means the actual number of days in the Calculation Period divided by 365;
- (d) if “**Actual/360**” is so specified, means the actual number of days in the Calculation Period divided by 360;

- (e) if “30/360” is so specified, the number of days in the Calculation Period divided by 360, calculated on a formula basis as follows:

$$\text{Day Count Fraction} = \frac{[360x(Y_2 - Y_1)] + [30x(M_2 - M_1)] + (D_2 - D_1)}{360}$$

where:

“Y₁” is the year, expressed as a number, in which the first day of the Calculation Period falls;

“Y₂” is the year, expressed as a number, in which the day immediately following the last day included in the Calculation Period falls;

“M₁” is the calendar month, expressed as a number, in which the first day of the Calculation Period falls;

“M₂” is the calendar month, expressed as number, in which the day immediately following the last day included in the Calculation Period falls;

“D₁” is the first calendar day, expressed as a number, of the Calculation Period, unless such number would be 31, in which case D₁ will be 30; and

“D₂” is the calendar day, expressed as a number, immediately following the last day included in the Calculation Period, unless such number would be 31 and D₁ is greater than 29, in which case D₂ will be 30;

- (f) if “30E/360” or “Eurobond Basis” is so specified, the number of days in the Calculation Period divided by 360, calculated on a formula basis as follows:

$$\text{Day Count Fraction} = \frac{[360x(Y_2 - Y_1)] + [30x(M_2 - M_1)] + (D_2 - D_1)}{360}$$

where:

“Y₁” is the year, expressed as a number, in which the first day of the Calculation Period falls;

“Y₂” is the year, expressed as a number, in which the day immediately following the last day included in the Calculation Period falls;

“M₁” is the calendar month, expressed as a number, in which the first day of the Calculation Period falls;

“M₂” is the calendar month, expressed as a number, in which the day immediately following the last day included in the Calculation Period falls;

“D₁” is the first calendar day, expressed as a number, of the Calculation Period, unless such number would be 31, in which case D₁ will be 30; and

“D₂” is the calendar day, expressed as a number, immediately following the last day included in the Calculation Period, unless such number would be 31, in which case D₂ will be 30; and

- (g) if “30E/360 (ISDA)” is so specified, the number of days in the Calculation Period divided by 360, calculated on a formula basis as follows:

$$\text{Day Count Fraction} = \frac{[360x(Y_2 - Y_1)] + [30x(M_2 - M_1)] + (D_2 - D_1)}{360}$$

where:

“Y₁” is the year, expressed as a number, in which the first day of the Calculation Period falls;

“**Y₂**” is the year, expressed as a number, in which the day immediately following the last day included in the Calculation Period falls;

“**M₁**” is the calendar month, expressed as a number, in which the first day of the Calculation Period falls;

“**M₂**” is the calendar month, expressed as a number, in which the day immediately following the last day included in the Calculation Period falls;

“**D₁**” is the first calendar day, expressed as a number, of the Calculation Period, unless (i) that day is the last day of February or (ii) such number would be 31, in which case D₁ will be 30; and

“**D₂**” is the calendar day, expressed as a number, immediately following the last day included in the Calculation Period, unless (i) that day is the last day of February but not the Maturity Date or (ii) such number would be 31, in which case D₂ will be 30,

provided, however, that in each such case the number of days in the Calculation Period is calculated from and including the first day of the Calculation Period to but excluding the last day of the Calculation Period;

“**Default**” means an occurrence of any event or condition which constitutes or which, after notice or passage of time or both, would become, an Event of Default;

“**Early Redemption Amount (Tax)**” means, in respect of any Note, its outstanding principal amount or such other amount as may be specified in (which shall in no event be less than its initial issue price), or determined in accordance with, the relevant Pricing Supplement;

“**Early Termination Amount**” means, in respect of any Note, its outstanding principal amount or such other amount as may be specified in, or determined in accordance with, these Conditions or the relevant Pricing Supplement;

“**Exchange Act**” means the U.S. Securities Exchange Act of 1934, as amended, and any rules or regulations promulgated thereunder;

“**External Indebtedness**” means any obligation for the payment or repayment of money borrowed which is denominated in a currency other than Baht and which has a final maturity of one year or more from its date of incurrence or issuance;

“**Final Redemption Amount**” means, in respect of any Note, its outstanding principal amount or such other amount as may be specified in, or determined in accordance with, the relevant Pricing Supplement;

“**First Interest Payment Date**” means the date specified in the relevant Pricing Supplement;

“**Fixed Coupon Amount**” has the meaning given in the relevant Pricing Supplement;

“**Group**” means the Company and its Subsidiaries, taken as a whole;

“**Guaranteed Notes**” means Notes issued by Treasury Center as Issuer and guaranteed by the Guarantor;

“**Holder**” has the meaning given in Condition 3(b) (*Title*);

“**Hong Kong**” means the Hong Kong Special Administrative Region of the PRC;

“**Interest Amount**” means, in relation to a Note and an Interest Period, the amount of interest payable in respect of that Note for that Interest Period;

“Interest Commencement Date” means the Issue Date of the Notes or such other date as may be specified as the Interest Commencement Date in the relevant Pricing Supplement;

“Interest Determination Date” has the meaning given in the relevant Pricing Supplement;

“Interest Payment Date” means the First Interest Payment Date and any date or dates specified as such in, or determined in accordance with the provisions of, the relevant Pricing Supplement and, if a Business Day Convention is specified in the relevant Pricing Supplement:

- (a) as the same may be adjusted in accordance with the relevant Business Day Convention; or
- (b) if the Business Day Convention is the FRN Convention, Floating Rate Convention or Eurodollar Convention and an interval of a number of calendar months is specified in the relevant Pricing Supplement as being the Specified Period, each of such dates as may occur in accordance with the FRN Convention, Floating Rate Convention or Eurodollar Convention at such Specified Period of calendar months following the Interest Commencement Date (in the case of the first Interest Payment Date) or the previous Interest Payment Date (in any other case);

“Interest Period” means each period beginning on (and including) the Interest Commencement Date or any Interest Payment Date and ending on (but excluding) the next Interest Payment Date;

“ISDA Definitions” means the 2006 ISDA Definitions (as amended and updated as at the date of issue of the first Tranche of the Notes of the relevant Series (as specified in the relevant Pricing Supplement) as published by the International Swaps and Derivatives Association, Inc.) unless otherwise specified in the relevant Pricing Supplement;

“Issue Date” has the meaning given in the relevant Pricing Supplement;

“Long-term Debt” means any note, bond, debenture or other indebtedness for money borrowed having a maturity of more than one year from the date such indebtedness was incurred or having a maturity of less than one year but by its terms being renewable or extendible, at the option of the borrower, beyond one year from the date such evidence of indebtedness was incurred;

“Margin” has the meaning given in the relevant Pricing Supplement;

“Maturity Date” has the meaning given in the relevant Pricing Supplement;

“Maximum Redemption Amount” has the meaning given in the relevant Pricing Supplement;

“Minimum Redemption Amount” has the meaning given in the relevant Pricing Supplement;

“Noteholder” has the meaning given in Condition 3(b) (*Title*);

“Officer’s Certificate” means a certificate signed by an Authorized Officer of the Issuer or the Guarantor, as the case may be, and delivered to the Trustee;

“Opinion of Counsel” means an opinion in writing signed by legal counsel who may be an employee of or counsel to the Issuer or the Guarantor, as the case may be, or who may be other counsel satisfactory to the Trustee;

“Optional Redemption Amount (Call)” means, in respect of any Note, its outstanding principal amount or such other amount as may be specified in, or determined in accordance with, the relevant Pricing Supplement;

“Optional Redemption Amount (Put)” means, in respect of any Note, its outstanding principal amount or such other amount as may be specified in, or determined in accordance with, the relevant Pricing Supplement;

“Optional Redemption Date (Call)” has the meaning given in the relevant Pricing Supplement;

“Optional Redemption Date (Put)” has the meaning given in the relevant Pricing Supplement;

“Payment Business Day” means:

- (a) if the currency of payment is euro, any day which is:
 - (i) a day on which (a) banks in the relevant place of presentation are open for presentation and payment of debt securities and for dealings in foreign currencies; and (b) a day on which commercial banks are open for general business (including dealings in foreign currencies) in the city where the Principal Paying Agent or, as the case may be, the Paying Agent has its Specified Office; and
 - (ii) in the case of payment by transfer to an account, (a) a TARGET Settlement Day and (b) a day on which dealings in foreign currencies may be carried on in each (if any) Additional Financial Centre; or
- (b) if the currency of payment is not euro, any day which is:
 - (i) a day on which (a) banks in the relevant place of presentation are open for presentation and payment of debt securities and for dealings in foreign currencies and (b) a day on which commercial banks are open for general business (including dealings in foreign currencies) in the city where the Principal Paying Agent or, as the case may be, the Paying Agent has its Specified Office; and
 - (ii) in the case of payment by transfer to an account, a day on which dealings in foreign currencies (including, in the case of Notes denominated in Renminbi, settlement of Renminbi payments) may be carried on in the Principal Financial Centre of the currency of payment and in each (if any) Additional Financial Centre;

“Person” means any individual, corporation, partnership, joint venture, association, joint-stock company, trust, unincorporated organization, limited liability company, state-owned enterprise, government or any agency or political subdivision thereof or any other entity;

“PRC” means, for the purpose of these Conditions, the People’s Republic of China excluding Hong Kong, Macau and Taiwan;

“Principal Financial Centre” means, in relation to any currency, the principal financial centre for that currency *provided, however, that:*

- (a) in relation to euro, it means the principal financial centre of such Member State of the European Communities as is selected (in the case of a payment) by the payee or (in the case of a calculation) as specified in the applicable Pricing Supplement;
- (b) in relation to Australian dollars, it means Sydney and in relation to New Zealand dollars, it means Auckland, in each case as is selected (in the case of a payment) by the payee or (in the case of a calculation) by the Calculation Agent or, in each case, the principal financial centre as is specified in the applicable Pricing Supplement; and
- (c) in relation to Renminbi, it means Hong Kong or the principal financial centre as is specified in the applicable Pricing Supplement;

“Principal Property” means any gas, oil or power generation, transformation, transmission or distribution facility of the Company, PTTEP or any of PTTEP’s subsidiaries located in Thailand, whether currently owned or hereafter acquired, including any land, buildings, structures or machinery and other fixtures that constitute any such facility, or portion thereof, other than any such facility, or portion thereof, reasonably determined by the board of directors of the Company not to be of material importance to the total business conducted by the Company and its Subsidiaries as a whole;

“PTTEP” means PTT Exploration and Production Public Company Limited;

“Rate of Interest” means the rate or rates (expressed as a percentage per annum) of interest payable in respect of the Notes specified in the relevant Pricing Supplement or calculated or determined in accordance with the provisions of these Conditions and/or the relevant Pricing Supplement;

“Redemption Amount” means, as appropriate, the Final Redemption Amount, the Early Redemption Amount (Tax), the Optional Redemption Amount (Call), the amount to be paid under Clause 10(d) (Put Option (Change of Control)), the Early Termination Amount or such other amount in the nature of a redemption amount as may be specified in, or determined in accordance with the provisions of, the relevant Pricing Supplement;

“Reference Banks” has the meaning given in the relevant Pricing Supplement or, if none, four major banks selected by the Issuer in the market that is most closely connected with the Reference Rate and notified in writing to the Trustee and the Calculation Agent;

“Reference Price” has the meaning given in the relevant Pricing Supplement;

“Reference Rate” has the meaning given in the relevant Pricing Supplement;

“Regular Period” means:

- (a) in the case of Notes where interest is scheduled to be paid only by means of regular payments, each period from and including the Interest Commencement Date to but excluding the first Interest Payment Date and each successive period from and including one Interest Payment Date to but excluding the next Interest Payment Date;
- (b) in the case of Notes where, apart from the first Interest Period, interest is scheduled to be paid only by means of regular payments, each period from and including a Regular Date falling in any year to but excluding the next Regular Date, where **“Regular Date”** means the day and month (but not the year) on which any Interest Payment Date falls; and
- (c) in the case of Notes where, apart from one Interest Period other than the first Interest Period, interest is scheduled to be paid only by means of regular payments, each period from and including a Regular Date falling in any year to but excluding the next Regular Date, where **“Regular Date”** means the day and month (but not the year) on which any Interest Payment Date falls other than the Interest Payment Date falling at the end of the irregular Interest Period.

“Relevant Date” means, in relation to any payment, whichever is the later of (a) the date on which the payment in question first becomes due and (b) if the full amount payable has not been received in the Principal Financial Centre of the currency of payment by the Principal Paying Agent or the Trustee on or prior to such due date, the date on which (the full amount having been so received) notice to that effect has been given to the Noteholders;

“Relevant Financial Centre” has the meaning given in the relevant Pricing Supplement;

“Relevant Screen Page” means the page, section or other part of a particular information service (including, without limitation, Reuters) specified as the Relevant Screen Page in the relevant Pricing Supplement, or such other page, section or other part as may replace it on

that information service or such other information service, in each case, as may be nominated by the Person providing or sponsoring the information appearing there for the purpose of displaying rates or prices comparable to the Reference Rate;

“**Relevant Time**” has the meaning given in the relevant Pricing Supplement;

“**Restricted Subsidiary**” means any Subsidiary that owns a Principal Property and the Treasury Center;

“**Security Interest**” means any mortgage, pledge, lien, fixed or floating charge or other encumbrance;

“**SGX-ST**” means the Singapore Exchange Securities Trading Limited;

“**Specified Currency**” has the meaning given in the relevant Pricing Supplement;

“**Specified Denomination(s)**” has the meaning given in the relevant Pricing Supplement;

“**Specified Office**” has the meaning given in the Indenture;

“**Specified Period**” has the meaning given in the relevant Pricing Supplement;

“**Stated Maturity**” when used with respect to a Series of Notes or any installment of interest thereon means the date specified in these Conditions as the date on which the principal of such Series of Notes or such installment of interest is due and payable;

“**Subsidiary**” means any corporation or other entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other Persons performing similar functions are at the time directly or indirectly owned by the Company;

“**TARGET Settlement Day**” means any day on which TARGET2 is open for the settlement of payments in euro;

“**TARGET2**” means the Trans-European Automated Real-Time Gross Settlement Express Transfer payment system which utilizes a single shared platform and which was launched on November 19, 2007;

“**TFRS**” means Thai Financial Reporting Standards; and

“**Zero Coupon Note**” means a Note specified as such in the relevant Pricing Supplement.

(b) **Interpretation:**

In these Conditions:

- (i) any reference to principal shall be deemed to include the Redemption Amount, any Additional Amounts (as defined in Condition 12 (*Additional Amounts*)), any premium payable in respect of a Note and any other amount in the nature of principal payable pursuant to these Conditions or the Indenture;
- (ii) any reference to interest shall be deemed to include any Additional Amounts and any other amount in the nature of interest payable pursuant to these Conditions or the Indenture;
- (iii) references to Notes being “**outstanding**” shall be construed in accordance with the Indenture;

- (iv) if an expression is stated in Condition 2(a) (*Interpretation — Definitions*) to have the meaning given in the relevant Pricing Supplement, but the relevant Pricing Supplement gives no such meaning or specifies that such expression is “**not applicable**” then such expression is not applicable to the Notes; and
- (v) any reference to the Indenture shall be construed as a reference to the Indenture as amended and/or supplemented up to and including the Issue Date of the Notes.

3. Form, Denomination, Title and Transfer

(a) Notes

The Notes are in the Specified Denomination(s), which may include a minimum denomination specified in the relevant Pricing Supplement and higher integral multiples of a smaller amount specified in the relevant Pricing Supplement.

(b) Title

The Registrar will maintain a register outside the United Kingdom in accordance with the provisions of the Indenture. A certificate (each, a “**Note Certificate**”) will be issued to each Holder of Notes in respect of its registered holding. Each Note Certificate will be numbered serially with an identifying number which will be recorded in the register (the “**Register**”). “**Holder**” means the person in whose name such Note is for the time being registered in the Register (or, in the case of a joint holding, the first named thereof) and “**Noteholder**” shall be construed accordingly.

(c) Ownership

The Holder of any Note shall (except as otherwise required by law) be treated as its absolute owner for all purposes (whether or not it is overdue and regardless of any notice of ownership, trust or any other interest therein, any writing on the Note Certificate relating thereto (other than the endorsed form of transfer) or any notice of any previous loss or theft thereof) and no Person shall be liable for so treating such Holder.

(d) Transfers of Notes

Subject to paragraphs (g) and (h) below, a Note may be transferred upon surrender of the relevant Note Certificate, with the endorsed form of transfer duly completed, at the Specified Office of the Registrar or any Transfer Agent, together with such evidence as such Registrar or (as the case may be) such Transfer Agent may reasonably require to prove the title of the transferor and the authority of the individuals who have executed the form of transfer; provided, however, that a Note may not be transferred unless the principal amount of Notes transferred and (where not all of the Notes held by a Holder are being transferred) the principal amount of the balance of Notes not transferred are Specified Denominations. Where not all the Notes represented by the surrendered Note Certificate are the subject of the transfer, a new Note Certificate in respect of the balance of the Notes will be issued to the transferor.

(e) Registration and delivery of Note Certificates

Within five business days of the surrender of a Note Certificate in accordance with paragraph (d) above, the Registrar will register the transfer in question and deliver a new Note Certificate of a like principal amount to the Notes transferred to each relevant Holder at its Specified Office or (as the case may be) the Specified Office of any Transfer Agent or (at the request and risk of any such relevant Holder) to the address specified for the purpose by such relevant Holder. In this paragraph, “business day” means a day on which commercial banks are open for general business (including dealings in foreign currencies) in the city where the Registrar or (as the case may be) the relevant Transfer Agent has its Specified Office.

(f) ***No charge***

The transfer of a Note will be effected without charge by or on behalf of the Issuer, the Guarantor (if applicable) or the Registrar or any Transfer Agent but against such indemnity by the transferor as such Registrar or (as the case may be) such Transfer Agent may require in respect of any tax or other duty of whatsoever nature which may be levied or imposed in connection with such transfer.

(g) ***Closed periods***

Noteholders may not require transfers to be registered:

- (i) during the period of 15 days ending on the due date for any payment of principal or interest in respect of the Notes; and
- (ii) during the period of 15 days ending on any date on which Notes may be called for redemption by the Issuer at its option pursuant to Condition 10(b) (*Optional Tax Redemption*) or Condition 10(c) (*Optional Redemption*) below.

(h) ***Regulations concerning transfers and registration***

All transfers of Notes and entries on the Register are subject to the detailed regulations concerning the transfer of Notes scheduled to the program manual relating to the Program. The regulations may be changed by the Issuer with the prior written approval of the Registrar. A copy of the current regulations will be sent by the Registrar to any Noteholder (at the cost and expense of such Noteholder) who requests in writing a copy of such regulations.

4. Status

- (a) The Notes constitute direct, unconditional, unsubordinated and (subject to Condition 5(a) (*Limitation on Liens*)) unsecured obligations of the Issuer which will at all times rank *pari passu* among themselves and at least *pari passu* with all other present and future unsecured and unsubordinated obligations of the Issuer, save for such obligations as may be preferred by provisions of law that are both mandatory and of general application.
- (b) The Guarantor's obligations under the Guarantee constitute direct, unconditional, unsubordinated and (subject to Condition 5(a) (*Limitation on Liens*)) unsecured obligations of the Guarantor which will at all times rank at least *pari passu* with all other present and future unsecured and unsubordinated obligations of the Guarantor, save for such obligations as may be preferred by provisions of law that are both mandatory and of general application.

5. Certain Covenants

(a) ***Limitation on Liens***

So long as any Note remains outstanding, the Company will not, and will not permit any Subsidiary to, create, incur, issue or assume or guarantee any External Indebtedness secured by any Security Interest on any Principal Property owned by the Company or any Restricted Subsidiary or on any shares of stock of any Restricted Subsidiary (such shares of stock of any Restricted Subsidiary being called "**Restricted Subsidiary Stock**") without in any such case effectively providing that the Notes shall be secured equally and ratably with or prior to such secured External Indebtedness unless, after giving effect thereto, the aggregate principal amount of all such secured External Indebtedness, plus Attributable Debt of the Company and its Restricted Subsidiaries in respect of sale and leaseback transactions (as defined in Condition 5(b)) involving Principal Properties would not exceed 10% of Consolidated Net Tangible Assets; *provided that* nothing contained in this Condition 5(a) shall prevent, restrict or apply to, and there shall be excluded from secured External Indebtedness in any computation under this Clause 5(a), External Indebtedness secured by:

- (i) any Security Interest existing on the Issue Date of such Series of Notes;
- (ii) any Security Interest existing on any Principal Property or Restricted Subsidiary Stock prior to the acquisition thereof by the Company or any of its Restricted Subsidiaries or arising from such acquisition pursuant to contractual commitments entered into prior to and not in contemplation of such acquisition;
- (iii) any Security Interest existing on any Principal Property or Restricted Securities securing External Indebtedness incurred or assumed for the purpose of financing the purchase price thereof or the cost of construction, improvement or repair of all or any part thereof, provided that such Security Interest attaches to such Principal Property concurrently with or within 12 months after the acquisition thereof or completion of construction, improvement or repair thereof;
- (iv) any Security Interest existing on any Principal Property or Restricted Subsidiary Stock of any Restricted Subsidiary prior to the time such restricted Subsidiary becomes a Subsidiary of the Company or arising after such time pursuant to contractual commitments entered into prior to and not in contemplation thereof; or
- (v) any Security Interest existing on any Principal Property or Restricted Securities arising out of the refinancing, extension, renewal or refunding of any External Indebtedness secured by any Security Interest permitted by any of the foregoing clauses, to the extent of the amount of such External Indebtedness; provided that such External Indebtedness is not secured by any additional Principal Property.

For the purposes of this Condition 5(a) and Condition 5(b), the giving of a guarantee which is secured by a Security Interest on a Principal Property or Restricted Subsidiary Stock, and the creation of a Security Interest on a Principal Property or Restricted Subsidiary Stock to secure External Indebtedness which existed prior to the creation of such Security Interest, shall be deemed to involve the creation of indebtedness in an amount equal to the principal amount guaranteed or secured by such Security Interest; but the amount of indebtedness secured by Security Interests on Principal Properties and Restricted Subsidiary Stock shall be computed without cumulating the underlying indebtedness with any guarantee thereof or Security Interest securing the same.

(b) *Limitation upon Sale and Leaseback Transactions*

So long as any Note remains outstanding, neither the Company nor any Restricted Subsidiary may enter into any arrangement with any Person (other than the Company or a Restricted Subsidiary) providing for the leasing by the Company or any Subsidiary of any Principal Property for a sale price of U.S.\$10,000,000 (or the equivalent thereof) or more (except a lease for a temporary period not to exceed three years by the end of which it is intended that the use of such Principal Property by the lessee will be discontinued) which was or is owned by the Company or a Restricted Subsidiary and which has been or is to be sold or transferred to such Person or to any other Person to whom funds are advanced by such Person or to any other Person to whom funds have been or are to be advanced by such Person on the security of such Principal Property (herein referred to as a “**sale and leaseback transaction**”) unless either:

- (i) any sale and lease back transaction existing on the Issue Date of such Series of Notes;
- (ii) the Attributable Debt of the Company and its Restricted Subsidiaries in respect of such sale and leaseback transaction and all other sale and leaseback transactions entered into after the Issue Date of the Notes (other than such sale and leaseback transactions as are permitted by paragraph (b) below), plus the aggregate principal amount of External Indebtedness secured by Security Interests on Principal Properties and Restricted Subsidiary Stock then outstanding without equally and ratably securing the Notes, would not exceed 10% of the Consolidated Net Tangible Assets of the Company; or

- (iii) the Company or a Restricted Subsidiary, within 12 months after such sale and leaseback transaction, apply an amount equal to the net proceeds of such sale or transfer of the property or asset which is the subject of such sale and leaseback transaction to the retirement of the Company's External Indebtedness or of a Restricted Subsidiary, as the case may be, which is not subordinate to the Notes provided that the amount to be so applied shall be reduced by (i) the principal amount of Notes delivered within 180 days after such sale and leaseback transaction for retirement and cancellation, and (ii) the principal amount of External Indebtedness of the Company or a Restricted Subsidiary other than the Notes, voluntarily retired by the Company or a Restricted Subsidiary within 12 months after such sale or leaseback transaction. Notwithstanding the foregoing, no retirement referred to in this Clause may be effected by payment at maturity or pursuant to any mandatory sinking fund payment or any mandatory prepayment provision.

Notwithstanding the foregoing, where the Company or any Subsidiary is the lessee in any sale and leaseback transaction, Attributable Debt shall not include any External Indebtedness resulting from the guarantee by the Company or any other Subsidiary of the lessee's obligation thereunder.

(c) ***Consolidation, Merger and Sale of Assets***

Nothing contained in the Indenture or in the Notes shall prevent any consolidation of either Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor (if applicable) with, or merger of either Issuer or the Guarantor (if applicable) into, any other corporation or corporations (whether or not affiliated with either Issuer or the Guarantor (if applicable)), or successive consolidations or mergers to which either Issuer or the Guarantor (if applicable) or their successor or successors shall be a party or parties, or shall prevent any sale, transfer, lease or conveyance of all or substantially all of the assets of the Issuer or the Guarantor (if applicable); *provided that*:

- (i) in case the Issuer or the Guarantor (if applicable) shall consolidate with or merge into another corporation, or sell, transfer, lease or convey all or substantially all of its assets to any corporation, the corporation formed by such consolidation or into which the Issuer or the Guarantor (if applicable) is merged or the corporation which acquires by sale, transfer, lease or conveyance of all or substantially all of the assets of the Issuer or the Guarantor (if applicable) shall be a corporation organized under the laws of Thailand and shall expressly assume, by an indenture supplemental to the indenture relating to the notes, executed and delivered to, and in form reasonably satisfactory to, the Trustee, the due and punctual payment of the principal of and interest (including all additional amounts, if any, payable pursuant to Condition 12) on the Notes or the Guarantee, as the case may be, and the due and punctual performance and observance of all of the covenants and conditions to these Conditions and the Indenture on the part of the Issuer or the Guarantor (if applicable), as the case may be, to be performed or observed;
- (ii) immediately after giving effect to such transaction and treating any indebtedness which becomes an obligation of the Issuer or the Guarantor (if applicable) as a result of such transaction as having been incurred by the Issuer or the Guarantor (if applicable) at the time of such transaction, no Event of Default, and no event which, after notice or lapse of time or both, would become an Event of Default, shall have occurred and be continuing;
- (iii) if, as a result of any such consolidation or merger or such sale, transfer, lease or conveyance, properties or assets of the Issuer, the Guarantor or a Restricted Subsidiary would become subject to a Security Interest which would not be permitted by these Conditions or the Indenture, the Issuer, the Guarantor or such successor corporation, as the case may be, shall take such steps as shall be necessary effectively to secure the Notes equally and ratably with (or prior to) all indebtedness secured thereby; and

- (iv) the Issuer or the Guarantor, as the case may be, has delivered to the Trustee an Officer's Certificate and an Opinion of Counsel as to matters of law each stating that such consolidation, merger, sale, transfer, lease or conveyance and, if a supplemental indenture is required in connection with such transaction, such supplemental indenture complies with this Condition 5(c) and that all conditions precedent provided for in the Indenture relating to such transaction have been complied with and that the relevant supplemental indenture is enforceable.

Notwithstanding the foregoing, it is understood and agreed that this Condition 5(c) shall not prohibit a restructuring of the gas industry in Thailand mandated by the government of Thailand that requires the Company to partially spin-off or separately incorporate the Company's natural gas transmission, processing or marketing businesses so long as (x) the Company controls, directly or indirectly, a majority of the issued and outstanding capital stock of the entity or entities that hold such natural gas transmission, processing or marketing businesses or (y) if such entities are listed on the Stock Exchange of Thailand (the "SET") or any other recognized exchange, the Company controls, directly or indirectly, at least 45% of such stock.

6. Fixed Rate Note Provisions

(a) Application

This Condition 6 is applicable to the Notes only if the Fixed Rate Note Provisions are specified in the relevant Pricing Supplement as being applicable.

(b) Accrual of interest

The Notes bear interest from the Interest Commencement Date at the Rate of Interest payable in arrear on each Interest Payment Date up to and including the Maturity Date, subject as provided in Condition 11 (*Payments*) below. Each Note will cease to bear interest from the due date for final redemption unless, upon due presentation, payment of the Redemption Amount is improperly withheld or refused, in which case it will continue to bear interest in accordance with this Condition 6 (as well after as before judgment) until whichever is the earlier of (i) the day on which all sums due in respect of such Note up to that day are received by or on behalf of the relevant Noteholder and (ii) the day which is seven days after the Principal Paying Agent or the Trustee has notified the Noteholders of receipt of all sums due in respect of the Notes up to such seventh day (except to the extent that there is any subsequent default in payment).

(c) Fixed Coupon Amount

Unless specified in the relevant Pricing Supplement, the amount of interest payable in respect of each Note for any Interest Period shall be the relevant Fixed Coupon Amount and, if the Notes are in more than one Specified Denomination, shall be the relevant Fixed Coupon Amount in respect of the relevant Specified Denomination.

(d) Calculation of interest amount

The amount of interest payable in respect of each Note for any period for which a Fixed Coupon Amount is not specified shall be calculated by applying the Rate of Interest to the Calculation Amount, multiplying the product by the relevant Day Count Fraction, rounding the resulting figure to the nearest sub-unit of the Specified Currency (half a sub-unit being rounded upwards) and multiplying such rounded figure by a fraction equal to the Specified Denomination of such Note divided by the Calculation Amount. For this purpose a "sub-unit" means, in the case of any currency other than euro, the lowest amount of such currency that is available as legal tender in the country of such currency and, in the case of euro, means one cent.

7. Floating Rate Note and Index-Linked Interest Note Provisions

(a) *Application*

This Condition 7 is applicable to the Notes only if the Floating Rate Note Provisions or the Index-Linked Interest Note Provisions are specified in the relevant Pricing Supplement as being applicable.

(b) *Accrual of interest*

The Notes bear interest from the Interest Commencement Date at the Rate of Interest payable in arrear on each Interest Payment Date, subject as provided in Condition 11 (*Payments*) below. Each Note will cease to bear interest from the due date for final redemption unless, upon due presentation, payment of the Redemption Amount is improperly withheld or refused, in which case it will continue to bear interest in accordance with this Condition (as well after as before judgment) until whichever is the earlier of (i) the day on which all sums due in respect of such Note up to that day are received by or on behalf of the relevant Noteholder and (ii) the day which is seven days after the Principal Paying Agent or the Trustee has notified the Noteholders of receipt of all sums due in respect of the Notes up to such seventh day (except to the extent that there is any subsequent default in payment).

(c) *Screen Rate Determination*

If Screen Rate Determination is specified in the relevant Pricing Supplement as the manner in which the Rate(s) of Interest is/are to be determined, the Rate of Interest applicable to the Notes for each Interest Period will be determined by the Calculation Agent on the following basis:

- (i) if the Reference Rate is a composite quotation or customarily supplied by one entity, the Calculation Agent will determine the Reference Rate which appears on the Relevant Screen Page as of the Relevant Time on the relevant Interest Determination Date;
- (ii) if Linear Interpolation is specified as applicable in respect of an Interest Period in the applicable Pricing Supplement, the Rate of Interest for such Interest Period shall be calculated by the Calculation Agent by straight-line linear interpolation by reference to two rates which appear on the Relevant Screen Page as of the Relevant Time on the relevant Interest Determination Date, where:
 - (A) one rate shall be determined as if the Relevant Period were the period of time for which rates are available next shorter than the length of the relevant Interest Period; and
 - (B) the other rate shall be determined as if the Relevant Period were the period of time for which rates are available next longer than the length of the relevant Interest Period;

provided, however, that if no rate is available for a period of time next shorter or, as the case may be, next longer than the length of the relevant Interest Period, then the Calculation Agent shall, upon seeking advice from the Reference Banks (at the cost of the Issuer (failing which, the Guarantor (if applicable))) or taking instructions from the Issuer, determine such rate at such time and by reference to such sources as it determines appropriate;

- (iii) in any other case, the Calculation Agent will determine the arithmetic mean of the Reference Rates which appear on the Relevant Screen Page as of the Relevant Time on the relevant Interest Determination Date;
- (iv) if, in the case of (i) above, such rate does not appear on that page or, in the case of (ii) above, fewer than two such rates appear on that page or if, in either case, the Relevant Screen Page is unavailable, the Issuer (or an agent appointed by it) will:

- (A) request the principal Relevant Financial Centre office of each of the Reference Banks to provide a quotation of the Reference Rate at approximately the Relevant Time on the Interest Determination Date to prime banks in the Relevant Financial Centre interbank market in an amount that is representative for a single transaction in that market at that time; and
 - (B) notify the Calculation Agent of the same.
- (v) The Calculation Agent will determine the arithmetic mean of such quotations; if fewer than two such quotations are provided as requested in accordance with (iv) above, the Calculation Agent will determine the arithmetic mean of the rates (being the nearest to the Reference Rate, as determined by the Calculation Agent) quoted by major banks in the Principal Financial Centre of the Specified Currency, selected by the Issuer, at approximately 11:00 a.m. (local time in the Principal Financial Centre of the Specified Currency) on the first day of the relevant Interest Period for loans in the Specified Currency for a period equal to the relevant Interest Period and in an amount that is representative for a single transaction in that market at that time, and the Rate of Interest for such Interest Period shall be the sum of the Margin and the rate or (as the case may be) the arithmetic mean so determined; provided, however, that if the Calculation Agent is unable to determine a rate or (as the case may be) an arithmetic mean in accordance with the above provisions in relation to any Interest Period, the Rate of Interest applicable to the Notes during such Interest Period will be the sum of the Margin and the rate or (as the case may be) the arithmetic mean last determined in relation to the Notes in respect of a preceding Interest Period; and
- (vi) notwithstanding the foregoing, if the Reference Rate from time to time in respect of Floating Rate Notes is specified hereon as CNH HIBOR:
- (A) the Rate of Interest for each Interest Period will, subject as provided below, be either:
 - (1) the offered quotation; or
 - (2) the arithmetic mean of the offered quotations,(expressed as a percentage rate per annum) for the Reference Rate which appears on the Relevant Screen Page as at 11:15 a.m. (Hong Kong time) or if, at or around that time it is notified that the fixing will be published at 2.30 p.m. (Hong Kong time), then 2.30 p.m. (Hong Kong time) on the Interest Determination Date in question as determined by the Calculation Agent;
 - (B) if the Relevant Screen Page is not available or, if sub-paragraph (vi)(A)(1) above applies and no such offered quotation appears on the Relevant Screen Page, or, if subparagraph (vi)(A)(2) above applies and fewer than three such offered quotations appear on the Relevant Screen Page, in each case as at the time specified above, subject as provided below, the Issuer (or an agent appointed by it) shall request the principal Hong Kong office of each of the Reference Banks to provide it with its offered quotation (expressed as a percentage rate per annum) for the Reference Rate at approximately 11:15 a.m. (Hong Kong time) on the Interest Determination Date in question. If two or more of the Reference Banks provide the Calculation Agent with such offered quotations, the Rate of Interest for such Interest Period shall be the arithmetic mean of such offered quotations as determined by the Calculation Agent. If all four Reference Banks provide the Calculation Agent with such offered quotations, the highest (or, if there is more than one such highest quotation, one only of such quotations) and the lowest (or, if there is more than one such lowest quotation, one only of such quotations) shall be disregarded by the Calculation Agent for the purpose of determining the arithmetic mean of such offered quotations;

(C) if subparagraph (vi)(B) above applies and the Calculation Agent determines that fewer than two Reference Banks are providing offered quotations, subject as provided below, the Rate of Interest shall be the arithmetic mean of the rates per annum (expressed as a percentage) on the request of the Issuer (or an agent appointed by it) and as communicated to the Calculation Agent by the Reference Banks or any two or more of them, at which such banks were offered at approximately 11:15 a.m. (Hong Kong time) on the relevant Interest Determination Date, deposits in CNH for a period equal to that which would have been used for the Reference Rate by leading banks in the Hong Kong inter-bank market. If fewer than two of the Reference Banks provide the Calculation Agent with such offered rates, the Rate of Interest shall be (i) the offered rate for deposits in CNH for a period equal to that which would have been used for the Reference Rate by a bank, or (ii) the arithmetic mean of the offered rates for deposits in CNH for a period equal to that which would have been used for the Reference Rate by two or more banks, in each case as informed to the Calculation Agent by such bank or banks (which shall be such bank or banks being in the opinion of the Issuer suitable for such purpose) as being quoted by each such bank at approximately 11:15 a.m. (Hong Kong time) on the relevant Interest Determination Date to leading banks in the Hong Kong inter-bank market and notified in writing to the Calculation Agent, *provided that*, if the Rate of Interest cannot be determined in accordance with the foregoing provisions of this paragraph, the Rate of Interest shall be determined as at the last preceding Interest Determination Date (though substituting, where a different Margin or Maximum or Minimum Rate of Interest is to be applied to the relevant Interest Period from that which applied to the last preceding Interest Period, the Margin or Maximum or Minimum Rate of Interest relating to the relevant Interest Period, in place of the Margin or Maximum or Minimum Rate of Interest relating to that last preceding Interest Period); and

(D) in no event shall the Rate of Interest be less than zero per cent. per annum.

(d) ***ISDA Determination***

If ISDA Determination is specified in the relevant Pricing Supplement as the manner in which the Rate(s) of Interest is/are to be determined, the Rate of Interest applicable to the Notes for each Interest Period will be the sum of the Margin and the relevant ISDA Rate where “**ISDA Rate**” in relation to any Interest Period means a rate equal to the Floating Rate (as defined in the ISDA Definitions) that would be determined by the Calculation Agent under an interest rate swap transaction if the Calculation Agent were acting as Calculation Agent for that interest rate swap transaction under the terms of an agreement incorporating the ISDA Definitions and under which:

- (i) the Floating Rate Option (as defined in the ISDA Definitions) is as specified in the relevant Pricing Supplement;
- (ii) the Designated Maturity (as defined in the ISDA Definitions) is a period specified in the relevant Pricing Supplement;
- (iii) the relevant Reset Date (as defined in the ISDA Definitions) is either (A) if the relevant Floating Rate Option is based on (x) the London inter-bank offered rate (LIBOR), (y) the Eurozone inter-bank offered rate (EURIBOR) or (z) the Hong Kong inter-bank offered rate (HIBOR) for a currency, the first day of that Interest Period or (B) in any other case, as specified in the relevant Pricing Supplement; and
- (iv) if Linear Interpolation is specified as applicable in respect of an Interest Period in the applicable Pricing Supplement, the Rate of Interest for such Interest Period shall be calculated by the Calculation Agent by straight-line linear interpolation by reference to two rates based on the relevant Floating Rate Option, where:

- (A) one rate shall be determined as if the Designated Maturity were the period of time for which rates are available next shorter than the length of the relevant Interest Period; and
- (B) the other rate shall be determined as if the Designated Maturity were the period of time for which rates are available next longer than the length of the relevant Interest Period

provided, however, that if there is no rate available for a period of time next shorter than the length of the relevant Interest Period or, as the case may be, next longer than the length of the relevant Interest Period, then the Calculation Agent shall determine such rate at such time and by reference to such sources as the Issuer (or an agent appointed by it) determines appropriate.

(e) ***Index-Linked Interest***

If the Index-Linked Interest Note Provisions are specified in the relevant Pricing Supplement as being applicable, the Rate(s) of Interest applicable to the Notes for each Interest Period will be determined in the manner specified in the relevant Pricing Supplement.

(f) ***Maximum or Minimum Rate of Interest***

If any Maximum Rate of Interest or Minimum Rate of Interest is specified in the relevant Pricing Supplement, then the Rate of Interest shall in no event be greater than the maximum or be less than the minimum so specified. If the relevant Pricing Supplement does not specify any Minimum Rate of Interest and the Rate of Interest as determined by the Calculation Agent according to this Condition is a negative value, the Rate of Interest shall be zero per cent. per annum.

(g) ***Calculation of Interest Amount***

The Calculation Agent will, as soon as practicable after the time at which the Rate of Interest is to be determined in relation to each Interest Period, calculate the Interest Amount payable in respect of each Note for such Interest Period. The Interest Amount will be calculated by applying the Rate of Interest for such Interest Period to the Calculation Amount, multiplying the product by the relevant Day Count Fraction, rounding the resulting figure to the nearest sub-unit of the Specified Currency (half a sub-unit being rounded upwards) and multiplying such rounded figure by a fraction equal to the Specified Denomination of the relevant Note divided by the Calculation Amount. For this purpose a “**sub-unit**” means, in the case of any currency other than euro, the lowest amount of such currency that is available as legal tender in the country of such currency and, in the case of euro, means one cent.

(h) ***Calculation of other amounts***

If the relevant Pricing Supplement specifies that any other amount is to be calculated by the Calculation Agent, the Calculation Agent will, as soon as practicable after the time or times at which any such amount is to be determined, calculate the relevant amount. The relevant amount will be calculated by the Calculation Agent in the manner specified in the relevant Pricing Supplement.

(i) ***Publication***

The Calculation Agent will cause each Rate of Interest and Interest Amount determined by it, together with the relevant Interest Payment Date, and any other amount(s) required to be determined by it together with any relevant payment date(s) to be notified to the Issuer, the Guarantor (if applicable), the Paying Agents, and the Trustee as soon as practicable after such determination but (in the case of each Rate of Interest, Interest Amount and Interest Payment Date) in any event not later than the first day of the relevant Interest Period. Notice thereof shall also promptly be given by the Issuer to the Noteholders and each competent authority, stock exchange and/or quotation system (if any) by which the Notes have then been admitted

to listing, trading and/or quotation. The Calculation Agent will be entitled to recalculate any Interest Amount (on the basis of the foregoing provisions) without notice in the event of an extension or shortening of the relevant Interest Period. If the Calculation Amount is less than the minimum Specified Denomination the Calculation Agent shall not be obliged to publish each Interest Amount but instead may publish only the Calculation Amount and the Interest Amount in respect of a Note having the minimum Specified Denomination.

(j) ***Notifications etc***

All notifications, opinions, determinations, certificates, calculations, quotations and decisions given, expressed, made or obtained for the purposes of this Condition by the Calculation Agent will (in the absence of manifest error) be binding on the Issuer, the Guarantor (if applicable), the Trustee, the Paying Agents, the Noteholders and (subject as aforesaid) no liability to any such Person will attach to the Calculation Agent in connection with the exercise or non-exercise by it of its powers, duties and discretions for such purposes.

(k) ***Benchmark Discontinuation***

If a Benchmark Event occurs in relation to the Reference Rate when the Rate of Interest (or any component part thereof) for any Interest Period remains to be determined by reference to such Reference Rate, then the Issuer shall use its reasonable endeavors to appoint an Independent Adviser, as soon as reasonably practicable, to determine a Successor Rate, failing which an Alternative Rate (in accordance with Condition 7(k)) and, in either case, an Adjustment Spread, if any (in accordance with Condition 7(k)(iii)) and any Benchmark Amendments (in accordance with Condition 7(k)(iv)).

In the absence of bad faith or fraud, the Independent Adviser shall have no liability whatsoever to the Issuer, the Guarantor, the Trustee, Agents or the Noteholders for any determination made by it pursuant to this Condition 7(k) and the Trustee and Agents will not be liable for any loss, liability, cost, charge or expense which may arise as a result thereof.

(i) If (A) the Issuer is unable to appoint an Independent Adviser or (B) the Independent Adviser appointed by it fails to determine a Successor Rate or, failing which, an Alternative Rate in accordance with this Condition 7(k) prior to the relevant Interest Determination Date, the Reference Rate applicable to the immediate following Interest Period shall be the Reference Rate applicable as at the last preceding Interest Determination Date. If there has not been a first Interest Payment Date, the Reference Rate shall be the Reference Rate applicable to the first Interest Period. For the avoidance of doubt, any adjustment pursuant to this final paragraph of Condition 7(k) shall apply to the immediately following Interest Period only. Any subsequent Interest Period may be subject to the subsequent operation of this Condition 7(k).

(ii) If the Independent Adviser determines in its discretion that:

(A) there is a Successor Rate, then such Successor Rate shall (subject to adjustment as provided in Condition 7(k)(iii)) subsequently be used in place of the Reference Rate to determine the Rate of Interest for the immediately following Interest Period and all following Interest Periods, subject to the subsequent operation of this Condition 7(k); or

(B) there is no Successor Rate but that there is an Alternative Rate, then such Alternative Rate shall (subject to adjustment as provided in Condition 7(k)(iii)) subsequently be used in place of the Reference Rate to determine the Rate of Interest for the immediately following Interest Period and all following Interest Periods, subject to the subsequent operation of this Condition 7(k).

- (iii) If the Independent Adviser determines in its discretion (A) that an Adjustment Spread is required to be applied to the Successor Rate or the Alternative Rate (as the case may be) and (B) the quantum of, or a formula or methodology for determining, such Adjustment Spread, then such Adjustment Spread shall apply to the Successor Rate or the Alternative Rate (as the case may be).
- (iv) If any relevant Successor Rate, Alternative Rate or Adjustment Spread is determined in accordance with this Condition 7(k) and the Independent Adviser determines in its discretion (i) that amendments to these Conditions are necessary to ensure the proper operation of such Successor Rate, Alternative Rate and/or Adjustment Spread (such amendments, the “**Benchmark Amendments**”) and (ii) the terms of the Benchmark Amendments, then the Issuer shall, subject to giving notice thereof in accordance with Condition 7(k)(v), without any requirement for the consent or approval of relevant Noteholders, vary these Conditions to give effect to such Benchmark Amendments with effect from the date specified in such notice (and for the avoidance of doubt, the Trustee shall, at the direction and expense of the Issuer, consent to and effect such consequential amendments to the Indenture and these Conditions as may be required in order to give effect to this Condition 7(k)).
- (v) Any Successor Rate, Alternative Rate, Adjustment Spread and the specific terms of any Benchmark Amendments, determined under this Condition 7(k) will be notified promptly by the Issuer to the Trustee, the Calculation Agent, the Paying Agents and, in accordance with Condition 21 (*Notices*), the Noteholders. Such notice shall be irrevocable and shall specify the effective date of the Benchmark Amendments, if any.
- (vi) No later than notifying the Trustee of the same, the Issuer shall deliver to the Trustee a certificate signed by two authorised signatories of the Issuer:
 - (A) confirming (x) that a Benchmark Event has occurred, (y) the relevant Successor Rate, or, as the case may be, the relevant Alternative Rate and, (z) where applicable, any relevant Adjustment Spread and/or the specific terms of any relevant Benchmark Amendments, in each case as determined in accordance with the provisions of this Condition 7(k); and
 - (B) certifying that the relevant Benchmark Amendments are necessary to ensure the proper operation of such relevant Successor Rate, Alternative Rate and/or Adjustment Spread.
- (vii) The Successor Rate or Alternative Rate and the Adjustment Spread (if any) and the Benchmark Amendments (if any) specified in such certificate will (in the absence of manifest error or bad faith in the determination of such Successor Rate or Alternative Rate and such Adjustment Spread (if any) and such Benchmark Amendments (if any)) be binding on the Issuer, the Trustee and Principal Paying Agent, the Calculation Agent, the other Paying Agents and the Noteholders.

As used in this Condition 7(k):

“**Adjustment Spread**” means either a spread (which may be positive or negative), or the formula or methodology for calculating a spread, in either case, which the Independent Adviser determines is required to be applied to the relevant Successor Rate or the relevant Alternative Rate (as the case may be) to reduce or eliminate, to the extent reasonably practicable in the circumstances, any economic prejudice or benefit (as the case may be) to Noteholders as a result of the replacement of the Reference Rate with the Successor Rate or the Alternative Rate (as the case may be) and is the spread, formula or methodology which:

- (i) in the case of a Successor Rate, is formally recommended, or formally provided as an option for parties to adopt, in relation to the replacement of the Reference Rate with the Successor Rate by any Relevant Nominating Body; or

- (ii) (if no such recommendation has been made, or in the case of an Alternative Rate), the Independent Adviser, determines is customarily applied to the relevant Successor Rate or Alternative Rate (as the case may be) in international debt capital markets transactions to produce an industry-accepted replacement rate for the Reference Rate; or
- (iii) (if no such recommendation has been made, or in the case of an Alternative Rate) the Independent Adviser determines, is recognised or acknowledged as being the industry standard for over-the-counter derivative transactions which reference the Reference Rate, where such rate has been replaced by the Successor Rate or the Alternative Rate (as the case may be); or
- (iv) (if the Independent Adviser determines that no such industry standard is recognised or acknowledged) the Independent Adviser determines to be appropriate.

“**Alternative Rate**” means an alternative benchmark or screen rate which the Independent Adviser determines in accordance with Condition 7(k)(ii) is customary in market usage in the international debt capital markets for the purposes of determining floating rates of interest (or the relevant component part thereof) in the Specified Currency.

“**Benchmark Event**” means:

- (i) the relevant Reference Rate has ceased to be published on the Relevant Screen Page as a result of such benchmark ceasing to be calculated or administered; or
- (ii) a public statement by the administrator of the relevant Reference Rate that it has ceased, or will, by a specified date within the following six months, cease, publishing such Reference Rate permanently or indefinitely (in circumstances where no successor administrator has been appointed that will continue publication of such Reference Rate); or
- (iii) a public statement by the supervisor of the administrator of the relevant Reference Rate that such Reference Rate has been or will, by a specified date within the following six months, be permanently or indefinitely discontinued; or
- (iv) a public statement by the supervisor of the administrator of the relevant Reference Rate that means that such Reference Rate will, by a specified date within the following six months, be prohibited from being used or that its use will be subject to restrictions or adverse consequences, either generally or in respect of the Notes; or
- (v) a public statement by the supervisor of the administrator of the relevant Reference Rate (as applicable) that, in the view of such supervisor, (i) such Reference Rate is no longer representative of an underlying market or (ii) the methodology to calculate such Reference Rate has materially changed; or
- (vi) it has or will, by a specified date within the following six months, become unlawful for the Calculation Agent to calculate any payments due to be made to any Noteholder using the relevant Reference Rate (as applicable) (including, without limitation, under the Benchmarks Regulation (EU) 2016/1011, if applicable).

“**Benchmark Amendments**” has the meaning given to it in Condition 7(k)(i).

“**Independent Adviser**” means an independent financial institution of international repute or other independent financial adviser experienced in the international capital markets, in each case appointed by the Issuer at its own expense under Condition 7(k)(i).

“**Relevant Nominating Body**” means, in respect of a benchmark or screen rate (as applicable):

- (i) the central bank for the currency to which the benchmark or screen rate (as applicable) relates, or any central bank or other supervisory authority which is responsible for supervising the administrator of the benchmark or screen rate (as applicable); or
- (ii) any working group or committee sponsored by, chaired or co-chaired by or constituted at the request of (a) the central bank for the currency to which the benchmark or screen rate (as applicable) relates, (b) any central bank or other supervisory authority which is responsible for supervising the administrator of the benchmark or screen rate (as applicable), (c) a group of the aforementioned central banks or other supervisory authorities or (d) the Financial Stability Board or any part thereof.

“**Successor Rate**” means a successor to or replacement of the Reference Rate which is formally recommended by any Relevant Nominating Body.

8. Zero Coupon Note Provisions

(a) Application

This Condition 8 is applicable to the Notes only if the Zero Coupon Note Provisions are specified in the relevant Pricing Supplement as being applicable.

(b) Late payment on Zero Coupon Notes

If the Redemption Amount payable in respect of any Zero Coupon Note is improperly withheld or refused, the Redemption Amount shall thereafter be an amount equal to the sum of:

- (i) the Reference Price; and
- (ii) the product of the Accrual Yield (compounded annually) being applied to the Reference Price on the basis of the relevant Day Count Fraction from (and including) the Issue Date to (but excluding) whichever is the earlier of (A) the day on which all sums due in respect of such Note up to that day are received by or on behalf of the relevant Noteholder and (B) the day which is seven days after the Principal Paying Agent or the Trustee has notified the Noteholders of receipt of all sums due in respect of the Notes up to such seventh day (except to the extent that there is any subsequent default in payment).

9. Dual Currency Note Provisions

(a) Application

This Condition 9 is applicable to the Notes only if the Dual Currency Note Provisions are specified in the relevant Pricing Supplement as being applicable.

(b) Rate of Interest

If the rate or amount of interest falls to be determined by reference to an exchange rate, the rate or amount of interest payable shall be determined in the manner specified in the relevant Pricing Supplement.

10. Redemption and Purchase

(a) Scheduled redemption

Unless previously redeemed, or purchased and cancelled, each Note will be redeemed at its Final Redemption Amount on the Maturity Date, subject as provided in Condition 11 (*Payments*).

(b) ***Optional Tax Redemption***

The Notes may be redeemed at the option of the Issuer in whole, but not in part, at the relevant Early Redemption Amount (Tax), upon not less than 30 nor more than 60 days' written notice:

- (i) at any time (if neither the Floating Rate Note Provisions nor the Index-Linked Interest Note Provisions are specified in the relevant Pricing Supplement as being applicable); or
- (ii) on any Interest Payment Date (if the Floating Rate Note Provisions or the Index-Linked Interest Note Provisions are specified in the relevant Pricing Supplement as being applicable),

if, as a result of any change in, expiration or amendment to, the tax laws of Thailand (or of any political subdivision or taxing authority thereof or therein) or any regulations or ruling promulgated thereunder or any change in the official interpretation or official application of such laws, regulations or rulings, or any change in the official application or interpretation of, or any execution of or amendment to, any treaty or treaties affecting taxation to which Thailand (or such political subdivision or taxing authority) is a party, which change, expiration, amendment or treaty becomes effective on or after the Issue Date of the Notes,

- (A) the Issuer is or would be required on the next succeeding due date for a payment with respect to the Notes to pay Additional Amounts (as defined in Condition 12) with respect to the Notes (or if additional amounts are payable by the Issuer as of the Issue Date, the Issuer has or will become required to pay Additional Amounts in excess of any Additional Amounts which are payable by the Issuer as of the Issue Date) and such obligation cannot be avoided by the use of reasonable measures available to the Issuer; or
- (B) the Guarantor (if applicable) is, or would be (if a demand was made under the Guarantee), obligated on the next succeeding due date for a payment with respect to the Notes to pay Additional Amounts (as defined in Condition 12) under the Guarantee and such obligation cannot be avoided by the use of reasonable measures available to the Guarantor (if applicable);

Prior to any redemption of any Notes, the Issuer will deliver to the Trustee an Officer's Certificate and an Opinion of Counsel each stating that the Issuer is entitled to effect such redemption and setting forth a statement of facts showing that the conditions precedent to the right of redemption have occurred.

The Trustee shall be entitled without further enquiry to accept and rely upon such Opinion of Counsel and Officer's Certificate as sufficient evidence of the satisfaction of the circumstances set out above, in which event they shall be conclusive and binding on the Noteholders.

(c) ***Optional Redemption (Call)***

If the Call Option is specified in the relevant Pricing Supplement as being applicable, the Notes may be redeemed at the option of the Issuer in whole or, if so specified in the relevant Pricing Supplement, in part on any Optional Redemption Date (Call) at the relevant Optional Redemption Amount (Call) on the Issuer's giving not less than 30 nor more than 60 days' notice to the Noteholders (which notice shall be irrevocable and shall oblige the Issuer to redeem the Notes or, as the case may be, the Notes specified in such notice on the relevant Optional Redemption Date (Call) at the Optional Redemption Amount (Call) *plus* accrued and unpaid interest (if any) to such date).

(d) ***Put Option (Change of Control)***

If the Put Option (Change of Control) is specified in the relevant Pricing Supplement as being applicable, in the event that (a) a Change of Control has occurred and (b) within 180 days from the date of such decrease in ownership, each of the Company's Credit Ratings is reduced below such Credit Rating immediately prior to the occurrence of such Change of Control (the "**Change of Control Triggering Event**"), each Noteholder shall have the right, at such Noteholder's option, to require the relevant Issuer to repurchase all of such Noteholder's Notes at a price equal to 100% of the unpaid principal amount thereof plus accrued interest (or such other amount as may be specified in, or determined in accordance with, the relevant Pricing Supplement) to the 20th Business Day after the Transfer Agent sends to each Noteholder a notice regarding the Change of Control Triggering Event (the "**Put Date**").

(e) ***Partial redemption***

If the Notes are to be redeemed in part only on any date in accordance with Condition 10(c) (*Optional Redemption*) above, each Note shall be redeemed in part in the proportion which the aggregate principal amount of the outstanding Notes to be redeemed on the relevant Optional Redemption Date (Call) bears to the aggregate principal amount of outstanding Notes on such date. If any Maximum Redemption Amount or Minimum Redemption Amount is specified in the relevant Pricing Supplement, then the Optional Redemption Amount (Call) shall in no event be greater than the maximum or be less than the minimum so specified.

(f) ***No other redemption***

The Issuer shall not be entitled to redeem the Notes otherwise than as provided in Conditions 10(a) to 10(e) above.

(g) ***Early redemption of Zero Coupon Notes***

Unless otherwise specified in the relevant Pricing Supplement, the Redemption Amount payable on redemption of a Zero Coupon Note at any time before the Maturity Date shall be an amount equal to the sum of:

- (i) the Reference Price; and
- (ii) the product of the Accrual Yield (compounded annually) being applied to the Reference Price from (and including) the Issue Date to (but excluding) the date fixed for redemption or (as the case may be) the date upon which the Note becomes due and payable.

Where such calculation is to be made for a period which is not a whole number of years, the calculation in respect of the period of less than a full year shall be made on the basis of such Day Count Fraction as may be specified in the Pricing Supplement for the purposes of this Condition 10(g) or, if none is so specified, a Day Count Fraction of 30E/360 (ISDA).

(h) ***Repurchase***

The Company and any of its Subsidiaries (including Treasury Center) may, in accordance with all applicable laws and regulations, at any time purchase Notes in the open market or otherwise at any price. Any Notes the Company or any of its Subsidiaries (including Treasury Center) repurchase may be held, cancelled or sold.

(i) *Calculations*

Neither the Trustee nor any of the Agents (other than the Calculation Agent and solely in respect of its functions as an appointed Calculation Agent of the Issuer and the Guarantor (if applicable)) shall be responsible for calculating or verifying the calculations of any amount payable under any notice of redemption and shall not be liable to the Noteholders or any other person for not doing so.

11. Payments

(a) *Principal*

Payments of principal on the relevant Note and premium thereon shall be made (i) in the case of a currency other than Renminbi, not later than the due date for any such payment, by transfer to an account denominated in that currency (or, if that currency is euro, any other account to which euro may be credited or transferred) and maintained by the payee with, a bank in the Principal Financial Centre of that currency, and (ii) in the case of Renminbi, by transfer to an account denominated in that currency and maintained by the payee with a bank in the Principal Financial Centre of that currency, and (in the case of redemption) upon surrender (or, in the case of part payment only, endorsement) of the relevant Note Certificates at the Specified Office of any Paying Agent.

(b) *Interest*

Payments of interest on the relevant Note shall be made (i) in the case of a currency other than Renminbi, not later than the due date for any such payment, by transfer to an account denominated in that currency (or, if that currency is euro, any other account to which euro may be credited or transferred) and maintained by the payee with, a bank in the Principal Financial Centre of that currency, and (ii) in the case of Renminbi, by transfer to an account denominated in that currency and maintained by the payee with a bank in the Principal Financial Centre of that currency, and (in the case of interest payable on redemption) upon surrender (or, in the case of part payment only, endorsement) of the relevant Note Certificates at the Specified Office of any Paying Agent.

(c) *Payments subject to fiscal laws*

All payments in respect of the Notes are subject in all cases to (i) any applicable fiscal or other laws and regulations in the place of payment, but (except as described in (ii) below) subject to Condition 12 (*Additional Amounts*), and (ii) any withholding or deduction required pursuant to an agreement described in Section 1471(b) of the Code or otherwise imposed pursuant to Sections 1471 through 1474 of the Code, as of the issue date (or any amended or successor version of such sections) any regulations or agreements thereunder, any official interpretations thereof, or any similar law implementing any intergovernmental agreement between a non-U.S. jurisdiction and the United States with respect to the foregoing. No commissions or expenses shall be charged to the Noteholders in respect of such payments.

(d) *Payments on business days*

Where payment is to be made by transfer to an account, payment instructions (for value the due date, or, if the due date is not Payment Business Day, for value the next succeeding Payment Business Day) will be initiated (i) (in the case of payments of principal, premium and interest payable on redemption) on the later of the due date for payment and the day on which the relevant Note Certificate is surrendered (or, in the case of part payment only, endorsed) at the Specified Office of a Paying Agent and (ii) (in the case of payments of interest payable other than on redemption) on the due date for payment. A Holder of a Note shall not be entitled to any interest or other payment in respect of any delay in payment resulting from the due date for a payment not being a Payment Business Day.

(e) **Partial payments**

If a Paying Agent makes a partial payment in respect of any Note, the Issuer shall procure that the amount and date of such payment are noted on the Register and, in the case of partial payment upon presentation of a Note Certificate, that a statement indicating the amount and the date of such payment is endorsed on the relevant Note Certificate.

(f) **Record date**

Each payment in respect of a Note will be made to the person shown as the Holder in the Register at the close of business in the place of the Registrar's Specified Office on the fifth (in the case of Renminbi) and fifteenth (in the case of a currency other than Renminbi) day before the due date for such payment (the "**Record Date**").

*So long as the Global Note Certificate is held on behalf of Euroclear Bank SA/NV ("**Euroclear**"), Clearstream Banking, S.A. ("**Clearstream**") and/or The Depository Trust Company ("**DTC**") or any other clearing system, each payment in respect of the Global Note Certificate will be made to the person shown as the holder in the Register at the close of business of the relevant clearing system on the Clearing System Business Day before the due date for such payments, where "Clearing System Business Day" means a weekday (Monday to Friday, inclusive) except 25 December and 1 January.*

12. Additional Amounts

All payments of principal of, and interest on, the Notes by the Issuer or the Guarantor (if applicable) will be made without deduction or withholding for or on account of any present or future taxes, duties, assessments or governmental charges of whatever nature imposed or levied by or on behalf of Thailand or by or within any political subdivision thereof or any authority therein having power to tax ("**Thai Tax**") (each such jurisdiction a "**Taxing Jurisdiction**"), unless deduction or withholding of such Thai Tax is required by law. In that event the Issuer or the Guarantor (if applicable) will pay such additional amounts ("**Additional Amounts**") as will result in the payment to holders of the Notes of the amounts which would otherwise have been receivable in respect of principal, and interest without any such Thai Tax, except that no such additional amount shall be payable in respect of any Note:

- (i) to or on behalf of a Noteholder who is subject to such Thai Tax in respect of such Note by reason of his being or having been connected with Thailand (or any political subdivision thereof) (including being a citizen or resident or national of, or carrying on a business or maintaining a permanent establishment in, or being physically present in, Thailand) otherwise than merely by holding such Note or receiving principal or interest in respect thereof; or
- (ii) to or on behalf of a Noteholder who fails to (a) provide information concerning his or her nationality, resident or identity or (b) make any declaration or other similar claim or satisfy any information or reporting requirement, in the case of either (a) or (b), after the Issuer, the Guarantor or the relevant tax authority requested him or her to do so; or
- (iii) to or on behalf of a Noteholder who presents a Note (where presentation is required) for payment more than 30 days after the relevant date except to the extent that the Noteholder thereof would have been entitled to such additional payment on presenting the same for payment on the last day of such 30-day period; for this purpose the "**relevant date**" in relation to any payments of principal of, or interest on, any Note means:
 - (A) the due date for payment thereof; or
 - (B) if the full amount of the monies payable on such date has not been received in New York City by the Trustee on or prior to such due date, the date on which, the full amount of such monies having been so received, notice to that effect is duly given to holders of the Notes in accordance with the Indenture; or

- (iv) where such withholding or deduction is required pursuant to an agreement described in Section 1471(b) of the Code, or otherwise imposed pursuant to Sections 1471 through 1474 of the Code, as of the issue date (or any amended or successor version of such sections), any regulations or agreements thereunder, any official interpretations thereof, or any similar law implementing an intergovernmental agreement between a non-U.S. jurisdiction and the United States with respect to the foregoing; or
- (v) any combination of (i), (ii), (iii) or (iv) above.

The obligation to pay additional amounts with respect to taxes, duties, assessments and governmental charges shall not apply to (i) any estate, inheritance, gift, sales, transfer, personal property or any similar tax, assessment or other governmental charge or (ii) any tax, assessment or other governmental charge which is payable otherwise than by deduction or withholding from payments of principal of, or interest on, the Notes; provided that, except as otherwise set forth in the Notes and in these Conditions or in the Indenture, the Issuer or the Guarantor shall pay all stamp and other duties, if any, which may be imposed by Thailand, the United States or any respective political subdivision thereof or any taxing authority of or in the foregoing, with respect to these Conditions or the Indenture or as a consequence of the issuance of the Notes.

References to principal or interest in respect of the Notes shall be deemed also to refer to any additional amounts which may be payable as set forth herein and in the Notes.

13. Events of Default

The occurrence and continuance of the following events will constitute events of default (“**Events of Default**”):

- (a) default in the payment of interest upon any of the Notes when due and payable, and continuance of such default for a period of 30 days;
- (b) default in the payment of principal of any of the Notes when due, and continuance of such default for a period of seven days whether at maturity, upon redemption or otherwise;
- (c) failure on the part of the Issuer or the Guarantor (if applicable) to duly observe or perform any of the other covenants or agreements on the part of the Issuer or the Guarantor (if applicable), as the case may be, contained in the Notes or in the Indenture relating to the Notes or the Guarantee that continues for 60 days after the date on which written notice specifying such failure, stating that such notice is a “Notice of Default” under the Notes and demanding that the Issuer or the Guarantor (if applicable) remedy the same, shall have been sent to the Issuer or the Guarantor (if applicable) by the Trustee, or to the Issuer or the Guarantor (if applicable) at the office of the Trustee by the holders of at least 25 per cent. in aggregate principal amount of the outstanding Notes;
- (d) any External Indebtedness of the Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor in the aggregate outstanding principal amount of U.S.\$100,000,000 (or the equivalent thereof) or more either (i) becoming due and payable prior to the due date for payment thereof by reason of acceleration thereof following default by the Issuer or the Guarantor (if applicable) or (ii) not being repaid at, and remaining unpaid after, maturity as extended by the period of grace, if any, applicable thereto, or any guarantee given by the Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor in respect of External Indebtedness of any other Person of an amount equal to or greater than U.S.\$100,000,000 (or the equivalent thereof) not being honored when, and remaining dishonored after becoming due and called; *provided that*, in either such case, if any such default under any such External Indebtedness shall be cured or waived, then the default hereunder by reason thereof shall be deemed to have been cured and waived;

- (e) the Guarantor ceasing to own and control, directly or indirectly, at least 51 per cent. of the issued and outstanding capital stock of PTTEP;
- (f) a court or administrative or other governmental agency or body having jurisdiction in the premises shall enter a decree or order for relief in respect of the Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor in an involuntary case under any applicable bankruptcy, insolvency, reorganization, compulsory composition or other similar law now or hereafter in effect, or appointing a receiver, liquidator, assignee, custodian, trustee, sequestrator (or similar official) of the Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor or for any substantial part of its property or ordering the winding up, dissolution or liquidation of its affairs, or shall otherwise adjudicate or find the Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor to be bankrupt or insolvent, and such decree or order shall remain unstayed and in effect for a period of 60 consecutive days;
- (g) the Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor shall commence a voluntary case under any applicable bankruptcy, insolvency, reorganization, compulsory composition or other similar law now or hereafter in effect, or consent to the entry of an order for relief in an involuntary case under any such law, or consent to the appointment or taking possession by a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor or for any substantial part of any of its, or any of their respective, property, or the Issuer or (while there are any Guaranteed Notes outstanding) the Guarantor ceases to carry on the whole or substantially the whole of its, or any of their respective, business or make any general assignment for the benefit of creditors, or enter into any composition with any of its respective creditors, or take corporate action in furtherance of any such action; or
- (h) (while there are any Guaranteed Notes outstanding) the Guarantee is not (or is claimed by the Guarantor not to be) in full force and effect.

If an Event of Default (other than an Event of Default described in clauses (f) or (g) above) with respect to the Notes shall occur and be continuing, either the Trustee or the Holders of at least 25 per cent. in aggregate principal amount of the Notes then outstanding by written notice to the Issuer and (while there are any Guaranteed Notes outstanding) the Guarantor (and to the Trustee if given to the Holders) may declare the principal amount of the Notes and any accrued and unpaid interest thereon to be due and payable immediately. If an Event of Default in clause (f) or (g) above with respect to the Notes shall occur, the unpaid principal amount of all the Notes and any accrued and unpaid interest thereon will automatically, and without any action by the Trustee or any Holder of Notes, become immediately due and payable. After any such acceleration but before a judgment or decree based on acceleration has been obtained, the Holders of at least a majority in aggregate principal amount of the Notes then outstanding may, under certain circumstances, rescind and annul such acceleration if all Events of Default have been cured or waived as provided in the Indenture.

Subject to the provisions of the Indenture relating to the duties of the Trustee, in case an Event of Default shall occur and be continuing, the Trustee will be under no obligation to exercise any of its rights or powers under the Indenture at the request or direction of any of the Holders of Notes unless such Holders shall have offered to the Trustee pre-funding, security and/or indemnity satisfactory to the Trustee. Subject to certain provisions, including those requiring pre-funding, security and/or indemnification of the Trustee, the Holders of a majority in aggregate principal amount of the Notes then outstanding will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the Trustee or exercising any trust or power conferred on the Trustee with respect to the Notes. No Holder will have any right to institute any proceeding, judicial or otherwise, with respect to the Indenture, or for the appointment of a receiver or a trustee, or for any other remedy thereunder unless (i) such Holder has previously given to the Trustee written notice of a continuing Event of Default with respect to the Notes, (ii) the Holders of at least 25 per cent. in aggregate principal amount of the Notes then outstanding have made written request,

and such Holder or Holders have offered to the Trustee pre-funding, security and/or indemnity satisfactory to the Trustee, to institute such proceeding as trustee and (iii) the Trustee has failed to institute such proceeding, and has not received from the Holders of a majority in aggregate principal amount of the Notes then outstanding a direction inconsistent with such request, within 60 days after such written notice, request and offer. However, such limitations do not apply to a suit instituted by a Holder of a Note for the enforcement of the right to receive payment of the principal of or interest on such Note on or after the applicable due date specified in such Note.

14. Prescription

Any moneys deposited with or paid to the Trustee or any Paying Agent of the Notes, or then held by the Issuer or the Guarantor (if applicable) for the payment of the principal of, premium (if any) or interest on (or any Additional Amount payable in respect of) any Note or the Guarantee (if applicable) and not applied but remaining unclaimed for two years after the date upon which such principal, premium (if any) or interest shall have become due and payable, shall, upon the written request of the Issuer or the Guarantor (if applicable) be repaid to the Issuer or the Guarantor (if applicable) by the Trustee or such Paying Agent or (if then held by the Issuer or the Guarantor (if applicable)) be discharged unless otherwise required by mandatory provisions of applicable escheat or abandoned or unclaimed property law, and the Holder shall, unless otherwise required by mandatory provisions of applicable escheat or abandoned or unclaimed property laws, thereafter look only to the Issuer or the Guarantor (if applicable) for any payment which such Holder may be entitled to collect, and all liability of the Trustee or any Paying Agent of the Notes with respect to such moneys shall thereupon cease.

Under New York law, any legal action upon the Notes must be commenced within six years after the payment thereof is due. Thereafter, the Notes will become unenforceable.

15. Replacement of Notes

If any Note or Note Certificate is lost, stolen, mutilated, defaced or destroyed, it may be replaced at the Specified Office of the Registrar (and, if the Notes are then admitted to listing, trading and/or quotation by any competent authority, stock exchange and/or quotation system which requires the appointment of a Paying Agent or Transfer Agent in any particular place, the Paying Agent or Transfer Agent having its Specified Office in the place required by such competent authority, stock exchange and/or quotation system), subject to all applicable laws and competent authority, stock exchange and/or quotation system requirements, upon payment by the claimant of the expenses incurred in connection with such replacement and on such terms as to evidence, pre-funding, security and/or indemnity and otherwise as the Trustee, the Paying Agent or the Transfer Agents may reasonably require. Mutilated or defaced Notes or Note Certificates must be surrendered before replacements will be issued.

16. Modification and Waiver

(a) *Modification with consent of Holders*

With the consent of the Holders of more than 50 per cent. in aggregate principal amount of the outstanding Notes, the Issuer or the Guarantor (if applicable) may execute supplemental indentures or modify, amend or supplement the Conditions or the Paying and Transfer Agent and Registrar Appointment Letter with the Trustee and Agents, as the case may be, to add provisions or change or eliminate any provision of the Indenture, any supplemental indenture, the Paying and Transfer Agent and Registrar Appointment Letter or the Conditions to modify, amend or supplement the rights of the Holders of the Notes. Without the consent of the Holders of all the outstanding Notes, however, no such supplemental indenture or modification, amendment or supplementation shall:

- (i) change the maturity of the principal of, or any installment of interest or additional amounts payable on, any Note;

- (ii) reduce the principal amount of, or any interest on, payable upon redemption or maturity of, or additional amounts payable on, any Note;
- (iii) change the manner of calculation of interest or principal with respect to any Note;
- (iv) change the place of payment, or currency of denomination or payment, of the principal of or any interest or additional amounts payable on any Note;
- (v) change the Issuer's or the Guarantor's (if applicable) obligation to pay Additional Amounts;
- (vi) impair the right to institute suit for the enforcement of any payment on or with respect to any Note; or
- (vii) reduce the percentage of the principal amount of the outstanding Notes, the consent of the Holders of which is required for any such supplemental indenture or for any modification to the provisions relating to modification and waiver.

The Holders of more than 50 per cent. in aggregate principal amount of the outstanding Notes may:

- (a) waive compliance by the Issuer and Guarantor (if applicable) with certain provisions of the Indenture, the Conditions, the Guarantee or the Paying and Transfer Agent and Registrar Appointment Letter; and
- (b) waive any past default or Event of Default hereunder and its consequences, except a default (a) in the payment of principal of, or interest on, any of the Notes or (b) in respect of a covenant or provision hereof which cannot be modified or amended without the consent of the Holder of each Note affected.

(b) ***Modification without consent of Holders***

Notwithstanding the foregoing, the Issuer, the Guarantor (if applicable), the Trustee and the Agents may, without notice to or the consent or vote of any Holder of the Notes, amend or supplement the Indenture, the Notes or the Guarantee (if applicable) or modify, amend or supplement the Conditions or the Paying and Transfer Agent and Registrar Appointment Letter, in each case, for one or more of the following purposes (it being understood that such modification, amendment or supplement shall not materially and adversely affect the rights of the Holders of the Notes):

- (i) to convey, transfer, assign, mortgage or pledge to the Trustee as security for the Notes any property or assets;
- (ii) to evidence the succession of another corporation to the Issuer or the Guarantor, or successive successions, and the assumption by the successor corporation of the covenants, agreements and obligations of the Issuer or the Guarantor pursuant to Condition 5(c);
- (iii) to add to the covenants of the Issuer or the Guarantor such further covenants, restrictions, conditions or provisions as the Issuer, the Guarantor and the Trustee shall consider to be for the protection of the holders of the Notes, and to make the occurrence, or the occurrence and continuance, of a default in any such additional covenants, restrictions, conditions or provisions an Event of Default permitting the enforcement of all or any of the several remedies provided in these Conditions or the Indenture; *provided, that* in respect of any such additional covenant, restriction, condition or provision such supplemental indenture may provide for a particular period of grace after default (which period may be shorter or longer than that allowed in the case of other defaults) or may provide for an immediate enforcement upon such an

Event of Default or may limit the remedies available to the Trustee upon such an Event of Default or may limit the right of the Holders of a majority in aggregate principal amount of the Notes to waive such an Event of Default;

- (iv) to cure any ambiguity or to correct or supplement any provision contained in these Conditions, the Indenture or in any supplemental indenture which may be defective or inconsistent with any other provision contained in these Conditions; and
- (v) the Indenture or in any supplemental indenture; or to make such other provisions in regard to matters or questions arising under these Conditions, the Indenture or under any supplemental indenture as the Issuer and the Guarantor may deem necessary or desirable and which shall not adversely affect the interests of the holders of the Notes

17. Concerning the Trustee

The Holders of more than 50 per cent. in aggregate principal amount of all outstanding Notes shall have the right to direct the time, method and place of conducting any proceeding for exercising any remedy or power available to the Trustee with respect to the Notes. However, the direction must not conflict with any rule of law or with the Indenture. In case of an Event of Default, the Trustee shall be required to exercise its powers with the degree of care and skill of a prudent person in the conduct of his own affairs. The Trustee is, however, under no obligation to exercise any of its rights or powers under the Indenture at the request of any of the Holders, unless they have offered to the Trustee pre-funding, security and/or indemnity satisfactory to the Trustee against the costs, expenses and liabilities that might be incurred by it in compliance with such request or direction in its sole discretion.

Under the Indenture, the Trustee is entitled to be indemnified and/or provided with security to its satisfaction, as well as relieved from responsibility in certain circumstances and to be paid its fees, costs and expenses in priority to the claims of the Noteholders. In addition, the Trustee is entitled to enter into business transactions with Treasury Center or the Company and any entity relating to Treasury Center or the Company without accounting for any profit.

In connection with the exercise by it of any of its trusts, powers, authorities and discretions (including, without limitation, any modification, waiver, authorization or determination), the Trustee shall have regard to the general interests of the Noteholders as a class (but shall not have regard to any interests arising from circumstances particular to individual Noteholders whatever their number) and, in particular but without limitation, shall not have regard to the consequences of any such exercise for individual Holders (whatever their number) resulting from their being for any purpose domiciled or resident in, or otherwise connected with, or subject to the jurisdiction of, any particular territory or any political sub-division thereof and the Trustee shall not be entitled to require, nor shall any Noteholder be entitled to claim, from the Issuer, the Guarantor (if applicable), the Trustee or any other person any indemnification or payment in respect of any tax consequences of any such exercise upon individual Noteholders except to the extent already provided for under Condition 12 (*Additional Amounts*) and/or any undertaking or covenant given in addition to, or in substitution for, Condition 12 (*Additional Amounts*) pursuant to the Indenture.

The Trustee may rely without liability to Noteholders on a report, confirmation or certificate or any advice of any lawyers, accountants, financial advisors, financial institution or any other expert, whether or not addressed to it and whether their liability in relation thereto is limited (by its terms or by any engagement letter relating thereto or in any other manner) by reference to a monetary cap, methodology or otherwise. The Trustee may accept and shall be entitled to rely on any such report, confirmation or certificate or advice and such report, confirmation or certificate or advice shall be binding on the Issuer, the Guarantor (if applicable), the Trustee and the Noteholders.

18. The Agents

In acting under the Indenture and the Paying and Transfer Agent and Registrar Appointment Letter and in connection with the Notes, the Agents act solely as agents of the Issuer, the Guarantor (if applicable) and (to the extent provided therein) the Trustee and do not assume any obligations towards or relationship of agency or trust for or with any of the Noteholders.

The initial Calculation Agent (if any) is specified in the relevant Pricing Supplement. The Issuer and the Guarantor (if applicable) reserve the right (with the prior approval of the Trustee) at any time to vary or terminate the appointment of any Agent and to appoint a successor principal paying agent or registrar or Calculation Agent and additional or successor paying agents; *provided, however, that:*

- (a) the Issuer and the Guarantor (if applicable) shall at all times maintain a principal paying agent and a registrar; and
- (b) if a Calculation Agent is specified in the relevant Pricing Supplement, the Issuer and the Guarantor (if applicable) shall at all times maintain a Calculation Agent; and
- (c) for so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Issuer and the Guarantor (if applicable) shall maintain a Paying Agent in Singapore, where the Notes may be presented or surrendered for payment or redemption, in the event that global certificates are exchanged for definitive certificates; and
- (d) if and for so long as the Notes are admitted to listing, trading and/or quotation by any competent authority, stock exchange and/or quotation system which requires the appointment of a paying agent and/or a transfer agent in any particular place, the Issuer and the Guarantor (if applicable) shall maintain a paying agent and/or a transfer agent having its Specified Office in the place required by such competent authority, stock exchange and/or quotation system.

Notice of any change in any of the Agents or in their Specified Offices shall promptly be given to the Noteholders by or on behalf of the Issuer.

19. Further Issuance

The Issuer may from time to time, without notice to or the consent of the Noteholders, create and issue further debt securities ranking *pari passu* with the Notes in all respects (or in all respects except for the payment of interest accruing prior to the issue date of the debt securities or except for the first payment of interest following the issue date of the debt securities). The Issuer may consolidate such further debt securities with the outstanding Notes to form a single Series; *provided that*, if any further debt securities issued are not fungible for U.S. federal income tax purposes with any Notes previously issued, such further debt securities shall trade separately from such previously issued Notes under different CUSIP, ISIN and common codes from those assigned to the Notes but shall otherwise be treated as a single Series with all other Notes issued under the Indenture.

20. Defeasance and Discharge

The Issuer and the Guarantor (if applicable) shall cease to be under any obligation to comply with any term, provision or condition set forth in Conditions 5(a) and 5(b), and, insofar as such Condition requires compliance with Conditions 5(a) and 5(b), Condition 5(c), and non-compliance with such Conditions shall not give rise to any Event of Default under paragraph (c) of Condition 13(c) (“**covenant defeasance**”) if, at any time at the Issuer’s option, with respect to the Notes at any time after the applicable conditions set forth below have been satisfied:

- (a) the Issuer shall have deposited or caused to be deposited irrevocably with the Trustee as trust funds in trust, specifically pledged as security for, and dedicated solely to, the benefit of the Holders (A) cash in U.S. dollars in an amount, or (B) U.S. Government

Obligations (as defined below) that through the payment of interest and principal in respect thereof in accordance with their terms will provide, not later than the due date of any payment, cash in U.S. dollars in an amount or (C) a combination of (A) and (B), which is certified by a nationally recognized accounting firm to be sufficient to pay and discharge the principal of and interest on, the outstanding Notes on the dates such interest or principal are due and such written certificate is delivered to the Trustee;

- (b) no Event of Default or event (including such deposit) that, with notice or lapse of time, or both, would become an Event of Default shall have occurred and be continuing on the date of such deposit;
- (c) the Issuer shall have delivered to the Trustee an Opinion of Counsel to the effect that Holders will not recognize income, gain or loss for United States federal income tax purposes as a result of such covenant defeasance; and
- (d) the Issuer shall have delivered to the Trustee an Officer's Certificate and an Opinion of Counsel, each stating that all conditions precedent provided for relating to the covenant defeasance have been complied with.

In addition, upon a written order signed in the name of the Issuer by an Authorized Officer, and delivered to the Trustee, these Conditions shall cease to be of further effect (except as to (i) the rights of Holders to receive, from the trust fund described below, payments of principal of and interest on the Notes and any Additional Amounts as provided in Condition 12 when such payments are due, (ii) the Issuer and the Guarantor's (if applicable) obligations with respect to the Notes under Conditions 3, 15, 18 and Clauses 2.9, 4.6, 13.1 of the Indenture and (iii) the rights, powers, trusts, duties and immunities of the Trustee hereunder) and the Trustee, at the expense of the Issuer, shall execute proper instruments acknowledging satisfaction and discharge of these Conditions, when:

- (i) either (A) all Notes theretofore authenticated and delivered (other than the Notes that have been destroyed, lost or stolen and that have been replaced or paid as provided in Condition 15 and the Notes for whose payment money has theretofore been deposited in trust or segregated and held in trust by the Issuer and thereafter repaid to the Issuer or discharged from such trust) have been delivered to the Trustee for cancellation; or (B) all Notes not theretofore delivered to the Trustee for cancellation, I. have become due and payable, or II. will become due and payable at their Stated Maturity within one year, or III. are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice by the Trustee in the name, and at the expense, of the Issuer, and the Issuer, in the case of I, II or III above, has irrevocably deposited or caused to be irrevocably deposited with the Trustee as trust funds in trust specifically pledged as security for, and dedicated solely to, the benefit of the Holders and (x) cash in U.S. dollars in an amount or (y) U.S. Government Obligations that through the payment of interest and principal in respect thereof in accordance with their terms will provide, not later than one day before the due date of any payment, cash in U.S. dollars in an amount or (z) a combination of (x) and (y), sufficient to pay and discharge the entire indebtedness on the Notes for principal and interest to the date of such deposit (in the case the Notes have become due and payable) or to the Stated Maturity or date of redemption, as the case may be;
- (ii) the Issuer has paid or caused to be paid all other sums payable hereunder by the Issuer to the Trustee and with respect to the Notes; and
- (iii) the Issuer has delivered to the Trustee an Officer's Certificate and an Opinion of Counsel each stating that all conditions precedent herein provided for relating to the satisfaction and discharge of all obligations with respect to such series have been complied with.

“U.S. Government Obligations” means securities that are (i) direct obligations of the United States for the payment of which its full faith and credit is pledged or (ii) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the United States the timely payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States, that, in either case under paragraph (i) or (ii), are not callable or redeemable at the option of the issuer thereof, and shall also include a depository receipt issued by a bank or trust company as custodian with respect to any such U.S. Government Obligation or a specific payment of interest on or principal of any such U.S. Government Obligation held by such custodian for the account of the holder of a depository receipt; *provided that* (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such depository receipt from any amount received by the custodian in respect of the U.S. Government Obligation or the specific payment of interest on or principal of the U.S. Government Obligation evidenced by such depository receipt.

21. Notices

Notices to the Holders of Notes shall be sent to them (or the first named of joint holders) at their respective addresses on the Register. Any such notice shall be deemed to have been given on the fourth day after the date of sending.

So long as the Notes are represented by a Global Note Certificate and such Global Note Certificate is held on behalf of Euroclear and/or Clearstream, DTC or any other clearing system, notices to the Holders of Notes of that Series may be given by delivery of the relevant notice to that clearing system for communication by it to entitled accountholders in substitution for publication as required by the Indenture.

22. Indemnification for Judgment Currency Fluctuations

To the fullest extent permitted by law, the obligations of the Issuer and the Guarantor (if applicable) to any Noteholder under the Indenture, the Guarantee or the Notes, as the case may be, shall, notwithstanding any judgment in a currency (the **“Judgment Currency”**) other than the currency of the particular Series or Tranche of Notes (the **“Agreement Currency”**), be discharged only to the extent that on the day following receipt by such Noteholder or the Trustee, as the case may be, of any amount in the Judgment Currency, such Noteholder or the Trustee, as the case may be, may in accordance with normal banking procedures purchase the Agreement Currency with the Judgment Currency. If the amount of the Agreement Currency so purchased is less than the amount originally to be paid to such Noteholder or the Trustee, as the case may be, in the Agreement Currency, the Issuer and the Guarantor (if applicable) agree, as a separate obligation and notwithstanding such judgment, to pay the difference and if the amount of the Agreement Currency so purchased exceeds the amount originally to be paid to such Noteholder, such Noteholder or the Trustee, as the case may be, agrees to pay to or for the account of the Issuer or the Guarantor (if applicable), as the case may be, such excess; *provided that* such Noteholder or the Trustee, as the case may be, shall not have any obligation to pay any such excess as long as a Default has occurred and is continuing, in which case such excess may be applied by such Noteholder or the Trustee, as the case may be, to such obligations.

23. Rounding

For the purposes of any calculations referred to in these Conditions or the Indenture (unless otherwise specified in these Conditions or the relevant Pricing Supplement), (a) all percentages resulting from such calculations will be rounded, if necessary, to the nearest one hundred-thousandth of a percentage point (with 0.000005 per cent. being rounded up to 0.00001 per cent.), (b) all United States dollar amounts used in or resulting from such calculations will be rounded to the nearest cent (with one half cent being rounded up), (c) all Japanese Yen amounts used in or resulting from such calculations will be rounded downwards to the next lower whole Japanese Yen amount, and (d) all amounts denominated in any other currency used in or resulting from such calculations will be rounded to the nearest two decimal places in such currency, with 0.005 being rounded upwards.

24. Governing Law; Consent to Jurisdiction and Waiver of Immunity

- (a) The Indenture and the Notes shall be governed by, and construed in accordance with, the laws of the State of New York.
- (b) The Issuer and the Guarantor (if applicable) shall irrevocably submit to the non-exclusive jurisdiction of any New York state or United States federal court located in the Borough of Manhattan, The City of New York, New York (each a “**New York Court**”) in any suit, action or proceeding arising out of or relating to the Indenture, the Notes or any transaction contemplated thereby, and will irrevocably waive, to the fullest extent permitted by applicable law, any objection to the venue of any such suit, action or proceeding in any such New York Court and any claim of any inconvenient forum. The Issuer and the Guarantor (if applicable) has appointed Cogency Global Inc. at 122 East 42nd Street, 18th Floor New York, NY 10168 as agent for service of process with respect of any such suit, action or proceeding.
- (c) To the extent that the Issuer or the Guarantor (if applicable) has or hereafter may acquire any immunity (sovereign or otherwise) from any legal action, suit or proceeding, from jurisdiction of any court or from set-off or any legal process (including any immunity from non-exclusive jurisdiction or from service of process or from any execution to satisfy a final judgment or from attachment or in aid of such execution or otherwise) with respect to itself or any of its assets or properties, the Issuer and the Guarantor (if applicable) irrevocably waives, to the fullest extent permitted under applicable law, any such right or immunity or claim thereto which may now or hereafter exist, and agrees not to assert any such right or claim in any action or proceeding against it arising out of or based on the Notes or the Indenture.

25. No Personal Liability of Directors, Officers, Employees and Stockholders

No director, officer, employee, incorporator or stockholder of the Issuer or the Guarantor (if applicable) shall have any personal liability for any obligations of the Issuer or the Guarantor (if applicable) under the Notes, the Guarantee, the Indenture, or for any claim based on, in respect of, or by reason of, such obligations or their creation. Each Holder by accepting a Note waives and releases all such liability. The waiver and release are part of the consideration for issuance of the Notes. The waiver may not be effective to waive liabilities under federal securities laws.

SUMMARY OF PROVISIONS RELATING TO THE NOTES WHILE IN GLOBAL FORM

Clearing System Accountholders

In relation to any Series of Notes represented by one or more Global Note Certificates, references in the Conditions of the Notes to “Noteholder” are references to the person in whose name the relevant Global Note Certificate is for the time being registered in the Register which (a) in the case of a Restricted Global Note Certificate held by or on behalf of DTC will be Cede & Co. (or such other entity as is specified in the applicable Pricing Supplement) as nominee for DTC and (b) in the case of any Unrestricted Global Note Certificate which is held by or on behalf of a common depository for Euroclear and/or Clearstream, Luxembourg and/or any other relevant clearing system, will be that depository or a nominee for that common depository.

Each of the persons shown in the records of DTC, Euroclear, Clearstream, Luxembourg and/or any other relevant clearing system as being entitled to an interest in a Global Note Certificate (each an “**Accountholder**”) must look solely to DTC, Euroclear, Clearstream, Luxembourg and/or such other relevant clearing system (as the case may be) for such Accountholder’s share of each payment made by the relevant Issuer (failing which, in the case of Guaranteed Notes, the Guarantor) to the holder of such Global Note Certificate and in relation to all other rights arising under such Global Note Certificate. The extent to which, and the manner in which, Accountholders may exercise any rights arising under a Global Note Certificate will be determined by the respective rules and procedures of DTC, Euroclear and Clearstream, Luxembourg and any other relevant clearing system from time to time. For so long as the relevant Notes are represented by a Global Note Certificate, Accountholders shall have no claim directly against the relevant Issuer or (in respect of each Series of Guaranteed Notes) the Guarantor in respect of payments due under the Notes and such obligations of the relevant Issuer or (in respect of each Series of Guaranteed Notes) the Guarantor will be discharged by payment to the holder of such Global Note Certificate.

Transfers of Interests in Global Note Certificates

Transfers of interests in Global Note Certificates within DTC, Euroclear and Clearstream, Luxembourg or any other relevant clearing system will be in accordance with their respective rules and operating procedures. None of the Issuers, the Guarantor, the Trustee, the Registrars, the Dealers or the Agents will have any responsibility or liability for any aspect of the records of any DTC, Euroclear and Clearstream, Luxembourg or any other relevant clearing system or any of their respective participants relating to payments made on account of beneficial ownership interests in a Global Note Certificate or for maintaining, supervising or reviewing any of the records of DTC, Euroclear and Clearstream, Luxembourg or any other relevant clearing system or the records of their respective participants relating to such beneficial ownership interests.

The laws of some states of the United States require that certain persons receive individual certificates in respect of their holdings of Notes. Consequently, the ability to transfer interests in a Global Note Certificate to such persons will be limited. Because clearing systems only act on behalf of participants, who in turn act on behalf of indirect participants, the ability of a person having an interest in a Global Note Certificate to pledge such interest to persons or entities which do not participate in the relevant clearing systems, or otherwise take actions in respect of such interest, may be affected by the lack of an Individual Note Certificate representing such interest.

Subject to compliance with the transfer restrictions applicable to the Notes described under “*Transfer Restrictions*,” transfers between DTC participants, on the one hand, and Euroclear or Clearstream, Luxembourg accountholders, on the other will be effected by the relevant clearing systems in accordance with their respective rules and through action taken by the DTC Custodian, the DTC Registrar and the Principal Paying Agent.

On or after the issue date for any Series, transfers of Notes of such Series between accountholders in Euroclear and/or Clearstream, Luxembourg and transfers of Notes of such Series between participants in DTC will generally have a settlement date three business days after the trade date (T+3). The customary arrangements for delivery versus payment will apply to such transfers.

Transfers between DTC participants, on the one hand, and Euroclear or Clearstream, Luxembourg accountholders, on the other will need to have an agreed settlement date between the parties to such transfer. Because there is no direct link between DTC, on the one hand, and Euroclear and Clearstream, Luxembourg, on the other, transfers of interests in the relevant Global Note Certificates will be effected through the Principal Paying Agent, the DTC Custodian, the relevant Registrar and any applicable Transfer Agent receiving instructions (and where appropriate certification) from the transferor and arranging for delivery of the interests being transferred to the credit of the designated account for the transferee. Transfers will be effected on the later of (i) three business days after the trade date for the disposal of the interest in the relevant Global Note Certificate resulting in such transfer and (ii) two business days after receipt by the Principal Paying Agent or the relevant Registrar, as the case may be, of the necessary certification or information to effect such transfer. In the case of cross-market transfers, settlement between Euroclear or Clearstream, Luxembourg accountholders and DTC participants cannot be made on a delivery versus payment basis. The Notes will be delivered on a free delivery basis and arrangements for payment must be made separately. The customary arrangements for delivery versus payment between Euroclear and Clearstream, Luxembourg account holders or between DTC participants are not affected.

For a further description of restrictions on the transfer of Notes, see “*Subscription and Sale*” and “*Transfer Restrictions*.”

Upon the issue of a Restricted Global Note Certificate to be held by or on behalf of DTC, DTC or the DTC Custodian will credit the respective nominal amounts of the individual beneficial interests represented by such Global Note Certificate to the account of DTC participants. Ownership of beneficial interests in such Global Note Certificate will be held through participants of DTC, including the respective depositaries of Euroclear and Clearstream, Luxembourg. Ownership of beneficial interests in such Global Note Certificate will be shown on, and the transfer of such ownership will be effected only through, records maintained by DTC or its nominee. DTC has advised the Issuers that it will take any action permitted to be taken by a holder of the Notes represented by a Global Note Certificate held by or on behalf of DTC (including, without limitation, the presentation of such Global Note Certificates for exchange as described above) only at the direction of one or more participants in whose account with DTC interests in such Global Note Certificate are credited, and only in respect of such portion of the aggregate nominal amount of such Global Note Certificate as to which such participant or participants has or have given such direction. However, in certain circumstances, DTC will exchange the relevant Global Note Certificate for Individual Note Certificates (which will bear the relevant legends set out in “*Transfer Restrictions*”).

Although DTC, Euroclear and Clearstream, Luxembourg have agreed to the foregoing procedures in order to facilitate transfers of interests in the Global Note Certificates among participants and account holders of DTC, Euroclear and Clearstream, Luxembourg, they are under no obligation to perform or continue to perform such procedures, and such procedures may be discontinued at any time. None of the Issuers, the Guarantor, the Registrars, the Dealers, the Trustee or the Agents will have any responsibility for the performance by DTC, Euroclear or Clearstream, Luxembourg or their respective direct or indirect participants or account holders of their respective obligations under the rules and procedures governing their respective operations. While a Global Note Certificate is lodged with DTC, Euroclear, Clearstream, Luxembourg or any relevant clearing system, Individual Note Certificates for the relevant Series of Notes will not be eligible for clearing and settlement through such clearing systems.

Conditions applicable to Global Note Certificates

Each Global Note Certificate will contain provisions which modify the Conditions of the Notes as they apply to the Global Note Certificate. The following is a summary of certain of those provisions:

Payments: So long as the Notes are represented by the Global Note Certificate, each payment in respect of the Global Note Certificate will be made to, or to the order of, the person shown as the holder of the Notes in the Register at the close of business (of the relevant clearing system) on the Clearing System Business Day immediately prior to the due date for such payments, where

Clearing System Business Day means Monday to Friday inclusive except December 25 and January 1 (if the Notes are held through Euroclear and/or Clearstream) or on fifteen days (or five days in the case of Renminbi) prior to the relevant payment date (if the Notes are held through DTC).

Payment Business Day: in the case of a Global Note Certificate, shall be: if the currency of payment is euro, any day which is a TARGET Settlement Day and a day on which dealings in foreign currencies may be carried on in each (if any) Additional Financial Center; or, if the currency of payment is not euro, any day which is a day on which dealings in foreign currencies may be carried on in the Principal Financial US Center of the currency of payment and in each (if any) Additional Financial Center.

Partial exercise of call option: In connection with an exercise of the option contained in Condition [10(c) (*Redemption and Purchase — Optional Redemption*) (Call)] in relation to some only of the Notes or Global Note Certificate may be redeemed in part in the principal amount specified by the relevant Issuer in accordance with the Conditions and the Notes to be redeemed will not be selected as provided in the Conditions but in accordance with the rules and procedures of DTC, Euroclear and/or Clearstream, Luxembourg (to be reflected in the records of DTC, Euroclear and/or Clearstream, Luxembourg as either a pool factor or a reduction in principal amount, at their discretion).

Notices: Notwithstanding Condition 21 (*Notices*) of the Terms and Conditions of the Notes, while the Notes are represented by a Global Note Certificate and the Global Note Certificate is registered in the name of DTC's nominee or deposited with a common depository for Euroclear and/or Clearstream, Luxembourg and/or any other relevant clearing system, notices to Noteholders may be given by delivery of the relevant notice to DTC and/or Euroclear and/or Clearstream, Luxembourg and/or any other relevant clearing system and, in any case, such notices shall be deemed to have been given to the Noteholders in accordance with Condition 21 (*Notices*) of the Terms and Conditions of the Notes on the date of delivery to DTC and/or Euroclear and/or Clearstream, Luxembourg and/or any other relevant clearing system.

Transfers: Transfers of interests in the Notes will be effected through the records of DTC, Euroclear and Clearstream (or any alternative clearing system) and their respective participants (as applicable) in accordance with the rules and procedures of DTC, Euroclear and Clearstream (or any alternative clearing system) and their respective direct and indirect participants (as applicable).

Cancellation: Cancellation of Notes by the Issuers following its redemption or purchase by the Issuers and/or the Guarantor will be effected by reduction in the principal amount of the Notes in the register of the Noteholders.

FORM OF PRICING SUPPLEMENT OF THE NOTES

The Pricing Supplement in respect of each Series of Notes will be substantially in the following form, duly supplemented (if necessary), amended (if necessary) and completed to reflect the particular terms of the relevant Notes and their issue.

MiFID II product governance/target market — *[appropriate target market legend to be included]*

Option 1: Legend for issuances involving one or more MiFID Firm manufacturers

[MiFID II product governance/Professional investors and ECPs only target market — *Solely for the purposes of [the/each] manufacturer's product approval process, the target market assessment in respect of the Notes has led to the conclusion that: (i) the target market for the Notes is eligible counterparties and professional clients only, each as defined in [Directive 2014/65/EU (as amended, "MiFID II")] [MiFID II]; and (ii) all channels for distribution of the Notes to eligible counterparties and professional clients are appropriate. Any person subsequently offering, selling or recommending the Notes (a "distributor") should take into consideration the manufacturer['s/s'] target market assessment; however, a distributor subject to MiFID II is responsible for undertaking its own target market assessment in respect of the Notes (by either adopting or refining the manufacturer['s/s'] target market assessment) and determining appropriate distribution channels.]*

Option 2: Legend for issuances where there are no MiFID Firm manufacturers

[MiFID II product governance/Professional investors and ECPs only target market — *For the purposes of Directive EU 2014/65/EU (as amended, "MiFID II"), the target market in respect of the Notes is expected to be eligible counterparties and professional clients only, each as defined in MiFID II. Any person offering, selling or recommending the Notes (a "distributor") should take into consideration such target market; however, a distributor subject to MiFID II is responsible for undertaking its own target market assessment in respect of the Notes and determining appropriate distribution channels.]*

Option 3: Legend for issuances where there is a sole manager that is a MiFID Firm manufacturer (i.e. no syndicate) (and assuming that none of the Issuer, the Guarantor or other credit provider is a MiFID regulated entity)

[MiFID II product governance/Professional investors and ECPs only target market — *Solely for the purposes of the manufacturer's product approval process, the target market assessment in respect of the Notes has led to the conclusion that: (i) the target market for the Notes is eligible counterparties and professional clients only, each as defined in [Directive 2014/65/EU (as amended, "MiFID II")] [MiFID II]; and (ii) all channels for distribution of the Notes to eligible counterparties and professional clients are appropriate. Any person subsequently offering, selling or recommending the Notes (a "distributor") should take into consideration the manufacturer's target market assessment; however, a distributor subject to MiFID II is responsible for undertaking its own target market assessment in respect of the Notes (by either adopting or refining the manufacturer's target market assessment) and determining appropriate distribution channels.]*

[PROHIBITION OF SALES TO EEA AND UK RETAIL INVESTORS — *The Notes are not intended to be offered, sold or otherwise made available to and should not be offered, sold or otherwise made available to any retail investor in the European Economic Area ("EEA") or in the United Kingdom (the "UK"). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client as defined in point (11) of Article 4(1) of MiFID II; (ii) a customer within the meaning of Directive (EU) 2016/97 (the "Insurance Distribution Directive"), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or (iii) not a qualified investor as defined in Regulation (EU) 2017/1129 (the "Prospectus Regulation"). Consequently no key information document required by Regulation (EU) No 1286/2014 (as amended, the "PRIIPs Regulation") for offering or selling the Notes or*

otherwise making them available to retail investors in the EEA or in the UK has been prepared and therefore offering or selling the Notes or otherwise making them available to any retail investor in the EEA or in the UK may be unlawful under the PRIIPs Regulation.]

[Singapore Securities and Futures Act Product Classification — Solely for the purposes of its obligations pursuant to Sections 309B(1)(a) and 309B(1)(c) of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time (the “SFA”), the Issuer has determined, and hereby notifies all relevant persons (as defined in Section 309A(1) of the SFA), that the Notes are [“prescribed capital markets products”]/[capital markets products other than “prescribed capital markets products”] (as defined in the Securities and Futures (Capital Markets Products) Regulations 2018 of Singapore) and [Excluded Investment Products]/[Specified Investment Products] (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products).]

[The following language applies if the Notes are intended to be “qualifying debt securities” (as defined in the Income Tax Act, Chapter 134 of Singapore):

Where interest, discount income, prepayment fee, redemption premium or break cost is derived from any Notes by any person who is not resident in Singapore and who carries on any operations in Singapore through a permanent establishment in Singapore, the tax exemption available for qualifying debt securities (subject to certain conditions) under the Income Tax Act, Chapter 134 of Singapore (the “ITA”) shall not apply if such person acquires such Notes using the funds and profits of such person’s operations through a permanent establishment in Singapore. Any person whose interest, discount income, prepayment fee, redemption premium or break cost derived from the Notes is not exempt from tax (including for the reasons described above) shall include such income in a return of income made under the ITA.]

Pricing Supplement dated [•]

**[PTT Public Company Limited]
[PTT Treasury Center Company Limited]
Issue of [Aggregate Nominal Amount of Series] [Guaranteed] [Title of Notes]
[Guaranteed by PTT Public Company Limited
subject to the Maximum Guaranteed Amount]
under the U.S.\$ [•] Global Medium Term Note Program**

The document constitutes the Pricing Supplement relating to the issue of Notes described herein.

Terms used herein shall be deemed to be defined as such for the purposes of the Conditions (the “**Conditions**”) set forth in the Offering Memorandum dated [•]. This Pricing Supplement contains the final terms of the Notes and must be read in conjunction with such Offering Memorandum [and the supplemental Offering Memorandum dated *[date]*].

[Include whichever of the following apply or specify as “Not Applicable” (N/A). Note that the numbering should remain as set out below, even if “Not Applicable” is indicated for individual paragraphs or sub paragraphs. Italics denote guidance for completing the Pricing Supplement.]

1. Issuer: [PTT Public Company Limited.]/[PTT Treasury Center Company Limited]
2. Guarantor: [PTT Public Company Limited]/[Not Applicable]¹
3. [(i) Series Number:] [•]
[(ii) Tranche Number:] [•]

(If fungible with an existing Series, details of that Series, including the date on which the Notes become fungible).]

¹ Guarantor to be included for every Series of Notes where PTT Treasury Center Company Limited is Issuer.

4. Specified Currency or Currencies: [•]
(If Notes are being cleared through DTC with interest and or principal payable in a currency other than U.S. dollars, check whether DTC will accept payments in such currency)
5. Aggregate Nominal Amount: [•]
 [(i) [Series]: [•]
 [(ii) Tranche:] [•]
6. (i) Issue Price: [•]% of the Aggregate Nominal Amount [plus accrued interest from [insert date] (in the case of fungible issues only, if applicable)]
 (ii) Net Proceeds: [•] [(Required only for listed issues)]
7. (i) Specified Denominations^{2 3 4}: [•]
 (ii) Calculation Amount: [•]
8. (i) Issue Date: [•]
 (ii) Interest Commencement Date: [Specify/Issue Date/Not Applicable]
9. Maturity Date: [Specify date or (for Floating Rate Notes) Interest Payment Date falling in or nearest to the relevant month and year]⁵
[If the Maturity Date is less than one year from the Issue Date and either (a) the issue proceeds are received by the Issuer in the United Kingdom, or (b) the activity of issuing the Notes is carried on from an establishment maintained by the Issuer in the United Kingdom, (i) the Notes must have a minimum redemption value of £100,000 (or its equivalent in other currencies) and be sold only to “professional investors” or (ii) another applicable exemption from section 19 of the FSMA must be available.]
10. Interest Basis: [[•]% Fixed Rate]
 [[Specify reference rate] +/-[•]% Floating Rate]
 [Zero Coupon]
 [Other (Specify)]
 (further particulars specified below)

² Notes (including Notes denominated in sterling) in respect of which the issue proceeds are to be accepted by the Issuer in the United Kingdom or whose issue otherwise constitutes a contravention of section 19 of the FSMA and which have a maturity of less than one year and must have a minimum redemption value of £100,000 (or its equivalent in other currencies).

³ If the specified denomination is expressed to be €100,000 or its equivalent and multiples of a lower principal amount (for example €1,000), insert the additional wording as follows: €100,000 and integral multiples of [€1,000] in excess thereof up to and including [€99,000]/[€199,000]. No notes in definitive form will be issued with a denomination above [€99,000]/[€199,000].

⁴ Notes to be listed on the Singapore Exchange Securities Trading Limited (the “SGX-ST”) are required to be traded with board lot size of at least S\$200,000 (or equivalent in other countries).

⁵ Note that for Renminbi or Hong Kong dollar denominated Fixed Rate Notes where Interest Payment Dates are subject to modification it will be necessary to use the second option here.

11. Redemption/Payment Basis: [Redemption at par]
[Index Linked Redemption]
[Dual Currency]
[Partly Paid]
[Installment]
[Other (*Specify*)]
12. Change of Interest or Redemption/Payment Basis: [*Specify details of any provision for convertibility of Notes into another interest or redemption/payment basis*]
13. Call Options: [Optional Redemption (Call)]
[(further particulars specified below)]
14. Put Options: [Optional Redemption (Put)]
[Put Option (Change of Control)]
[(further particulars specified below)]
15. Listing: [Singapore Exchange Securities Trading Limited/Other (*specify*)/None]
16. Method of distribution: [Syndicated/Non syndicated]

PROVISIONS RELATING TO INTEREST (IF ANY) PAYABLE

17. **Fixed Rate Note Provisions:** [Applicable/*Not Applicable*]
(If not applicable, delete the remaining sub paragraphs of this paragraph)
- (i) Rate[(s)] of Interest: [•]% per annum [payable [annually/semi-annually/quarterly/monthly/other (*specify*)] in arrear]
- (ii) Interest Payment Date(s): [•] in each year [adjusted in accordance with [*specify Business Day Convention and any applicable Business Centre(s) for the definition of "Business Day"*]/not adjusted]
- (iii) Fixed Coupon Amount[(s)]: [•] per Calculation Amount⁶
- (iv) Broken Amount(s): [•] per Calculation Amount, payable on the Interest Payment Date falling [in/on] [•]
- (v) Day Count Fraction: [30/360/Actual/Actual (ICMA/ISDA)//other]
- (vi) Other terms relating to the method of calculating interest for Fixed Rate Notes: [Not Applicable/*give details*]

⁶ For Renminbi or Hong Kong dollar denominated Fixed Rate Notes where the Interest Payment Dates are subject to modification the following alternative wording is appropriate: "Each Fixed Coupon Amount shall be calculated by multiplying the product of the Rate of Interest and the Calculation Amount by the Day Count Fraction and rounding the resultant figure to the nearest RMB0.01, RMB0.005 for the case of Renminbi-denominated Fixed Rate Notes and to the nearest HK\$0.01, HK\$0.005 for the case of Hong Kong dollar denominated Fixed Rate Notes, being rounded upwards.

18. **Floating Rate Note Provisions:** [Applicable/Not Applicable]
- (i) Interest Period(s): [•]
- (ii) Specified Period: [•]
- (Specified Period and Specified Interest Payment Dates are alternatives. A Specified Period, rather than Specified Interest Payment Dates, will only be relevant if the Business Day Convention is the FRN Convention, Floating Rate Convention or Eurodollar Convention. Otherwise, insert "Not Applicable")*
- (iii) Specified Interest Payment Dates: [•]
- (Specified Period and Specified Interest Payment Dates are alternatives. If the Business Day Convention is the FRN Convention, Floating Rate Convention or Eurodollar Convention, insert "Not Applicable")*
- (iv) First Interest Payment Date: [•]
- (v) Business Day Convention: [Floating Rate Convention/Following Business Day Convention/Modified Following Business Day Convention/Preceding Business Day Convention/other (give details)]
- (vi) Additional Business Centre(s): [Not Applicable/give details]
- (vii) Manner in which the Rate(s) of Interest is/are to be determined: [Screen Rate Determination/ISDA Determination/other (give details)]
- (viii) Party responsible for calculating the Rate(s) of Interest and/or Interest Amount(s) (if not the [Principal Paying Agent]): [[Name] shall be the Calculation Agent (no need to specify if the Principal Paying Agent is to perform this function)]
- (ix) Screen Rate Determination:
- Reference Bank: [•]
- Reference Rate: [For example, LIBOR or EURIBOR]
- Interest Determination Date(s): [•]
- Relevant Screen Page: [For example, Reuters LIBOR 01/EURIBOR]
- Relevant Time: [For example, 11:00 a.m. London time/Brussels time]
- Relevant Financial Centre: [For example, London/Euro zone (where Euro zone means the region comprised of the countries whose lawful currency is the euro)]
- (x) ISDA Determination:
- Floating Rate Option: [•]
- Designated Maturity: [•]
- Reset Date: [•]

- (xi) Margin(s): [+/-][•] % per annum
- (xii) Minimum Rate of Interest: [•] % per annum
- (xiii) Maximum Rate of Interest: [•] % per annum
- (xiv) Linear Interpolation: [Applicable/Not Applicable]
- (xv) Day Count Fraction: [•]
- (xvi) Fall back provisions, rounding provisions, denominator and any other terms relating to the method of calculating interest on Floating Rate Notes, if different from those set out in the Conditions: [•]
19. **Zero Coupon Note Provisions** [Applicable/Not Applicable]
(If not applicable, delete the remaining sub paragraphs of this paragraph)
- (i) Accrual Yield: [•] % per annum
- (ii) Reference Price: [•]
- (iii) Any other formula/basis of determining amount payable: [•]
20. **Index-Linked Interest Note/other variable-linked interest Note Provisions** [Applicable/Not Applicable]
(If not applicable, delete the remaining sub-paragraphs of this paragraph)
- (i) Index/Formula/other variable: [give or annex details]
- (ii) Calculation Agent responsible for calculating the interest due: [•]
- (iii) Provisions for determining Coupon where calculated by reference to Index and/or Formula and/or other variable: [•]
- (iv) Interest Determination Date(s): [•]
- (v) Provisions for determining Coupon where calculation by reference to Index and/or Formula and/or other variable is impossible or impracticable or otherwise disrupted: [•]
- (vi) Interest or calculation period(s): [•]
- (vii) Specified Period: [•]
- (Specified Period and Specified Interest Payment Dates are alternatives. A Specified Period, rather than Specified Interest Payment Dates, will only be relevant if the Business Day Convention is the FRN Convention, Floating Rate Convention or Eurodollar Convention. Otherwise, insert "Not Applicable")*

- (viii) Specified Interest Payment Dates: [•]
(Specified Period and Specified Interest Payment Dates are alternatives. If the Business Day Convention is the FRN Convention, Floating Rate Convention or Eurodollar Convention, insert "Not Applicable")
- (ix) Business Day Convention: [Floating Rate Convention/Following Business Day Convention/Modified Following Business Day Convention/Preceding Business Day Convention/other *(give details)*]
- (x) Additional Business Centre(s): [•]
- (xi) Minimum Rate/Amount of Interest: [•]% per annum
- (xii) Maximum Rate/Amount of Interest: [•]% per annum
- (xiii) Day Count Fraction: [•]
21. **Dual Currency Note Provisions** [Applicable/Not Applicable]
(If not applicable, delete the remaining sub paragraphs of this paragraph)
- (i) Rate of Exchange/method of calculating Rate of Exchange: [give details]
- (ii) Calculation Agent, if any, responsible for calculating the principal and/or interest due: [•]
- (iii) Provisions applicable where calculation by reference to Rate of Exchange impossible or impracticable: [•]
- (iv) Person at whose option Specified Currency(ies) is/are payable: [•]

PROVISIONS RELATING TO REDEMPTION

22. **Optional Redemption (Call)** [Applicable/Not Applicable]
(If not applicable, delete the remaining sub paragraphs of this paragraph)
- (i) Optional Redemption Date(s) (Call): [•]
- (ii) Optional Redemption Amount(s) (Call) of each Note and method, if any, of calculation of such amount(s): [•]
- (iii) If redeemable in part:
- (a) Minimum Redemption Amount: [•] per Calculation Amount
- (b) Maximum Redemption Amount: [•] per Calculation Amount
- (iv) Notice period: [•]

23. **Optional Redemption (Put)** [Applicable/Not Applicable]
(If not applicable, delete the remaining sub paragraphs of this paragraph)
- (i) Optional Redemption Date(s) (Put): [•]
 - (ii) Optional Redemption Amount(s) (Put) of each Note and method, if any, of calculation of such amount(s): [•] per Calculation Amount
 - (iii) Notice period: [•]
24. **Put Option (Change of Control)** [Applicable/Not Applicable]
(If not applicable, delete the remaining sub paragraphs of this paragraph)
- (i) Optional Redemption Date(s) (Put): [•]
 - (ii) Optional Redemption Amount(s) (Put) of each Note and method, if any, of calculation of such amount(s): [•] per Calculation Amount
 - (iii) Notice period: [•]
25. **Final Redemption Amount of each Note** [•] per Calculation Amount
- In cases where the Final Redemption Amount is Index-Linked or other variable-linked:
- (i) Index/Formula/variable: [give or annex details]
 - (ii) Calculation Agent responsible for calculating the Final Redemption Amount: [•]
 - (iii) Provisions for determining Final Redemption Amount where calculated by reference to Index and/or Formula and/or other variable: [•]
 - (iv) Date for determining Final Redemption Amount where calculation by reference to Index and/or Formula and/or other variable: [•]
 - (v) Provisions for determining Final Redemption Amount where calculation by reference to Index and/or Formula and/or other variable is impossible or impracticable or otherwise disrupted: [•]
 - (vi) [Payment Date]: [•]

- (vii) Minimum Final Redemption Amount: [•] per Calculation Amount
- (viii) Maximum Final Redemption Amount: [•] per Calculation Amount
26. **Early Redemption Amount** [Not Applicable]
- Early Redemption Amount(s) per Calculation Amount payable on redemption for taxation reasons, on event of default or other early redemption and/or the method of calculating the same (if required or if different from that set out in the Conditions): *(If each of the Early Redemption Amount (Tax) and the Early Termination Amount are the principal amount of the Notes/specify the Early Redemption Amount (Tax) and/or the Early Termination Amount if different from the principal amount of the Notes)*

GENERAL PROVISIONS APPLICABLE TO THE NOTES

27. Form of Notes: [Unrestricted Global Certificate exchangeable for unrestricted Individual Note Certificates on [•] days' notice in the limited circumstances described in the Unrestricted Global Certificate]⁷
- [and]
- [Restricted Global Certificate exchangeable for Restricted Individual Note Certificates on [•] days' notice in the limited circumstances described in the Restricted Global Certificate]⁸
28. Additional Financial Centre(s) or other special provisions relating to payment dates: [Not Applicable/give details.]
- [Note that this paragraph relates to the date and place of payment, and not interest period end dates, to which sub paragraphs 16(vi) and 18(x) relate]*
29. Details relating to Partly Paid Notes: amount of each payment comprising the Issue Price and date on which each payment is to be made [and consequences (if any) of failure to pay, including any right of the Issuer to forfeit the Notes and interest due on late payment]: [Not Applicable/give details.]
30. Details relating to Installment Notes: amount of each installment, date on which each payment is to be made: [Not Applicable/give details.]

⁷ If the Specified Denominations of the Notes in paragraph [6] includes language substantially to the following effect: "[€50,000]/[€100,000] and integral multiples of [€1,000] in excess thereof up to and including [€99,000]/[€199,000]," the Unrestricted Global Certificate shall not be exchangeable on [•] days' notice or at any time.

⁸ If the Specified Denominations of the Notes in paragraph [6] includes language substantially to the following effect: "[€50,000]/[€100,000] and integral multiples of [€1,000] in excess thereof up to and including [€99,000]/[€199,000]," the Restricted Global Certificate shall not be exchangeable on [•] days' notice or at any time.

31. Redenomination, renominialization and reconventioning provisions: [Not Applicable/The provisions annexed to this Pricing Supplement apply]
32. Consolidation provisions: The provisions in [Condition 19 (*Further Issuance*)] [annexed to this Pricing Supplement] apply]
33. Any applicable currency disruption/fallback provisions: [Not Applicable/*give details*]
34. Maximum Guaranteed Amount: [Not Applicable/*as further described in the Offering Memorandum*]
35. Other terms or special conditions: [Not Applicable/*give details*]

DISTRIBUTION

36. (i) If syndicated, names of Managers: [Not Applicable/*give names*]
- (ii) [Stabilization Manager(s)] (if any): [Not Applicable/*give names*]
37. If non-syndicated, name and address of Dealer: [Not Applicable/*give name and address*]
38. Total commission and concession: [•]% of the Aggregate Nominal Amount
39. U.S. Selling Restrictions: [Reg. S Category [1/2]]/[Rule 144A]; [Rule 144A Eligible/Not Rule 144A Eligible]
40. Additional selling restrictions: [Not Applicable/*give details*]
41. Prohibition of Sales to EEA Retail Investors: [Applicable/Not Applicable]

(If the Notes clearly do not constitute “packaged” products, “Not Applicable” should be specified. If the offer of the Notes may constitute “packaged” products and no KID will be prepared, “Applicable” should be specified.)

OPERATIONAL INFORMATION

42. ISIN Code: [•]
43. Common Code: [•]
44. CUSIP: [•]
45. Any clearing system(s) other than Euroclear/Clearstream, Luxembourg, DTC Service and the relevant identification number(s): [Not Applicable/*give name(s) and number(s)*]
46. Delivery: Delivery [against/free of] payment
47. Additional Paying Agent(s) (if any): [•]

GENERAL

48. The aggregate principal amount of Notes issued has been translated into United States dollars at the rate of [•], producing a sum of (for Notes not denominated in United States dollars): [Not Applicable/U.S.\$]
49. [Ratings: The Notes to be issued have been rated:
[[•]: [•]];
[[•]: [•]]; [and]
(each a “**Rating Agency**”).
- If any Rating Agency shall not make a rating of the Notes publicly available, the Issuer shall select and substitute them with [•] or [•] and its successors.]

[USE OF PROCEEDS

Give details if different from the “Use of Proceeds” section in the Offering Memorandum.]

[STABILIZING

In connection with the issue of the Notes, [name(s) of Stabilization Manager(s)] (or persons acting on behalf of [name(s) of Stabilization Manager(s)]) (the “**Stabilization Manager[s]**”) may over-allot Notes or effect transactions with a view to supporting the price of the Notes at a level higher than that which might otherwise prevail for a limited period after the Issue Date. However, there is no obligation on such Stabilization Manager[s] to do this. Such stabilizing, if commenced, may be discontinued at any time, and must be brought to an end after a limited period. Such stabilizing shall be in compliance with all applicable laws, regulations and rules.]

[GUARANTEE

The Guarantor hereby fully, irrevocably and unconditionally guarantees as principal obligor to each Holder of a Note authenticated by the Registrar and to the Trustee and its successors and assigns the due and punctual payment of the principal of, premium (if any) and interest in respect of or on, and all other amounts payable under, the Notes and the Indenture. The obligations of the Guarantor are unconditional and absolute and, without limiting the generality of the foregoing, will not be released, discharged or otherwise affected by: (1) to the extent permitted by applicable law, any extension, renewal, settlement, compromise, waiver or release in respect of any obligation of the Issuer under the Indenture or any Note, by operation of law or otherwise; (2) any modification or amendment of or supplement to the Indenture or any Note (to the extent such modification or amendment or supplement does not (a) affect the Guarantor’s rights and obligations under the Indenture or any Note or (b) require the consent of the Guarantor upon such modification, amendment or supplement); (3) any change in the corporate existence, structure or ownership of the Issuer, or any insolvency, bankruptcy, reorganization or other similar proceeding affecting the Issuer or its assets or any release or discharge of any obligation of the Issuer contained in the Indenture or any Note; (4) the existence of any claim, set off or other rights which the Guarantor may have at any time against the Issuer, the Trustee or any other Person, whether in connection with the Indenture or any unrelated transactions; *provided* that nothing herein prevents the assertion by the Guarantor of any such claim by separate suit or compulsory counterclaim; (5) any invalidity, irregularity, or unenforceability relating to or against the Issuer for any reason of the Indenture or any Note; or (6) any other act or omission to act or delay of any kind by the Issuer, the Trustee or any other Person or any other circumstance whatsoever which might, but for the provisions of this paragraph, constitute a legal or equitable discharge of or defense to the Guarantor’s obligations hereunder.

The Guarantee shall take effect from the Issue Date of the Notes and will not be discharged with respect to any Note until the earlier of (i) the date falling ten years after the maturity date of the Notes or (ii) the date on which all sums expressed to be payable by Treasury Center under the

Indenture and the Notes have been unconditionally and irrevocably paid and discharged in full; or, alternatively, upon a defeasance or discharge as provided in Article 13 of the Indenture. In case of the failure of the Issuer punctually to pay any such principal of, premium, if any, and interest on the Notes and all other amounts payable, the Guarantor hereby agrees to cause any such payment to be made punctually when and as the same shall become due and payable, whether on an interest payment date, at the stated maturity date, by declaration of acceleration, call for redemption or otherwise, and as if such payment were made by the Issuer.

Subject to certain exceptions as set forth in the Indenture, the Guarantor hereby further agrees that all payments of principal of, and premium, if any, and interest under the Guarantee will be made free and clear of, and without withholding or deduction for present or future taxes, duties, assessments, fees or other governmental charges imposed by the Kingdom of Thailand or any other jurisdiction in which the Issuer or the Guarantor is tax resident (or of any political subdivision or taxing authority thereof or therein) or any jurisdiction through which the Issuer, the Guarantor or its Agent makes payment, unless such withholding or deduction is required by law or by regulation or any governmental policy having the force of law. In the event that any such withholding or deduction is so required, the Guarantor will pay additional amounts as necessary to ensure that the Holder will receive the same amount as would have been received without any such withholding or deduction, subject to the exceptions in Condition 12.

Notwithstanding anything to the contrary in this Indenture or any Note, the Guarantor's maximum liability under the Guarantee in respect of the Notes will be capped at an amount equal to 125 per cent. of the outstanding aggregate principal amount of the Notes (the "**Maximum Guaranteed Amount**")

The obligations of the Guarantor to the Holders and to the Trustee pursuant to this Guarantee and the Indenture are expressly set forth in Article 9 of the Indenture, and reference is hereby made to such Article and Indenture for the precise terms of the Guarantee.]

PURPOSE OF PRICING SUPPLEMENT

This Pricing Supplement comprises the final terms required for issue and admission to trading on the SGX-ST of the Notes described herein pursuant to the U.S.\$[•] Global Medium Term Note Program of the Issuer [and the Guarantor].

RESPONSIBILITY

The Issuer [and the Guarantor] accept[s] responsibility for the information contained in this Pricing Supplement.

Signed on behalf of
[PTT Public Company Limited] [PTT Treasury Center Company Limited] as Issuer

By: _____

Name: _____

Title: _____

Signed on behalf of
PTT Public Company Limited as Guarantor

By: _____

Name: _____

Title: _____

CLEARANCE AND SETTLEMENT

The information set out below is subject to any change in or reinterpretation of the rules, regulations and procedures of DTC, Euroclear or Clearstream, Luxembourg (together, the “**Clearing Systems**”) currently in effect. The information in this section concerning the Clearing Systems has been obtained from sources that the Issuers and the Guarantor believe to be reliable, but none of the Issuers, the Guarantor or any Dealer takes any responsibility for the accuracy thereof. Investors wishing to use the facilities of any of the Clearing Systems are advised to confirm the continued applicability of the rules, regulations and procedures of the relevant Clearing System. The Issuers and the Guarantor will not have any responsibility or liability for any aspect of the records relating to, or payments made on account of, beneficial ownership interests in the Global Note Certificates held through the facilities of any Clearing System or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

The Clearing Systems

DTC

DTC has advised us that it is a limited purpose trust company organized under the New York Banking Law, a “banking organization” within the meaning of the New York Banking Law, a “clearing corporation” within the meaning of the New York Uniform Commercial Code and a “clearing agency” registered pursuant to Section 17A of the Exchange Act. DTC holds securities that its participants (“**Participants**”) deposit with DTC. DTC also facilitates the clearance and settlement among Participants of securities transactions, such as transfers and pledges, in deposited securities through electronic computerized book-entry changes in Participants’ accounts, thereby eliminating the need for physical movement of securities certificates. DTC is owned by a number of its direct participants (“**Direct Participants**”), which include securities brokers and dealers, banks, trust companies, clearing corporations and certain other organizations. Access to the DTC System is also available to others such as securities brokers and dealer, banks and trust companies that clear through or maintain a custodial relationship with a Direct Participant, either directly or indirectly (“**Indirect Participants**”).

Under the rules, regulations and procedures creating and affecting DTC and its operations (the “**Rules**”), DTC makes book-entry transfers of Notes among Direct Participants on whose behalf it acts with respect to Notes accepted into DTC’s book-entry settlement system (“**DTC Notes**”) as described below and receives and transmits distributions of principal and interest on DTC Notes. The Rules are on file with the U.S. Securities and Exchange Commission. Direct Participants and Indirect Participants with which beneficial owners of DTC Notes (“**Owners**”) have accounts with respect to the DTC Notes similarly are required to make book-entry transfers and receive and transmit such payments on behalf of their respective Owners. Accordingly, although Owners who hold DTC Notes through Direct Participants or Indirect Participants will not possess Notes, the Rules, by virtue of the requirements described above, provide a mechanism by which Direct Participants will receive payments and will be able to transfer their interest in respect of the DTC Notes.

Purchases of DTC Notes under the DTC system must be made by or through Direct Participants, which will receive a credit for the DTC Notes on DTC’s records. The ownership interest of each actual purchaser of each DTC Security (“**Beneficial Owner**”) is in turn to be recorded on the Direct and Indirect Participant’s records. Beneficial Owners will not receive written confirmation from DTC of their purchase, but Beneficial Owners are expected to receive written confirmations providing details of the transaction, as well as periodic statements of their holdings, from the Direct or Indirect Participant through which the Beneficial Owner entered into the transaction. Transfers of ownership interests in the DTC Notes are to be accomplished by entries made on the books of Participants acting on behalf of Beneficial Owners. Beneficial Owners will not receive certificates representing their ownership interests in DTC Notes, except in the event that use of the book-entry system for the DTC Notes is discontinued.

To facilitate subsequent transfers, all DTC Notes deposited by Participants with DTC are registered in the name of DTC’s partnership nominee, Cede & Co. The deposit of DTC Notes with DTC and their registration in the name of Cede & Co. effect no change in beneficial ownership.

DTC has no knowledge of the actual Beneficial Owners of the DTC Notes; DTC's records reflect only the identity of the Direct Participants to whose accounts such DTC Notes are credited, which may or may not be the Beneficial Owners. The Participants will remain responsible for keeping account of their holdings on behalf of their customers.

Conveyance of notices and other communications by DTC to Direct Participants, by Direct Participants to Indirect Participants, and by Direct Participants and Indirect Participants to Beneficial Owners will be governed by arrangements among them, subject to any statutory or regulatory requirements as may be in effect from time to time.

Redemption notices shall be sent to Cede & Co. If less than all of the DTC Notes within an issue are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such issue to be redeemed.

Neither DTC nor Cede & Co. will consent or vote with respect to DTC Notes. Under its usual procedures, DTC mails an Omnibus Proxy to the relevant Issuer as soon as possible after the record date. The Omnibus Proxy assigns Cede & Co.'s consenting or voting rights to those Direct Participants to whose accounts the DTC Notes are credited on the record date (identified in a listing attached to the Omnibus Proxy).

Principal and interest payments on the DTC Notes will be made to DTC. DTC's practice is to credit Direct Participants' accounts on the due date for payment in accordance with their respective holdings shown on DTC's records unless DTC has a reason to believe that it will not receive payment on the due date. Payments by Participants to Beneficial Owners will be governed by standing instructions and customary practices, as is the case with securities registered in "street name," and will be the responsibility of such Participant and not of DTC, the Issuers, or the Guarantor subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of principal and interest to DTC is the responsibility of the relevant Issuer (failing which, in the case of Guaranteed Notes, the Guarantor), disbursement of such payments to Direct Participants is the responsibility of DTC, and disbursement of such payments to the Beneficial Owners is the responsibility of Direct and Indirect Participants.

Under certain circumstances, including if there is an Event of Default under the Notes, DTC will exchange the DTC Notes for definitive Notes, which it will distribute to its Participants in accordance with their proportionate entitlements and which, if representing interests in a Restricted Global Note Certificate, will be legended as set forth under "*Transfer Restrictions*."

Since DTC may only act on behalf of Direct Participants, who in turn act on behalf of Indirect Participants, any Owner desiring to pledge DTC Notes to persons or entities that do not participate in DTC, or otherwise take actions with respect to such DTC Notes, will be required to withdraw its Notes from DTC as described below.

Euroclear and Clearstream, Luxembourg

Euroclear and Clearstream, Luxembourg each hold securities for its customers and facilitate the clearance and settlement of securities transactions by electronic book-entry transfer between their respective account holders. Euroclear and Clearstream, Luxembourg provide various services including safekeeping, administration, clearance and settlement of internationally traded securities and securities lending and borrowing. Euroclear and Clearstream, Luxembourg also deal with domestic securities markets in several countries through established depository and custodial relationships. Euroclear and Clearstream, Luxembourg have established an electronic bridge between their two systems across which their respective participants may settle trades with each other.

Euroclear and Clearstream, Luxembourg customers are world-wide financial institutions, including underwriters, securities brokers and dealers, banks, trust companies and clearing corporations. Indirect access to Euroclear and Clearstream, Luxembourg is available to other institutions that clear through or maintain a custodial relationship with an account holder of either system.

Book-entry Ownership of and Payments in respect of DTC Notes

The relevant Issuer may apply to DTC in order to have any Series of Notes represented by a Global Note Certificate accepted in its book-entry settlement system. Upon the issue of any such Global Note Certificate, DTC or its custodian will credit, on its internal book-entry system, the respective nominal amounts of the individual beneficial interests represented by such Global Note Certificate to the accounts of persons who have accounts with DTC. Such accounts initially will be designated by or on behalf of the relevant Dealer. Ownership of beneficial interests in such a Global Note Certificate will be limited to Direct Participants or Indirect Participants, including, in the case of any Unrestricted Global Note, the respective depositaries of Euroclear and Clearstream, Luxembourg. Ownership of beneficial interests in a Global Note Certificate accepted by DTC will be shown on, and the transfer of such ownership will be effected only through, records maintained by DTC or its nominee (with respect to the interests of Direct Participants) and the records of Direct Participants (with respect to interests of Indirect Participants).

Payments in U.S. dollars of principal and interest in respect of a Global Note Certificate accepted by DTC will be made to the order of DTC or its nominee as the registered holder of such Note. In the case of any payment in a currency other than U.S. dollars, payment will be made to the Exchange Agent on behalf of DTC or its nominee and the Exchange Agent will (in accordance with instructions received by it) remit all or a portion of such payment for credit directly to the beneficial holders of interests in the Global Note Certificate in the currency in which such payment was made and/or cause all or a portion of such payment to be converted into U.S. dollars and credited to the applicable Participants' account.

The Issuers expect DTC to credit accounts of Direct Participants on the applicable payment date in accordance with their respective holdings as shown in the records of DTC unless DTC has reason to believe that it will not receive payment on such payment date. The Issuers also expect that payments by Participants to beneficial owners of Notes will be governed by standing instructions and customary practices, as is the case with securities held for the accounts of customers, and will be the responsibility of such Participant and not the responsibility of DTC, the Principal Paying Agent, the Registrar, the Issuers or the Guarantor. Payment of principal, premium, if any, and interest, if any, on Notes to DTC is the responsibility of the relevant Issuer (failing which, in the case of Guaranteed Notes, the Guarantor).

Transfers of Notes Represented by Global Note Certificates

Transfers of any interests in Notes represented by a Global Note Certificate within DTC, Euroclear and Clearstream, Luxembourg will be effected in accordance with the customary rules and operating procedures of the relevant clearing system. The laws in some States within the United States require that certain persons take physical delivery of securities in definitive form. Consequently, the ability to transfer Notes represented by a Global Note Certificate to such persons may depend upon the ability to exchange such Notes for Notes in definitive form. Similarly, because DTC can only act on behalf of Direct Participants in the DTC system who in turn act on behalf of Indirect Participants, the ability of a person having an interest in Notes represented by a Global Note Certificate accepted by DTC to pledge such Notes to persons or entities that do not participate in the DTC system or otherwise to take action in respect of such Notes may depend upon the ability to exchange such Notes for Notes in definitive form. The ability of any holder of Notes represented by a Global Note Certificate accepted by DTC to resell, pledge or otherwise transfer such Notes may be impaired if the proposed transferee of such Notes is not eligible to hold such Notes through a direct or indirect participant in the DTC system.

Subject to compliance with the transfer restrictions applicable to the Notes described under "*Transfer Restrictions*," cross-market transfers between DTC, on the one hand, and directly or indirectly through Clearstream, Luxembourg or Euroclear acountholders, on the other, will be effected by the relevant clearing system in accordance with its rules and through action taken by the Registrar, the Paying Agent and the DTC Custodian with whom the relevant Notes have been deposited.

On or after the Issue Date for any Series, transfers of Notes of such Series between accountholders in Clearstream, Luxembourg and Euroclear and transfers of Notes of such Series between Participants in DTC will generally have a settlement date three business days after the trade date (T+3). The customary arrangements for delivery versus payment will apply to such transfers.

Cross-market transfers between accountholders in Clearstream, Luxembourg or Euroclear and DTC participants will need to have an agreed settlement date between the parties to such transfer. Because there is no direct link between DTC, on the one hand, and Clearstream, Luxembourg and Euroclear, on the other, transfers of interests in the relevant Global Note Certificate will be effected through the Registrar, the Paying Agent and the DTC Custodian receiving instructions (and, where appropriate, certification) from the transferor and arranging for delivery of the interests being transferred to the credit of the designated account for the transferee. In the case of cross-market transfers, settlement between Euroclear or Clearstream, Luxembourg accountholders and DTC participants cannot be made on a delivery versus payment basis. The securities will be delivered on a free delivery basis and arrangements for payment must be made separately.

DTC, Clearstream, Luxembourg and Euroclear have each published rules and operating procedures designed to facilitate transfers of beneficial interests in Notes among participants and accountholders of DTC, Clearstream, Luxembourg and Euroclear. However, they are under no obligation to perform or continue to perform such procedures, and such procedures may be discontinued or changed at any time. None of the Issuers, the Guarantor, the Agents or any Dealer will be responsible for any performance by DTC, Clearstream, Luxembourg or Euroclear or their respective direct or indirect participants or accountholders of their respective obligations under the rules and procedures governing their operations and none of them will have any liability for any aspect of the records relating to or payments made on account of beneficial interests in the Notes represented by Global Note Certificates or for maintaining, supervising or reviewing any records relating to such beneficial interests.

TAXATION

Thai Taxation

The information provided below does not purport to be a complete summary of Thai tax laws and practice currently applicable. It is not intended as tax advice and does not consider any investor's particular circumstances.

*The following is a summary of the principal Thai tax consequences of the purchase, ownership and disposition of the Notes by individual and corporate investors who are not resident in Thailand for tax purposes (referred to as “**non-resident individual holders**” and “**non-resident corporate holders**,” respectively, and together as “**non-resident holders**”) based on Thai tax laws and their implementing regulations in force as of the date of this Offering Memorandum. The summary does not address any laws other than the tax laws of Thailand. It does not purport to be a comprehensive description of all of the tax considerations that may be relevant to a decision to purchase the Notes. Prospective investors in all jurisdictions are advised to consult their own tax advisors as to other tax consequences of the purchase, ownership and disposition of the Notes, including the consequences under Thai laws, the laws of the country of which they are resident and any double taxation agreement between Thailand and their country of residence for tax purposes.*

Income Tax

Non-resident Individual Holders

A non-resident individual holder is an individual owner of Notes that has not resided in Thailand at one or more times for a period or periods equal in the aggregate to 180 days or more in any calendar year, regardless of the nationality of the individual holders.

- **Interest**

Unless the terms and conditions of applicable double taxation agreement entered into between Thailand and the resident country of the non-resident individual holders provide otherwise, interest paid or deemed to be paid on the Notes, from or within Thailand to a non-resident individual holder is subject to 15.0% withholding tax.

- **Capital Gains**

Capital gains (being the amount received in excess of the cost of acquisition of the Notes) received by a non-resident individual holder from the sale or other disposition of Notes outside Thailand which payment is made neither from nor within Thailand are not subject to Thai withholding tax.

Unless the terms and conditions of applicable double taxation agreement entered into between Thailand and the resident country of the non-resident individual holders provide otherwise, capital gain received by a non-resident individual holder from a sale or other disposition of Notes in which payment is made or deemed to be made from or within Thailand is subject to 15.0% withholding tax. The transferee or the payer of the gain has a duty to withhold tax at such rate and remit the withholding tax to the Thai Revenue Department.

Non-resident Corporate Holders

A non-resident corporate holder is an owner of Notes that is a company, a registered partnership or any entity established pursuant to a foreign law that is not doing business in Thailand or deemed to be doing business in Thailand or does not have a permanent establishment, employees, agents or representatives in Thailand but receiving from or within Thailand interest on the Notes or capital gains arising from the transfer of the Notes.

- **Interest**

Interest paid on the Notes by the Issuer from or within Thailand to a non-resident corporate holder that is a company or limited partnership established under a foreign law that is not doing business in Thailand (a “**Qualified Non-resident Corporate Holder**”) are exempted from Thai corporate income tax (including Thai withholding tax), to the extent that the Issuer remains qualified as a treasury center that has the international business center status pursuant to the rules and regulations of the Revenue Department of Thailand and the Bank of Thailand and all other conditions for a Thai corporate income tax exemption with respect to the interest made by the Issuer in accordance with the Royal Decree issued pursuant to the Revenue Code on Reduction and Exemption of Taxes are fully satisfied.

If any of the qualifications or conditions for a Qualified Non-resident Corporate Holder’s Thai corporate income tax (including Thai withholding tax) exemption referred to in the paragraph above are no longer met, interest paid on the Notes by the Issuer to a Qualified Non-resident Corporate Holder will be subject to a withholding tax at the rate of 15% of the gross amount of the interest payment, unless the terms and conditions of applicable double taxation agreement between Thailand and the resident country of such non-resident corporate holder provide otherwise.

Interest paid on the Notes by the Issuer from or within Thailand to a non-resident corporate holder that is not a Qualified Non-resident Corporate holder will, in any case, be subject to a withholding tax at the rate of 15% of the gross amount of the interest payment, unless the terms and conditions of applicable double taxation agreement between Thailand and the resident country of such non-resident corporate holder provide otherwise.

- **Capital Gains**

Capital gains (being the amount received in excess of the cost of acquisition of the Notes) received by a non-resident corporate holder from the sale or other disposition of Notes outside Thailand which payment is made neither from nor within Thailand are not subject to Thai withholding tax.

Unless the terms and conditions of applicable double taxation agreement entered into between Thailand and the resident country of the non-resident corporate holder provide otherwise, capital gain received by a nonresident corporate holder from a sale or other disposition of Notes in which payment is made or deemed to be made from or within Thailand is subject to 15.0% withholding tax. The transferee or the payer of the gain has a duty to withhold tax at such rate and remit the withholding tax to the Thai Revenue Department.

Income Tax in connection with a Guarantee Payment by the Guarantor

Thai taxation with respect to any payment made to the holders of the Notes by the Guarantor pursuant to its obligations under the Guarantee, if part of the guaranteed payment is considered by the Thai authorities as payment of interest and/or premium (as described below) from or in Thailand, is as set out below.

Non-resident Individual Holders

- **Interest**

Interest paid on the Notes to a non-resident individual holder will be subject to a withholding tax at the rate of 15% of the gross amount of the interest payment, unless the terms and conditions of applicable double taxation agreement between Thailand and the resident country of such non-resident individual holder provide otherwise.

- **Premium**

Any premium (being the amount received in excess of the interest and the principal amount paid in accordance with the terms of the Guarantee) paid to a non-resident individual holder will be subject to Thai withholding tax at the rate of 15% of the gross amount of the premium, unless the terms and conditions of applicable double taxation agreement between Thailand and the resident country of such non-resident individual holder provide otherwise.

Non-resident Corporate Holders

- **Interest**

Interest paid on the Notes to a non-resident corporate holder (including a Qualified Non-resident Corporate Holder) will be subject to a withholding tax at the rate of 15% of the gross amount of the interest payment, unless the terms and conditions of applicable double taxation agreement entered into between Thailand and the resident country of the non-resident corporate holder provide otherwise.

- **Premium**

Any premium (being the amount received in excess of the interest and the principal amount paid in accordance with the terms of the Guarantee) paid to a non-resident corporate holder (including a Qualified Non-resident Corporate Holder) will be subject to Thai withholding tax at the rate of 15% of the gross amount of the premium, unless the terms and conditions of applicable double taxation agreement between Thailand and the resident country of such non-resident corporate holder provide otherwise.

Double Taxation Agreement

As of the date of this Offering Memorandum, Thailand concluded double taxation agreements with 61 countries. The rate of withholding tax applicable to individual and corporate holders of the Notes, who are regarded as tax residents of the countries which are parties to the double taxation agreements and receive interest payments in respect of the Notes that are subject to withholding tax, may be reduced or exempted depending on the terms and conditions of the particular tax agreement.

Value Added Tax

Interest on the Notes and capital gains derived from the transfer of the Notes are not subject to value added tax in Thailand.

Specific Business Tax

Interest on the Notes and capital gains derived from the transfer of the Notes are not subject to specific business tax in Thailand. However, Thai specific business tax would apply at a rate which varies depending on the type of business and income if a person who receives the interest on the Notes and capital gains derived from the transfer of the Notes is a person carrying on a banking business or business similar to a commercial bank in Thailand.

Stamp Duty

Each Note certificate will be subject to a stamp duty of THB5.0 in Thailand. Stamp duty will be triggered when a Note certificate is issued in Thailand, or is brought into Thailand if issued outside Thailand. An instrument of transfer of the Notes is exempted from stamp duty in Thailand.

United States Federal Income Taxation

The following discussion is a summary of certain U.S. federal income tax consequences of the purchase, ownership and disposition of the Notes by a U.S. holder (defined below), but does not purport to be a complete analysis of all potential tax effects.

This summary is based upon the U.S. Internal Revenue Code of 1986, as amended (the “**Code**”), Treasury regulations issued thereunder and judicial and administrative interpretations thereof, each as of the date hereof, and all of which are subject to change, possibly with retroactive effect. There can be no assurance that the United States Internal Revenue Service (the “**IRS**”) will not take a different position concerning the tax consequences of the purchase, ownership or disposition of the Notes or that any such position would not be sustained. This discussion does not address the potential application of the Medicare contribution tax on net investment income, the effects of the U.S. federal estate and gift tax laws or any applicable non-U.S., state or local laws, other than U.S. Federal income tax law. This discussion does not address all of the U.S. federal income tax consequences that may be relevant to a U.S. holder in light of such U.S. holder’s particular circumstances or to U.S. holders subject to special rules, such as banks, insurance companies and other financial institutions, certain U.S. expatriates or former long-term residents of the United States, dealers in securities, traders in securities that elect mark-to-market tax accounting, partnerships or other pass-through entities or persons holding the Notes through such entities, U.S. holders whose functional currency is not the U.S. dollar, tax-exempt organizations, regulated investment companies, real estate investment trusts, persons subject to alternative minimum tax, persons required for U.S. federal income tax purposes to accelerate the recognition of any item of gross income with respect to the Notes as a result of such income being recognized on an applicable financial statement, persons holding the Notes as part of a “straddle,” “hedge,” “conversion transaction” or other integrated transaction, persons deemed to sell Notes under the “constructive sale” provisions of the Code. In addition, this discussion is limited to U.S. holders who purchase the Notes for cash at the price set forth in the applicable Pricing Supplement and who hold the Notes as capital assets (generally, property held for investment) for U.S. federal income tax purposes.

THIS SUMMARY IS NOT INTENDED TO CONSTITUTE A COMPLETE ANALYSIS OF ALL TAX CONSEQUENCES RELATING TO THE OWNERSHIP OF THE NOTES. PROSPECTIVE PURCHASERS OF THE NOTES SHOULD CONSULT THEIR OWN TAX ADVISORS CONCERNING THE TAX CONSEQUENCES OF THEIR PARTICULAR SITUATIONS.

For purposes of this discussion, a “U.S. holder” is a beneficial owner of a Note that is for U.S. federal income tax purposes: (i) an individual who is a citizen or resident of the United States; (ii) a corporation or any entity taxable as a corporation created or organized in or under the laws of the United States, any state thereof or the District of Columbia; (iii) an estate the income of which is subject to U.S. federal income taxation regardless of its source; or (iv) a trust if a court within the United States is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have the authority to control all substantial decisions of the trust or if it has validly elected to be treated as a “U.S. person” for U.S. federal income tax purposes.

If an entity or arrangement that is treated as a partnership for U.S. federal income tax purposes holds Notes, the tax treatment of a partner in the partnership will generally depend upon the status of the partner and the activities of the partnership. Such entities and arrangements should consult their own tax advisors regarding the tax consequences of their particular situations.

Characterization of the Notes

Unless otherwise indicated under the applicable Pricing Supplement, the Issuer intends, and each holder, by purchasing the Notes, agrees, to treat the Notes as indebtedness for U.S. federal income tax purposes. Prospective investors should consult their tax advisors concerning the U.S. federal income tax characterization of the Notes.

In addition, we are required to pay additional amounts with respect to Thai taxes withheld on interest payments made on the Notes, subject to certain exceptions and limitations. In addition, under certain circumstances, we may be obligated to pay amounts in excess of the principal and interest on the Notes. The following discussion assumes that the additional amounts each Issuer is required to pay will remain constant throughout the term of the Notes and that there is only a remote possibility that we will be required to pay different amounts. Based on such assumption, we believe that it is unlikely that the Notes will be treated as contingent payment debt instruments. However the IRS may not agree and may treat the Notes as contingent payment debt instruments. In such case, U.S. holders may be required to accrue interest at a rate higher than the yield to maturity and recognize ordinary income rather than capital gain upon a sale, exchange or redemption of the Notes. U.S. Holders should consult their tax advisors regarding the potential application of the contingent payment debt instrument rules to the Notes and the tax consequences thereof. Additionally, the following summary does not discuss Notes that are characterized as contingent payment debt instruments for U.S. federal income tax purposes. In the event the Company or the Treasury Center issues contingent payment debt instruments, the applicable Pricing Supplement may describe the material U.S. federal income tax consequences thereof.

Stated Interest and Original Issue Discount

Payments of stated interest on the Notes that constitutes “qualified stated interest” generally will be taxable to a U.S. holder as ordinary income at the time that such payments are received or accrued, in accordance with such U.S. holder’s method of accounting for U.S. federal income tax purposes. Stated interest payments on a Note that are unconditionally payable in cash at least annually at a single fixed rate or qualified floating rate would generally constitute “qualified stated interest.” A rate is a qualified floating rate if variations in the rate can reasonably be expected to measure contemporaneous fluctuations in the cost of newly borrowed funds in the currency in which the Note is denominated.

A Note will be treated as issued with OID if the excess of the Note’s “stated redemption price at maturity” over its issue price is greater than or equal to a *de minimis* amount (0.25% of the Note’s stated redemption price at maturity multiplied by the number of complete years to its maturity or, in the case of an installment obligation, the weighted average maturity date of the Note, as defined in the applicable Treasury Regulations). Generally, the issue price of a Note will be the first price at which a substantial amount of Notes included in the issue of which the Note is a part is sold for money to persons other than bond houses, brokers, or similar persons or organizations acting in the capacity of underwriters, placement agents, or wholesalers. The stated redemption price at maturity of a Note is the total of all payments provided by the Note that are not payments of qualified stated interest.

If Notes are treated as issued with OID, U.S. holders must generally include the OID in income as it accrues, using a constant-yield method before the receipt of cash attributable to the income, and generally will have to include in income increasingly greater amounts of OID over the life of the Notes. The amount of OID includible in income by a U.S. holder of a Note is the sum of the daily portions of OID with respect to the Note for each day during the taxable year or portion of the taxable year on which the U.S. holder holds the Note. The daily portion is determined by allocating to each day in any “accrual period” a pro rata portion of the OID allocable to that accrual period. Accrual periods with respect to a Note may be of any length and may vary in length over the term of the Note as long as (i) no accrual period is longer than one year and (ii)

each scheduled payment of interest or principal on the Note occurs on either the final or first day of an accrual period. The amount of OID allocable to an accrual period equals the excess of (a) the product of the Note's adjusted issue price at the beginning of the accrual period and the Note's yield to maturity (determined on the basis of compounding at the close of each accrual period and properly adjusted for the length of the accrual period) over (b) the sum of the payments of qualified stated interest on the Note allocable to the accrual period. The "adjusted issue price" of a Note at the beginning of any accrual period is the issue price of the Note increased by (x) the amount of accrued OID for each prior accrual period and decreased by (y) the amount of any payments previously made on the Note that were not qualified stated interest payments.

Interest payments on the Notes may be subject to Thai withholding taxes (see "*— Thai Taxation — Income Tax*"). Such Thai withholding taxes, if any, and any other non-U.S. tax withheld together with the gross amount of any additional amounts paid to a U.S. holder will also be included in such holder's income at the time such amount is received or accrued in accordance with such holder's method of accounting for U.S. federal income tax purposes. Any non-U.S. tax withheld on interest paid to a U.S. holder (taking into account any applicable income tax treaty) will, subject to limitations and conditions, be treated as foreign income tax eligible for credit against such holder's U.S. federal income tax liability or, at such holder's election, eligible for deduction in computing such holder's U.S. federal taxable income. To the extent the amount of such non-U.S. withholding tax is based on a withholding rate in excess of the rate otherwise applicable to a U.S. holder (taking into account any applicable income tax treaty), such excess amount may not be eligible as foreign income tax eligible for credit or deduction in computing such holder's U.S. federal income tax liability.

Interest income on a Note as well as any additional amounts and OID generally will constitute foreign source income and generally will be considered "passive category" income in computing the foreign tax credit allowable to U.S. holders under U.S. federal income tax laws. Alternatively, a U.S. Holder may take a deduction for Thai income tax if it does not elect to claim a foreign tax credit for any foreign taxes paid or accrued during the taxable year; however, there are substantial limitations to the deductibility of taxes for non-corporate U.S. Holders. The rules relating to the treatment of non-U.S. taxes imposed on a U.S. holder and foreign tax credits and deductions are complex, and U.S. holders should consult their tax advisors about the impact of these rules in their particular situations.

Sale, Exchange and Redemption of Notes

Generally, upon the sale, exchange or redemption of a Note, a U.S. holder will recognize taxable gain or loss equal to the difference between the amount realized on the sale, exchange or redemption (less any amount attributable to accrued but unpaid qualified stated interest, which will be treated like a payment of interest as described above) and such U.S. holder's tax basis in the Note. A U.S. holder's tax basis in a Note will generally equal the cost of the Note to such U.S. holder, increased by the amount of any OID included in the U.S. holder's income with respect to the Note and reduced by the amount of any payments that are not qualified stated interest payments. Such gain or loss generally will be capital gain or loss and will be long-term capital gain or loss if at the time of sale, exchange or redemption the Note has been held by such U.S. holder for more than one year. Such gain or loss will generally be U.S. source, subject to the potential applicability of the sourcing rules in the income tax treaty between the United States and Thailand. The deductibility of capital losses is subject to limitations. As described in "*— Thai Taxation,*" gain from the sale of a Note may be subject to Thai tax in certain circumstances. If gain from the sale of a Note is subject to Thai income tax, the U.S. Holder may not be able to benefit from the foreign tax credit for that Thai income tax (i.e., because the gain from the disposition would be U.S.-source), unless the U.S. Holder can apply the credit against U.S. federal income tax payable on other income from foreign sources. Alternatively, a U.S. Holder may take a deduction for Thai income tax if it does not elect to claim a foreign tax credit for any foreign taxes paid or accrued during the taxable year; however, there are substantial limitations to the deductibility of taxes for non-corporate U.S. Holders. The rules relating to the treatment of non-U.S. taxes imposed on a U.S. holder and foreign tax credits and deductions are complex, and U.S. holders should consult their tax advisors regarding the creditability of any such tax.

Foreign Currency Notes

The following discussion summarizes the principal U.S. federal income tax consequences to a U.S. Holder of the ownership and disposition of Notes that are denominated in a specified currency other than the U.S. dollar or the payments of interest or principal on which are determined by reference to a currency other than the U.S. dollar (“**foreign currency Notes**”).

The rules applicable to foreign currency Notes could require some or all gain or loss on the sale, exchange or other disposition of a foreign currency Notes to be recharacterized as ordinary income or loss. The rules applicable to foreign currency Notes are complex and may depend on the U.S. Holder’s particular U.S. federal income tax situation. For example, various elections are available under these rules, and whether a U.S. Holder should make any of these elections may depend on the U.S. Holder’s particular U.S. federal income tax situation. U.S. Holders are urged to consult their tax advisers regarding the U.S. federal income tax consequences of the ownership and disposition of foreign currency Notes.

A U.S. Holder who uses the cash method of accounting and who receives a payment of qualified stated interest in a foreign currency with respect to a foreign currency Note will be required to include in income the U.S. dollar value of the foreign currency payment (determined on the date the payment is received) regardless of whether the payment is in fact converted to U.S. dollars at the time, and this U.S. dollar value will be the U.S. Holder’s tax basis in the foreign currency.

An accrual method U.S. Holder will be required to include in income the U.S. dollar value of the amount of interest income that has accrued and is otherwise required to be taken into account with respect to a foreign currency Note during an accrual period. The U.S. dollar value of the accrued income will be determined by translating the income at the average rate of exchange for the accrual period or, with respect to an accrual period that spans two taxable years, at the average rate for the partial period within the taxable year. Such a U.S. Holder may elect to translate interest income into U.S. dollars at the spot rate on the last day in the interest accrual period (or, in the case of a partial accrual period, the spot rate on the last day of the partial accrual period in the taxable year) or, if the date of receipt is within five business days of the last day of the interest accrual period, the spot rate on the date of receipt. A U.S. Holder that makes this election must apply it consistently to all debt instruments from year to year and cannot change the election without the consent of the IRS. The U.S. Holder will recognize ordinary income or loss with respect to accrued interest income on the date the income is actually received. The amount of ordinary income or loss recognized will equal the difference between the U.S. dollar value of the foreign currency payment received (determined on the date the payment is received) in respect of the accrual period and the U.S. dollar value of interest income that has accrued during the accrual period (as determined above). Rules similar to these rules apply in the case of OID for both a cash method or accrual method taxpayer.

Upon the sale, exchange or retirement of a foreign currency Note, a U.S. Holder will recognize taxable U.S. source gain or loss equal to the difference between the U.S. dollar value amount of the amount realized on the sale, exchange or retirement and the U.S. Holder’s tax basis in the foreign currency Note. U.S. Holders should consult their tax advisors concerning how to determine the U.S. dollar value of the amount realized as well as their U.S. dollar basis in a foreign currency Note.

Gain or loss realized upon the sale, exchange or retirement of a foreign currency Note that is attributable to fluctuation in currency exchange rates will be ordinary income or loss that will not be treated as interest income or expense. Gain or loss attributable to fluctuations in exchange rates will equal the difference between (i) the U.S. dollar value of the nonfunctional currency purchase price of the Note, determined on the date the payment is received or the Note is disposed of, and (ii) the U.S. dollar value of the nonfunctional currency purchase price of the Note, determined on the date the U.S. Holder acquired the Note. Payments received attributable to accrued interest will be treated in accordance with the rules applicable to payments of interest on foreign currency Notes described above. Any foreign currency gain or loss will be recognized only to the extent of the total gain or loss realized by the U.S. Holder on the sale, exchange or retirement of the foreign currency Note. Any gain or loss realized by these U.S. Holders in excess of the foreign currency gain or loss will be capital gain or loss.

Occurrence of a Benchmark Phase-Out Event for Notes Linked to or Referencing Benchmarks

If there is a phase out of interest rate benchmarks used to determine the amounts payable under Floating Rate Notes (a “**Phase-Out Event**”), the tax treatment of a U.S. Holder holding Notes linked to or referencing such an interest rate benchmark will depend on whether a replacement of the relevant interest rate benchmark with a successor rate is treated as a “significant modification” that results in a deemed exchange of the existing Notes for “new” Notes. In general, for U.S. federal income tax purposes, a significant modification occurs if, based on all the facts and circumstances and taking into account all modifications of the debt instrument collectively, the legal rights or obligations that are altered and the degree to which they are altered are economically significant. A modification is generally any alteration, including any deletion or addition, in whole or in part, of a legal right or obligation of the issuer or a holder of a debt instrument. The applicable regulations provide, however, that alterations that occur as a result of the operation of the terms of the debt instrument are not considered modifications for U.S. federal income tax purposes. Recently released Proposed Treasury regulations describe circumstances under which a reference rate amendment (or related adjustments to the interest rate on the Notes) would not be treated as a deemed exchange and would not affect the calculation of OID, provided certain conditions are met. It cannot be determined at this time whether the final Treasury regulations on this issue will contain the same standards as the proposed Treasury regulations, however the preamble to the proposed Treasury regulations provides that taxpayers may rely on the proposed Treasury regulations prior to the issuance of the final Treasury regulations.

Although the matter is not entirely free from doubt, the Company intends to take the position that the occurrence of a Phase-Out Event should not constitute a modification of the terms of the Notes, and the U.S. Holders should not recognize any gain or loss for U.S. federal income tax purposes as a result of the occurrence of a Phase-Out Event. U.S. Holders should consult their tax advisors concerning the U.S. federal income tax consequences to them of the replacement of an interest rate benchmark with a successor rate upon the occurrence of a Phase-Out Event.

Backup Withholding and Information Reporting

Information returns may be filed with the IRS in connection with payments of principal and interest in respect of, and the proceeds from sales of, Notes held by a U.S. Holder unless the U.S. Holder establishes, if required, that it is exempt from the information reporting rules, for example by properly establishing that it is a corporation. If the U.S. Holder does not establish that it is exempt from these rules, the U.S. Holder may be subject to backup withholding on these payments if it fails to provide a taxpayer identification number or otherwise comply with the backup withholding rules. The amount of any backup withholding from a payment to a U.S. Holder will be allowed as a credit against the U.S. Holder’s U.S. federal income tax liability and may entitle the U.S. Holder to a refund, provided that the required information is timely furnished to the IRS.

U.S. Holders should consult their own tax advisers regarding any reporting or filing obligations they have as a result of their purchase, ownership or disposition of the Notes. Failure to comply with these reporting or filing obligations could result in the imposition of substantial penalties.

Singapore Taxation

The statements below are general in nature and are based on certain aspects of current tax laws in Singapore and administrative guidelines and circulars issued by Inland Revenue Authority of Singapore (the “IRAS”) and the Monetary Authority of Singapore (the “MAS”) in force as at the date of this Offering Memorandum and are subject to any changes in such laws, administrative guidelines or circulars, or the interpretation of those laws, guidelines or circulars, occurring after such date, which changes could be made on a retroactive basis. These laws, guidelines and circulars are also subject to various interpretations and no assurance can be given that the relevant tax authorities or the courts will agree with the explanations or conclusions set out below. Neither these statements nor any other statements in this Offering Memorandum are intended or are to be regarded as advice on the tax position of any holder of the Notes or of any person acquiring, selling or otherwise dealing with the Notes or on any tax implications arising from the acquisition, sale or other dealings in respect of the Notes. The statements made herein do not purport to be a comprehensive or exhaustive description of all the tax considerations that may be relevant to a decision to subscribe for, purchase, own or dispose of the Notes and do not purport to deal with the tax consequences applicable to all categories of investors, some of which (such as

dealers in securities or financial institutions in Singapore which have been granted the relevant Financial Sector Incentive(s)) may be subject to special rules or tax rates. The statements should not be regarded as advice on the tax position of any person and should be treated with appropriate caution. Holders and prospective holders of the Notes are advised to consult their own tax advisors as to the Singapore or other tax consequences of the acquisition, ownership of or disposal of the Notes, including, in particular, the effect of any foreign, state or local tax laws to which they are subject. It is emphasized that none of the Issuers, the Guarantor, the Arrangers, the Dealers and any other persons involved in the issue of the Notes accepts responsibility for any tax effects or liabilities resulting from the subscription for, purchase, holding or disposal of the Notes.

Qualifying Debt Securities Scheme

BNP Paribas is a Financial Sector Incentive (Standard Tier) Company, Citigroup Global Markets Singapore Pte. Ltd. is a Financial Sector Incentive (Standard Tier) Company, The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch is a Financial Sector Incentive (Standard Tier) Company and Standard Chartered Bank (Singapore) Limited is a Financial Sector Incentive (Standard Tier) Company for the purposes of the ITA. As the Program as a whole is arranged by BNP Paribas, Citigroup Global Markets Singapore Pte. Ltd., The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch and Standard Chartered Bank (Singapore) Limited, each of which is a Financial Sector Incentive (Bond Market) Company, a Financial Sector Incentive (Capital Market) Company or a Financial Sector Incentive (Standard Tier) Company for the purposes of the ITA, any tranche of the Notes (the “**Relevant Notes**”) which are debt securities issued under the Program from the date of this Offering Memorandum to December 31, 2023 would be qualifying debt securities for the purposes of the ITA, and subject to certain conditions having been fulfilled (including the furnishing of a return on debt securities to the MAS in respect of the Relevant Notes within such period as the MAS may specify and such other particulars in connection with the Relevant Notes as the MAS may require), interest, discount income (not including discount income arising from secondary trading), prepayment fee, redemption premium and break cost (collectively, the “**Qualifying Income**”) from the Relevant Notes derived by any company or body of persons (as defined in the ITA) in Singapore is subject to income tax at a concessionary rate of 10 per cent. (except for holders of the relevant Financial Sector Incentive(s) who may be taxed at different rates).

Where interest, discount income, prepayment fee, redemption premium or break cost is derived from any of the Relevant Notes by any person who (i) is not resident in Singapore and (ii) carries on any operations in Singapore through a permanent establishment in Singapore, the tax exemption available for qualifying debt securities (subject to certain conditions) under the ITA shall not apply if such person acquires such Relevant Notes using the funds and profits of such person’s operations through a permanent establishment in Singapore. Any person whose interest, discount income, prepayment fee, redemption premium or break cost derived from the Relevant Notes is not exempt from tax (including for the reasons described above) shall include such income in a return of income made under the ITA.

However, notwithstanding the foregoing:

- (A) if during the primary launch of the Relevant Notes, the Relevant Notes are issued to fewer than four persons and 50 per cent. or more of the issue of such Relevant Notes is beneficially held or funded, directly or indirectly, by related parties of the relevant Issuer, such Relevant Notes would not qualify as “qualifying debt securities”; and
- (B) even though the Relevant Notes are “qualifying debt securities,” if at any time during the tenure of such Relevant Notes, 50 per cent. or more of the issue of such Relevant Notes is held beneficially or funded, directly or indirectly, by any related party(ies) of the relevant Issuer, Qualifying Income derived from such Relevant Notes held by:
 - (i) any related party of the relevant Issuer; or
 - (ii) any other person where the funds used by such person to acquire such Relevant Notes are obtained, directly or indirectly, from any related party of the relevant Issuer,

shall not be eligible for concessionary rate of tax as described above.

The term “related party,” in relation to a person, means any other person who, directly or indirectly, controls that person, or is controlled, directly or indirectly, by that person, or where he and that other person, directly or indirectly, are under the control of a common person.

For the purposes of the ITA and this Singapore tax disclosure:

- (a) **break cost** means any fee payable by the issuer of the securities on the early redemption of the securities, the amount of which is determined by any loss or liability incurred by the holder of the securities in connection with such redemption;
- (b) **prepayment fee** means any fee payable by the issuer of the securities on the early redemption of the securities, the amount of which is determined by the terms of the issuance of the securities; and
- (c) **redemption premium** means any premium payable by the issuer of the securities on the redemption of the securities upon their maturity.

Gains on disposal of Notes

Any gains considered to be in the nature of capital made from the sale of the Notes will not be taxable in Singapore. However, any gains derived by any person from the sale of the Notes which are gains from any trade, business, profession or vocation carried on by that person, if accruing in or derived from Singapore, may be taxable as such gains are considered revenue in nature.

Holders of the Notes who apply or are required to apply Singapore Financial Reporting Standard 39 (“**FRS 39**”), Financial Reporting Standard 109 — Financial Instruments (“**FRS 109**”) or Singapore Financial Reporting Standard (International) 9 (Financial Instruments) (“**SFRS(I) 9**”) (as the case may be) may for Singapore income tax purposes be required to recognise gains or losses (not being gains or losses in the nature of capital) on the Notes, irrespective of disposal, in accordance with FRS 39, FRS 109 or SFRS(I) 9 (as the case may be). Please see the section below on “*Adoption of FRS 39, FRS 109 or SFRS(I) 9 Treatment for Singapore Income Tax Purposes.*”

Adoption of FRS 39, FRS 109 or SFRS(I) 9 Treatment for Singapore income tax purposes

Subject to certain “opt-out” provisions, Section 34A of the ITA requires taxpayers who adopt or are required to adopt FRS 39 for financial reporting purposes to calculate their profit, loss or expense for Singapore income tax purposes in respect of financial instruments in accordance with FRS 39, subject to certain exceptions provided in that section. The IRAS has also issued a circular entitled “Income Tax Implications Arising from the Adoption of FRS 39 — Financial Instruments: Recognition and Measurement” to provide guidance on the Singapore income tax treatment of financial instruments.

FRS 109 or SFRS(I) 9 (as the case may be) is mandatorily effective for annual periods beginning on or after January 1, 2018, replacing FRS 39. Section 34AA of the ITA requires taxpayers who adopt or who are required to adopt FRS 109 or SFRS(I) 9 for financial reporting purposes to calculate their profit, loss or expense for Singapore income tax purposes in respect of financial instruments in accordance with FRS 109 or SFRS(I) 9 (as the case may be), subject to certain exceptions provided in that section. The IRAS has also issued a circular entitled “Income Tax: Income Tax Treatment Arising from Adoption of FRS 109 — Financial Instruments.”

Holders of the Notes who may be subject to the tax treatment under the FRS 39 tax regime, FRS 109 tax regime or the SFRS(I) 9 tax regime should consult their own accounting and tax advisers regarding the Singapore income tax consequences of their acquisition, holding or disposal of the Notes.

Estate Duty

Singapore estate duty has been abolished with respect to all deaths occurring on or after February 15, 2008.

SUBSCRIPTION AND SALE

Summary of Dealer Agreement

The Dealers have, in a dealer agreement dated on or about the date of this Offering Memorandum (the “**Dealer Agreement**”), agreed with the Issuers and the Guarantor a basis upon which they or any of them may from time to time agree to severally, and not jointly, purchase Notes. Any such agreement will extend to those matters stated under “*Form of the Notes*” and “*Terms and Conditions of the Notes*.” The relevant Issuer will pay each relevant Dealer a commission as agreed between them in respect of Notes purchased by it. Where the relevant Issuer agrees to sell to the Dealer(s), who agree to purchase and pay for, or to procure purchasers to purchase and pay for, Notes at an issue price (the “**Issue Price**”), any subsequent offering of those Notes to investors may be at a price different from such Issue Price. The Issuers are responsible for the payment of certain of the expenses incurred in connection with the establishment, and maintenance of the Program and certain other activities in connection with the Program. The commissions in respect of an issue of Notes on a syndicated basis may be stated in the relevant Pricing Supplement.

The Issuers and the Guarantor have agreed to indemnify the Dealers against certain liabilities in connection with the offer and sale of the Notes. The Dealer Agreement entitles the Dealers to terminate any agreement that they make to purchase Notes in certain circumstances prior to payment for such Notes being made to the Issuer.

In connection with the issue of any Series of Notes, the Stabilizing Manager may over-allot Notes or effect transactions with a view to supporting the price of the Notes at a level higher than that which might otherwise prevail for a limited period after the issue date of the Notes. However, there is no obligation on such Stabilizing Manager(s) to do this. Such stabilizing, if commenced, may be discontinued at any time, and must be brought to an end after a limited period. Such stabilizing shall be in compliance with all applicable laws, regulations and rules.

In connection with each Series of Notes issued under the Program, the Dealers or certain of their affiliates may purchase Notes and be allocated Notes for asset management and/or proprietary purposes but not with a view to distribution. Further, each of the Dealers or their respective affiliates may purchase Notes for its or their own account and enter into transactions, including credit derivatives, such as asset swaps, repackaging and credit default swaps relating to such Notes and/or other securities of the Issuers, the Guarantor or their respective subsidiaries or affiliates at the same time as the offer and sale of each Series of Notes or in secondary market transactions. Such transactions would be carried out as bilateral trades with selected counterparties and separately from any existing sale or resale of the Series of Notes to which a particular Pricing Supplement relates (notwithstanding that such selected counterparties may also be purchasers of such Series of Notes).

The Dealers and their affiliates are full service financial institutions engaged in various activities which may include securities trading, commercial and investment banking, financial advice, investment management, principal investment, hedging, financing and brokerage activities. Each of the Dealers may have engaged in, and may in the future engage in, investment banking and other commercial dealings in the ordinary course of business with the Issuers, the Guarantor or their subsidiaries, joint ventures or associated companies from time to time. In the ordinary course of their various business activities, the Dealers and their affiliates may make or hold (on their own account, on behalf of clients or in their capacity of investment advisers) a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments and enter into other transactions, including credit derivatives (such as asset swaps, repackaging and credit default swaps) in relation thereto. Such transactions, investments and securities activities may involve securities and instruments of the Issuers, the Guarantor or their subsidiaries, joint ventures or associated companies, including Notes issued under the Program, may be entered into at the same time or proximate to offers and sales of Notes or at other times in the secondary market and be carried out with counterparties that are also purchasers, holders or sellers of Notes. Notes issued under the Program may be purchased by or be allocated to any Dealer or an affiliate for asset management and/or proprietary purposes but not with a view to distribution.

If a jurisdiction requires that the offering be made by a licensed broker or dealer and a Dealer or any affiliate of that Dealer is a licensed broker or dealer in that jurisdiction, the offering shall be deemed to be made by that Dealer or such affiliate on behalf of the relevant Issuer in such jurisdiction.

Selling Restrictions

United States of America

The Notes and the Guarantee have not been and will not be registered under the Securities Act and may not be offered or sold within the United States or to, or for the account or benefit of, U.S. persons (as defined in Regulation S) except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act. Furthermore, each of the Issuers and the Guarantor is not and will not be registered under Investment Company Act. Accordingly, the Notes are being offered and sold only (a) outside the United States to non-U.S. persons in offshore transactions in accordance with Regulation S, and (b) to persons who are both QIBs under Rule 144A and QPs under the Investment Company Act.

Compliance with United States securities laws

- (a) *Offers/sales only in accordance with Regulation S:* Each Dealer has represented, warranted and undertaken to the Issuers and the Guarantor, and each further dealer appointed under the program will be required to represent and agree, that in relation to each Tranche of Notes issued in reliance on Regulation S under the Securities Act:
- (i) the Notes and the Guarantee have been offered and sold, and will be offered and sold, at any time, as part of their distribution, only outside the United States to non-U.S. persons in offshore transactions in accordance with Rule 903 of Regulation S and, accordingly, each Dealer confirms that neither it nor any of its affiliates (including any person acting on behalf of a Dealer or any of its affiliates) has engaged or will engage in any directed selling efforts with respect to the Notes and the Guarantee; and
 - (ii) *Prescribed form of confirmation:* At or prior to confirmation of sale, each distributor, dealer or person receiving a selling concession, fee or other remuneration which purchases Notes from a Dealer will receive a confirmation or notice in substantially the following form: “The Notes covered hereby have not been and will not be registered under the United States Securities Act of 1933, as amended, (the “**Securities Act**”) and may not be offered or sold within the United States or to, or for the account or benefit of, U.S. persons (as defined in Regulation S), as part of their distribution at any time, except in pursuant to a valid exemption from registration in accordance with Rule 144A under the Securities Act to persons who are “qualified institutional buyers” within the meaning of Rule 144A under the Securities Act that are also “qualified purchasers” within the meaning of section 2(a)(51) of the Investment Company Act of 1940, as amended.”;
- (b) *Offers/sales in accordance with Rule 144A:* Each Dealer has represented, warranted and undertaken to the Issuers and the Guarantor, and each further dealer appointed under the program will be required to represent and agree, that in relation to each Tranche of Notes issued in reliance on Rule 144A under the Securities Act:
- (i) each Dealer may directly or through their respective affiliates arrange for the placing of Restricted Notes in the United States to persons who are both QIBs under Rule 144A under the Securities Act and QPs under the Investment Company Act and in accordance with the provisions of the Dealer Agreement, provided that each person to whom Restricted Notes are offered or sold is, or such Dealer reasonably believes each such person to be a QIB and a QP purchasing for its own account or for the account of a QIB and a QP and provided further that the aggregate principal amount of Restricted Notes sold by such Dealer to each qualified institutional buyer pursuant to this paragraph is not less than U.S.\$200,000 (or its equivalent in other currencies). In addition, the

affiliate through which the mandated Dealer arranges for the placing of Restricted Notes in the United States or (as the case may be) such other Dealer or its affiliate shall be a U.S. broker-dealer that is registered under the Exchange Act;

- (ii) neither of the Issuers nor the Guarantor have been, and they will not be, registered under the Investment Company Act, and investors will not be entitled to the benefits of the Investment Company Act.; and
- (iii) no Dealer nor any of its affiliates (including any person acting on behalf of such Dealer or any of its affiliates) has solicited or will solicit any offer to buy or offer to sell the Notes by any form of general solicitation or general advertising (as those terms are used in Rule 502(c) under the Securities Act) in the United States.

Interpretation

Terms used in the paragraph “Compliance with United States securities laws” have the meanings given to them by Regulation S under the Securities Act, unless otherwise defined.

Commodity- or currency-linked Notes

Each issuance of commodity- or currency-linked Notes shall be subject to additional U.S. selling restrictions.

Prohibition of Sales to EEA and UK Retail Investors

Unless the Pricing Supplement in respect of any Notes specifies the “Prohibition of Sales to EEA and UK Retail Investors” as “Not Applicable,” each Dealer has represented and agreed, and each further Dealer appointed under the Program will be required to represent and agree, that it has not offered, sold or otherwise made available and will not offer, sell or otherwise make available any Notes which are the subject of the offering contemplated by the Offering Memorandum as completed by the Pricing Supplement in relation thereto to any retail investor in the European Economic Area or in the United Kingdom. For the purposes of this provision:

- (i) the expression “retail investor” means a person who is one (or more) of:
 - (a) a retail client as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, “**MiFID II**”); or
 - (b) a customer within the meaning of Directive (EU) 2016/97 (the “**Insurance Distribution Directive**”), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or
 - (c) not a qualified investor as defined in Regulation (EU) 2017/1129 (the “**Prospectus Regulation**”); and
- (ii) the expression an “offer” includes the communication in any form and by any means of sufficient information on the terms of the offer and the Notes to be offered so as to enable an investor to decide to purchase or subscribe the Notes.

Public Offer Selling Restriction Under the Prospectus Regulation

If the Pricing Supplement in respect of any Notes specifies the “Prohibition of Sales to EEA and UK Retail Investors” as “Not Applicable,” in relation to each Member State of the European Economic Area and the United Kingdom (each, a “**Relevant State**”), each Dealer has represented and agreed, and each further Dealer appointed under the Program will be required to represent and agree, that it has not made and will not make an offer of Notes which are the subject of the offering contemplated by this Offering Memorandum as completed by the Pricing Supplement in relation thereto (or are the subject of the offering contemplated by a supplemental offering circular, as the case may be) to the public in that Relevant State except that it may make an offer of such Notes to the public in that Relevant State:

- (i) *Approved prospectus*: if the Pricing Supplement or supplemental offering circular in relation to the Notes specify that an offer of those Notes may be made other than pursuant to Article 1(4) of the Prospectus Regulation in that Relevant State (a “**Non-exempt Offer**”), following the date of publication of a prospectus in relation to such Notes which has been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, provided that any such prospectus which is not a supplemental offering circular has subsequently been completed by the Pricing Supplement contemplating such Non-exempt Offer, in accordance with the Prospectus Regulation, in the period beginning and ending on the dates specified in such prospectus or Pricing Supplement, as applicable and the Issuer has consented in writing to its use for the purpose of that Non-exempt Offer;
- (ii) *Qualified investors*: at any time to any legal entity which is a qualified investor as defined in the Prospectus Regulation;
- (iii) *Fewer than 150 offerees*: at any time to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Regulation) subject to obtaining the prior consent of the relevant Dealer or Dealers nominated by the Issuer for any such offer; or
- (iv) *Other exempt offers*: at any time in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of Notes referred to in (i) to (iii) above shall require the Issuer or any Dealer to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

For the purposes of this provision, the expression “offer of Notes to the public” in relation to any Notes in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and the Notes to be offered so as to enable an investor to decide to purchase or subscribe for the Notes and the expression “Prospectus Regulation” means Regulation (EU) 2017/1129.

United Kingdom

In relation to each Tranche of Notes, each Relevant Dealer has represented, warranted and undertaken to the Issuers, the Guarantor and each other Relevant Dealer (if any) that:

- (i) *No deposit-taking*: In relation to any Notes having a maturity of less than one year:
 - (a) it is a person whose ordinary activities involve it in acquiring, holding, managing or disposing of investments (as principal or agent) for the purposes of its business and:
 - (b) it has not offered or sold and will not offer or sell any Notes other than to persons:
 - (i) whose ordinary activities involve them in acquiring, holding, managing or disposing of investments (as principal or agent) for the purposes of their businesses; or
 - (ii) who it is reasonable to expect will acquire, hold, manage or dispose of investments (as principal or agent) for the purposes of their businesses,

where the issue of the Notes would otherwise constitute a contravention of Section 19 of the FSMA by the Issuers or the Guarantor.

- (ii) *Financial promotion*: It has only communicated or caused to be communicated and will only communicate or cause to be communicated any invitation or inducement to engage in investment activity (within the meaning of Section 21 of the FSMA) received by it in connection with the issue or sale of any Notes in circumstances in which Section 21(1) of the FSMA does not apply to the Issuers or the Guarantor.

- (iii) *General compliance*: It has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to any Notes in, from or otherwise involving the United Kingdom.

Hong Kong

In relation to each Tranche of Notes issued by an Issuer, each Dealer has represented and agreed that:

- (a) it has not offered or sold and will not offer or sell in Hong Kong, by means of any document, any Notes other than (i) to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong (the “SFO”) and any rules made under the SFO; or (ii) in other circumstances which do not result in the document being a “prospectus” as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32) of Hong Kong (the “C(WUMP)O”) or which do not constitute an offer to the public within the meaning of the C(WUMP)O; and
- (b) it has not issued or had in its possession for the purposes of issue, and will not issue or have in its possession for the purposes of issue, whether in Hong Kong or elsewhere, any advertisement, invitation or document relating to the Notes, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to Notes which are or are intended to be disposed of only to persons outside Hong Kong or only to “professional investors” as defined in the SFO and any rules made under the SFO.

Singapore

Each Dealer has acknowledged, and each further Dealer appointed under the Program will be required to acknowledge, that this Offering Memorandum has not been and will not be registered as a prospectus with the Monetary Authority of Singapore. Accordingly, each Dealer has represented, warranted and agreed, and each further Dealer appointed under the Program will be required to represent, warrant and agree, that it has not offered or sold any Notes or caused the Notes to be made the subject of an invitation for subscription or purchase and will not offer or sell any Notes or cause the Notes to be made the subject of an invitation for subscription or purchase, and has not circulated or distributed, nor will it circulate or distribute, this Offering Memorandum or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the Notes whether directly or indirectly, to any person in Singapore other than (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time (the “SFA”)) pursuant to Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the Notes are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- (a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities or securities-based derivatives contracts (each term as defined in Section 2(1) of the SFA) of that corporation or the beneficiaries’ rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the Notes pursuant to an offer made under Section 275 of the SFA except:

- (a) to an institutional investor or to a relevant person, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;
- (b) where no consideration is or will be given for the transfer;
- (c) where the transfer is by operation of law;
- (d) as specified in Section 276(7) of the SFA; or
- (e) as specified in Regulation 37A of the Securities and Futures (Offers of Investments) (Securities and Securities-based Derivatives Contracts) Regulations 2018.

Thailand

Each Dealer has represented, warranted and agreed that (i) it has not offered or sold and will not offer or sell in Thailand, whether directly or indirectly, any Notes; (ii) it has not made and will not make, whether directly or indirectly, any advertisement, invitation or document relating to the Notes in Thailand, and (iii) it has not circulated or distributed, nor will it circulate or distribute, this Offering Memorandum in relation to the Notes or any other documents or material in connection with the offering of the Notes, or invitation for subscription or purchase, of the Notes, whether directly or indirectly, to any persons in Thailand.

No invitation will be made to any person in Thailand to subscribe for any Notes. The Notes cannot be offered, sold or transferred, whether directly or indirectly, in Thailand.

Canada

The Notes may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the Notes must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this Offering Memorandum (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts (“NI 33-105”), the Arrangers and Dealers are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with the Issue.

General

Each Dealer has agreed or will agree that it will (to the best of its knowledge and belief) comply with all applicable securities laws and regulations in force in any jurisdiction in which it purchases, offers, sells or delivers Notes or possesses or distributes this Offering Memorandum and will obtain any consent, approval or permission required by it for the purchase, offer, sale or delivery by it of Notes under the laws and regulations in force in any jurisdiction to which it is subject or in which it makes such purchases, offers, sales or deliveries and neither the Company nor any other Dealer shall have any responsibility therefor. If a jurisdiction requires that the offering be made by a licensed broker or dealer and the Dealers or any affiliate of the Dealers is a licensed broker or dealer in that jurisdiction, the offering shall be deemed to be made by BNP Paribas, Citigroup Global Markets Singapore Pte. Ltd., The Hongkong and Shanghai Banking Corporation Limited, Singapore Branch and Standard Chartered Bank (Singapore) Limited or their eligible affiliates on behalf of the Company in such jurisdiction.

Neither the Company nor any of the Dealers represents that Notes may at any time lawfully be sold in compliance with any applicable registration or other requirements in any jurisdiction, or pursuant to any exemption available thereunder, or assumes any responsibility for facilitating such sale.

With regard to each Tranche, the Relevant Dealer(s) will be required to comply with such other additional restrictions as the Company and the Relevant Dealer(s) shall agree and as shall be set forth in the applicable Pricing Supplement.

Purchasers of Notes sold by the Dealers may be required to pay stamp taxes and other charges in accordance with the laws and practices of the country of purchase in addition to the offering price and accrued interest, if any.

Each Series or Tranche of Notes is a new issue of securities with no established trading market. Any one or more of the Dealers may make a market in the Notes, but are not obliged to do so and may discontinue any market-marking, if commenced, at any time without notice. No assurance can be given as to the liquidity of the trading markets for the Notes.

These selling restrictions may be modified by the agreement of each of the Issuers, the Guarantor and the Dealers following a change in a relevant law, regulation or directive. Any such modification will be set out in the relevant Pricing Supplement issued in respect of the issue of the Notes to which it relates or in a supplement to this Offering Memorandum.

TRANSFER RESTRICTIONS

Thailand

By accepting delivery of this Offering Memorandum and the Notes, the holders of the Notes will be deemed to have agreed for the benefit of the Issuers and the Guarantor that the Notes may not, either directly or indirectly, be resold, transferred or otherwise in Thailand.

United States

The Notes may not be offered or sold except (i) to persons who are both QIBs under Rule 144A and QPs under the Investment Company Act and (ii) outside the United States to non-U.S. persons in offshore transactions in reliance on Regulation S.

The Restricted Notes and the Unrestricted Notes will at all times be represented by separate Global Notes and have separate CUSIP numbers.

Regulation S Notes

Each purchaser of Unrestricted Notes and each subsequent purchaser of Unrestricted Notes will be deemed to have represented, agreed and acknowledged that:

- (i) it is, or at the time Notes are purchased will be, the beneficial owner of such Notes and:
 - (a) it is not a U.S. person and it is located outside the United States (within the meaning of Regulation S); and
 - (b) it is not an affiliate of the Issuers, the Guarantor or a person acting on behalf of such an affiliate;
- (ii) it understands that such Notes have not been and will not be registered under the Securities Act and that it will not offer, sell, pledge or otherwise transfer such Notes except:
 - (a) to non-U.S. persons in an offshore transaction in accordance with Rule 903 or Rule 904 of Regulation S; or
 - (b) to the Issuers or the Guarantor; or
 - (c) in the case of Unrestricted Notes only, in accordance with Rule 144A, to a person that it and any person acting on its behalf reasonably believe is both a QIB and a QP purchasing for its own account or the account of a person that is both a QIB and a QP,in each case in accordance with any applicable securities laws of any state of the United States; and
- (iii) it understand that if any person acquiring a Note (or any beneficial interest therein) is not either (A) a non-U.S. person outside the United States and purchasing the Notes in an offshore transaction in compliance with Regulation S under the Securities Act or (B) both a QIB and a QP (or fails to meet the other requirements set forth under the Indenture) at the time of acquiring the Notes, the Issuer may regard the transaction as null and void and of no effect. If the purchaser or any subsequent purchaser or transferee of a Note (or any beneficial interest therein) is determined not to have met either the foregoing Regulation S or the foregoing QIB and QP requirements (and the other requirements set forth in the Indenture) at the time it acquired such Notes (or such beneficial interest), the Issuer may compel such person to sell or transfer, as applicable, such Notes (or such beneficial interest) within ten days after notice of the sale requirement is given, to a person that is a non-U.S. person or is both a QIB and a QP (and, in each case, meets the other requirements as set forth in the indenture). If such holder (or beneficial owner) fails to effect the sale or transfer, as applicable, within such tenday period, the Issuer has the right, without further notice to such holder, to compel such holder to sell or transfer, as applicable, such Notes (or such beneficial

interest) to a purchaser selected by the Issuer who meets the requirements set forth in the indenture on such terms as the Issuer may choose. The Issuer may select the purchaser by soliciting one or more bids from one or more brokers or other market professionals that regularly deal in securities similar to the Notes, and selling such Notes to the highest such bidder. However, the Issuer may select a purchaser by any other means determined in its sole discretion;

- (iv) it understand that, at all times, transfers will continue to be subject to the transfer restrictions contained in the legend appearing on the face of such Global Note Certificate, as described below under “— *Rule 144A*;”
- (v) as a purchaser of Unrestricted Notes, it agrees and acknowledges that the Unrestricted Notes are contractually restricted, that a sale of the Regulation S Notes in reliance on Regulation S does not cause them to cease to be contractually restricted and that the Regulation S Notes will remain contractually restricted so long as they are outstanding; and
- (vi) it understands that the Issuers, the Guarantor, the Principal Paying Agent, the Registrar, the Dealers and their affiliates, and others will rely upon the truth and accuracy of the foregoing acknowledgements, representations and agreements.

Notes represented by an interest in an Unrestricted Global Note Certificate may be transferred to a person who wishes to hold such Notes in the form of an interest in a Restricted Global Note Certificate only upon receipt by the relevant Registrar of a written certification from the transferor to the effect that such transfer is being made to a person whom the transferor reasonably believes is a both QIB and a QP, in a transaction meeting the requirements of Rule 144A and in accordance with any applicable securities laws of any state of the United States.

Notes represented by an interest in a Restricted Global Note Certificate may also be transferred to a person who wishes to hold such Notes in the form of an interest in an Unrestricted Global Note Certificate, but only upon receipt by the Registrar of a written certification from the transferor to the effect that such transfer is being made in accordance with Regulation S under the Securities Act.

Any interest in a Note represented by an Unrestricted Global Note Certificate that is transferred to a person who takes delivery in the form of an interest in a Note represented by a Restricted Global Note Certificate will, upon transfer, cease to be an interest in a Note represented by an Unrestricted Global Note Certificate and become an interest in a Note represented by a Restricted Global Note Certificate and, accordingly, will thereafter be subject to all transfer restrictions and other procedures applicable to Notes represented by a Restricted Global Note Certificate.

Rule 144A

Each purchaser of Restricted Notes in reliance on Rule 144A, by accepting delivery of this Offering Memorandum, will be deemed to have represented, agreed and acknowledged as follows (terms used in the following paragraphs that are defined in Rule 144A have the respective meanings given to them in Rule 144A):

- (i) the purchaser (a) is both a QIB and a QP, (b) is acquiring the Notes for its own account or for the account of one or more persons who are both QIBs and QPs, (c) is not a broker-dealer that owns and invests on a discretionary basis less than U.S.\$25 million in securities of unaffiliated issuers; (e) is not a participant-directed employee plan, such as a 401(k) plan, or a trust fund as referred to in paragraph (a)(1)(i)(F) of Rule 144A that holds the assets of such a plan, and (f) is aware, and each beneficial owner of such Notes has been advised, that the sale of the Notes to it is being made in reliance on Rule 144A;
- (ii) the purchaser is not (x) a partnership, common trust fund, special trust, pension fund or retirement plan or other entity in which the partners, beneficiaries, security owners or participants, as the case may be, may designate the particular investments to be made or the allocation thereof, unless each such partner, beneficiary, security owner or participant empowered alone or with other partners or participants to make such decisions is both a

qualified institutional buyer and a qualified purchaser, (y) an entity that has invested more than 40% of its assets in securities of the Issuer, giving effect to the amount invested in collection with its acquisition of the Notes or a beneficial interest therein, or (z) an entity that was formed or is operated for the specific purpose of purchasing the Notes or investing in the Issuer, unless, in each case, each beneficial owner of its securities is both a QIB and a QP;

- (iii) the purchaser understands that (1) the Notes have not been and will not be registered under the Securities Act and may not be offered, sold, pledged or otherwise transferred except (a) in accordance with Rule 144A to a person that it, and any person acting on its behalf, reasonably believes is both a QIB and a QP purchasing for its own account or for the account of one or more persons who are both QIBs and QPs, (b) to a non U.S. person and are outside the United States in an offshore transaction in accordance with Rule 903 or Rule 904 of Regulation S under the Securities Act, or (c) to the Issuers, the Guarantor or any of their affiliates, in each case in accordance with any applicable securities laws of any state of the United States and (2) it will, and each subsequent holder of the Restricted Notes is required to, notify any purchaser of the Restricted Notes from it of the resale restrictions applicable to the Restricted Notes;
- (iv) the purchaser acknowledges that the Issuer may receive a list of participants holding positions in its securities from one or more book entry depositories;
- (v) the purchaser either (x) is not an entity organized prior to April 30, 1996 that is excepted from the Investment Company Act pursuant to Section 3(c)(1) or 3(c)(7) thereof or (y) has received the consent of the beneficial owners of its securities with respect to its treatment as a QP in the manner required by Section 2(a)(51)(C) of the Investment Company Act and the rules thereunder;
- (vi) it understand that if any person acquiring a Note (or any beneficial interest therein) is not either (A) a non-U.S. person outside the United States and purchasing the Notes in an offshore transaction in compliance with Regulation S under the Securities Act or (B) both a QIB and a QP (or fails to meet the other requirements set forth under the Indenture) at the time of acquiring the Notes, the Issuer may regard the transaction as null and void and of no effect. If the purchaser or any subsequent purchaser or transferee of a Note (or any beneficial interest therein) is determined not to have met either the foregoing Regulation S or the foregoing QIB and QP requirements (and the other requirements set forth in the Indenture) at the time it acquired such Notes (or such beneficial interest), the Issuer may compel such person to sell or transfer, as applicable, such Notes (or such beneficial interest) within ten days after notice of the sale requirement is given, to a person that is a non-U.S. person or is both a QIB and a QP (and, in each case, meets the other requirements as set forth in the indenture). If such holder (or beneficial owner) fails to effect the sale or transfer, as applicable, within such tenday period, the Issuer has the right, without further notice to such holder, to compel such holder to sell or transfer, as applicable, such Notes (or such beneficial interest) to a purchaser selected by the Issuer who meets the requirements set forth in the indenture on such terms as the Issuer may choose. The Issuer may select the purchaser by soliciting one or more bids from one or more brokers or other market professionals that regularly deal in securities similar to the Notes, and selling such Notes to the highest such bidder. However, the Issuer may select a purchaser by any other means determined in its sole discretion;
- (vii) the purchaser represents that no portion of the assets used by such purchaser or holder to purchase or hold the Notes or any interest therein constitutes assets of any (a) employee benefit plan subject to Title I of the U.S. Employee Retirement Income Security Act of 1974, as amended (“ERISA”), (b) plan, account or other arrangement that is subject to Section 4975 of the U.S. Internal Revenue Code of 1986, as amended (the “Code”), or (c) entity whose underlying assets are considered to include “plan assets” of any such plan, account or arrangement;

- (viii) the purchaser understands that the Restricted Global Note Certificate and any restricted Individual Note Certificate (a “Restricted Individual Note Certificate”) will bear a legend to the following effect, unless the relevant Issuer determines otherwise in accordance with applicable law, and that the legend will not be removed so long as the Issuer continues to rely on Section 3(c)(7) under the Investment Company Act:

THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER THE UNITED STATES SECURITIES ACT OF 1933, AS AMENDED (THE “**SECURITIES ACT**”) OR ANY SECURITIES LAW OF ANY STATE OF THE UNITED STATES, AND EACH OF THE ISSUER AND THE GUARANTOR HAS NOT BEEN REGISTERED AND DOES NOT INTEND TO REGISTER AS AN INVESTMENT COMPANY UNDER THE UNITED STATES INVESTMENT COMPANY ACT OF 1940, AS AMENDED (THE “**INVESTMENT COMPANY ACT**”) AND MAY RELY ON THE EXCLUSION FROM THE DEFINITION OF INVESTMENT COMPANY PROVIDED BY SECTION 3(C)(7) OF THE INVESTMENT COMPANY ACT.

THE HOLDER HEREOF, BY PURCHASING THE SECURITIES REPRESENTED HEREBY, AGREES FOR THE BENEFIT OF THE ISSUER [AND THE GUARANTOR] THAT:

- (1) THE SECURITIES REPRESENTED HEREBY MAY BE REOFFERED, RESOLD, PLEDGED OR OTHERWISE TRANSFERRED ONLY IN COMPLIANCE WITH THE SECURITIES ACT AND OTHER APPLICABLE LAWS AND ONLY (A) TO A PERSON THAT THE HOLDER REASONABLY BELIEVES IS BOTH A “QUALIFIED INSTITUTIONAL BUYER” WITHIN THE MEANING OF RULE 144A AND A “QUALIFIED PURCHASER” AS DEFINED IN SECTION 2(A)(51) OF THE INVESTMENT COMPANY ACT (“**QUALIFIED PURCHASER**”) PURCHASING FOR ITS OWN ACCOUNT OR A PERSON PURCHASING FOR THE ACCOUNT OF A PERSON WHO IS BOTH A QUALIFIED INSTITUTIONAL BUYER AND A QUALIFIED PURCHASER WHOM THE HOLDER HAS INFORMED, IN EACH CASE, THAT THE REOFFER, RESALE, PLEDGE OR OTHER TRANSFER IS BEING MADE IN RELIANCE ON RULE 144A AND SHALL BE MADE TO A QUALIFIED PURCHASER, (B) TO A NON-U.S. PERSON OUTSIDE THE UNITED STATES IN AN OFFSHORE TRANSACTION IN ACCORDANCE WITH RULE 903 OR 904 OF REGULATIONS UNDER THE SECURITIES ACT, OR (3) TO THE ISSUER, [THE GUARANTOR] OR [ITS/THEIR] AFFILIATES.
- (2) AGREES THAT IT WILL DELIVER TO EACH PERSON TO WHOM THIS SECURITY IS TRANSFERRED A NOTICE SUBSTANTIALLY TO THE EFFECT OF THIS RESTRICTIVE LEGEND. THIS LEGEND WILL ONLY BE REMOVED WITH CONSENT OF THE ISSUER, AND WILL NOT BE REMOVED SO LONG AS THE ISSUER CONTINUES TO RELY ON SECTION 3(C)(7) UNDER THE INVESTMENT COMPANY ACT;
- (3) REPRESENTS THAT IT IS (A) A NON-U.S. PERSON OUTSIDE THE UNITED STATES AND IS PURCHASING THE NOTES IN AN OFFSHORE TRANSACTION IN COMPLIANCE WITH REGULATIONS OR (B) NOT (i) A BROKER-DEALER THAT OWNS AND INVESTS ON A DISCRETIONARY BASIS LESS THAN \$25 MILLION IN SECURITIES OF UNAFFILIATED ISSUERS OR (ii) A PARTICIPANT-DIRECTED EMPLOYEE PLAN, SUCH AS A 401(K) PLAN, OR A TRUST FUND AS REFERRED TO IN PARAGRAPH (A)(1)(I)(F) OF RULE 144A THAT HOLDS THE ASSETS OF SUCH A PLAN;
- (4) REPRESENTS THAT IT IS (A) A NON-U.S. PERSON OUTSIDE THE UNITED STATES AND IS PURCHASING THE NOTES IN AN OFFSHORE TRANSACTION IN COMPLIANCE WITH REGULATIONS OR (B) NOT (X) A PARTNERSHIP, COMMON TRUST FUND, SPECIAL TRUST, PENSION FUND OR RETIREMENT PLAN OR OTHER ENTITY IN WHICH THE PARTNERS, BENEFICIARIES, SECURITY OWNERS OR PARTICIPANTS, AS THE CASE MAY BE, MAY DESIGNATE THE PARTICULAR INVESTMENTS TO BE MADE OR THE ALLOCATION THEREOF, UNLESS EACH SUCH PARTNER, BENEFICIARY,

SECURITY OWNER OR PARTICIPANT EMPOWERED ALONE OR WITH OTHER PARTNERS OR PARTICIPANTS TO MAKE SUCH DECISIONS IS BOTH A QUALIFIED INSTITUTIONAL BUYER AND A QUALIFIED PURCHASER, (Y) AN ENTITY THAT HAS INVESTED MORE THAN 40% OF ITS ASSETS IN SECURITIES OF THE ISSUER, GIVING EFFECT TO THE AMOUNT INVESTED IN CONNECTION WITH ITS ACQUISITION OF THE NOTES OR A BENEFICIAL INTEREST THEREIN, OR (Z) AN ENTITY THAT WAS FORMED OR IS OPERATED FOR THE SPECIFIC PURPOSE OF PURCHASING THE NOTES OR INVESTING IN THE ISSUER, UNLESS, IN EACH CASE, EACH BENEFICIAL OWNER OF ITS SECURITIES IS BOTH A QUALIFIED INSTITUTIONAL BUYER AND A QUALIFIED PURCHASER;

- (5) UNDERSTANDS THAT THE ISSUER MAY RECEIVE A LIST OF PARTICIPANTS HOLDING POSITIONS IN ITS SECURITIES FROM ONE OR MORE BOOK ENTRY DEPOSITORIES;
- (6) REPRESENTS THAT IT (1) IS A NON-U.S. PERSON OUTSIDE THE UNITED STATES AND IS PURCHASING THE NOTES IN AN OFFSHORE TRANSACTION IN COMPLIANCE WITH REGULATION S OR (2) EITHER (X) IS NOT AN ENTITY ORGANIZED PRIOR TO APRIL 30, 1996 THAT IS EXCEPTED FROM THE INVESTMENT COMPANY ACT PURSUANT TO SECTION 3(C)(1) OR 3(C)(7) THEREOF OR (Y) HAS RECEIVED THE CONSENT OF THE BENEFICIAL OWNERS OF ITS SECURITIES WITH RESPECT TO ITS TREATMENT AS A "QUALIFIED PURCHASER" IN THE MANNER REQUIRED BY SECTION 2(A)(51)(C) OF THE INVESTMENT COMPANY ACT AND THE RULES THEREUNDER; AND
- (7) UNDERSTANDS THAT IF ANY PERSON ACQUIRING A NOTE (OR ANY BENEFICIAL INTEREST THEREIN) IS NOT (A) A NON-U.S. PERSON OUTSIDE THE UNITED STATES AND PURCHASING THE NOTES IN AN OFFSHORE TRANSACTION IN COMPLIANCE WITH REGULATION S UNDER THE SECURITIES ACT OR (B) BOTH A QUALIFIED INSTITUTIONAL BUYER AND A QUALIFIED PURCHASER (OR FAILS TO MEET THE OTHER REQUIREMENTS SET FORTH UNDER THE INDENTURE) AT THE TIME OF ACQUISITION THEREOF, THE ISSUER MAY REGARD THE TRANSACTION AS NULL AND VOID AND OF NO EFFECT. IF THE PURCHASER OR ANY SUBSEQUENT PURCHASER OR TRANSFEREE OF A NOTE (OR ANY BENEFICIAL INTEREST THEREIN) IS DETERMINED NOT TO HAVE MET EITHER THE FOREGOING REGULATION S REQUIREMENT OR THE FOREGOING QUALIFIED INSTITUTIONAL BUYER AND QUALIFIED PURCHASER REQUIREMENTS (AND, IN EACH CASE, THE OTHER REQUIREMENTS SET FORTH IN THE INDENTURE) AT THE TIME IT ACQUIRED SUCH NOTES (OR SUCH BENEFICIAL INTEREST), THE ISSUER MAY COMPEL SUCH PERSON TO SELL OR TRANSFER, AS APPLICABLE, SUCH NOTES (OR SUCH BENEFICIAL INTEREST) WITHIN TEN DAYS AFTER NOTICE OF THE SALE REQUIREMENT IS GIVEN, TO A PERSON THAT IS EITHER A NON-U.S. PERSON OR A QUALIFIED INSTITUTIONAL BUYER AND A QUALIFIED PURCHASER (AND, IN EACH CASE, MEETS THE OTHER REQUIREMENTS AS SET FORTH IN THE INDENTURE). IF SUCH HOLDER (OR BENEFICIAL OWNER) FAILS TO EFFECT THE SALE OR TRANSFER, AS APPLICABLE, WITHIN SUCH TEN-DAY PERIOD, THE ISSUER HAS THE RIGHT, WITHOUT FURTHER NOTICE TO SUCH HOLDER, TO COMPEL SUCH HOLDER TO SELL OR TRANSFER, AS APPLICABLE, SUCH NOTES (OR SUCH BENEFICIAL INTEREST) TO A PURCHASER SELECTED BY THE ISSUER WHO MEETS THE REQUIREMENTS SET FORTH IN THE INDENTURE ON SUCH TERMS AS THE ISSUER MAY CHOOSE. THE ISSUER MAY SELECT THE PURCHASER BY SOLICITING ONE OR MORE BIDS FROM ONE OR MORE BROKERS OR OTHER MARKET PROFESSIONALS THAT REGULARLY DEAL IN SECURITIES SIMILAR TO THE NOTES, AND SELLING SUCH NOTES TO THE HIGHEST SUCH BIDDER. HOWEVER, THE ISSUER MAY SELECT A PURCHASER BY ANY OTHER MEANS DETERMINED IN ITS SOLE DISCRETION.

- (ix) if it is acquiring any Notes for the account of one or more persons who is a QIB and a QP, the purchaser represents that it has sole investment discretion with respect to each such account and that it has full power to make the foregoing acknowledgements, representations and agreements on behalf of each such account; and
- (x) the purchaser understands that the Issuers, the Guarantor, the relevant Transfer Agent, the Dealers and their affiliates, and others will rely upon the truth and accuracy of the foregoing acknowledgements, representations and agreements.

Upon the transfer, exchange or replacement of a Restricted Global Note Certificate or a Restricted Individual Note Certificate, or upon specific request for removal of the legend, the relevant Issuer will deliver only a Restricted Global Note Certificate or one or more Restricted Individual Note Certificates that bear such legend or will refuse to remove such legend, unless there is delivered to the relevant Issuer, (in respect of each Series of Guaranteed Notes) the Guarantor, and the relevant Registrar such satisfactory evidence (which may include a legal opinion) as may reasonably be required by the relevant Issuer or (in respect of each Series of Guaranteed Notes) the Guarantor, that neither the legend nor the restrictions on transfer set forth therein are required to ensure compliance with the provisions of the Securities Act or the U.S. Investment Company Act.

Any interest in a Restricted Global Note Certificate that is transferred to a person who takes delivery in the form of an interest in an Unrestricted Global Note Certificate will, upon transfer, cease to be an interest in a Restricted Global Note Certificate and become an interest in an Unrestricted Global Note Certificate and, accordingly, will thereafter be subject to all transfer restrictions and other procedures applicable to an interest in an Unrestricted Global Note Certificate.

Prospective purchasers are hereby notified that sellers of the Restricted Notes may be relying on the exemption from the provisions of Section 5 of the Securities Act provided by Rule 144A.

SUMMARY OF PRINCIPAL DIFFERENCES BETWEEN TFRS AND IFRS

A summary of certain significant differences between TFRS and IFRS which are relevant to our financial statements is provided below. The differences identified below are limited to those significant differences that are appropriate to our financial statements for the years ended December 31, 2017, 2018 and 2019 and to our financial information for the three-month ended March 31, 2019 and 2020, included elsewhere in this Offering Memorandum. However, they should not be construed as being exhaustive. The International Accounting Standard Board (“IASB”) and the Federation of Accounting Professions in Thailand (“TFAC”) have issued new pronouncements that may impact subsequent periods and have on-going projects that could significantly affect the summary of differences between TFRS and IFRS described below. Accordingly, no attempt has been made to identify differences between TFRS and IFRS as a result of prescribed changes in accounting standards in the future or to identify all future differences that may affect our financial statements as a result of transactions or events that may occur in the future. Furthermore, no attempt has been made in this summary to identify disclosures, presentation, or classification differences that would affect the manners in which transaction and events are reflected in the financial statements or the respective note thereto.

TFRS and accounting interpretations are issued by the TFAC and endorsed by the Supervisory Board on Audit Profession of the Business Development Department, the Ministry of Commerce of Thailand. These standards and interpretations are endorsed by the Government gazette and supplemented by the requirements of the SET and the Thai SEC, as well as the announcements of the TFAC.

Our audited financial statements for the years ended December 31, 2017, 2018 and 2019 have been prepared without the adoption of (i) a set of financial reporting standards related to financial instruments (i.e., TAS 32 Financial Instruments: Presentation, TFRS 7 Financial Instruments: Disclosures, TFRS 9, Financial Instruments, TFRIC 16 Hedges of a Net Investment in a Foreign Operation, TFRIC 19 Extinguishing Financial Liabilities with Equity Instruments, collectively the “**New Financial Instrument Standards**”) and (ii) TFRS 16 Leases (the “**New Lease Standard**”) since they were not effective yet. When the new financial instrument and lease standards become effective on January 1, 2020, we adopted these financial reporting standards using the modified retrospective method of initial adoption of which the cumulative effect is recognized as an adjustment to the retained earnings and related other component of equity as at January 1, 2020, and the comparative information was not restated. Therefore, there is no difference between TFRS and IFRS for our financial information for the three-month ended March 31, 2020.

In making an investment decision, investors must rely on their own examination of our business, financial condition and results of operations, the terms of the relevant offering and our financial information. Potential investors should consult their own professional advisors for an understanding of the differences between TFRS and IFRS and how these differences might affect the financial information in this Offering Memorandum. Significant differences between TFRS and IFRS as applicable to our audited financial statements for the years ended December 31, 2017, 2018 and 2019 and for the three-month period ended March 31, 2019 are as follows:

Financial Instruments: Recognition and Measurement

While there was no one single TAS covering accounting for all types of financial instruments similar to IFRS, there were a number of TAS standards which provided guidance on accounting for financial instruments such as TAS 105 Accounting for Investment in Debt and Equity Securities and TAS 101 Doubtful Accounts and Bad Debts.

IFRS 9 *Financial Instruments* provides extensive guidance on the recognition and measurement of financial instruments, including the classification of financial assets and liabilities, accounting for derivatives, hedging activities and impairment.

Classification of Financial Assets and Liabilities

Under TAS 105, investments are classified into the following four categories: (1) held-for-trade investments; (2) held-to-maturity investments; (3) available-for-sale investments; and (4) general investments. The classification is dependent on the purpose for which the investments were acquired. Investment in a marketable equity security is classified as an available-for-sale investment if it is not held for trading purposes. An available-for-sale investment is carried at fair value through other comprehensive income while held-to maturity investments are carried at amortized cost. An investment in non-marketable equity security is classified as general investment and is carried at cost less impairment loss.

IFRS 9 contains three principal classification categories for financial assets — i.e. measured at: amortized cost, fair value through other comprehensive income and fair value through profit or loss. The classification depends on the objective of the business model within which the financial asset is held. Financial liabilities are either classified into financial liabilities at fair value through profit or loss or financial liabilities carried at amortized cost. Subsequent measurement depends on their respective categories.

On recognition of a financial asset for debt instrument, IFRS 9 requires an assessment of its underlying terms to establish if these constitute solely payments of principal and interest, the “**SPPI test**.” If the asset does not pass this test it is mandatorily classified at fair value through profit or loss. No such assessment is required under TFRS.

Derivative Financial Instruments and Hedge Accounting

We enter into derivative contracts to manage our exposure from fluctuation of interest rate, foreign exchange rate and commodity price. There was no specific guidance under TFRS for accounting for derivatives or embedded derivatives. We did not recognize derivatives on the balance sheet at fair value. We recognized realized derivative gain or loss upon settlement, and disclosed details of outstanding derivatives together with their fair value in the notes to financial statements.

No assessment of embedded derivative is made by us. Under IFRS 9, any embedded derivatives identified in financial assets would need to be considered in the context of the SPPI test referred to under the classification section above. In the case of liabilities, any embedded derivatives would need to be either (a) bifurcated from the host contract and recognized separately at fair value through profit or loss, or (b) not bifurcated, but with the whole financial liability being recorded at fair value through profit or loss. Under IFRS, derivative financial instruments are required to be recognized at fair value. Changes to fair value are recognized through profit and loss. If hedge accounting is elected and the specific criteria of IFRS 9 are met, volatility in profit and loss is minimized. If a hedge is designated as a fair value hedge, changes in the derivative’s fair value are recorded in profit and loss and the hedged item is adjusted for changes in fair value associated with the hedged risk. If designated as a cash flow hedge, the effective portion of the hedge is recorded in equity as a component of other comprehensive income, and released from other comprehensive income into earnings as the hedged item affects earnings. All ineffectiveness in the hedging relationship, as well as derivative instruments not qualifying for hedge accounting, is reflected in the statement of income immediately.

Effective Interest Method and Impairment

IFRS 9 requires loans to be initially recognized at fair value net of transaction costs. Unless designated as at fair value through profit or loss, the loans are subsequently carried at amortized cost using the effective interest method.

IFRS 9 requires that financial assets that are not measured at fair value through profit and loss, including loans, lease and trade receivables and debt securities are considered for impairment based on an “expected credit loss” model. The model uses a dual measurement approach, under which the loss allowance is measured as either the twelve month expected credit losses or the lifetime expected credit losses. The measurement basis generally depends on whether there has been a significant increase in credit risk since initial recognition.

Financial Instruments: Presentation and Disclosure

TFRS required disclosing significant transactions related to financial instruments by TAS 107, “Financial Instruments: Presentation and Disclosure” (“**TAS 107**”) but not extensive as those required by IFRS 7 *Financial Instruments: Disclosures*. IFRS 7 requires that the entity disclose qualitative and quantitative information about exposure to risks arising from financial instruments, including specified minimum disclosures about credit risk, liquidity risk and market risk. The qualitative disclosures describe management’s objectives, policies and processes for managing those risks. The quantitative disclosures provide information about the extent to which the entity is exposed to risk, based on information provided internally to the entity’s key management personnel. Together, these disclosures provide an overview of the entity’s use of financial instruments and the exposures to risks they create.

Lease

TAS 17 required the lessee to recognize payments made under operating leases in profit or loss on a straight-line basis over the term of the lease, and recognize payments made under finance leases as lease assets and lease liabilities.

IFRS 16 introduces a single lessee accounting model, which required the lessee to recognize a lease liability as well as an asset (right of use of the leased asset) on the balance sheet. It also contains an exception to recognize asset and liability on the balance sheet for short-term leases and leases for which the underlying asset is of low value. As a result, the nature of expenses related to those leases has changed because the lessee would recognize depreciation of right-of-use assets and interest expense on lease.

GENERAL INFORMATION

1. The Company is a public company with limited liability incorporated under the laws of Thailand, having its registered address at 555 Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900, Thailand and its Legal Entity Identifier is 549300QOGMPTKB6W7G56.
2. The Treasury Center is a private company with limited liability incorporated under the laws of Thailand, having its registered address at 555/2 Energy Complex, Building B, 14th Floor, Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900, Thailand and its Legal Entity Identifier is 254900FBQLIN5XACCX50.
3. The establishment of the Program and the issue of the Notes have been duly authorized by resolutions of the Company's board of directors' meeting held on December 22, 2017 and resolution of shareholders' meeting held on April 12, 2018 and resolutions of the Treasury Center's board of directors' meeting held on April 20, 2020 and June 15, 2020. The guarantee of the Notes has been authorized by resolutions of the Company's board of directors' meeting held on February 20, 2018 and May 16, 2019.
4. Copies of the following documents, all of which are published in English, may be inspected at the specified office of the Principal Paying Agent set out at the end of this Offering Memorandum during normal business hours (being between 9:00 a.m. and 3:00 p.m. (London Time)) on any weekday (Saturdays and Public Holidays excepted) following prior written notice and proof of holding and identity satisfactory to the Principal Paying Agent:
 - (i) the Dealer Agreement;
 - (ii) the Indenture;
 - (iii) each Pricing Supplement in respect of Notes; and
 - (iv) a copy of this Offering Memorandum or any further offering memorandum and any supplementary offering memorandum.

The Dealer Agreement, our latest audited financial statements and our latest unaudited interim financial statements, and a copy of this Offering Memorandum or any further offering memorandum and any supplementary offering memorandum, are also displayed at the registered office of the Issuer.

5. Approval in-principle has been received from the SGX-ST for the establishment of the Program and the application will be made to the SGX-ST for permission to deal in and for the listing and quotation of any Notes that may be issued pursuant to the Program and which are agreed at or prior to the time of issue thereof to be so listed on the SGX-ST. Such permission will be granted when such Notes have been admitted to the Official List of the SGX-ST. The relevant Pricing Supplement in respect of any Series of Notes will specify whether or not such Notes will be listed on the SGX-ST (or any other stock exchange). Any Notes listed on the SGX-ST will be traded in a minimum board lot size of S\$200,000 (or its equivalent in foreign currencies) for as long as any of the Notes remain listed on the SGX-ST. There is no assurance that an application to the SGX-ST for the listing of the Notes of any Series will be approved. Admission to the Official List of the SGX-ST and quotation of any Notes on the SGX-ST is not to be taken as an indication of the merits of the Issuers, the Guarantor, their respective subsidiary companies (if any), their respective associated companies (if any) or such Notes. The SGX-ST assumes no responsibility for the correctness of any of the statements made, opinions expressed or reports contained herein.

LEGAL MATTERS

Certain matters in connection with this offering as to New York law and U.S. federal law will be passed upon for us by Allen & Overy (Asia) Pte. Ltd., and for the Arrangers and Dealers by Clifford Chance Pte. Ltd. Certain matters in connection with this offering as to Thai law will be passed upon for us by Allen & Overy (Thailand) Co., Ltd., and for the Arrangers and Dealers by Weerawong, Chinnavat & Partners Ltd.

INDEPENDENT AUDITORS

The consolidated and separate financial statements of the Company for the year ended December 31, 2017, 2018 and 2019 and the unaudited interim consolidated and separate financial statements of the Company for the three-month period ended March 31, 2019 included in this Offering Memorandum have been audited or reviewed by the State Audit Office of the Kingdom of Thailand in accordance with State Audit Standards and Thai Standards on Auditing established by the State Audit Commission and the Thailand Federation of Accounting Professions, respectively, as stated in their audit and review report appearing herein.

The unaudited interim consolidated and separate financial statements of the Company for the three-month period ended March 31, 2020 included in this Offering Memorandum have been reviewed by EY Office Limited, in accordance with Thai Standard on Review Engagements 2410 established by the Thailand Federation of Accounting Professions, as stated in its review report appearing herein.

GLOSSARY

Unless otherwise indicated in the context, references to:

- “Agents” are to a dealer, manager or underwriter.
- “BOT” are to Bank of Thailand.
- “Bbls” are to barrels.
- “Bbls/d” are to barrels per day.
- “Bcf” are to billion cubic feet.
- “BOE/d” are to barrels-of-oil equivalent per day.
- “btu” are to British Thermal Units.
- “btu/cf” are to British Thermal Units per cubic foot.
- “condensate” are to liquid hydrocarbons of very light crude oil composition that are gaseous subsurface (high temperature and pressure), and condense into a liquid upon production and in response to surface temperature and pressure.
- “DWT” are to deadweight tonnage.
- “EGAT” are to the Electricity Generating Authority of Thailand.
- “EPPO” are to the Energy Policy and Planning Office of Thailand.
- “ERC” are to the Energy Regulatory Commission of Thailand.
- “ESP” are to electrostatic precipitator.
- “GGC” are to Global Green Chemicals Public Company Limited.
- “GMTP” are to Gulf MTP LNG Terminal Company Limited.
- “GLOW” are to Glow Energy Public Company Limited.
- “GPSC” are to Global Power Synergy Public Company Limited and, unless otherwise indicated or required by context, its consolidated subsidiaries.
- “GSA” are to gas sale agreement.
- “GSP” are to gas separation plant.
- “HDPE” are high density polyethylene.
- “JDA” are to Block A-18, B-17 and C-19 of the Malaysia-Thailand Joint Development Area.
- “KBD” are to thousand of barrels per day.
- “IPO” are to initial public offering.
- “IPP” are to independent power producers.
- “IRPC” are to IRPC Public Company Limited and, unless otherwise indicated or required by context, its consolidated subsidiaries.

- “LDPE” are to low-density polyethylene.
- “LLDPE” are to linear low-density polyethylene.
- “LNG” are to liquefied natural gas.
- “LPG” are to liquefied petroleum gas which is propane gas or, less commonly, butane or a propane-butane mixture that has been compressed into liquid.
- “MEA” are to the Metropolitan Electricity Authority of Thailand.
- “MMbbls” are to million barrels.
- “MMBOE” are to million of barrels-of-oil equivalent.
- “MMbtu” are to million British Thermal Units.
- “MMSCFD” are to million standard cubic feet per day. The volume of natural gas is determined at a reference heating value of 1,000 btu/cf.
- “MT” are to million tons.
- “mtpa” are to million tons per annum.
- “MTJDA” are to Malaysia-Thailand Joint Development Area.
- “MW” are megawatt.
- “NEPC” are to the National Energy Policy Council of Thailand.
- “NGV” are to natural gas for vehicles.
- “OPEC” are to the Organization of the Petroleum Exporting Countries
- “PEA” are to the Provincial Electricity Authority of Thailand.
- “petroleum” are to hydrocarbons, including natural gas, natural gas liquids, crude oil and their products.
- “PTTMMC” are to PTT MCC Biochem Company Limited.
- “PTTEP” are to PTT Exploration and Production Public Company Limited and, unless otherwise indicated or required by context, its consolidated subsidiaries.
- “PTTEP AA” are to PTTEP Australasia Pty Ltd. and its subsidiaries.
- “PTTEP CA” are to PTTEP Canada Limited.
- “PTTEP ED” are to PTTEP Energy Development Company Limited.
- “PTTEP HKO” are to PTTEP HK Offshore Limited.
- “PTTEPI” are to PTTEP International Limited.
- “PTTEPS” are to PTTEP Siam Limited.
- “PTTEP SBO” are to PTTEP Sabah Oil Limited.
- “PTTEP SKO” are to PTTEP Sarawak Oil Limited.

- “PTTEP SP” are to PTTEP SP Limited.
- “PTTER” are to PTT Energy Resources Company Limited.
- “PTTGC” refers to PTT Global Chemical Public Company Limited and, unless otherwise indicated or required by context, its consolidated subsidiaries.
- “PTTGM” are to PTT Global Management Company Limited.
- “PTT LNG” are to PTT LNG Co., Ltd.
- “PTTMCC” are to PTTMCC Biochem Co., Ltd.
- “PTTME” are to PTT Maintenance and Engineering Co., Ltd.
- “PTT NGD” are to PTT Natural Gas Distribution Co., Ltd.
- “PTTOR” are to PTT Oil and Retail Business Public Company Limited.
- “PTTPL” are to PTT Polymer Logistics Company Limited.
- “PTTPM” are to PTT Polymer Marketing Company Limited.
- “PTT Tank” are to PTT Tank Terminal Co., Ltd.
- “SAR” are to Sakari Resources Limited.
- “SET” are to the Stock Exchange of Thailand.
- “SPP” are to small power producers.
- “Thaioil” or “Thaioil Group” are to Thai Oil Public Company Limited and, unless otherwise indicated or required by context, its consolidated subsidiaries.
- “Tons” or “tons” are to metric tons. A metric ton is equal to 1,000 kilograms, or approximately 2,204.6 pounds.
- “TP” are to Thaioil Power Co., Ltd.

INDEX TO THE FINANCIAL STATEMENTS

Unaudited interim financial statements of the Company and the Group as of and for the three-month period ended March 31, 2020

Independent Auditor's Report	F-4
Statements of Financial Position as of March 31, 2020 and December 31, 2019	F-6
Statements of Income for the three-months periods ended March 31, 2020 and 2019	F-9
Statements of Comprehensive Income for the three-month periods ended March 31, 2020 and 2019	F-10
Statements of Changes in Shareholders' Equity for the three-month periods ended March 31, 2020 and 2019	F-11
Statements of Cash Flows for the three-months periods ended March 31, 2020 and 2019	F-13
Notes to interim information for the three-month period ended March 31, 2020	F-17

Unaudited interim financial statements of the Company and the Group as of and for the three-month period ended March 31, 2019

Auditor's Report	F-81
Statements of Financial Position as of March 31, 2019 and December 31, 2018	F-83
Statements of Income for the three-months periods ended March 31, 2019 and 2018	F-86
Statements of Comprehensive Income for the three-month periods ended March 31, 2019 and 2018	F-87
Statements of Changes in Equity for the three-month periods ended March 31, 2019 and 2018	F-88
Statements of Cash Flows for the three-months periods ended March 31, 2019 and 2018	F-90
Notes to interim information for the three-month period ended March 31, 2019	F-94

Audited financial statements of the Company and the Group as of and for the year ended December 31, 2019

Auditor's Report	F-173
Statements of Financial Position as of December 31, 2019 and 2018	F-183
Statements of Income for the years ended December 31, 2019 and 2018	F-189
Statements of Comprehensive Income for the years ended December 31, 2019 and 2018	F-190
Statements of Changes in Equity for the years ended December 31, 2019 and 2018	F-191
Statements of Cash Flows for the years ended December 31, 2019 and 2018	F-193
Notes to the Financial Statements for the year ended December 31, 2019	F-197

Audited financial statements of the Company and the Group as of and for the year ended December 31, 2018

Auditor’s Report	F-374
Statements of Financial Position as of December 31, 2018 and 2017	F-385
Statements of Income for the years ended December 31, 2018 and 2017.	F-388
Statements of Comprehensive Income for the years ended December 31, 2018 and 2017	F-389
Statements of Changes in Equity for the years ended December 31, 2018 and 2017	F-390
Statements of Cash Flows for the years ended December 31, 2018 and 2017	F-392
Notes to the Financial Statements for the year ended December 31, 2018.	F-396

Audited financial statements of the Company and the Group as of and for the year ended December 31, 2017

Auditor’s Report	F-561
Statements of Financial Position as of December 31, 2017 and 2016	F-571
Statements of Income for the years ended December 31, 2017 and 2016.	F-574
Statements of Comprehensive Income for the years ended December 31, 2017 and 2016	F-575
Statements of Changes in Equity for the years ended December 31, 2017 and 2016	F-576
Statements of Cash Flows for the years ended December 31, 2017 and 2016	F-578
Notes to the Financial Statements for the year ended December 31, 2017.	F-582

PTT Public Company Limited
and its subsidiaries
Review report and interim financial information
For the three-month period ended 31 March 2020

Independent Auditor's Report on Review of Interim Financial Information

To the Shareholders of PTT Public Company Limited

I have reviewed the accompanying consolidated statement of financial position of PTT Public Company Limited and its subsidiaries as at 31 March 2020, the related consolidated statements of income, comprehensive income, changes in shareholders' equity, and cash flows for the three-month period then ended, as well as the condensed notes to the interim consolidated financial statements. I have also reviewed the separate financial information of PTT Public Company Limited for the same period (collectively "interim financial information"). Management is responsible for the preparation and presentation of this interim financial information in accordance with Thai Accounting Standard 34 *Interim Financial Reporting*. My responsibility is to express a conclusion on this interim financial information based on my review.

Scope of Review

I conducted my review in accordance with Thai Standard on Review Engagements 2410, *Review of Interim Financial Information Performed by the Independent Auditor of the Entity*. A review of interim financial information consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with Thai Standards on Auditing and consequently does not enable me to obtain assurance that I would become aware of all significant matters that might be identified in an audit. Accordingly, I do not express an audit opinion.

Conclusion

Based on my review, nothing has come to my attention that causes me to believe that the accompanying interim financial information is not prepared, in all material respects, in accordance with Thai Accounting Standard 34 *Interim Financial Reporting*.

Emphasis of Matter

I draw attention to the Ombudsman of Thailand's submission of a complaint against the Company to the Administrative Court, as described in Note 31 to the financial statements, Other event. My conclusion is not modified in respect of this matter.

Other Matters

- a) The consolidated statements of financial position of PTT Public Company Limited and its subsidiaries, and the separate statement of financial position of PTT Public Company Limited as at 31 December 2019, presented herein as comparative information, were audited by another auditor who expressed an unmodified opinion on those statements and drew attention to the Ombudsman of Thailand's submission of a complaint against the Company to the Administrative Court, under a report dated 20 February 2020.

The consolidated statements of income, comprehensive income, changes in shareholders' equity and cash flows for the three-month period ended 31 March 2019 of PTT Public Company Limited and its subsidiaries, and the separate statements of income, comprehensive income, changes in shareholders' equity and cash flows for the three-month period then ended of PTT Public Company Limited, presented herein as comparative information, were also reviewed by the aforementioned other auditor who concluded, under a report dated 13 May 2019, that nothing had come to the auditor's attention that caused the auditor to believe that the interim financial information was not prepared, in all material respects, in accordance with Thai Accounting Standard 34 *Interim Financial Reporting*, and drew attention to the Ombudsman of Thailand's submission of a complaint against the Company to the Administrative Court.

- b) Due to the impact of COVID-19 outbreak situation, the Company has postponed the annual general meeting of the Company's shareholders which results in no resolution for the appointment of the auditor of the Company for the accounting period of 2020 yet. However, the Board of Director of the Company has a resolution to propose to the annual general meeting of the Company's shareholders to appoint me as the auditor of the Company for the accounting period of 2020. I therefore have conducted my review on the interim financial information for first quarter of 2020 which is in compliance with the notification of the Capital Market Supervisory Board (CMSB) No. TorChor. 28/2563 dated 27 March 2020.

Waraporn Prapasirikul
Certified Public Accountant (Thailand) No. 4579

EY Office Limited
Bangkok: 11 May 2020

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT 31 MARCH 2020

Unit: Baht

Notes	Consolidated financial statements		Separate financial statements		
	31 March 2020	31 December 2019	31 March 2020	31 December 2019	
	(Unaudited but reviewed)	(Audited)	(Unaudited but reviewed)	(Audited)	
Assets					
Current assets					
Cash and cash equivalents	5	254,345,002,644	292,542,457,953	32,397,644,035	46,480,809,912
Short-term investments in financial assets	4	73,586,985,484	-	24,932,182,958	-
Current investments	4	-	38,263,305,589	-	15,002,337,892
Trade accounts receivable	6	115,765,360,616	167,641,021,249	81,943,404,742	111,557,959,067
Other accounts receivable	7	49,211,972,776	49,611,747,735	24,695,447,080	8,404,192,746
Short-term lending loans	8.1	2,845,380,899	2,669,222,092	11,905,103,873	21,369,269,521
Inventories		88,125,157,428	117,746,964,312	4,373,709,278	4,797,200,993
Supplies		34,844,388,626	34,379,141,870	5,745,084,397	5,744,178,058
Current derivative assets		17,593,525,824	3,686,309,104	794,951,606	1,089,388,849
Other current financial assets		5,762,827,082	4,964,315,664	4,801,633,293	4,808,662,609
Other current assets		5,287,439,432	5,594,227,731	2,008,073,957	2,524,155,555
Total current assets		647,368,040,811	717,098,713,299	193,597,235,219	221,778,155,202
Non-current assets					
Other long-term investments in financial assets	4, 11	22,963,885,663	-	5,593,850,128	-
Available-for-sale investments	4	-	6,687,351,993	-	2,986,699,279
Investments in subsidiaries	12.1.3	-	-	334,605,551,313	335,213,563,656
Investments in joint ventures	12.1.1	49,160,806,856	49,512,818,297	6,008,453,213	5,961,911,690
Investments in associates	12.1.2	25,592,185,208	25,670,169,643	-	-
Other long-term investments	4	-	17,931,829,711	-	4,257,167,950
Long-term lending loans	8.2	12,439,084,883	12,474,409,002	36,607,385,286	24,981,890,696
Investment properties	13	8,101,739,264	7,987,227,078	3,733,063,899	3,742,809,674
Property, plant and equipment	14	1,315,738,834,767	1,294,979,084,151	266,916,971,397	273,820,653,535
Right-of-use assets	4, 15	70,404,098,562	-	20,479,822,472	-
Goodwill	16	117,532,094,347	111,933,136,559	-	-
Other intangible assets	17	68,750,882,272	79,967,673,324	2,441,149,530	13,375,222,267
Exploration and evaluation assets	18	87,593,892,356	80,268,342,040	-	-
Deferred tax assets		50,612,272,815	47,611,099,702	2,094,296,857	1,256,718,197
Non-current derivative assets		1,077,119,231	3,810,602,110	898,292,450	912,740,713
Other non-current financial assets		7,071,511,455	5,423,872,131	212,874,931	243,349,240
Other non-current assets		15,259,100,153	23,082,350,952	87,231,853	1,145,308,878
Total non-current assets		1,852,297,507,832	1,767,339,966,693	679,678,943,329	667,898,035,775
Total assets		2,499,665,548,643	2,484,438,679,992	873,276,178,548	889,676,190,977

The accompanying notes are an integral part of these interim financial statements.

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT 31 MARCH 2020

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		31 March 2020	31 December 2019	31 March 2020	31 December 2019
		(Unaudited but reviewed)	(Audited)	(Unaudited but reviewed)	(Audited)
<u>Liabilities and shareholders' equity</u>					
Current liabilities					
Bank overdrafts and short-term loans from financial institutions	19	28,484,649,489	44,440,533,236	-	-
Trade accounts payable		104,230,678,839	158,301,915,916	65,797,314,488	100,570,030,799
Other accounts payable		101,123,213,802	80,763,972,530	45,248,872,087	22,743,735,200
Current portion of long-term loans	19	54,606,242,353	50,439,925,974	27,113,328,288	27,118,000,000
Current portion of lease liabilities	19	7,432,229,417	1,342,430,248	651,613,710	484,800,610
Short-term loans	9.5, 19	-	-	1,357,479,602	3,487,561,436
Income tax payable		39,057,377,094	30,136,899,332	4,275,933,324	2,947,212,120
Short-term provision for decommissioning costs	21	1,387,977,717	1,289,373,133	-	-
Current derivative liabilities		4,852,187,656	2,522,074,028	1,102,523,888	-
Other current financial liabilities		1,550,024,320	1,332,012,310	68,421,153	107,560,356
Other current liabilities		8,224,326,775	9,216,170,176	2,539,519,281	3,262,783,960
Total current liabilities		350,948,907,462	379,785,306,883	148,155,005,821	160,721,684,481
Non-current liabilities					
Long-term loans	19	570,530,316,963	555,018,258,339	92,959,644,500	90,263,371,322
Lease liabilities	19	44,377,866,651	7,727,508,141	7,797,498,260	3,471,939,120
Deferred tax liabilities		58,599,832,122	56,673,547,421	-	-
Provisions for employee benefits	20	33,232,076,363	32,590,214,665	7,462,764,730	7,312,721,428
Long-term provision for decommissioning costs	21	99,710,152,164	90,599,917,383	-	-
Deposits on LPG cylinders		11,759,042,280	11,656,784,200	-	-
Non-current derivative liabilities		5,551,759,927	2,702,433,432	1,001,277,237	324,316,495
Other non-current financial liabilities		21,016,073,722	19,374,483,656	16,962,633,293	15,306,356,626
Other non-current liabilities		26,976,172,000	27,270,608,298	4,933,537,377	4,969,067,816
Total non-current liabilities		871,753,292,192	803,613,755,535	131,117,355,397	121,647,772,807
Total liabilities		1,222,702,199,654	1,183,399,062,418	279,272,361,218	282,369,457,288

The accompanying notes are an integral part of these interim financial statements.

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT 31 MARCH 2020

Unit: Baht

	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
	(Unaudited but reviewed)	(Audited)	(Unaudited but reviewed)	(Audited)
<u>Liabilities and shareholders' equity</u> (Continued)				
Shareholders' equity				
Share capital				
Registered share capital				
28,562,996,250 ordinary shares of Baht 1 each	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Issued and fully paid-up share capital				
28,562,996,250 ordinary shares of Baht 1 each	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Share premium	29,211,131,966	29,211,131,966	29,211,131,966	29,211,131,966
Deficit from the change in the ownership interests in subsidiaries	(36,250,864,803)	(36,250,864,803)	-	-
Retained earnings				
Appropriated - legal reserve	2,857,245,725	2,857,245,725	2,857,245,725	2,857,245,725
Appropriated - self-insurance fund reserve	1,243,656,319	1,243,656,319	1,243,656,319	1,243,656,319
Unappropriated	835,393,517,041	869,016,087,473	531,115,748,175	544,005,237,331
Other components of shareholders' equity	5,751,186,044	(16,036,143,473)	1,013,038,895	1,426,466,098
Equity attributable to owners of the Company	866,768,868,542	878,604,109,457	594,003,817,330	607,306,733,689
Non-controlling interests of the subsidiaries	410,194,480,447	422,435,508,117	-	-
Total shareholders' equity	1,276,963,348,989	1,301,039,617,574	594,003,817,330	607,306,733,689
Total liabilities and shareholders' equity	2,499,665,548,643	2,484,438,679,992	873,276,178,548	889,676,190,977

The accompanying notes are an integral part of these interim financial statements.

(Phannalin Mahawongtikul)
Chief Financial Officer

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF INCOME
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		2020	2019	2020	2019
Sales and service income		483,566,985,570	550,873,525,048	265,470,478,384	309,627,993,882
Cost of sales and services	24	466,216,302,979	481,512,037,269	254,114,454,078	295,799,254,003
Gross profit		17,350,682,591	69,361,487,779	11,356,024,306	13,828,739,879
Other income	23	5,108,070,068	5,826,445,450	21,832,100,350	12,576,354,722
Gain (loss) on derivatives		8,469,853,085	(3,780,017,728)	(3,289,778,595)	377,109,918
Gain (loss) on foreign exchange rates		(5,075,251,982)	3,875,190,072	(1,140,339,011)	1,909,043,256
Profit before expenses		25,853,353,762	75,283,105,573	28,758,007,050	28,691,247,775
Selling and distribution expenses	24	7,344,535,669	6,869,591,077	3,426,040,613	2,866,816,920
Administrative expenses	24	13,561,599,626	11,962,598,529	4,192,859,174	4,700,643,121
Petroleum royalties		4,023,600,172	4,143,756,825	-	-
Operating profit		923,618,295	52,307,159,142	21,139,107,263	21,123,787,734
Share of profit from investments in joint ventures and associates		643,374,298	1,535,560,866	-	-
Profit before finance costs and income taxes		1,566,992,593	53,842,720,008	21,139,107,263	21,123,787,734
Finance costs		6,955,003,992	6,887,788,316	1,307,006,465	1,763,616,988
Profit (loss) before income taxes		(5,388,011,399)	46,954,931,692	19,832,100,798	19,360,170,746
Income taxes		8,617,872,274	7,370,530,980	1,036,915,992	2,259,039,196
Profit (loss) for the periods		(14,005,883,673)	39,584,400,712	18,795,184,806	17,101,131,550
Profit (loss) attributable to					
Equity holders of the Company		(1,554,358,470)	29,312,075,916	18,795,184,806	17,101,131,550
Non-controlling interests of the subsidiaries		(12,451,525,203)	10,272,324,796	-	-
		(14,005,883,673)	39,584,400,712	18,795,184,806	17,101,131,550
Basic earnings (loss) per share	22	(0.06)	1.02	0.66	0.60

The accompanying notes are an integral part of these interim financial statements.

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF COMPREHENSIVE INCOME
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
Profit (loss) for the periods	(14,005,883,673)	39,584,400,712	18,795,184,806	17,101,131,550
Other comprehensive income (loss)				
Other comprehensive income to be reclassified to profit or loss in subsequent periods				
Exchange differences on translation of financial statements in foreign currency	33,238,037,344	(8,585,098,684)	-	-
Gain on measurements of available-for-sale investments	-	154,061,547	-	1,726,119
Income taxes related to available-for-sale investments	-	(21,324,844)	-	(345,224)
Loss on debt investments measured at fair value through other comprehensive income	(21,339,178)	-	-	-
Income taxes related to debt investments measured at fair value through other comprehensive income	4,592,129	-	-	-
Loss on cash flow hedges	(2,230,891,300)	(296,706,232)	-	-
Income taxes related to cash flow hedges	504,716,280	(2,197,291)	-	-
Share of other comprehensive loss of joint ventures and associates	(227,619,865)	(354,145,488)	-	-
Other comprehensive income not to be reclassified to profit or loss in subsequent periods				
Loss on remeasurements of defined benefits plans	(53,880,273)	(6,454,495)	-	-
Income taxes related to remeasurements of defined benefits plans	10,570,446	1,036,515	-	-
Loss on equity investments designated at fair value through other comprehensive income	(1,938,836,700)	-	(354,712,442)	-
Income taxes related to equity investments designated at fair value through other comprehensive income	261,250,516	-	70,942,489	-
Share of other comprehensive income (loss) from joint ventures and associates	94,930,617	(2,754,366)	-	-
Other comprehensive income (loss) for the periods, net of income taxes	29,641,530,016	(9,113,583,338)	(283,769,953)	1,380,895
Total comprehensive income for the periods	15,635,646,343	30,470,817,374	18,511,414,853	17,102,512,445
Total comprehensive income (loss) attributable to				
Equity holders of the Company	18,662,411,790	23,219,318,177	18,511,414,853	17,102,512,445
Non-controlling interests of the subsidiaries	(3,026,765,447)	7,251,499,197	-	-
	15,635,646,343	30,470,817,374	18,511,414,853	17,102,512,445

The accompanying notes are an integral part of these interim financial statements.

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN SHAREHOLDERS' EQUITY
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020

Notes	Consolidated financial statements														
	Equity attributable to owners of the Company														
	Found and fully paid-up share capital	Share premium	Deficit from the change in the ownership interests in subsidiaries	Retained earnings		Unappropriated	Exchange differences on translation of financial statements in foreign currency	Other comprehensive income (loss)			Share of other comprehensive income (loss) from joint ventures and associates	Put option over non-controlling interest of the subsidiary	Total other components of shareholders' equity	Total equity attributable to owners of the Company	Equity attributable to non-controlling interests of the subsidiaries
Legal reserve				Self-insurance fund reserve	Appropriated			Investments in other long-term financial assets/available-for-sale investments	Cash flow hedges						
	28,562,996,250	20,211,131,966	(28,483,907,093)	2,857,245,725	1,223,675,618	838,208,853,447	534,370,409	2,849,434,838	407,298,511	(286,212,642)	-	3,504,891,116	875,063,256,429	443,410,523,895	1,318,494,350,324
Balance as at 1 January 2019	-	-	-	-	-	838,208,853,447	-	-	-	-	-	-	-	-	-
Changes in shareholders' equity for the period	-	-	-	-	(1,227,709)	1,227,709	-	-	-	-	-	-	(285,870,173)	(152,000,767)	(437,870,940)
Reserve for self-insurance fund	-	-	-	-	-	(285,870,173)	-	-	-	-	-	-	2,467,389	1,311,942	3,779,331
Interest expenses for subordinated capital debentures	-	-	-	-	-	2,467,389	-	-	-	-	-	-	-	(4,750,188,767)	(4,750,188,767)
Income taxes for subordinated capital debentures	-	-	-	-	-	-	-	-	-	-	-	-	-	20,324,752,398	20,324,752,398
Dividends paid of subsidiaries	-	-	-	-	-	-	-	-	-	-	-	-	(54,230,463)	873,520,000	33,121,537
Business acquisition of subsidiaries	-	-	-	-	-	-	-	-	-	-	-	-	-	10,273,234,796	39,584,400,712
Change in the ownership interests subsidiaries	-	-	-	-	-	29,312,075,916	-	-	-	-	-	-	(6,087,357,195)	(3,020,825,599)	(9,113,583,338)
Profit for the period	-	-	-	-	-	867,232,348,744	(5,806,084,067)	111,269,057	(40,572,627)	(251,969,558)	-	(6,087,357,195)	(6,092,757,739)	466,173,299,898	1,364,138,761,257
Other comprehensive income (loss) for the period	-	-	-	-	-	(5,806,084,067)	(5,371,713,658)	2,940,703,895	366,738,884	(538,182,200)	-	(2,582,466,079)	897,965,511,350	-	8,641,381,761,257
Balance as at 31 March 2019	28,562,996,250	20,211,131,966	(28,483,907,093)	2,857,245,725	1,221,452,909	867,232,348,744	(5,371,713,658)	2,940,703,895	366,738,884	(538,182,200)	-	(2,582,466,079)	897,965,511,350	466,173,299,898	1,364,138,761,257
	28,562,996,250	20,211,131,966	(28,483,907,093)	2,857,245,725	1,223,675,618	838,208,853,447	534,370,409	2,849,434,838	407,298,511	(286,212,642)	-	3,504,891,116	875,063,256,429	443,410,523,895	1,318,494,350,324
Balance as at 1 January 2020	-	-	-	-	-	869,016,087,473	(18,399,093,432)	2,858,740,374	19,840,975	(515,631,390)	-	(16,036,143,473)	878,604,109,457	422,433,508,117	1,301,039,617,574
Changes in shareholders' equity for the period	-	-	-	-	-	(538,817,231)	3,941,032	2,117,328,405	16,006,580	19,725,810	(62,712,247)	1,534,388,480	995,471,249	(638,119,623)	357,351,626
Cumulative effect of changes in accounting policies	-	-	-	-	-	(538,817,231)	3,941,032	2,117,328,405	16,006,580	19,725,810	(62,712,247)	1,534,388,480	995,471,249	(638,119,623)	357,351,626
Balance as at 1 January 2020 - as restated	28,562,996,250	20,211,131,966	(28,483,907,093)	2,857,245,725	1,243,656,319	868,477,270,242	(18,395,152,400)	4,976,068,779	35,846,555	(495,905,580)	(62,712,247)	(14,501,854,993)	879,599,580,706	421,793,388,494	1,301,393,969,200
Reclamation of subordinated capital debentures	-	-	-	-	-	298,248	-	-	-	-	-	-	298,248	(1,035,880,517)	(1,035,582,269)
Interest expenses for subordinated capital debentures	-	-	-	-	-	(61,339,103)	-	-	-	-	-	-	(61,339,103)	(3,261,701,3)	(98,986,116)
Income taxes for subordinated capital debentures	-	-	-	-	-	(13,657,777)	-	-	-	-	-	-	(13,657,777)	(7,262,012)	(20,919,789)
Dividend paid	-	-	-	-	-	(31,418,425,322)	-	-	-	-	-	-	(31,418,425,322)	-	(31,418,425,322)
Dividends paid of subsidiaries	-	-	-	-	-	-	-	-	-	-	-	-	-	(7,653,008,891)	(7,653,008,891)
Increase in share capital of subsidiary	-	-	-	-	-	(1,554,358,470)	-	-	-	-	-	-	(1,554,358,470)	(12,451,525,203)	(15,262,883)
Loss for the period	-	-	-	-	-	(36,270,777)	2,238,257,360	(4,473,462,383)	(992,163,174)	137,409,234	-	20,253,041,037	20,216,770,260	9,424,759,736	29,641,530,016
Other comprehensive income (loss) for the period	-	-	-	-	-	(36,270,777)	2,238,257,360	(4,473,462,383)	(992,163,174)	137,409,234	-	20,253,041,037	20,216,770,260	9,424,759,736	29,641,530,016
Balance as at 31 March 2020	28,562,996,250	20,211,131,966	(28,483,907,093)	2,857,245,725	1,243,656,319	835,395,577,041	(4,186,104,960)	3,502,606,396	(983,166,619)	(384,962,346)	(62,712,247)	(5,751,186,044)	866,768,668,542	410,194,809,447	1,276,963,488,989

The accompanying notes are an integral part of these interim financial statements.

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN SHAREHOLDERS' EQUITY
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020

Unit: Baht

Notes	Separate financial statements									
	Issued and fully paid-up share capital	Share premium	Legal reserve	Retained earnings		Self-insurance fund reserve	Unappropriated	Other components of shareholders' equity		Total shareholders' equity
				Appropriated	Investments in other long-term financial assets/ available-for-sale investments			Investments in other long-term financial assets/ available-for-sale investments	Other comprehensive income (loss)	
Balance as at 1 January 2019	28,562,996,250	29,211,131,966	2,857,245,725	1,222,675,618	541,852,837,981	1,293,640,767	1,293,640,767	605,000,528,307		
Changes in shareholders' equity for the period										
Reserve for self-insurance fund				(1,222,709)	1,222,709					
Profit for the period					17,101,131,550					17,101,131,550
Other comprehensive income for the period								1,380,895		1,380,895
Balance as at 31 March 2019		29,211,131,966	2,857,245,725	1,221,452,909	558,955,192,240	1,295,021,662	1,295,021,662	622,103,040,752		
Balance as at 1 January 2020		28,562,996,250	29,211,131,966	2,857,245,725	1,243,656,319	544,005,237,331	1,426,466,098	607,306,733,689		
Cumulative effects of changes in accounting policies					(266,248,640)		(129,657,250)			
Balance as at 1 January 2020 - as restated	4	28,562,996,250	29,211,131,966	2,857,245,725	1,243,656,319	543,738,988,691	1,296,808,848	606,910,827,799		
Changes in shareholders' equity for the period										
Dividend paid								(31,418,425,322)		(31,418,425,322)
Profit for the period	27					18,795,184,806				18,795,184,806
Other comprehensive loss for the period								(283,769,953)		(283,769,953)
Balance as at 31 March 2020		28,562,996,250	29,211,131,966	2,857,245,725	1,243,656,319	531,115,748,175	1,013,038,895	594,003,817,330		

The accompanying notes are an integral part of these interim financial statements.

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
Cash flows from operating activities				
Profit (loss) before income taxes	(5,388,011,399)	46,954,931,692	19,832,100,798	19,360,170,746
Adjustment of profit (loss) before income taxes to net cash provided by (used in) operating activities				
Depreciation and amortization expenses	35,865,429,773	31,194,607,346	4,906,467,223	4,749,476,514
(Gain) loss on disposal of assets	(30,536,554)	24,159,038	(48,185,736)	6,603,031
(Gain) loss on disposal of investments	(1,955,310)	420,680	(2,256,428,316)	-
Loss on impairment of assets	2,503,750	195,945	-	-
Share of profit from investments in joint ventures and associates	(643,374,298)	(1,535,560,866)	-	-
Provision for employee benefits	710,036,462	564,498,514	165,406,434	181,420,152
(Gain) loss on exchange rates	7,099,668,288	(1,901,034,610)	3,020,393,438	(604,059,700)
Unrealized (gain) loss on derivatives	(8,835,387,867)	4,150,787,979	2,805,392,293	(377,109,918)
Loss on investments at fair value though profit and loss	1,099,248,721	-	132,109,164	-
Reversal of allowance for doubtful accounts/ Expected credit loss of accounts receivable	(182,398,144)	(19,495,537)	(10,170,270)	(1,723,885)
Write-off exploration assets	839,257,089	-	-	-
(Reversal of) reduction of inventories to net realizable value	12,618,532,970	(3,917,999,651)	650,924,192	(46,047,283)
Allowance for obsolete supplies	603,064,862	158,864,041	-	-
Dividend income	(135,509,739)	(94,327,581)	(15,351,637,357)	(8,661,580,260)
Interest income	(1,250,232,678)	(2,794,869,872)	(601,546,090)	(915,668,820)
Finance costs	6,955,003,992	6,887,788,316	1,307,006,465	1,763,616,988
Others	169,098,876	292,346	(117,107,332)	(3,408,883)
Profit from operating activities before changes in operating assets and liabilities	49,494,438,794	79,673,257,780	14,434,724,906	15,451,688,682

The accompanying notes are an integral part of these interim financial statements.

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
Operating assets (increase) decrease				
Trade accounts receivable	52,261,580,901	(3,464,331,497)	29,767,722,876	8,078,655,720
Other accounts receivable	1,766,121,445	4,535,023,158	818,639,643	6,976,216,836
Inventories, material and supplies	15,507,388,611	(3,766,113,456)	(151,622,755)	4,437,625,767
Other current assets	(510,848,261)	750,839,070	522,298,957	276,155,292
Other non-current assets	(2,104,643,837)	3,532,271,058	49,444,596	(138,156,822)
Operating liabilities increase (decrease)				
Trade accounts payable	(54,532,345,801)	5,427,773,030	(35,410,403,092)	(3,574,849,919)
Other accounts payable	(3,824,177,075)	(12,110,159,957)	(8,497,094,590)	(4,719,653,186)
Other current liabilities	(574,157,321)	(422,135,421)	(762,411,748)	(373,845,669)
Other non-current liabilities	7,629,046,513	(2,345,879,304)	128,713,261	77,345,551
	<u>15,617,965,175</u>	<u>(7,862,713,319)</u>	<u>(13,534,712,852)</u>	<u>11,039,493,570</u>
Cash received from operating activities	65,112,403,969	71,810,544,461	900,012,054	26,491,182,252
Income taxes paid	<u>(3,869,438,255)</u>	<u>(1,873,846,780)</u>	<u>(362,317,068)</u>	<u>(394,982,906)</u>
Net cash provided by operating activities	<u>61,242,965,714</u>	<u>69,936,697,681</u>	<u>537,694,986</u>	<u>26,096,199,346</u>

The accompanying notes are an integral part of these interim financial statements.

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
Cash flows from investing activities				
Cash payment of property, plant and equipment and investment property	(42,148,336,282)	(33,259,950,500)	(4,840,826,749)	(5,475,129,499)
Cash payment of intangible assets	(680,740,456)	(625,863,456)	(118,063,055)	(43,044,825)
Cash payment of exploration and evaluation assets	(727,600,887)	(1,280,501,575)	-	-
Cash payment of right-of-use assets	(116,416,686)	-	-	-
Cash payment for other long-term investments in financial assets	(200,160,794)	-	(71,008,564)	-
Cash payment for available-for-sale investments	-	(43,873,386)	-	(43,873,386)
Net cash payment for business acquisition	(1,477,432,703)	(78,513,214,436)	-	-
Cash payment of investments in subsidiaries	-	-	(54,355,742)	-
Cash payment of investments in joint ventures and associates	(456,544,940)	(513,581,170)	(46,541,523)	(490,000)
Cash payment of short-term lending loans	-	-	(4,008,222,863)	(27,000,000,000)
Cash payment of long-term lending loans	-	(250,903,593)	(15,618,796,400)	-
Cash payment of other long-term investments	-	(1,393,221,683)	-	(1,302,547,455)
Cash proceeds from disposals of property, plant and equipment and intangible assets	50,282,266	133,167,534	427,097,145	2,160,000
Cash proceeds from disposals of other long-term investments in financial assets	1,926,985,292	-	423,710,057	-
Cash proceeds from disposals of available-for-sale investments	-	9,743,956,342	-	-
Cash proceeds from disposals of investments in subsidiaries	-	-	2,918,796,400	-
Cash proceeds from short-term lending loans	-	45,000,000	3,790,072,129	2,500,000,000
Cash proceeds from long-term lending loans	140,702,792	438,289,054	14,025,000,000	1,707,211,864
Cash proceeds from disposal of other long-term investments	-	38,742,470	-	-
Decrease in current investments	-	26,294,538,440	-	6,030,431,781
Increase in short-term investments in financial assets	(27,515,200,065)	-	(8,131,651,001)	-
Interests received	869,309,874	1,858,089,085	540,724,780	928,089,839
Dividends received	1,117,278,226	179,193,707	113,867,003	18,116,355
Net cash used in investing activities	(69,217,874,363)	(77,150,133,167)	(10,650,198,383)	(22,679,075,326)

The accompanying notes are an integral part of these interim financial statements.

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020

		Unit: Baht			
		<u>Consolidated financial statements</u>		<u>Separate financial statements</u>	
<u>Notes</u>		<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Cash flows from financing activities					
	Cash proceeds from issuance of ordinary shares of subsidiaries	152,625,833	87,352,000	-	-
	Cash proceeds from short-term loans	-	-	-	115,570,553
	Cash proceeds from long-term loans	19,845,072,278	5,260,819,833	-	-
	Cash repayment of short-term loans	-	-	(2,130,081,834)	(958,911,967)
	Cash repayment of long-term loans	(19,717,677,176)	(9,315,490,577)	-	-
	Cash payment for lease installments	(1,689,121,743)	(242,886,090)	(207,282,685)	(151,744,565)
	Cash payment for redemption of subordinated capital debentures	(964,625,400)	-	-	-
	Increase (decrease) in bank overdrafts and short-term loans				
	from financial institutions	(16,840,809,443)	67,281,444,265	-	-
	Finance costs paid	(7,256,731,154)	(5,988,662,809)	(1,161,139,299)	(1,333,609,907)
	Dividends paid	(585,105,622)	(2,524,054)	-	-
	Net cash provided by (used in) financing activities	<u>(27,056,372,427)</u>	<u>57,080,052,568</u>	<u>(3,498,503,818)</u>	<u>(2,328,695,886)</u>
	Effects of exchange rates on cash and cash equivalents	3,859,780,665	(7,867,313)	(472,158,662)	170,630,713
	Exchange differences on translation	<u>(7,025,954,898)</u>	<u>(1,880,086,260)</u>	<u>-</u>	<u>-</u>
	Net increase (decrease) in cash and cash equivalents	(38,197,455,309)	47,978,663,509	(14,083,165,877)	1,259,058,847
	Cash and cash equivalents at beginning of period	<u>292,542,457,953</u>	<u>292,184,322,373</u>	<u>46,480,809,912</u>	<u>86,204,049,166</u>
	Cash and cash equivalents at end of period	<u>5</u> <u>254,345,002,644</u>	<u>340,162,985,882</u>	<u>32,397,644,035</u>	<u>87,463,108,013</u>
Non cash items					
	Accounts payable from purchases of property, plant and equipment				
	and investment properties	10,485,494,412	25,972,620,792	968,814,370	2,054,730,058
	Accounts payable from purchases of intangible assets	24,510,265	16,626,614	2,169,900	16,323,856
	Accounts payable from purchases of securities	-	24,008,547	-	-

The accompanying notes are an integral part of these interim financial statements.

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO INTERIM FINANCIAL STATEMENTS
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020
(UNAUDITED BUT REVIEWED)

NOTES	CONTENTS
1	General information
2	Basis for the preparation of interim financial statements
3	Accounting policies
4	Cumulative effects of changes in accounting policies
5	Cash and cash equivalents
6	Trade accounts receivable
7	Other accounts receivable
8	Lending loans
9	Related party transactions
10	The restructuring of the oil business unit and IPO filing
11	Other long-term investments in financial assets
12	Investments in subsidiaries, joint ventures and associates
13	Investment properties
14	Property, plant and equipment
15	Right-of-use assets
16	Goodwill
17	Other intangible assets
18	Exploration and evaluation assets
19	Loans and lease liabilities
20	Provisions for employee benefits
21	Provision for decommissioning costs
22	Basic earnings (loss) per share
23	Other income
24	Expenses by nature
25	Operating segments
26	Fair value measurement of financial instruments
27	Dividend payment
28	Business acquisition
29	Proceeding regarding the Central Administrative Court's ordering temporary suspension of projects in the Map Ta Phut area
30	Commitments and contingent liabilities
31	Other event
32	Events after the reporting period

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO INTERIM FINANCIAL STATEMENTS
FOR THE THREE-MONTH PERIOD ENDED 31 MARCH 2020
(UNAUDITED BUT REVIEWED)

1. General information

1.1 General information of the company

PTT Public Company Limited (the Company) is incorporated as a public limited company in Thailand, and is listed on the Stock Exchange of Thailand.

The Head Office of the Company is located at 555 Vibhavadi-Rangsit Road, Chatuchak, Bangkok, Thailand.

The Company has a status of a state enterprise while the Ministry of Finance is the largest shareholder and is under the supervision of Ministry of Energy.

The Company's principal activity is the operation of its petroleum business. The Company has invested in subsidiaries, joint arrangements and associates (the Group), which are engaged in upstream petroleum and natural gas, downstream petroleum, technology and engineering, and other related businesses as described in Note 25 Operating Segments.

1.2 Coronavirus disease 2019 pandemic

The Coronavirus disease 2019 pandemic is continuing to evolve, resulting in an economic slowdown and adversely impacting most businesses and industries. This situation may bring uncertainties and have an impact on the environment in which the Group operates. The Group's management has continuously monitored ongoing developments and assessed the financial impact in respect of the valuation of assets, provisions and contingent liabilities, and has used estimates and judgement in respect of various issues as the situation has evolved, using the best information obtained up to the date of this report.

2. Basis for the preparation of interim financial statements

2.1 Purpose of the interim financial statements

These interim financial statements are prepared in order to provide additional information other than that included in the latest annual financial statements. Accordingly, these interim financial statements focus on the reporting of new activities, events and circumstances so as not to duplicate information previously reported. These interim financial statements should therefore be read in conjunction with the latest annual financial statements.

2.2 Basis for the preparation of interim financial statements

These interim financial statements are prepared in accordance with Thai Accounting Standard No. 34 "Interim Financial Reporting", and Thai Financial Reporting Standards under the Accounting Act, B.E. 2543. These are Thai Financial Reporting Standards under the Accounting Profession Act, B.E. 2547, including guidelines promulgated by the Federation of Accounting Professions (FAP), and applicable rules and regulations of the Securities and Exchange Commission under the Securities and Exchange Act, B.E. 2535. The content of the interim financial statements comprises the statement of financial position, statement of income, statement of comprehensive income, statement of changes in equity and statement of cash flows in compliance with the notification of the Department of Business Development "Definition of the abbreviated components required in the financial statements (No.3), B.E. 2562", dated 26 December 2019, under the third paragraph of section 11 of the Accounting Act, B.E. 2543. As well as the condensed notes to the interim consolidated financial statements.

2. Basis of interim financial statements preparation (Continued)

2.2 Basis of interim financial statement preparation (Continued)

The consolidated and the separate financial statements are prepared and presented in Thai Baht and are rounded in the notes to financial statements to the nearest million unless otherwise stated.

This English translation of the financial statements has been prepared from the statutory financial statements that were issued in Thai language. In the event of a conflict or a difference in interpretation between the two languages, the Thai language statutory financial statements shall prevail.

3. Accounting policies

3.1 New financial reporting standards that became effective in the current period

During the period, the Group has adopted the revised (revised 2019) and new financial reporting standards and interpretations which are effective for fiscal years beginning on or after 1 January 2020. The management of the Group has assessed impacts of the amended financial reporting standards and Interpretations. It is believed that employing amended standards have no significant impact on both Consolidated Financial Statement and Separate Financial Statement ,except the new standard involves changes to key principles, which are summarised below:

Financial reporting standards related to financial instruments

◆ TAS 32	Financial Instruments: Presentation
◆ TFRS 7	Financial Instruments: Disclosures
◆ TFRS 9	Financial Instruments
◆ TFRIC 16	Hedges of a Net Investment in a Foreign Operation
◆ TFRIC 19	Extinguishing Financial Liabilities with Equity Instruments

The above financial instruments standards will replace the following standards.

◆ TAS 101	Doubtful Accounts and Bad Debts
◆ TAS 103	Disclosures in the Financial Statements of Banks and Similar Financial Institutions
◆ TAS 104 (revised 2016)	Accounting for Troubled Debt Restructuring
◆ TAS 105 (revised 2016)	Accounting for Investments in Debt and Equity Securities
◆ TAS 106	Accounting For Investment Entities
◆ TAS 107 (revised 2016)	Financial Instruments: Disclosure and Presentation
◆ TI-9	Assets Transferred by Debtors for Debt Settlement

These TFRSs related to Financial Instruments have been set approaches of classification and measurement of financial instruments at fair value or amortized cost, which are determined from types of financial instruments, contractual cash flow characteristics, and business model. The new TFRSs also introduces standards in calculating asset impairment, using expected credit loss concept and standards of hedge accounting, including financial instrument presentation and disclosures.

3. Accounting policies (Continued)

3.1 New financial reporting standards that became effective in the current period (Continued)

TFRS 16 Lease will replace the following standards.

- ◆ TAS 17 (revised 2018) Leases
- ◆ TSIC 15 (revised 2018) Operating Leases - Incentives
- ◆ TSIC 27 (revised 2018) Evaluating the Substance of Transactions Involving the Legal Form of a Lease
- ◆ TFRIC 4 (revised 2018) Determining Whether an Arrangement Contains a Lease

TFRS 16 has been set approaches for the identification, recognition, measurement, presentation and disclosure of leases from both lessees and lessors. Major changed principle is cancellation for lessees to identify the classification between operating leases and financial leases as specified in TAS 17; and lessees should recognized a right of use assets and lease liabilities at the commencement date for all leases, except short-term leases and leases for which the underlying asset is of low value. Accounting by lessors is still required to classify leases as operating or finance according to TAS 17.

The Group adopted these financial reporting standards using the modified retrospective method of initial adoption of which the cumulative effect is recognised as an adjustment to the retained earnings as at 1 January 2020, and the comparative information was not restated.

Announcement of the Federation of Accounting Professions relaxing classification of perpetual bonds

The Group has subordinated capital debentures reported in equity section as such debentures offering a single payment of principal when the business ceases operations or when the issuer uses the right of call options complying to stated conditions. Moreover, the issuer has the right, at its sole discretion, to defer payment without time limitations and number of times. The overdue payment will be accumulated with no interest. However, according to Paragraph 25 in TAS 32 - Financial Instruments: Presentation, effective for annual reporting periods beginning on or after 1 January 2020. The Group has to classify such debentures as liabilities. Due to conditions in “The indenture of subordinated capital debentures”, it can be interpreted as the debentures’ holders will have the right to redeem the debentures prior to the liquidation. Owing to the announcement No. 95/2562 of the Federation of Accounting Professions, it allows relaxation in classifying the issued (subordinated) capital debentures and paid-up before 31 December 2019 still to be the part of issuer until 31 December 2022.

On 31 March 2020, the Group has subordinated capital debentures in a total of Baht 4,982 million in the consolidated financial statements, which will be classified as non-controlling interests of the subsidiaries in the equity section.

The cumulative effects of the changes in accounting policies are described in Note 4.

3. Accounting policies (Continued)

3.2 Accounting policies

In preparing the interim financial statements, the Group uses the same accounting policies and computation methods in the financial statements for the year ended 31 December 2019 are applied, except the changes in accounting policies related to financial instruments and leases.

3.2.1 Financial instruments

Classification and measurement

Financial assets that are debt instruments are measured at fair value through profit or loss, fair value through other comprehensive income, or amortised cost. Classification is driven by the Group's business model for managing the financial assets and the contractual cash flows characteristics of the financial assets.

Financial assets that are equity instruments are measured at fair value through profit or loss. In certain cases, the Group makes an election to measure them at fair value through other comprehensive income, with no subsequent recycling to profit or loss.

Financial liabilities excluding derivatives are classified and measured at amortised cost.

Derivatives are classified and measured at fair value through profit or loss. As the Group uses hedge accounting, derivatives can be classified and measured at fair value through other comprehensive income. Derivatives, including commodity futures contracts that are qualified financial instruments and to attain a consistent recognition, the Group decides to use commodity broker-traders method to measure inventory value at fair value through profit or loss less costs to sell.

Impairment of financial assets

The Group recognises an allowance for expected credit losses on its financial assets measured at amortised cost and financial assets that are debt instruments and measured at fair value through other comprehensive income, without requiring a credit-impaired event to have occurred prior to the recognition. The Group accounts for changes in expected credit losses in stages, with differing methods of determining allowance for credit losses and the effective interest rate applied at each stage. An exception from this approach is that for trade receivables and other receivables that do not contain a significant financing component and lease receivables, the Group applies a simplified approach to determine the lifetime expected credit losses.

3. Accounting policies (Continued)

3.2 Accounting policies (Continued)

3.2.1 Financial instruments (Continued)

Hedge accounting

If hedge accounting criteria are met, recognition is as follows:

For fair value hedges, a change in fair value of the hedging instruments and a change in fair value of the hedged items attributable to the risk being hedged are both recognised in profit or loss.

For cash flow hedges, a change in fair value of the effective portion of the hedging instrument is recognised in other comprehensive income, while a change in fair value of the ineffective portion of the hedging instruments is recognised in profit or loss.

3.2.2 Leases

Right-of-use assets

The Group recognises right-of-use assets at the commencement date of the lease. Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognised through initial measurement, initial direct costs incurred, and lease payments made at or before the commencement date, less any lease incentives received.

Unless the Group is reasonably certain that it will obtain ownership of the leased asset at the end of the lease term, the recognised right-of-use assets are depreciated on a straight-line basis from the commencement date of the lease to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term.

Lease liabilities

At the commencement date of the lease, the Group recognises lease liabilities measured at the present value of the lease payments to be made over the lease term, discounted by the interest rate implicit in the lease or the Group's incremental borrowing rate. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification or reassessment.

Short-term leases and leases of low-value assets

Payments under leases that, have a lease term of 12 months or less at the commencement date, or are leases of low-value assets, are recognised as expenses on a straight-line basis over the lease term.

4. Cumulative effects of changes in accounting policies

The impacts on the beginning balance of 2020 from changes in accounting policies due to the adoption of TFRSs related to Financial Instruments and TFRS 16 - Leases are presented as follows:

(Unit: Million Baht)

	Consolidated financial statements			1 January 2020
	31 December 2019	The impacts of		
		TFRSs related to financial instruments	TFRS 16	
Statement of financial position				
Assets				
Current assets				
Short-term investments in financial assets	-	38,263	-	38,263
Current investments	38,263	(38,263)	-	-
Trade accounts receivable	167,641	(19)	-	167,622
Other accounts receivable	49,612	1,174	(466)	50,320
Short-term lending loans	2,669	-	(138)	2,531
Current derivative assets	3,686	682	-	4,368
Other current financial assets	4,965	(2)	-	4,963
Other current assets	5,594	-	(18)	5,576
Non-current assets				
Other long-term investments in financial assets	-	26,679	-	26,679
Available-for-sale investments	6,687	(6,687)	-	-
Investments in joint ventures	49,513	(106)	(2)	49,405
Other long-term investments	17,932	(17,932)	-	-
Long-term lending loans	12,474	-	(208)	12,266
Investment properties	7,987	-	107	8,094
Property, plant and equipment	1,294,979	-	(9,036)	1,285,943
Right-of-use assets	-	-	69,121	69,121
Other intangible assets	79,968	-	(10,980)	68,988
Deferred tax assets	47,611	(33)	53	47,631
Non-current derivative assets	3,811	1,071	-	4,882
Other non-current financial assets	5,424	(31)	-	5,393
Other non-current assets	23,082	-	(8,230)	14,852
Total assets	1,821,898	4,796	40,203	1,866,897
Liabilities				
Current liabilities				
Other accounts payable	80,764	1,521	(16)	82,269
Current portion of lease liabilities	1,342	-	4,499	5,841
Current derivative liabilities	2,522	835	-	3,357
Other current financial liabilities	1,332	(110)	-	1,222
Non-current liabilities				
Long-term loans	555,018	(16)	-	555,002
Lease liabilities	7,728	-	36,050	43,778
Deferred tax liabilities	56,674	(30)	(23)	56,621
Non-current derivative liabilities	2,702	767	-	3,469
Other non-current financial liabilities	19,374	1,166	-	20,540
Total liabilities	727,456	4,133	40,510	772,099

4. Cumulative effects of changes in accounting policies (Continued)

The impacts on the beginning balance of 2020 from changes in accounting policies due to the adoption of TFRSs related to Financial Instruments and TFRS 16 - Leases are presented as follows: (Continued)

(Unit: Million Baht)

	Consolidated financial statements			
	The impacts of			
	31 December 2019	TFRSs related to financial instruments	TFRS 16	1 January 2020
Statement of financial position				
Shareholders' equity				
Retained earnings - unappropriated	869,016	(379)	(160)	868,477
Other components of shareholders' equity	(16,036)	1,534	-	(14,502)
Non-controlling interests of the subsidiaries	422,436	(492)	(147)	421,797
Total shareholders' equity	1,275,416	663	(307)	1,275,772

(Unit: Million Baht)

	Separate financial statements			
	The impacts of			
	31 December 2019	TFRSs related to financial instruments	TFRS 16	1 January 2020
Statement of financial position				
Assets				
Current assets				
Short-term investments in financial assets	-	15,002	-	15,002
Current investments	15,002	(15,002)	-	-
Other accounts receivable	8,404	1,849	(39)	10,214
Inventories	4,797	6	-	4,803
Current derivative assets	1,089	242	-	1,331
Other current financial assets	4,809	(1)	-	4,808
Non-current assets				
Other long-term investments in financial assets	-	7,236	-	7,236
Available-for-sale investments	2,987	(2,987)	-	-
Other long-term investments	4,257	(4,257)	-	-
Property, plant and equipment	273,821	-	(4,644)	269,177
Right-of-use assets	-	-	20,241	20,241
Other intangible assets	13,375	-	(10,770)	2,605
Deferred tax assets	1,257	113	-	1,370
Non-current derivative assets	913	604	-	1,517
Other non-current financial assets	244	(31)	-	213
Other non-current assets	1,145	-	(1,009)	136
Total assets	332,100	2,774	3,779	338,653

4. Cumulative effects of changes in accounting policies (Continued)

The impacts on the beginning balance of 2020 from changes in accounting policies due to the adoption of TFRSs related to Financial Instruments and TFRS 16 - Leases are presented as follows : (Continued)

	(Unit: Million Baht)			
	Separate financial statements			
	The impacts of			
	31 December 2019	TFRSs related to financial instruments	TFRS 16	1 January 2020
Statement of financial position				
Liabilities				
Current liabilities				
Other accounts payable	22,744	1,766	-	24,510
Current portion of lease liabilities	485	-	36	521
Current derivative liabilities	-	73	-	73
Non-current liabilities				
Long-term loans	90,263	(31)	-	90,232
Lease liabilities	3,472	-	3,743	7,215
Other non-current financial liabilities	15,306	1,361	-	16,667
Total liabilities	132,270	3,169	3,779	139,218
Shareholders' equity				
Retained earnings - unappropriated	544,005	(266)	-	543,739
Other components of shareholders' equity	1,426	(129)	-	1,297
Total shareholders' equity	545,431	(395)	-	545,036

Details of the impact on retained earnings as at 1 January 2020 due to the adoption of TFRSs related to Financial Instruments and TFRS 16 - Leases related to financial instruments are presented as follows:

	(Unit: Million Baht)	
	Consolidated financial statements	Separate financial statements
Fair value measurement of investments in equity instruments of non-listed companies	21	21
Classification of available-for-sale investments as financial assets at fair value through profit or loss	49	106
Recognition of an allowance for expected credit losses on financial assets	(60)	-
Recognition of derivatives at fair value through profit or loss	(384)	(399)
Fair value measurement of inventory	-	6
Adjustment of effective interest rate	(5)	-
Recognition of lease liabilities	(160)	-
Total impacts on retained earnings	(539)	(266)

5. Cash and cash equivalents

Cash and cash equivalents as at 31 March 2020 and 31 December 2019 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
Cash on hand	436	556	12	11
Call deposits held at banks	114,234	192,074	17,903	36,016
Fixed deposits within 3 months	98,439	87,461	6,254	5,008
Treasury bills	809	593	-	-
Promissory notes	-	1,000	-	-
Bonds	8,229	5,446	8,229	5,446
Other investments	2,198	5,412	-	-
Total	254,345	292,542	32,398	46,481

Call deposits held at banks, fixed deposits within 3 months, treasury bills, promissory notes, bonds and other investments, as at 31 March 2020 bear the interest at rates ranging from 0.00% - 7.50% per annum (As at 31 December 2019: interest rates ranging from 0.00% - 7.00% per annum).

6. Trade accounts receivable

Trade accounts receivable as at 31 March 2020 and 31 December 2019 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
Trade accounts receivable - unrelated parties	115,430	166,558	42,313	55,462
<u>Less</u> Allowance for expected credit loss/Allowance for doubtful accounts	(3,124)	(3,127)	(1,874)	(1,886)
Trade accounts receivable - unrelated parties - net	112,306	163,431	40,439	53,576
Trade accounts receivable - related parties (Note 9.1)	3,459	4,210	41,504	57,982
Total	115,765	167,641	81,943	111,558

Classified by aging as at 31 March 2020 is as follows:

	Unit: Million Baht	
	Consolidated financial statements	Separate financial statements
Not yet due	113,412	81,337
Overdue		
- Within 1 months	1,372	163
- Over 1 - 2 months	516	159
- Over 2 - 3 months	32	5
- Over 3 - 12 months	507	83
- Over 12 months	3,050	2,070
	118,889	83,817
<u>Less</u> Allowance for expected credit loss	(3,124)	(1,874)
Total	115,765	81,943

6. Trade accounts receivable (Continued)

Trade accounts receivable as at 31 March 2020 and 31 December 2019 are as follows: (Continued)

Classified by aging as at 31 December 2019 is as follows:

	Unit: Million Baht	
	Consolidated financial statements	Separate financial statements
Not yet due	161,975	108,240
Overdue		
- Within 3 months	5,216	3,006
- Over 3 - 6 months	83	44
- Over 6 - 12 months	382	249
- Over 12 months	3,112	1,905
	170,768	113,444
<u>Less</u> Allowance for doubtful accounts	<u>(3,127)</u>	<u>(1,886)</u>
Total	<u>167,641</u>	<u>111,558</u>

Trade accounts receivable - unrelated parties as at 31 March 2020 include receivables from government agencies and state enterprises in the consolidated financial statements amounting to Baht 17,734 million (As at 31 December 2019: Baht 21,958 million), and in the separate financial statements amounting to Baht 10,246 million (As at 31 December 2019: Baht 14,680 million).

7. Other accounts receivable

Other accounts receivable as at 31 March 2020 and 31 December 2019 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
Other accounts receivable	20,841	18,650	2,299	1,660
<u>Less</u> Allowance for expected credit loss/Allowance for doubtful accounts	(518)	(713)	(434)	(432)
Other accounts receivable	20,323	17,937	1,865	1,228
Advance payments	5,220	8,546	621	292
Refund receivable from the Oil Stabilization Fund	16,984	16,116	5,965	5,539
Current tax assets	5,018	5,557	-	-
Other accounts receivable - unrelated parties - net	47,545	48,156	8,451	7,059
Other accounts receivable - related parties (Note 9.2)	1,004	1,010	16,036	1,099
Advance payments - related parties (Note 9.2)	663	446	208	246
Total	49,212	49,612	24,695	8,404

The refund receivable from the Oil Stabilization Fund mostly comprised of compensation for locally manufactured oil and liquefied petroleum gas (LPG) or imported LPG for local uses, as well as compensation for Natural Gas for Vehicles (NGV) prices. The compensation rates are determined by the Committee of Energy Policy Administration.

8. Lending loans

8.1 Short-term lending loans as at 31 March 2020 and 31 December 2019 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
Current portion of finance lease receivable - unrelated parties	1,150	1,106	-	-
Current portion of finance lease receivable - related parties (Note 9.2)	5	5	-	-
Short-term lending loans - related parties (Note 9.2)	1,691	1,558	11,905	21,369
Total	<u>2,846</u>	<u>2,669</u>	<u>11,905</u>	<u>21,369</u>

8.2 Long-term lending loans as at 31 March 2020 and 31 December 2019 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
Long-term finance lease receivable - unrelated parties	7,516	7,578	-	-
Long-term finance lease receivable - related parties (Note 9.3)	50	51	-	-
Long-term lending loans - unrelated parties	1,186	1,230	-	-
Long-term lending loans - related parties (Note 9.3)	3,687	3,615	36,607	24,982
Total	<u>12,439</u>	<u>12,474</u>	<u>36,607</u>	<u>24,982</u>

9. Related party transactions

Significant transactions carried out with related parties are as follows:

9.1 Trade accounts receivable - related parties as at 31 March 2020 and 31 December 2019

	Unit: Million Baht			
	Consolidated		Separate	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
Subsidiaries	-	-	40,007	55,739
Joint ventures	2,238	2,188	991	1,000
Associates	1,052	1,056	343	287
Other related parties	169	966	163	956
Total (Note 6)	3,459	4,210	41,504	57,982

Aging analysis as at 31 March 2020 as follows:

	Unit: Million Baht	
	Consolidated financial statements	Separate financial statements
Within credit terms	3,405	41,504
Overdue		
- Within 1 month	26	-
- Over 1 month - 2 months	10	-
- Over 2 months - 3 months	3	-
- Over 3 months - 12 months	13	-
- Over 12 months	2	-
	3,459	41,504
<u>Less</u> Allowance for expected credit loss	-	-
Total (Note 6)	3,459	41,504

9. Related party transactions (Continued)

9.1 Trade accounts receivable - related parties as at 31 March 2020 and 31 December 2019 (Continued)

Aging analysis as at 31 December 2019 as follows:

	Unit: Million Baht	
	Consolidated financial statements	Separate financial statements
Within credit terms	4,164	57,982
Overdue		
- Within 3 months	34	-
- Over 3 months - 6 months	3	-
- Over 6 months - 12 months	9	-
- Over 12 months	-	-
	4,210	57,982
<u>Less Allowance for doubtful accounts</u>	-	-
Total (Note 6)	4,210	57,982

9.2 Other accounts receivable, advance payments, current portion of finance lease receivable, and short-term lending loans - related parties as at 31 March 2020 and 31 December 2019

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
<u>Other accounts receivable</u>				
Subsidiaries	-	-	15,729	1,062
Joint ventures	528	322	209	29
Associates	246	208	5	6
Other related parties	230	480	93	2
Total (Note 7)	1,004	1,010	16,036	1,099
<u>Advance payments</u>				
Subsidiaries	-	-	48	6
Associates	16	-	-	-
Other related parties	647	446	160	240
Total (Note 7)	663	446	208	246

9. Related party transactions (Continued)

9.2 Other accounts receivable, advance payments, current portion of finance lease receivable, and short-term lending loans - related parties as at 31 March 2020 and 31 December 2019 (Continued)

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
<u>Current portion of finance lease receivable</u>				
Joint ventures (Note 8.1)	5	5	-	-
<u>Short-term lending loans</u>				
Subsidiaries	-	-	11,905	21,369
Joint ventures	1,691	1,558	-	-
Total (Note 8.1)	<u>1,691</u>	<u>1,558</u>	<u>11,905</u>	<u>21,369</u>

Movements in short-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
Balance as at 1 January	-	242	5,913	2,500
- Loans granted	-	-	4,008	27,000
- Repayment receipt	-	-	(3,790)	(2,500)
- Gain (loss) on exchange rate	-	(5)	180	-
Balance as at 31 March	-	237	6,311	27,000
<u>Add Current portion (Note 9.3)</u>	<u>1,691</u>	<u>-</u>	<u>5,594</u>	<u>4,982</u>
Balance as at 31 March - net	<u>1,691</u>	<u>237</u>	<u>11,905</u>	<u>31,982</u>

Short-term lending loans - related parties as at 31 March 2020 in the separate financial statements bear interest rates ranging from 0.07% - 1.30% per annum (31 December 2019: interest rates ranging from 1.15% - 3.25% per annum).

9. Related party transactions (Continued)

9.3 Long-term finance lease receivable and long-term lending loans - related parties as at 31 March 2020 and 31 December 2019

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
<u>Long-term finance lease receivable</u>				
Joint ventures (Note 8.2)	50	51	-	-
<u>Long-term lending loans</u>				
Subsidiaries	-	-	36,607	24,982
Joint ventures	871	804	-	-
Associates	2,816	2,811	-	-
Total (Note 8.2)	<u>3,687</u>	<u>3,615</u>	<u>36,607</u>	<u>24,982</u>

Movements in long-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Balance as at 1 January	5,173	6,177	40,438	37,730
- Loans granted	-	251	15,619	-
- Repayment receipt	-	-	(14,025)	(1,707)
- Gain (loss) on exchange rate	205	(72)	169	(49)
- Business acquisition	-	220	-	-
- Exchange differences on translation of financial statements	-	(3)	-	-
Balance as at 31 March	5,378	6,573	42,201	35,974
<u>Less Current portion (Note 9.2)</u>	<u>(1,691)</u>	<u>-</u>	<u>(5,594)</u>	<u>(4,982)</u>
Balance as at 31 March - net	<u>3,687</u>	<u>6,573</u>	<u>36,607</u>	<u>30,992</u>

Long-term lending loans - related parties as at 31 March 2020 in the consolidated financial statements bear interest rates ranging from 2.38% - 7.38% per annum (31 December 2019: interest rates ranging from 3.00% - 7.38% per annum), and in the separate financial statements bear interest rates ranging from 2.01% - 4.43% per annum (31 December 2019: interest rates ranging from 2.57% - 4.68% per annum).

9. **Related party transactions (Continued)**

9.4 Trade accounts payable - related parties as at 31 March 2020 and 31 December 2019

	Unit: Million Baht			
	Consolidated		Separate	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
Subsidiaries	-	-	23,267	29,990
Joint ventures	782	808	262	246
Associates	290	338	-	-
Other related parties	6	4	-	-
Total	1,078	1,150	23,529	30,236

9.5 Other accounts payable, current portion of lease liabilities and short-term loans - related parties as at 31 March 2020 and 31 December 2019

	Unit: Million Baht			
	Consolidated		Separate	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
<u>Other accounts payable</u>				
Subsidiaries	-	-	6,716	6,696
Joint ventures	38	59	23	16
Associates	12	19	7	12
Other related parties	50	51	34	35
Total	100	129	6,780	6,759
<u>Current portion of lease liabilities</u>				
Subsidiaries	-	-	46	1
Joint ventures	1,578	375	413	375
Associates	1	-	-	-
Total	1,579	375	459	376
<u>Short-term loans*</u>				
Subsidiaries	-	-	1,357	3,488

* The Company has liquidity management policies within the Group include the use of the cash pooling method. Inter-company loans were used for short-term financial management of cash surpluses or deficits of each affiliate. Interests on these were calculated by using market interest rates.

9. Related party transactions (Continued)

9.6 Lease liabilities and long-term loans - related parties as at 31 March 2020 and 31 December 2019

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	31 March 2020	31 December 2019	31 March 2020	31 December 2019
<u>Lease liabilities</u>				
Subsidiaries	-	-	34	3
Joint ventures	5,156	3,181	3,370	3,181
Associates	4	-	-	-
Total	<u>5,160</u>	<u>3,181</u>	<u>3,404</u>	<u>3,184</u>

Long-term loans

Subsidiaries	-	-	25,887	23,873
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Movements in long-term loans - subsidiaries are as follows:

	Unit: Million Baht	
	Separate financial statements	
	2020	2019
Balance as at 1 January	23,873	-
- Loss on exchange rate	2,014	-
Balance as at 31 March	<u>25,887</u>	<u>-</u>

Long-term loans - subsidiaries as at 31 March 2020 in the separate financial statements bear interest rates ranging from 4.95% - 6.38% per annum (31 December 2019: interest rates ranging from 4.95% - 6.38% per annum).

9. Related party transactions (Continued)

9.7 Revenue and expense transactions carried out with related parties

For the three-month period ended 31 March 2020 and 2019

	Consolidated		Unit: Million Baht Separate	
	financial statements	financial statements	financial statements	financial statements
	2020	2019	2020	2019
Revenues				
<u>Sales and service income</u>				
Subsidiaries	-	-	141,615	161,131
Joint ventures	5,509	6,096	2,939	3,558
Associates	3,009	3,129	837	931
Other related parties	763	3,270	758	3,265
<u>Interest income</u>				
Subsidiaries	-	-	325	372
Joint ventures	26	54	-	-
Associates	40	39	-	-
<u>Dividend income</u>				
Subsidiaries	-	-	14,957	8,442
Joint ventures	-	-	288	212
Other related parties	92	72	92	-
<u>Other income</u>				
Subsidiaries	-	-	3,888	1,830
Joint ventures	96	84	19	16
Associates	42	47	6	5
Other related parties	157	13	17	12
Expenses				
<u>Cost of goods purchased and services</u>				
Subsidiaries	-	-	67,494	70,606
Joint ventures	2,484	2,036	468	351
Associates	793	796	-	-
Other related parties	311	326	65	64
<u>Interest expenses</u>				
Subsidiaries	-	-	291	10
Joint ventures	48	13	12	13
<u>Other expenses</u>				
Subsidiaries	-	-	845	774
Joint ventures	-	8	-	-
Associates	17	13	1	2
Other related parties	90	86	17	30

9. Related party transactions (Continued)

9.8 Significant purchasing and selling of investment properties, properties plant and equipments and right-of-use assets, transactions carried out with related parties

For the three-month period ended 31 March 2020 and 2019

	Consolidated		Unit: Million Baht Separate	
	financial statements		financial statements	
	2020	2019	2020	2019
Selling				
Subsidiaries	-	-	431	-

The aforementioned related party transactions exclude transactions carried out with government agencies and state enterprises.

Stipulation prices between the Company and its related parties are based on normal prices for the same types of business transactions carried out with non-related parties. Goods purchased from subsidiaries are charged at the normal prices determined by the subsidiaries with reference to global market prices.

9.9 Details of commitments to subsidiaries and joint ventures are stated in Note 30

9.10 Executive remunerations

Detail of executive remunerations for the three-month period ended 31 March 2020 and 2019 are as follows:

	Consolidated		Unit: Million Baht Separate	
	financial statements		financial statements	
	2020	2019	2020	2019
<u>Directors remuneration</u>				
Meeting remuneration and bonuses	94	91	20	16
<u>Managements remuneration</u>				
Salaries, bonuses, and other employee benefits	344	245	26	19
Post-employment benefits	39	6	1	-
Total	477	342	47	35

Managements are those persons who have authority and responsibility for planning, directing and controlling the activities of an entity, directly or indirectly.

10. The restructuring of the oil business unit and IPO filing

On 18 June 2018, the Company and PTT Oil and Retail Business Public Co., Ltd. (OR) successfully executed the Business Transfer Agreement to transfer various assets and liabilities, and shares of related companies (Bangkok Aviation Fuel Services Public Co., Ltd. (BAFS), PTT (Cambodia) Limited (PTTCL), PTT Oil Myanmar Co., Ltd. (PTTOM), Thai Lube Blending Co., Ltd. (TLBC), Thai Petroleum Pipeline Co., Ltd. (THAPPLINE), Petro Asia (Thailand) Co., Ltd. (PAT), Intoplane Services Co., Ltd. (IPS) and Fuel Pipeline Transportation Co., Ltd. (FPT)) to OR. The Company has commenced the process of transferring various assets and liabilities, and shares of related companies to OR since 1 July 2018. The business transfer price is Baht 117,203 million. On 28 June 2018, OR made the initial payment of Baht 85,367 million to the Company. Then, OR made the remaining payment of Baht 31,836 million on 28 September 2018.

The valuation of the business transferred had been evaluated by financial advisors following relevant international standards in order to provide the most reasonable prices.

In cases where the registration process for the transfer of various assets and liabilities is not completed within 6 months after the date of the business transfer, the Company must comply with the conditions under the Business Transfer Agreement, whereby the Company has to transfer the right of ownership and use in assets to OR, which is entitled to benefits, interests or profits from the assets under the agreement from the date of the business transfer until the registration process is completed.

On 28 February 2019, the Company and OR successfully executed the memorandum for the revision of the Business Transfer Agreement for extending the period for the process of registering the transfer of ownership in assets, rights, duties and responsibilities under agreements, in accordance with the Business Transfer Agreement. In cases where the registration process is not completed within 31 December 2019, the Company and OR will consider the best solution in order to achieve their interests.

On 12 January 2020, the Company and OR successfully executed the memorandum for the revision of the Business Transfer Agreement for extending the period for the process of registering the transfer of ownership in assets, rights, duties and responsibilities under agreements, in accordance with the Business Transfer Agreement, whereby it is to be completed within 31 December 2020. This Agreement is effective on 1 January 2020. As at 31 March 2020, some assets and contracts have not yet been transferred.

Subsequently, on 2 April 2020, OR submitted to the Securities and Exchange Commission its application to make an initial public offering (IPO), of its shares, together with a registration statement and draft prospectus and submitted a request to accept its ordinary shares as listed securities on the Stock Exchange of Thailand (SET) to the SET.

11. Other long-term investments in financial assets

Details of other long-term investments in financial assets in the consolidated financial statements as at 31 March 2020

Unit: Million Baht

	Consolidated financial statements				
	At fair value through other comprehensive income		At amortized cost		Total
	At fair value through profit or loss	Items to be reclassified to profit or loss in subsequent periods	Items not to be reclassified to profit or loss in subsequent periods	At amortized cost	
Equity securities	14	-	17,736	-	17,750
Debt securities	32	147	-	3,467	3,646
Mutual funds	786	-	782	-	1,568
Total other long-term investments in financial assets	832	147	18,518	3,467	22,964

The Group recognized dividend income for the three-month period ended 31 March 2020 amounting to Baht 136 million. (31 March 2019: Baht 94 million)

11. Other long-term investments in financial assets (Continued)

Details of other long-term investments in financial assets in the separate financial statements as at 31 March 2020

Unit: Million Baht

	Separate financial statements				Total
	At fair value through other comprehensive income				
	At fair value through profit or loss	Items to be reclassified to profit or loss in subsequent periods	Items not to be reclassified to profit or loss in subsequent periods	At amortized cost	
Equity securities	-	-	1,568	-	1,568
Debt securities	-	-	-	2,979	2,979
Mutual funds	265	-	782	-	1,047
Total other long-term investments in financial assets	265	-	2,350	2,979	5,594

The Company recognized dividend income for the three-month period ended 31 March 2020 amounting to Baht 107 million. (31 March 2019: Baht 7 million)

12. Investments in subsidiaries, joint ventures and associates

12.1 Movements in investments in the consolidated and the separate financial statements

12.1.1 Movements in investments in joint ventures are as follows:

	Unit: Million Baht	
	Consolidated financial statements	Separate financial statements
	Equity method	Cost method
For the three-month period ended 31 March 2020		
Book value at the beginning of period	49,513	5,962
Cumulative effects of changes in accounting policies (Note 4)	(108)	-
Book value at the beginning of period after cumulative effects of changes in accounting policies	49,405	5,962
- Share of profit from investments in joint ventures	473	-
- Dividend income	(1,183)	-
- Additional investments	192	46
- Share of other comprehensive loss from joint ventures	(240)	-
- Exchange differences on translation of financial statements	514	-
Book value at the end of period	49,161	6,008

The Company recognized dividend income for the three-month period ended 31 March 2020 amounting to Baht 288 million. (31 March 2019: Baht 212 million)

12. Investments in subsidiaries, joint ventures and associates (Continued)

12.1 Movements in investments in the consolidated and the separate financial statements (Continued)

12.1.2 Movements in investments in associates are as follows:

	Unit: Million Baht
	Consolidated financial statements
	<u>Equity method</u>
For the three-month period ended 31 March 2020	
Book value at the beginning of period	25,670
- Share of profit from investments in associates	170
- Dividend income	(71)
- Additional investments	266
- Share of other comprehensive loss of associates	(455)
- Exchange differences on translation of financial statements	12
Book value at the end of period	<u><u>25,592</u></u>

12.1.3 Movements in investments in subsidiaries are as follows:

	Unit: Million Baht
	Separate financial statements
	<u>Cost method</u>
For the three-month period ended 31 March 2020	
Book value at the beginning of period	335,214
- Additional investments	54
- Disposal of investments	(662)
Book value at the end of period	<u><u>334,606</u></u>

The Company recognized dividend income for the three-month period ended 31 March 2020 amounting to Baht 14,957 million. (31 March 2019: Baht 8,442 million)

12. Investments in subsidiaries, joint ventures and associates (Continued)

12.2 Significant events during the period ended 31 March 2020

PTTLNG

On 29 November 2019, at the Board of Directors Meeting of PTTLNG No. 12/2019, the Board passed a resolution to approve the call up of remaining additional share capital of Baht 25 million. The Company made the additional payment on 24 January 2020.

PTTGM

On 13 February 2020, at the Extraordinary General Meeting of the shareholders of PTT Global Management Co., Ltd. (PTTGM) No. 1/2020, the shareholders passed a resolution to approve the call up of remaining additional share capital of Baht 2 million. The Company made the additional payment on 25 February 2020.

On 17 December 2019, at the Extraordinary General Meeting of the shareholders of PTTGM, the shareholders passed a resolution to increase 268,000 authorized share capital at Baht 100 per share amounting to Baht 27 million. The Company made the additional payment on 27 February 2020.

PTTEP

On 25 March 2019, at the Board of Directors Meeting of the Company No. 3/2019, the Board passed a resolution to approve the procedure of shareholding management in the Group's affiliates. During the period, the Company sold 20 million ordinary shares in PTT Exploration and Production Public Co., Ltd. (PTTEP), amounting to Baht 2,289 million, causing its equity interest in PTTEP decreasing to 64.79%. The Company recognized gain on disposal of investments amounting to Baht 1,742 million in the separate financial statements. The shares were sold to a subsidiary of the Group, therefore, there is no impact on the consolidated financial statements.

TOP

On 25 March 2019, at the Board of Directors Meeting of the Company No. 3/2019, the Board passed a resolution to approve the procedure of shareholding management in the Group's affiliates. During the period, the Company sold 10 million ordinary shares in Thai Oil Public Co., Ltd. (TOP), amounting to Baht 630 million, causing its equity interest in TOP decreasing to 47.03%. The Company recognized gain on disposal of investments amounting to Baht 514 million in the separate financial statements. The shares were sold to a subsidiary of the Group, therefore, there is no impact on the consolidated financial statements.

MAP

On 15 January 2020, Map Ta Phut Air Products Company Limited (MAP) passed a resolution to approve the call up of remaining additional share capital of Baht 47 million. The Company made the additional payment on 25 February 2020.

13. Investment properties

Details of investment properties are as follows:

Unit: Million Baht

	Consolidated financial statements				Total
	Land	Buildings and building improvements	Other assets	Right-of-use assets	
As at 1 January 2020					
Cost	6,882	2,366	3	-	9,251
<u>Less</u> Accumulated depreciation	-	(1,200)	-	-	(1,200)
Allowance for impairment	(64)	-	-	-	(64)
Net book value	6,818	1,166	3	-	7,987
Cumulative effects of changes in accounting policies (Note 4)	-	-	-	107	107
Net book value after cumulative effects of changes in accounting policies	6,818	1,166	3	107	8,094
For the period ended 31 March 2020					
Beginning net book value after cumulative effects of changes in accounting policies	6,818	1,166	3	107	8,094
- Additions	-	-	-	1	1
- Reclassifications	-	29	-	-	29
- Depreciation and amortization for the period	-	(19)	-	(3)	(22)
Ending net book value	6,818	1,176	3	105	8,102
As at 31 March 2020					
Cost	6,882	2,392	3	125	9,402
<u>Less</u> Accumulated depreciation and amortization	-	(1,216)	-	(20)	(1,236)
Allowance for impairment	(64)	-	-	-	(64)
Net book value	6,818	1,176	3	105	8,102

13. Investment properties (Continued)

Details of investment properties are as follows: (Continued)

	Unit: Million Baht		
	Separate financial statements		
	Land	Buildings and building improvements	Total
As at 1 January 2020			
Cost	3,414	1,175	4,589
<u>Less</u> Accumulated depreciation	-	(846)	(846)
Net book value	<u>3,414</u>	<u>329</u>	<u>3,743</u>
For the period ended 31 March 2020			
Beginning net book value	3,414	329	3,743
- Disposal - net	-	(1)	(1)
- Depreciation for the period	-	(9)	(9)
Ending net book value	<u>3,414</u>	<u>319</u>	<u>3,733</u>
As at 31 March 2020			
Cost	3,414	1,172	4,586
<u>Less</u> Accumulated depreciation	-	(853)	(853)
Net book value	<u>3,414</u>	<u>319</u>	<u>3,733</u>

14. Property, plant and equipment

Detail of property, plant and equipment are as follows:

	Consolidated financial statements						Unit: Million Baht	
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets		Construction in progress
As at 1 January 2020								
Cost	47,801	302,478	1,166,628	933,235	52,263	28,221	148,833	2,679,459
<u>Less</u> Accumulated depreciation	-	(167,201)	(537,818)	(605,448)	(28,088)	(18,032)	-	(1,356,587)
Allowance for impairment	(73)	(512)	(2,896)	(10,093)	(12,800)	(17)	(1,502)	(27,893)
Net book value	47,728	134,765	625,914	317,694	11,375	10,172	147,331	1,294,979
Cumulative effects of changes in accounting policies (Note 4)	-	-	(4,238)	(3,662)	-	(1,136)	-	(9,036)
Net book value after cumulative effects of changes in accounting policies	47,728	134,765	621,676	314,032	11,375	9,036	147,331	1,285,943

14. Property, plant and equipment (Continued)

Detail of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements						Unit: Million Baht	
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets		Construction in progress
For the period ended 31 March 2020								
Beginning net book value after cumulative effects of changes in accounting policies	47,728	134,765	621,676	314,032	11,375	9,036	147,331	1,285,943
- Business Acquisition (Note 28)	205	817	1,184	-	-	-	-	2,206
- Additions	87	1,204	904	8,919	334	56	20,604	32,108
- Borrowing costs	-	-	-	-	-	-	619	619
- Reclassifications	482	1,945	5,500	-	-	198	(8,400)	(275)
- Disposals - net	-	(31)	(48)	(819)	(14)	(10)	(20)	(942)
- Depreciation for the period	-	(2,907)	(12,216)	(16,348)	(656)	(468)	-	(32,595)
- Reversal of (loss) on impairment	-	6	(3)	-	-	-	-	3
- Exchange differences on translation of financial statements	127	414	1,474	25,203	935	4	515	28,672
Ending net book value	48,629	136,213	618,471	330,987	11,974	8,816	160,649	1,315,739
As at 31 March 2020								
Cost	48,702	306,960	1,166,305	1,014,792	56,960	26,660	162,254	2,782,633
Less Accumulated depreciation	-	(170,201)	(544,761)	(672,869)	(31,118)	(17,827)	-	(1,436,776)
Allowance for impairment	(73)	(546)	(3,073)	(10,936)	(13,868)	(17)	(1,605)	(30,118)
Net book value	48,629	136,213	618,471	330,987	11,974	8,816	160,649	1,315,739

As at 31 March 2020, the Group had pledged assets amounting to Baht 78,322 million (December 31, 2019: Baht 78,983 million.).

14. Property, plant and equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Other assets	Construction in progress	
As at 1 January 2020						
Cost	5,659	38,796	378,011	18,386	31,672	472,524
<u>Less</u> Accumulated depreciation	-	(16,474)	(169,066)	(12,604)	-	(198,144)
Allowance for impairment	-	(33)	(526)	-	-	(559)
Net book value	5,659	22,289	208,419	5,782	31,672	273,821
Cumulative effects of changes in accounting policies (Note 4)	-	-	(4,238)	(406)	-	(4,644)
Net book value after cumulative effects of changes in accounting policies	5,659	22,289	204,181	5,376	31,672	269,177
For the period ended 31 March 2020						
Beginning net book value after cumulative effects of changes in accounting policies	5,659	22,289	204,181	5,376	31,672	269,177
- Additions	-	15	10	7	2,087	2,119
- Borrowing costs	-	-	-	-	316	316
- Reclassifications	42	9	453	49	(609)	(56)
- Termination	-	(295)	(76)	(4)	(4)	(379)
- Depreciation for the period	-	(412)	(3,518)	(335)	-	(4,265)
- Reversal of loss on impairment	-	5	-	-	-	5
Ending net book value	5,701	21,611	201,050	5,093	33,462	266,917
As at 31 March 2020						
Cost	5,701	38,157	369,037	17,835	33,462	464,192
<u>Less</u> Accumulated depreciation	-	(16,519)	(167,461)	(12,742)	-	(196,722)
Allowance for impairment	-	(27)	(526)	-	-	(553)
Net book value	5,701	21,611	201,050	5,093	33,462	266,917

Borrowing costs were capitalized as a part of costs of property, plant and equipment. During the period, the Group used capitalization rates ranging from 0.50% - 5.00% per annum (2019: 0.85% - 5.25% per annum).

15. Right-of-use assets

Detail of right-of-use assets are as follows:

	Consolidated financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Vehicles	Exploration and production properties	
	-	-	-	-	-	-
As at 1 January 2020						
Beginning net book value	41,916	1,168	7,646	1,811	13,541	3,039
Cumulative effects of changes in accounting policies (Note 4)						
Net book value after cumulative effects of changes in accounting policies	41,916	1,168	7,646	1,811	13,541	3,039
For the period ended 31 March 2020						
Beginning net book value after cumulative effects of changes in accounting policies	41,916	1,168	7,646	1,811	13,541	3,039
- Additions	1,246	116	314	115	75	-
- Modification	9	-	-	-	-	9
- Reclassifications	29	211	(3)	(2)	-	-
- Termination	(3)	(1)	-	(28)	-	-
- Amortization charge for the period	(629)	(137)	(303)	(183)	(628)	(284)
- Exchange differences on translation of financial statements	170	53	11	23	1,106	6
Ending net book value	42,738	1,410	7,665	1,736	14,094	2,761
As at 31 March 2020						
Cost	56,872	1,670	13,427	2,296	14,750	3,123
Less: Accumulated amortization	(14,134)	(260)	(5,762)	(560)	(656)	(362)
Net book value	42,738	1,410	7,665	1,736	14,094	2,761

15. Right-of-use assets (Continued)

Detail of right-of-use assets are as follows: (Continued)

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Vehicles	Other assets	
Unit: Million Baht						
As at 1 January 2020						
Beginning net book value	-	-	-	-	-	-
Cumulative effects of changes in accounting policies (Note 4)	14,705	40	5,030	452	14	20,241
Net book value after cumulative effects of changes in accounting policies	14,705	40	5,030	452	14	20,241
For the period ended 31 March 2020						
Beginning net book value after cumulative effects of changes in accounting policies	14,705	40	5,030	452	14	20,241
- Additions	543	38	27	52	4	664
- Modification	-	-	-	(13)	-	(13)
- Amortization charge for the period	(222)	(7)	(143)	(37)	(3)	(412)
Ending net book value	15,026	71	4,914	454	15	20,480
As at 31 March 2020						
Cost	25,142	85	10,192	618	18	36,055
Less: Accumulated amortization	(10,116)	(14)	(5,278)	(164)	(3)	(15,575)
Net book value	15,026	71	4,914	454	15	20,480

16. Goodwill

Movements of goodwill are as follows:

	Unit: Million Baht Consolidated financial statements
	2020
Net book value as at 1 January	111,933
- Business acquisition (Note 28)	377
- Exchange differences on translation of financial statements	5,222
Net book value as at 31 March	117,532

17. Other intangible assets

Details of other intangible assets are as follows:

	Unit: Million Baht					
	Consolidated financial statements					
	Computer software	Right-of- use	Customer contracts	Copyright, license and trademark	Other intangible assets	Total
As at 1 January 2020						
Cost	24,865	20,507	45,780	3,966	24,306	119,424
<u>Less</u> Accumulated amortization	(14,994)	(9,674)	(2,300)	(1,839)	(9,935)	(38,742)
Allowance for impairment	-	-	-	-	(714)	(714)
Net book value	9,871	10,833	43,480	2,127	13,657	79,968
Cumulative effects of changes in accounting policies (Note 4)	(147)	(10,833)	-	-	-	(10,980)
Net book value after cumulative effects of changes in accounting policies	9,724	-	43,480	2,127	13,657	68,988
For the period ended 31 March 2020						
Beginning net book value after cumulative effects of changes in accounting policies	9,724	-	43,480	2,127	13,657	68,988
- Additions	228	-	-	49	195	472
- Reclassifications	122	-	-	-	(198)	(76)
- Amortization for the period	(592)	-	(486)	(22)	(308)	(1,408)
- Exchange differences on translation of financial statements	189	-	26	9	551	775
Ending net book value	9,671	-	43,020	2,163	13,897	68,751
As at 31 March 2020						
Cost	25,403	-	45,957	4,024	24,940	100,324
<u>Less</u> Accumulated amortization	(15,732)	-	(2,937)	(1,861)	(10,272)	(30,802)
Allowance for impairment	-	-	-	-	(771)	(771)
Net book value	9,671	-	43,020	2,163	13,897	68,751

17. Other intangible assets (Continued)

Details of other intangible assets are as follows: (Continued)

	Unit: Million Baht		
	Separate financial statements		
	Computer software	Right-of-use	Total
As at 1 January 2020			
Cost	8,131	20,151	28,282
<u>Less</u> Accumulated amortization	(5,526)	(9,381)	(14,907)
Net book value	2,605	10,770	13,375
Cumulative effects of changes in accounting policies (Note 4)	-	(10,770)	(10,770)
Net book value after cumulative effects of changes in accounting policies	2,605	-	2,605
For the period ended 31 March 2020			
Beginning net book value after cumulative effects of changes in accounting policies	2,605	-	2,605
- Additions	17	-	17
- Reclassifications	45	-	45
- Amortization for the period	(226)	-	(226)
Ending net book value	2,441	-	2,441
As at 31 March 2020			
Cost	8,188	-	8,188
<u>Less</u> Accumulated amortization	(5,747)	-	(5,747)
Net book value	2,441	-	2,441

18. Exploration and evaluation assets

Details of exploration and evaluation assets are as follows:

Unit: Million Baht

	Consolidated financial statements		
	Petroleum exploration and evaluation assets	Mining properties	Total
As at 1 January 2020			
Cost	131,643	828	132,471
<u>Less</u> Allowance for impairment	<u>(52,052)</u>	<u>(151)</u>	<u>(52,203)</u>
Net book value	<u>79,591</u>	<u>677</u>	<u>80,268</u>
For the period ended 31 March 2020			
Beginning net book value	79,591	677	80,268
- Additions	730	23	753
- Reclassifications	(31)	-	(31)
- Exchange differences on translation of financial statements	<u>6,550</u>	<u>54</u>	<u>6,604</u>
Ending net book value	<u>86,840</u>	<u>754</u>	<u>87,594</u>
As at 31 March 2020			
Cost	138,471	917	139,388
<u>Less</u> Allowance for impairment	<u>(51,631)</u>	<u>(163)</u>	<u>(51,794)</u>
Net book value	<u>86,840</u>	<u>754</u>	<u>87,594</u>

19. Loans and lease liabilities (Continued)

Details of loans and lease liabilities are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements											
	As at 1 January 2020	Cumulative effects of changes in accounting policies (Note 4)	Beginning net book value after cumulative effects of changes in accounting policies	Cash flows from financing			Non-cash items				As at 31 March 2020	
				Additions	Repayments	Lease - Addition	(Gain) loss on exchange rates	Exchange differences on translation of financial statements	Business acquisition (Note 28)	Others		
Short-term loans from financial institutions	44,441	-	44,441	19,001	(35,842)	-	-	847	-	-	38	28,485
Loans - Baht	139,267	-	139,267	15,926	(4,320)	-	-	-	1,125	(96)	151,902	
Loans - foreign currencies	47,872	16	47,888	170	(390)	-	1,290	2,666	-	28	51,652	
Debentures - Baht	230,143	(15)	230,128	-	-	-	(2,106)	2,107	-	(50)	230,079	
Debentures - foreign currencies	188,176	(17)	188,159	3,749	(15,008)	-	8,375	6,795	-	(567)	191,503	
Lease liabilities	9,070	40,549	49,619	-	(1,689)	1,824	539	1,185	-	332	51,810	
Total	658,969	40,533	699,502	38,846	(57,249)	1,824	8,098	13,600	1,125	(315)	705,431	

On 15 January 2020, PTT Exploration and Production Public Co., Ltd. (PTTEP) refinanced its debentures by which the existing debentures in the nominal value of USD 220 million were exchanged for the new debentures with the nominal value of USD 153 million. The present value discounted using effective interest rate of existing debentures is in the amount of USD 121 million, and the cash amount of USD 67 million paid to the existing debenture holders. The Group recognised modification gain net of refinancing costs in the amount of USD 22 million or equivalent to Baht 680 million as described in Note 23 to the financial statement. On accounting basis, this refinancing of debentures is considered as an exchange between an existing debenture holders and PTTEP, since the newly issue debentures are issued to existing debenture holders, for which the term were not substantially different as the discounted cash flow value of new debentures varies from discounted cash flow value of previously issued debentures is less than 10%.

19. Loans and lease liabilities (Continued)

Details of loans and lease liabilities are as follows: (Continued)

Unit: Million Baht

	Separate financial statements							As at 31 March 2020
	As at 1 January 2020	Cumulative effects of changes in accounting policies (Note 4)	Beginning net book value after cumulative effects of changes in accounting policies	Cash flows from financing		Non-cash items		
				Additions	Repayments	Lease - Additions	Loss on exchange rates Others	
Short-term loans - related party	3,488	-	3,488	122	(2,253)	-	-	1,357
Loans - Baht	1,000	-	1,000	-	-	-	-	1,000
Loans - foreign currencies	23,873	-	23,873	-	-	2,014	-	25,887
Debentures - Baht	83,702	(14)	83,688	-	-	-	(17)	83,671
Debentures - foreign currencies	8,806	(16)	8,790	-	-	737	(12)	9,515
Lease liabilities	3,957	3,778	7,735	-	(207)	666	336	8,450
Total	124,826	3,748	128,574	122	(2,460)	666	3,087	129,880

20. Provisions for employee benefits

Movements in the present value of provisions for employee benefits are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
As at 1 January	32,590	23,921	7,313	6,907
Service cost	540	408	132	126
Interest cost	137	156	33	55
Actuarial loss from provisions for post-employment benefit	54	6	-	-
Actuarial loss from provisions for other long-term employee benefit	33	-	-	-
Actual payment	(286)	(366)	(15)	(12)
Business acquisition	-	256	-	-
Exchange differences on translation of financial statements	164	(24)	-	-
As at 31 March	<u>33,232</u>	<u>24,357</u>	<u>7,463</u>	<u>7,076</u>

21. Provision for decommissioning costs

Movements in the provision for decommissioning costs are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2020	2019
As at 1 January	91,889	74,723
- Additional provision	1,625	771
- Paid during the period	(32)	-
- Reversal of provision	(65)	(2)
- Business acquisition (Note 28)	36	-
- Exchange differences on translation of financial statements	7,645	(1,458)
As at 31 March	101,098	74,034
- Current portion	<u>(1,388)</u>	<u>(1,079)</u>
- Long-term portion	<u>99,710</u>	<u>72,955</u>

22. Basic earnings (loss) per share

Basic earnings (loss) per share for the three-month period ended 31 March 2020 and 2019 are as follows:

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
Profit (loss) attributable to equity holders of the Company	(1,554,358,470)	29,312,075,916	18,795,184,806	17,101,131,550
Adjustment of profit (loss)*	(74,698,632)	(283,402,784)	-	-
Profit (loss) for the calculation of earnings per share	(1,629,057,102)	29,028,673,132	18,795,184,806	17,101,131,550
Number of weighted average of ordinary shares (shares)	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Earnings(loss) per share (Baht/share)	(0.06)	1.02	0.66	0.60

*Adjustments of profit (loss) are adjustments related to redemption of perpetual subordinated debentures, interests, and income taxes are presented in the statement of changes in shareholders' equity.

23. Other income

Details of other income for the three-month period ended 31 March 2020 and 2019 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
Transportation income	1,952	1,348	2,734	2,016
Dividend income	136	94	15,352	8,662
Interest income	1,250	2,795	602	916
Gain (loss) on disposal of assets and investments	32	(24)	2,309	(5)
Loss on investment at fair value through profit and loss	(1,099)	-	(132)	-
Gain on debt modification (Note 19)	680	-	-	-
Others	2,157	1,613	967	987
Total	5,108	5,826	21,832	12,576

24. Expenses by nature

Details of expenses by nature for the three-month period ended 31 March 2020 and 2019 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
Changes in inventories decrease	409,147	432,047	246,220	287,992
Staff costs	14,209	13,069	2,119	2,178
Depreciation and amortization	35,865	31,195	4,906	4,749
Expenses related to short-term lease agreements	276	-	42	-
Expenses related to low-value assets lease agreements	49	-	24	-
Expenses related to variable rental	349	-	265	-

25. Operating segments

These operating segments are consistent with the internal management reports provided to the Chief Operating Decision Maker (CODM), who makes decisions related to the allocation of resources to the segments and assesses their performance.

For management purposes, the Group is organized into business groups based on types of products and services. The major segments of the Group are as follows:

Upstream Petroleum and Natural gas business group

1. Petroleum exploration and production business:
The Group conducts petroleum exploration and production business both domestically and overseas. The Group is the operator and jointly invests with leading petroleum exploration and production companies. Most domestic projects are located in the Gulf of Thailand, while overseas projects are located in Southeast Asia, Australia, America and Africa.
2. Natural gas business:
The Group conducts natural gas business including procurement, natural gas pipeline transmission, distribution, and natural gas separation. Products from the natural gas separation plants are used as feedstock for the petrochemical industry and as fuel in the household, transportation and industry sectors.
3. Coal business:
The Group conducts coal mining business, involving overseas exploration, production and distribution of coals.

Downstream Petroleum business group

1. Oil business:
The Group conducts marketing of petroleum products and lube oil in both domestic and overseas markets under an efficient operating system of procurement, storage, and distribution of products as well as the retail business at service stations.
2. International trading business:
The Group conducts international trading business including the import and export of petroleum and petrochemical products as well as other related products. This includes the price risk management and international chartering.
3. Petrochemical and Refining business:
The Group conducts refining business including the production and distribution of petroleum and petrochemicals products in both domestic and overseas markets.

Technology and Engineering group

The Group conducts innovation, digital, technology, engineering, the production and distribution of electricity, steam and water for industrial purpose, and the project management of the Group. This includes seeking the business opportunities for the sustainability of the Group.

Other operations of the Group are included in other segments, none of which constitutes a separately reportable segment.

25. Operating segments (Continued)

Consolidated financial statements

For the three-month period ended 31 March 2020

	Upstream petroleum and natural gas				Downstream petroleum			Technology and Engineering	Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining					
Sales - others	11,205	80,958	3,320	129,466	119,741	123,963	14,866	48	-	483,567	
- related parties	35,781	33,307	206	1,163	102,943	88,089	4,839	812	(267,140)	-	
Net sales	46,986	114,265	3,526	130,629	222,684	212,052	19,705	860	(267,140)	483,567	
Gross profit (loss)*	40,453	16,353	1,454	7,957	(3,234)	(18,302)	5,864	(19)	(274)	50,252	
EBITDA	33,315	14,433	1,174	3,755	(3,392)	(22,971)	5,668	(532)	935	32,385	
Depreciation and amortization expenses	(16,719)	(4,832)	(771)	(1,290)	(71)	(9,360)	(2,733)	(89)	-	(35,865)	
Segment operating profit (loss)	16,596	9,601	403	2,465	(3,463)	(32,331)	2,935	(621)	935	(3,480)	
Share of profit (loss) from investments in joint ventures and associates	334	(13)	(1)	231	-	140	(48)	-	-	643	
Others	(30)	(6)	(5)	84	-	(266)	(4)	(14)	-	(241)	
Unallocated revenue and expenses:											
Interest income										1,250	
Gain on derivatives										8,470	
Loss on foreign exchange rate										(5,075)	
EBIT										1,567	
Loss for the period										(14,006)	

* Gross profit (loss) excludes depreciation and amortization expenses in cost of sales.

25. Operating segments (Continued)

Consolidated financial statements

For the three-month period ended 31 March 2019

	Upstream petroleum and natural gas				Downstream petroleum			Technology and Engineering	Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining					
Sales - others	5,839	90,945	4,216	145,140	141,503	157,136	6,062	33	-	550,874	
- related parties	37,021	35,194	-	752	127,705	97,543	4,377	719	(303,311)	-	
Net sales	42,860	126,139	4,216	145,892	269,208	254,679	10,439	752	(303,311)	550,874	
Gross profit (loss)*	38,320	20,538	1,596	10,003	1,600	25,698	2,864	(151)	(2,390)	98,078	
EBITDA	32,812	17,948	1,209	5,954	829	20,920	2,708	(599)	(1,258)	80,523	
Depreciation and amortization expenses	(14,525)	(4,615)	(831)	(966)	(27)	(8,891)	(1,260)	(80)	-	(31,195)	
Segment operating profit (loss)	18,287	13,333	378	4,988	802	12,029	1,448	(679)	(1,258)	49,328	
Share of profit from investments in joint ventures and associates	20	181	-	269	-	921	145	-	-	1,536	
Others	-	(1)	(1)	29	(9)	2	71	(2)	-	89	
Unallocated revenue and expenses:											
Interest income										2,795	
Loss on derivatives										(3,780)	
Gain on foreign exchange rate										3,875	
EBIT										53,843	
Profit for the period										39,584	

* Gross profit (loss) excludes depreciation and amortization expenses in cost of sales.

26. Fair value measurement of financial instruments

As at 31 March 2020 and 31 December 2019 the Group had financial assets and liabilities measured at fair value as follows:

As at 31 March 2020

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Investments in short-term financial assets	11,215	184	-	11,399
Investments measured at fair value through other comprehensive income				
Equity instruments	2,400	828	13,951	17,179
Debt instruments	-	147	-	147
Mutual funds	-	20	782	802
Investments measured at fair value through profit or loss				
Mutual funds	785	1	-	786
Long-term lending loans measured at fair value through profit or loss	-	97	-	97
Derivatives				
Foreign currency forward contracts	-	2,734	-	2,734
Cross-currency swap contracts	-	359	-	359
Interest rate swap contracts	-	758	-	758
Finance option contracts	-	197	-	197
Commodity derivatives	4,928	7,211	-	12,139
Commodities contracts	-	2,411	-	2,411
Other non-current financial assets				
Pension scheme investments from joint operation	1,466	-	-	1,466

26. Fair value measurement of financial instruments (Continued)

As at 31 March 2020 and 31 December 2019 the Group had financial assets and liabilities measured at fair value as follows: (Continued)

As at 31 March 2020 (Continued)

Unit: Million Baht

	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial liabilities measured at fair value				
Derivatives				
Foreign currency forward contracts	-	1,458	-	1,458
Cross-currency swap contracts	-	2,863	-	2,863
Interest rate swap contracts	-	1,330	-	1,330
Finance option contracts	-	791	-	791
Commodity derivatives	-	3,337	-	3,337
Commodities contracts	-	163	-	163
Put options over non-controlling interest	-	-	611	611
Other non-current financial liabilities				
Contingent considerations from business acquisition	-	-	181	181
Contingent considerations from interest acquisition in joint venture	-	-	1,706	1,706

26. Fair value measurement of financial instruments (Continued)

As at 31 March 2020 and 31 December 2019 the Group had financial assets and liabilities measured at fair value as follows: (Continued)

As at 31 December 2019

Unit: Million Baht

	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	3,360	-	-	3,360
Debt instruments	-	1,503	-	1,503
Mutual funds	1,170	-	654	1,824
Derivatives				
Foreign currency forward contracts	-	357	-	357
Cross-currency swap contracts	-	4,949	-	4,949
Interest rate swap contracts	-	265	-	265
Commodity swap contracts	-	696	-	696
Other derivative contracts	-	1,230	-	1,230
Other non-current assets				
Pension scheme investments from joint operation	1,354	-	-	1,354
Financial liabilities measured at fair value				
Derivatives				
Foreign currency forward contracts	-	727	-	727
Cross-currency swap contracts	-	154	-	154
Interest rate swap contracts	-	2,492	-	2,492
Commodity swap contracts	1,365	412	-	1,777
Other derivative contracts	-	73	-	73
Other non-current liabilities				
Contingent considerations from business acquisition	-	-	214	214
Contingent considerations from interest acquisition in joint venture	-	-	1,564	1,564

26. Fair value measurement of financial instruments (Continued)

As at 31 March 2020 and 31 December 2019 the Group had financial assets and liabilities measured at fair value as follows: (Continued)

As at 31 March 2020

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Investments measured at fair value through other comprehensive income				
Equity instruments	1,512	-	56	1,568
Mutual funds	-	-	782	782
Investments measured at fair value through profit or loss				
Mutual funds	265	-	-	265
Derivatives				
Foreign currency forward contracts	-	177	-	177
Cross-currency swap contracts	-	359	-	359
Interest rate swap contracts	-	653	-	653
Finance option contracts	-	197	-	197
Commodity derivatives	-	223	-	223
Commodities contracts	-	85	-	85
Financial liabilities measured at fair value				
Derivatives				
Foreign currency forward contracts	-	181	-	181
Cross-currency swap contracts	-	914	-	914
Interest rate swap contracts	-	87	-	87
Commodity derivatives	-	815	-	815
Commodities contracts	-	106	-	106

26. Fair value measurement of financial instruments (Continued)

As at 31 March 2020 and 31 December 2019 the Group had financial assets and liabilities measured at fair value as follows: (Continued)

As at 31 December 2019

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	1,936	-	-	1,936
Mutual funds	397	-	654	1,051
Derivatives				
Cross-currency swap contracts	-	1,763	-	1,763
Interest rate swap contracts	-	239	-	239
Financial liabilities measured at fair value				
Derivatives				
Interest rate swap contracts	-	324	-	324

26. Fair value measurement of financial instruments (Continued)

As at 31 March 2020 and 31 December 2019 the Group had financial assets and liabilities that were not measured at fair value, though the fair values approximate their carrying value, except financial assets and liabilities as follow:

As at 31 March 2020

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Amortized cost investments				
Debt instruments	-	16,215	-	16,215
Financial liabilities disclosed at fair value				
Long-term loans	-	155,638	-	155,638
Debentures	-	466,892	-	466,892

As at 31 December 2019

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Amortized cost investments				
Debt instruments	-	15,014	-	15,014
Financial liabilities disclosed at fair value				
Debentures	-	393,143	-	393,143

26. Fair value measurement of financial instruments (Continued)

As at 31 March 2020 and 31 December 2019 the Group had financial assets and liabilities that were not measured at fair value, though the fair values approximate their carrying value, except financial assets and liabilities as follow: (Continued)

As at 31 March 2020

	Unit: Million Baht			
	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Amortized cost investments				
Debt instruments	-	15,727	-	15,727
Financial liabilities disclosed at fair value				
Long-term loans	-	-	41,029	41,029
Debentures	-	110,418	-	110,418

As at 31 December 2019

	Unit: Million Baht			
	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Amortized cost investments				
Debt instruments	-	15,014	-	15,014
Financial liabilities disclosed at fair value				
Debentures	-	107,048	-	107,048

26. Fair value measurement of financial instruments (Continued)

Fair value valuation techniques and inputs for Level 2 valuation

The fair values of debt securities and available-for-sale investments were determined based on the latest bid price or the yield rate quoted by the Thai Bond Market Association or other relevant markets. They were also calculated based on the contractual cashflows, discounted using the market reference rate of other debt securities that have observable prices.

In determining the fair values of derivatives, most of the inputs used for the valuations are observable in the relevant markets, adjusted by appropriate risk factors, such as market price, price volatility, spot rates of foreign currencies, yield curves of the respective currencies, and commodity price yield curves. Discounting was applied if there was a significant impact to the fair value of the derivative instruments.

The fair values of long-term loans were determined based on the present values of future cash flows, discounted using the market interest rate for similar instruments. The fair values of debentures were based on the latest closing price or the reference interest rate quoted by the bond market. They were also calculated using the reference price in the secondary market of bond market that are quoted in an active market.

Fair value valuation techniques and inputs for Level 3 valuation

The fair values of investments in financial assets and available-for-sale investments in mutual funds were determined based on the net asset value or the net asset value as reported in the capital call statement and translated using the closing exchange rate or a company valuation based on the latest round of funding or costs, depending upon which value is more appropriate. For some financial assets measured at fair value through other comprehensive income, a significant unobservable input is the risk-adjusted discount rate. This is estimated based on the weighted average cost of capital of public companies' that are, in the opinion of the Group, in a comparable financial position with the counterparty to the contract. The valuation processes and results are reviewed regularly.

The fair values of long-term loans were determined based on discounted future cash flow and valuation model techniques, using an appropriate risk-adjusted discount rate. Most of the inputs used for the valuation are observable in the relevant markets such as spot rates of foreign currencies, interest rate yield curves and bonds yield curves.

The fair values of derivative liabilities, which are the put options over non-controlling interests, were determined based on present value of expected payments, which is determined by considering forecasted earnings before financial costs, taxes, depreciation and amortization, discounted using a discount rate.

The fair value of other non-current financial liabilities that are categorized as contingent considerations from business acquisition and contingent considerations from interest acquisition in joint venture were determined by discounted cash flow.

During the period, there were no transfers of items within the fair value hierarchy.

27. Dividend payment

On 26 March 2020, at the Special Meeting of the Company No.1/2020, the Board approved interim dividend payments for the year 2019 of Baht 2 per share, approximately amounting to Baht 57,124 million. On 25 October 2019, the Company paid an interim dividend from the operating results of the first half of 2019 at Baht 0.90 per share for 28,562,203,593 shares, amounting to Baht 25,706 million.

Dividend	For operating period	Dividend payment rate (Baht/share)	Number of shares (shares)	Total dividend (Million Baht)	Payment date
Interim	1 January 2019 - 30 June 2019	0.90	28,562,203,593	25,706	25 October 2019

On 24 April 2020, the Company paid the remaining dividend from the operating results of the second half of 2019 at Baht 1.10 per share for 28,562,204,838 shares, amounting to Baht 31,418 million.

Dividend	For operating period	Dividend payment rate (Baht/share)	Number of shares (shares)	Total dividend (Million Baht)	Payment date
Interim	1 July 2019 - 31 December 2019	1.10	28,562,204,838	31,418	24 April 2020

28. Business acquisition

On 6 December 2018, Global Power Synergy Public Co., Ltd. (GPSC) and Terraform Global Operating LLC. entered into a Share Purchase Agreement to authorise Global Renewable Power Company Limited, which is the GPSC's subsidiary, to acquire shareholding interests of Terraform Global Operating (Thailand) Company Limited, World X Change Asia Company Limited, P.P. Solar Company Limited and N.P.S. Stargroup Company Limited. Their principal business operations are to generate and supply electricity from solar farms and provide management and consultancy services to solar farm sector. Total investment value was Baht 1,957 million.

On 26 March 2020, a subsidiary made a full payment to Terraform Global Operating LLC and changed a shareholder's name on the same date.

Details of net assets acquired and goodwill at the acquisition date are as follows:

	Unit: Million Baht
Purchase consideration	1,957
Fair value of net assets acquired	<u>(1,580)</u>
Goodwill (Note 16)	<u><u>377</u></u>

Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	480
Trade accounts receivable	71
Other accounts receivable	4
Current derivative assets	4
Property, plant and equipment (Note 14)	2,206
Deferred tax assets	2
Trade accounts payable	(2)
Other accounts payable	(16)
Current portion of long-term loans (Note 19)	(1,125)
Other current liabilities	(8)
Provision for decommissioning costs (Note 21)	<u>(36)</u>
Fair value of net assets acquired	1,580
<u>Add</u> Goodwill (Note 16)	<u>377</u>
Total purchase consideration transferred	1,957
<u>Less</u> Cash and cash equivalents of subsidiaries	<u>(480)</u>
Cash outflow on the business acquisition	<u><u>1,477</u></u>

GPSC is still evaluating the fair value of the net assets acquired from business acquisition. The above goodwill needs to be further adjusted to the fair value of the net assets acquired. Which must be completed within 12 months from the business acquisition date.

29. Proceeding regarding the Central Administrative Court's ordering temporary suspension of projects in Map Ta Phut area

On 19 June 2009, the Stop Global Warming Association and a group of individuals totaling 43 parties (the Petitioners) filed a complaint with the Central Administrative Court (the Court) as the black case No. 908/2552, against eight government agencies, together with a motion seeking the Court injunction to temporarily suspend all operations and activities of 76 industrial projects in the Map Ta Phut area in Rayong Province.

On 29 September 2009, the Court ordered the temporary injunction by requiring the eight accused government agencies to issue the order to temporarily suspend all 76 projects pending the Court's judgment or order otherwise, except for those projects or activities which received the permits before the effective date of the Constitution of Kingdom of Thailand B.E. 2550 or which were not required to prepare the Environmental Impact Assessment (EIA) reports pursuant to the Ministerial Announcement of Ministry of Natural Resources and Environment on 16 June 2009. 25 projects of the Group were under the suspension order, and 3 of those 25 projects belonged to the Company.

On 16 October 2009, the Group, as an interested person, submitted a motion to appeal the Court's order to the Supreme Administrative Court.

On 2 December 2009, the Supreme Administrative Court issued an order No. 592/2552 amending the Court's injunction by requiring the eight accused government agencies to order the temporary suspension of all projects or activities listed in the complaint except for 11 projects, which clearly, according to the Supreme Administrative Court, did not severely affect the community but were projects intended to mitigate pollution or only additional installation to the existing projects. Among those 11 projects, 7 of them belonged to the Group, comprising 1 project of the Company and 6 projects of the other companies in the Group. 2 projects of the Company were still under the Court's order to suspend.

On 18 December 2009, the public prosecutor submitted the answer rejecting all allegations in the complaint.

On 2 September 2010, the Court rendered a judgment revoking the permit of the projects listed in the complaint which, according to the law, were categorized as project that might severely affect the community and did not comply with the procedures set forth in Section 67 paragraph 2 of the Constitution, B.E. 2550. The revocation was effective as of the date of the judgment. 1 project of the Group is within the scope of the judgment.

On 1 October 2010, the 43 prosecutors appealed the Court's judgment to the Supreme Administrative Court. On 7 December 2010, the eight accused government agencies by the public prosecutors submitted a reply to the appeal. The appeal is currently under the consideration of the Supreme Administrative Court.

30. Commitments and contingent liabilities

Details of significant changes in commitments and contingent liabilities are as follows:

30.1 Details of commitments to subsidiaries and joint ventures are as follows:

30.1.1 The Company has provided loans to its subsidiaries with credit limits totalling Baht 119,131 million. As at 31 March 2020, the Company made these loans payments to its subsidiaries totalling Baht 67,972 million. The remaining credit limits were Baht 51,159 million.

30.1.2 The Company entered into the Sponsor Support Agreements with subsidiaries and joint ventures with credit limits equal to the sum of the loan obligations to financial institutions of such subsidiaries and joint ventures. Under these agreements, as at 31 March 2020, the Company had commitments of USD 17 million or equivalent to Baht 555 million.

30.1.3 The Company had obligations under the Shareholder Agreements to pay for ordinary shares in proportion to its shareholding. As at 31 March 2020, the Company had remaining obligations amounting to Baht 32,650 million.

30.2 Commitments under leases - the Group as a lessee, the future minimum lease payments under uncancellable leases as at 31 March 2020 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	Separate financial statements
- Within 1 year	279	118
- Over 1 year but not over 5 years	439	138
- Over 5 years	738	70
Total	1,456	326

30.3 As at 31 March 2020, the Group had capital commitments of Baht 126,323 million in the consolidated financial statements and Baht 13,200 million in the separate financial statements.

30.4 As at 31 March 2020, the Group had outstanding letters of credit of Baht 28,810 million in the consolidated financial statements and Baht 4,851 million in the separate financial statements.

30.5 As at 31 March 2020, the Group had contingent liabilities in the form of letter of guarantee amounting to Baht 29,847 million in the consolidated financial statements and Baht 56 million in the separate financial statements.

30. Commitments and contingent liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 30.6 A subsidiary entered into a contract to sell a product to the Company and the Company entered into a contract to resell the same product to a listed company (i.e. back-to-back contracts). The term of the two contracts was 15 years, expiring on 31 January 2012. Before the expiration of the contract, the subsidiary notified the Company that the contract would not be renewed. The Company had to notify the listed company that the contract would also not be renewed. The Company's notice was served to the listed company in accordance with the terms and conditions set forth in the contract. On 3 December 2009, the listed company submitted claims with the Thai Arbitration Institute (the Institute) requesting the Company and the subsidiary, as the seller and the supplier, respectively, to comply with the contracts by continuing to sell the product to the listed company or be jointly liable to pay damages.

On 10 February 2010, the subsidiary submitted motion with the Institute asking to dismiss the claims against it from the case list. The Institute issued an order to dismiss the claims relating to the subsidiary.

The Company forwarded the case to the Office of the Attorney General to submit a defense to the Institute. On 28 April 2010, the public prosecutor submitted the defense with the Institute for the Company. The tribunal finished the witness examination. Consequently, on 25 March 2016, the tribunal ruled that the Company make a partial payment for compensations to the listed company. However, the Company was of the opinion that the arbitral award might be both factually and legally inconsistent. Therefore, the Company could exercise its legal right by filing a motion with the court requesting the arbitral award to be revoked. On 30 June 2016, the Company by the public prosecutor filed a motion to revoke the arbitral award with the Civil Court. Subsequently, on 16 December 2016, the listed company submitted a motion with the Civil Court asking for the enforcement of the arbitral award. The Company by the public prosecutor submitted the objection with the Civil Court. On 19 September 2019, the Civil Court rendered a judgment to enforce the arbitral award that the Company to make payment of damages according to the abovementioned award in the amount of Baht 390 million per annum from 1 February 2012 to 25 March 2016 with the interest thereof at the rate of 7.50% per annum accrued from the date of the arbitral award to the date on which the Company makes full payment. However, the Company respectfully cannot concur with the judgment. On 16 March 2020, the Company therefore submitted an appeal against the Civil Court's judgment with the Supreme Court in accordance with the law. The case is currently under the consideration of the Supreme Court.

30. Commitments and contingent liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 30.7 On 26 May 2010, the contractor for an onshore natural gas pipeline construction project (the “Contractor”) submitted claims to the Thai Arbitration Institute (the Institute) seeking overdue payment and damages for the work performed in the aforementioned project from the Company. The Company, however, considered that the submission of the claims was incompliant with the dispute resolution procedure agreed upon the contract. Therefore, the Company filed an opposition to the Contractor’s claim submission with the Institute and reserved right to protest such contractually incompliant claim submission in the arbitration procedure. After the claim submission, the Central Bankruptcy Court ordered the Contractor to be under an absolute receivership which rendered the official receiver to have sole power in any litigation pertaining to the Contractor’s assets. Subsequently, the Contractor’s official receiver has petitioned the Institute to substitute the Contractor in the dispute against the Company. Regarding the Contractor’s bankruptcy case, the Company submitted a motion for receiving a debt payment in accordance with the law as a creditor. With respect to the arbitration process, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the Arbitral Tribunal rendered an award ordering the Company to partially pay for the Contractor’s claims. However, the Company considered that the arbitral award is materially both factually and legally inconsistent. The Company, therefore, filed a motion to revoke the arbitral award, while the contractor submitted a motion with the Civil Court to enforce the arbitral award. On 17 October 2017, the Civil Court delivered a judgment to enforce the arbitral award whereby some penalty amounts were reduced. However, The Company submitted with the Supreme Court an appeal of the Civil Court's judgment and, together with the appeal, the Company also placed with the Civil Court a Company's book bank as a security to stay the enforcement of the judgment. Subsequently, the Contractor also submitted with the Supreme Court an appeal of the Civil Court's judgment. On 18 December 2019, the Supreme Court rendered judgment in not accepting the Company’s appeal for consideration and the case was final. Therefore, the Company was obliged to make payment in accordance with the Civil Court’s judgment. On 8 January 2020, the Company made payment in accordance with the Civil Court’s judgment in the approximate amount of 4,544 million Baht with the Civil Court.

On 8 September 2010, the Contractor by the official receiver submitted another claim to the Institute seeking overdue payment and damages from the Company for the work performed in connection with another pipeline construction project. The Company, however, considered that the submission of the claims was incompliant with the dispute resolution procedure agreed upon the contract. Therefore, the Company filed an opposition to the Contractor’s claim submission with the Institute and reserved the right to protest such contractually incompliant claim submission in the arbitration procedure. In contention against the alleged claims, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the Arbitral Tribunal was mutually appointed to consider the disputes. On 30 November 2018, the tribunal rendered an award that both claims and counterclaims were dismissed. However, the Company already submitted the application of repayment of debt in the bankruptcy case. The Contractor, then, file a motion for revocation of the arbitral award with the Civil Court and the Company by the Office of the Attorney General submitted the motion to object the revocation of the arbitral award with the Civil Court. The case is currently under the consideration of the Civil Court.

30. Commitments and contingent liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 30.8 On 25 February 2014, the contractor for an onshore natural gas pipeline construction project (the "Contractor") filed a lawsuit against the Company with the Civil Court on the grounds of wrongful termination and breach of contract and claimed for outstanding payment of the work and damages. On the contrary, the Company considered that all of the Company's actions have been in accordance with the terms and conditions of the contract. Therefore, the Company forwarded the case to the Office of the Attorney General for consideration to arguing the case for the Company and the prosecutor has submitted the answer with the Court. Consequently, the Civil Court ordered the case be transferred to the Central Administrative Court for consideration and judgment because the Civil Court and the Central Administrative Court has the corresponding opinions that this case was an administrative case. The Civil Court transferred this case to the Central Administrative Court. Currently, the case is under the consideration of the Central Administrative Court.

After the Company terminated the contract with the Contractor, the Company completed an onshore natural gas pipeline construction project. Subsequently, on 20 June 2018, the Company filed a lawsuit against the Contractor with the Central Administrative Court on the grounds of breach of contract and absent from service and claimed for damages. Currently, the case is under the consideration of the Central Administrative Court.

On 25 September 2019, the Contractor filed a statement of fact with the Central Administrative Court that on 8 March 2019, the National Company Law Tribunal of India ordered that the Contractor to be under the Corporate Insolvency Resolution Process and appointed the Resolution Professional in accordance with India Law. The Company conducted an investigation and found that such statement was true. Subsequently, on 26 November 2019, the Company filed a petition to request the payment of debt with the Resolution Professional in India. Currently, the Resolution Professional is in consideration of the Company's petition. With regard to the Central Administrative Court's case, the Court is in consideration of the proceedings of the case.

- 30.9 On 11 March 2016, the group of PTTEP Australasia (PTTEP AA) received a letter from a firm of Australia lawyers representing a group of West Timorese seaweed farmers, notifying PTTEP AA of their intention to commence a legal action for compensation relating to the Montara oil spill incident in the Timor Sea in 2009. Subsequently, on 9 August 2016, PTTEP AA was notified of a claim made in the Sydney Registry of the Federal Court of Australia seeking damages on behalf of a group of seaweed farmers (Class Action). The Statement of Claim as filed does not quantify the claim, and no supporting evidence has yet been presented to the court. PTTEP AA has appointed lawyers and to defend against the claim. Currently, the case is under the court determination.

PTTEP considers that the claims from representative of West Timorese seaweed farmers related to Montara oil spill incident remain unproven due to insufficient evidence to support the claim.

30. Commitments and contingent liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 30.10 During the third quarter of 2014, the number of people in Rayong filed several lawsuits with the Civil Court and the Rayong Provincial Court against PTT Global Chemical Public Co., Ltd. (PTTGC) to claim the extra compensation from oil spill incident and to perform the rehabilitation of the sea and natural environmental recovery. Some cases have been dismissed and some cases have been passed a judgment by the Civil Court on 25 August 2016 ordered PTTGC to compensate for damages including interest and rehabilitation of approximately Baht 11 million. PTTGC has appealed on 17 February 2017. Subsequently, on 11 May 2018, PTTGC made a compromise agreement with majority plaintiffs at the Civil Court. On 20 December 2018, the Court of Appeal has passed the judgment according to the compromise contracts which PTTGC has already paid compensation in full amount. For the remaining plaintiffs, the Court of Appeal orders PTTGC to pay compensation with its interest according to the judgement of the Court of First Instance and reduced the amount of interest. PTTGC has paid compensation to all plaintiff completely and no petition is submitted to Supreme Court by any of plaintiff. This case has become final.

For the case at Rayong Provincial Court, on 28 September 2018, the Court has made the judgement ordering PTTGC to pay damage cost with its interest approximately Baht 38 million by deducting the remedy payment paid to the plaintiffs of Baht 24 million. PTTGC deposited the remaining damage cost with its interest to the Rayong Provincial Court on 25 February 2019. Some plaintiffs filed an appeal with the Rayong Provincial Court and PTTGC has filed an answer to the appeal with the Rayong Provincial Court on 2 October 2019. Subsequently, on 22 January 2020 the Rayong Provincial Court sent an appointment to hear the judgment of the Court of Appeal Region 2 on 19 March 2020. On 11 January 2020 the Court of Appeal Region 2 has postponed the date of hearing the judgment and notify the date of reconciliation and compromise in dispute on 13 May 2020.

31. Other event

On 4 April 2016, the Ombudsman of Thailand submitted a complaint to the Administrative Court against the Minister of Finance, the Minister of Energy, the Company and other defendants as a black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on 18 December 2007 and 10 August 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of 30 September 2001 amounting to Baht 68,570 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On 26 May 2016, the Administrative Court ordered the Company to submit a defense, responding to the particular issue that was whether the Company completely transferred the assets of the Petroleum Authority of Thailand (the tenth defendant), which were public assets, to the first defendant (the Minister of Finance) in accordance with the Cabinet Resolution on 18 December 2007. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. On 11 May 2018, the Administrative Court issued an order to end the fact finding process. Currently, the case is under the consideration of the Administrative Court.

Nevertheless, on 14 December 2007, the Supreme Administrative Court in a red case No. Fo. 35/2550, ordered the defendants to jointly segregate the public assets to the Minister of Finance, in accordance with the judgment. Therefore, on 18 December 2007, the Cabinet acknowledged the aforesaid judgment and assigned the Minister of Finance and the Minister of Energy to jointly segregate the public assets to comply with the judgment. Consequently, on 26 December 2008, the Supreme Administrative Court declared that the defendants had completely complied with the judgment of the Court. Furthermore, the plaintiff and the co-plaintiffs had submitted complaints regarding such segregation of public assets to the Court for four times but the Court ordered to dismiss such complaints and reaffirmed that the judgment of the Supreme Administrative Court in the red case No. Fo. 35/2550 was completed. Consequently, on 10 August 2010, the Cabinet acknowledged the conduct followed the Supreme Administrative Court's judgment in accordance with the proposals of the Minister of Energy and the Minister of Finance.

32. Events after the reporting period

- 32.1 On 7 April 2020 at the 2020 Annual General Meeting of PTT LNG Co., Ltd. (PTTLNG), the shareholders passed a resolution to increase 530 million authorized share capital at Baht 10 per share amounting to Baht 5,300 million. The Company has made the additional payment amounting to Baht 1,325 million on 7 May 2020.
- 32.2 On 8 April 2020, PTT Global Chemical Public Co., Ltd. (PTTGC) issued and offered 15 million units of name-registered, unsubordinated and unsecured debentures with debentureholders' representative at Baht 1,000 per unit, totalling Baht 15,000 million, to institutional investors and major shareholder.
- 32.3 The Audit Committee of the Company approved these financial statements for issuance on 11 May 2020.

**AUDITOR'S INTERIM FINANCIAL INFORMATION REVIEW REPORT
AND FINANCIAL STATEMENTS
OF
PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019**



(TRANSLATION)

AUDITOR'S REPORT ON REVIEW OF INTERIM FINANCIAL INFORMATION

TO: THE SHAREHOLDERS OF PTT PUBLIC COMPANY LIMITED

The State Audit Office of the Kingdom of Thailand has reviewed the consolidated and separate statements of financial position as at March 31, 2019, the consolidated and separate statements of income, the consolidated and separate statements of comprehensive income, the consolidated and separate statements of changes in equity and the consolidated and separate statements of cash flows for the three-month period ended March 31, 2019, and the condensed notes to the financial statements of PTT Public Company Limited and its subsidiaries and of PTT Public Company Limited, respectively. Management is responsible for the preparation and presentation of this interim financial information in accordance with Thai Accounting Standard No. 34, "Interim Financial Reporting". The responsibility of the State Audit Office of the Kingdom of Thailand is to express a conclusion on this interim financial information based on our review.

Scope of review

The State Audit Office of the Kingdom of Thailand conducted the review in accordance with Thai Standard on Review Engagements 2410, "Review of Interim Financial Information Performed by the Independent Auditor of the Entity". A review of interim financial information consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with Thai Standards on Auditing and consequently does not enable the State Audit Office of the Kingdom of Thailand to obtain assurance that the State Audit Office of the Kingdom of Thailand would become aware of all significant matters that might be identified in an audit. Accordingly, the State Audit Office of the Kingdom of Thailand does not express an audit opinion.

Conclusion

Based on the review, nothing has come to attention that causes the State Audit Office of the Kingdom of Thailand to believe that the accompanying interim financial information is not prepared, in all material respects, in accordance with Thai Accounting Standard No. 34, "Interim Financial Reporting".

(TRANSLATION)



- 2 -

Emphasis of Matter

The State Audit Office of the Kingdom of Thailand draws attention to Note 33.1 to the financial statements, which describes the event that Ombudsman of Thailand submitted a complaint to the Administrative Court (the Court) against the Company as the black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on December 18, 2007 and August 10, 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of September 30, 2001 amounting to Baht 68,569.69 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On May 26, 2016, the Administrative Court ordered the Company to submit a defense. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. On May 11, 2018, the Administrative Court issued an order to end the fact finding process. Currently, the case is under the consideration of the Administrative Court.

In conclusion, the State Audit Office of the Kingdom of Thailand's opinion is not qualified in respect of these matter.

(Signed) *Pasutnicha Jumpathes*
(Pasutnicha Jumpathes)
Deputy Auditor General

(Signed) *Mayuree Juntamat*
(Mayuree Juntamat)
Director of Financial and Procurement Audit Office No. 14

State Audit Office of the Kingdom of Thailand
May 13, 2019

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT MARCH 31, 2019

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
		(Unaudited but reviewed)	(Audited)	(Unaudited but reviewed)	(Audited)
Assets					
Current assets					
Cash and cash equivalents	4	340,162,985,882	292,184,322,373	87,463,108,013	86,204,049,166
Current investments		110,604,269,541	142,420,735,568	16,202,437,302	21,971,964,949
Trade accounts receivable	5	184,859,129,742	174,604,696,553	130,829,006,122	138,675,854,879
Other accounts receivable	6	75,793,180,551	78,827,069,774	19,237,358,294	17,314,183,668
Short-term lending loans	7.1	2,075,510,587	1,782,916,135	31,981,653,132	7,334,315,325
Inventories	9	134,047,251,748	125,279,815,840	5,832,669,830	10,247,494,259
Materials and supplies		32,885,716,130	28,871,647,153	5,594,522,848	5,540,731,086
Current derivative assets		2,129,927,199	5,097,686,415	-	-
Other current assets		7,178,512,913	7,894,466,941	4,056,726,646	4,648,056,425
Assets held-for-sale	14	465,050,449	-	-	-
Total current assets		890,201,534,742	856,963,356,752	301,197,482,187	291,936,649,757
Non-current assets					
Available-for-sale investments	11.2	6,845,768,255	10,875,929,781	2,625,154,820	2,579,555,315
Investments in subsidiaries	12.5	-	-	315,654,139,538	315,654,139,538
Investments in joint ventures	12.3, 12.5	42,073,200,009	41,317,061,064	5,928,104,973	5,927,614,973
Investments in associates	12.4	25,212,568,408	24,368,261,034	-	-
Other long-term investments	13.2	27,526,567,758	26,970,809,757	14,651,952,970	13,986,905,648
Long-term lending loans	7.2	16,445,970,447	13,862,709,357	30,992,018,848	32,895,679,795
Investment properties	14	5,448,807,563	5,605,699,619	2,348,400,149	2,032,718,766
Property, plant and equipment	15	1,183,061,085,282	1,114,174,738,576	273,324,848,206	273,321,633,368
Goodwill	16	110,133,964,325	48,924,920,577	-	-
Intangible assets	17	35,612,530,340	34,200,400,854	13,469,057,112	13,813,942,896
Exploration and evaluation assets	18	102,581,583,087	108,162,569,167	-	-
Deferred tax assets		35,337,691,606	28,498,932,833	945,626,623	-
Non-current derivative assets		2,626,230,253	2,079,494,926	1,041,045,102	708,186,115
Other non-current assets	19	37,993,261,397	39,478,987,823	5,865,686,727	5,756,487,773
Total non-current assets		1,630,899,228,730	1,498,520,515,368	666,846,035,068	666,676,864,187
Total assets		2,521,100,763,472	2,355,483,872,120	968,043,517,255	958,613,513,944

Notes to interim financial statements are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT MARCH 31, 2019

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
		(Unaudited but reviewed)	(Audited)	(Unaudited but reviewed)	(Audited)
Liabilities and Equity					
Current liabilities					
Bank overdrafts and short-term loans from financial institutions	21	92,163,059,251	25,561,803,923	-	-
Trade accounts payable		169,790,643,202	160,323,070,746	117,309,348,330	120,085,364,132
Other accounts payable		88,219,775,921	96,961,604,060	20,422,381,909	26,247,876,235
Current portion of long-term loans	20	67,285,343,367	63,108,598,300	26,502,762,900	26,511,158,464
Short-term loans	8.5, 21	701,550,500	-	2,489,353,962	3,332,695,376
Income tax payable		57,748,092,679	46,487,811,196	25,083,668,639	22,063,437,824
Short-term provision for decommissioning costs	23	1,078,811,603	1,090,300,309	-	-
Current derivative liabilities		3,061,551,974	2,545,871,892	51,176,228	94,600,356
Other current liabilities		11,169,545,519	10,801,967,333	4,129,779,638	4,503,619,289
Total current liabilities		491,218,374,016	406,881,027,759	195,988,471,606	202,838,751,676
Non-current liabilities					
Long-term loans	20	478,227,296,069	454,964,315,364	122,743,918,887	123,638,958,453
Deferred tax liabilities		33,290,352,691	32,868,290,152	-	210,202,677
Provisions for employee benefit	22	24,357,385,109	23,921,033,707	7,075,812,205	6,906,650,387
Long-term provision for decommissioning costs	23	72,954,691,857	73,632,219,096	-	-
Deposits on LPG cylinders		11,236,969,920	11,082,662,040	-	-
Non-current derivative liabilities		812,307,465	668,918,447	160,126,362	160,953,165
Other non-current liabilities	24	44,864,625,088	32,971,055,231	19,972,147,443	19,857,469,279
Total non-current liabilities		665,743,628,199	630,108,494,037	149,952,004,897	150,774,233,961
Total liabilities		1,156,962,002,215	1,036,989,521,796	345,940,476,503	353,612,985,637

Notes to interim financial statements are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT MARCH 31, 2019

Unit: Baht

	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
	(Unaudited but reviewed)	(Audited)	(Unaudited but reviewed)	(Audited)
Liabilities and Equity (Continued)				
Equity				
Share capital				
Authorized share capital				
28,562,996,250 ordinary shares of Baht 1 each	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Issued and paid-up share capital				
28,562,996,250 ordinary shares of Baht 1 each	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Premium on ordinary shares	29,211,131,966	29,211,131,966	29,211,131,966	29,211,131,966
Deficit from the change in the ownership interests in subsidiaries	(28,538,198,156)	(28,483,967,693)	-	-
Retained earnings				
Appropriated				
Legal reserve	2,857,245,725	2,857,245,725	2,857,245,725	2,857,245,725
Reserve for self-insurance fund	1,221,452,909	1,222,675,618	1,221,452,909	1,222,675,618
Unappropriated	867,233,348,744	838,208,853,447	558,955,192,240	541,852,837,981
Other components of equity	(2,582,466,079)	3,504,891,116	1,295,021,662	1,293,640,767
Total equity attributable to owners of the parent	897,965,511,359	875,083,826,429	622,103,040,752	605,000,528,307
Non-controlling interests	466,173,249,898	443,410,523,895	-	-
Total equity	1,364,138,761,257	1,318,494,350,324	622,103,040,752	605,000,528,307
Total liabilities and equity	2,521,100,763,472	2,355,483,872,120	968,043,517,255	958,613,513,944

Notes to interim financial statements are an integral part of these financial statements.

(Signed) Chansin Treenuchagron
(Chansin Treenuchagron)
President & Chief Executive Officer

(Signed) Phannalin Mahawongtikul
(Phannalin Mahawongtikul)
Chief Financial Officer

(TRANSLATION)

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF INCOME
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019

		Unit: Baht			
		Consolidated financial statements		Separate financial statements	
Notes		2019	2018	2019	2018 (Restated)
	Sales and service income	550,873,525,048	532,971,980,942	309,627,993,882	297,550,084,188
	Cost of sales and services	481,512,037,269	453,427,131,636	295,799,254,003	278,288,352,591
	Gross profit	69,361,487,779	79,544,849,306	13,828,739,879	19,261,731,597
	Other income	2,046,427,722	5,058,708,148	12,953,464,640	3,987,150,371
	Gain on foreign exchange rates	3,875,190,072	4,741,986,776	1,909,043,256	3,317,805,679
	Profit before expenses	75,283,105,573	89,345,544,230	28,691,247,775	26,566,687,647
	Selling and distribution expenses	6,869,591,077	5,898,422,619	2,866,816,920	1,520,850,327
	Administrative expenses	11,962,598,529	10,714,312,851	4,700,643,121	2,518,180,789
	Petroleum royalties	4,143,756,825	3,635,745,782	-	-
	Operating profit	52,307,159,142	69,097,062,978	21,123,787,734	22,527,656,531
	Share of profit from investments in joint ventures	1,097,296,987	1,865,959,711	-	-
	Share of profit from investments in associates	438,263,879	606,508,424	-	-
	Profit before finance costs and income taxes	53,842,720,008	71,569,531,113	21,123,787,734	22,527,656,531
	Finance costs	6,887,788,316	6,503,888,307	1,763,616,988	2,067,610,775
	Profit before income taxes	46,954,931,692	65,065,642,806	19,360,170,746	20,460,045,756
	Income taxes	7,370,530,980	8,478,621,780	2,259,039,196	3,257,649,491
	Profit for the period from continuing operations	39,584,400,712	56,587,021,026	17,101,131,550	17,202,396,265
	Profit for the period from discontinued operations, net of tax	-	-	-	3,471,333,923
	Profit for the period	39,584,400,712	56,587,021,026	17,101,131,550	20,673,730,188
	Profit attributable to				
	Owners of the parent				
	Continuing operations	29,312,075,916	39,788,257,848	17,101,131,550	17,202,396,265
	Discontinued operations, net of tax	-	-	-	3,471,333,923
		29,312,075,916	39,788,257,848	17,101,131,550	20,673,730,188
	Non-controlling interests				
	Continuing operations	10,272,324,796	16,798,763,178	-	-
	Discontinued operations, net of tax	-	-	-	-
		10,272,324,796	16,798,763,178	-	-
	Basic earnings per share				
	Continuing operations	1.02	1.38	0.60	0.60
	Discontinued operations	-	-	-	0.12
		1.02	1.38	0.60	0.72

Notes to interim financial statements are an integral part of these financial statements.

(TRANSLATION)

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF COMPREHENSIVE INCOME
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019

Unit: Baht

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
				(Restated)
Profit for the period from continuing operations	39,584,400,712	56,587,021,026	17,101,131,550	17,202,396,265
Other comprehensive income (loss)				
Items that will be reclassified subsequent to profit or loss				
Currency translation differences	(8,585,098,684)	(17,969,088,382)	-	-
Gain (loss) on measurements of available-for-sale investments	154,061,547	(1,286,852,238)	1,726,119	(844,583,462)
Income taxes related to available-for-sale investments	(21,324,844)	267,405,166	(345,224)	168,916,692
Loss on cash flow hedges	(296,706,232)	(376,429,067)	-	-
Income taxes related to cash flow hedges	(2,197,291)	(36,408,601)	-	-
Share of other comprehensive loss of joint ventures and associates	(354,145,488)	(16,980,749)	-	-
Items that will not be reclassified subsequent to profit or loss				
Gain (loss) on remeasurements of defined benefits plans	(6,454,495)	84,252	-	-
Income taxes related to remeasurements of defined benefits plans	1,036,515	(148,202)	-	-
Share of other comprehensive income (loss) from joint ventures and associates	(2,754,366)	1,757,501	-	-
Other comprehensive income (loss) for the period, net of taxes	(9,113,583,338)	(19,416,660,320)	1,380,895	(675,666,770)
Comprehensive income for the period from continuing operations	30,470,817,374	37,170,360,706	17,102,512,445	16,526,729,495
Comprehensive income for the period from discontinued operations, net of taxes	-	-	-	3,084,333,923
Total comprehensive income for the period	30,470,817,374	37,170,360,706	17,102,512,445	19,611,063,418
Total comprehensive income attributable to				
Owners of the parent				
Continuing operations	23,219,318,177	26,546,872,053	17,102,512,445	16,526,729,495
Discontinued operations, net of tax	-	-	-	3,084,333,923
	23,219,318,177	26,546,872,053	17,102,512,445	19,611,063,418
Non-controlling interests				
Continuing operations	7,251,499,197	10,623,488,653	-	-
Discontinued operations, net of tax	-	-	-	-
	7,251,499,197	10,623,488,653	-	-

Notes to interim financial statements are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN EQUITY
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019

Unit: Baht

Notes	Consolidated financial statements													
	Equity attributable to owners of the parent					Other components of equity								
	Issued and paid-up share capital	Premium on ordinary shares	Deficit from the change in the ownership interests in subsidiaries	Legal reserve	Reserve for self-insurance fund	Unappropriated	Currency translation differences	Available-for-sale investments	Cash flow hedges	Share of other comprehensive loss of joint ventures and associates	Total other components of equity	Total equity attributable to owners of the parent	Non-controlling interests	Total equity
	28,562,996,250	29,211,131,966	(24,311,625,093)	2,887,245,725	1,199,991,563	775,959,276,682	1,971,688,038	3,259,236,757	740,244,994	(112,215,260)	5,192,734,029	818,671,751,122	429,883,989,506	1,248,555,740,628
Balance as at January 1, 2018														
Changes in equity for the period														
Interests for subordinated capital debentures	-	-	-	-	-	(286,647,476)	-	-	-	-	-	(286,647,476)	(152,414,068)	(439,061,544)
Income taxes related to subordinated capital debentures	-	-	-	-	-	(42,615,262)	-	-	-	-	-	(42,615,262)	(22,659,072)	(65,274,334)
Finance cost from issuance of subordinated capital debentures	-	-	-	-	-	-	-	-	-	-	-	-	(2,425,380)	(2,425,380)
Change in the ownership interests in subsidiaries	-	-	(5,177,344,878)	-	-	-	-	-	-	-	-	(5,177,344,878)	(7,884,701,848)	(13,062,046,726)
Profit for the period	-	-	-	-	-	397,982,257,848	-	-	-	-	-	397,982,257,848	16,798,763,178	56,887,021,026
Other comprehensive income (loss) for the period	-	-	-	-	-	794,503	(11,856,294,966)	(1,066,796,418)	(177,859,008)	(140,727,906)	(13,242,180,298)	(13,241,385,795)	(6,175,274,525)	(19,416,660,320)
Balance as at March 31, 2018														
	28,562,996,250	29,211,131,966	(29,488,969,971)	2,887,245,725	1,199,991,563	815,419,062,295	(9,885,106,928)	2,192,438,339	(103,834,514)	(252,943,166)	(8,049,446,269)	839,712,015,559	432,445,277,791	1,272,157,293,350
Balance as at January 1, 2019														
Changes in equity for the period														
Reserve for self-insurance fund	-	-	-	-	(1,222,709)	1,222,709	-	-	-	-	-	-	-	-
Interests for subordinated capital debentures	-	-	-	-	-	(285,870,173)	-	-	-	-	-	(285,870,173)	(152,000,767)	(437,870,940)
Income taxes related to subordinated capital debentures	-	-	-	-	-	2,467,389	-	-	-	-	-	2,467,389	1,311,942	3,779,331
Dividends paid to subsidiaries	-	-	-	-	-	-	-	-	-	-	-	-	(4,750,188,767)	(4,750,188,767)
Business acquisition of subsidiaries	-	-	-	-	-	-	-	-	-	-	-	-	20,324,752,398	20,324,752,398
Change in the ownership interests in subsidiaries	-	-	(54,230,463)	-	-	-	-	-	-	-	-	(54,230,463)	87,352,000	33,121,537
Profit for the period	-	-	-	-	-	29,312,075,916	-	-	-	-	-	29,312,075,916	10,272,324,796	39,584,400,712
Other comprehensive income (loss) for the period	-	-	-	-	-	(5,400,544)	(5,806,084,067)	11,120,067	(140,572,627)	(25,969,558)	(6,087,357,195)	(6,092,757,759)	(3,620,823,599)	(9,713,583,358)
Balance as at March 31, 2019														
	28,562,996,250	29,211,131,966	(28,538,198,156)	2,887,245,725	1,221,452,209	867,233,348,744	(5,271,713,658)	2,960,768,895	266,725,884	(538,182,200)	(2,582,466,079)	897,965,511,359	466,173,249,898	1,364,138,761,257

Notes to interim financial statements are an integral part of these financial statements.

Unaudited
but reviewed

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN EQUITY
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019

Unit: Baht

	Separate financial statements									
	Retained earnings					Other components of equity				
	Notes	Issued and paid-up share capital	Premium on ordinary shares	Legal reserve	Reserve for self-insurance fund	Unappropriated	Available-for-sale investments	Other comprehensive income (loss)	Total equity	
Balance as at January 1, 2018		28,562,996,250	29,211,131,966	2,857,245,725	1,199,991,563	433,069,636,210	2,979,265,871		497,880,267,585	
Changes in equity for the period		-	-	-	-	3,471,333,923	(387,000,000)		3,084,333,923	
Other comprehensive income (loss) from discontinued operations	10	-	-	-	-	17,202,396,265	-		17,202,396,265	
Profit for the period		-	-	-	-	-	-	(675,666,770)	(675,666,770)	
Other comprehensive loss for the period		-	-	-	-	-	-	(675,666,770)	(675,666,770)	
Balance as at March 31, 2018		28,562,996,250	29,211,131,966	2,857,245,725	1,199,991,563	453,743,366,398	1,916,599,101		517,491,331,003	
Balance as at January 1, 2019		28,562,996,250	29,211,131,966	2,857,245,725	1,222,675,618	541,852,837,981	1,293,640,767		605,000,528,307	
Changes in equity for the period		-	-	-	(1,222,709)	1,222,709	-		-	
Reserve for self-insurance fund		-	-	-	-	17,101,131,550	-		17,101,131,550	
Profit for the period		-	-	-	-	-	-	1,380,895	1,380,895	
Other comprehensive income for the period		-	-	-	-	-	-	1,380,895	1,380,895	
Balance as at March 31, 2019		28,562,996,250	29,211,131,966	2,857,245,725	1,221,452,909	558,955,192,240	1,295,021,662		622,103,040,752	

Notes to interim financial statements are an integral part of these financial statements.

(TRANSLATION)

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019

Unit: Baht

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Cash flows from operating activities				
Profit attributable to owners of the parent	29,312,075,916	39,788,257,848	17,101,131,550	20,673,730,188
Adjustment of profit to net cash provided by (used in) operating activities				
Depreciation and amortization	31,194,607,346	28,519,485,301	4,749,476,514	5,285,244,546
(Gain) loss on disposal of assets	24,159,038	3,937,335	6,603,031	(175,787,409)
(Gain) loss on disposal of investments	420,680	(4,136,389)	-	(615,035,525)
Loss on impairment of assets	195,945	-	-	-
Loss on impairment of investments	-	-	-	21,624,657,670
Share of profit from investments in joint ventures	(1,097,296,987)	(1,865,959,711)	-	-
Share of profit from investments in associates	(438,263,879)	(606,508,424)	-	-
Profit attributable to non-controlling interests	10,272,324,796	16,798,763,178	-	-
Provision for employee benefit	564,498,514	594,412,992	181,420,152	242,468,283
Gain on exchange rates	(1,901,034,610)	(2,202,444,382)	(604,059,700)	(81,567,853)
Unrealized (gain) loss on derivatives	4,150,787,979	(1,895,791,916)	(377,109,918)	(647,492,253)
(Reversal of) allowance for doubtful accounts	(19,495,537)	130,884,049	(1,723,885)	(22,316,339,990)
Write-off exploration assets	-	14,332,862	-	-
(Reversal of) allowance for loss on decline in value of inventories	(3,917,999,651)	43,559,970	(46,047,283)	5,460,571
(Reversal of) allowance for obsolete materials and supplies	158,864,041	(41,791,162)	-	-
Dividends income	(94,327,581)	(34,020,265)	(8,661,580,260)	(168,684,657)
Income taxes	7,370,530,980	8,478,621,780	2,259,039,196	4,451,159,108
Interest income	(2,794,869,872)	(2,504,743,162)	(915,668,820)	(743,990,390)
Finance costs	6,887,788,316	6,503,888,307	1,763,616,988	2,069,629,183
Others	292,346	5,191,937	(3,408,883)	9,513,668
Profit from operating activities before changes in operating assets and liabilities	79,673,257,780	91,725,940,148	15,451,688,682	29,612,965,140

Notes to interim financial statements are an integral part of these financial statements.

(TRANSLATION)

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
(Increase) decrease in operating assets				
Trade accounts receivable	(3,464,331,497)	19,372,795,339	8,078,655,720	13,182,796,908
Other accounts receivable	4,535,023,158	(8,792,759,367)	6,976,216,836	(7,390,726,411)
Inventories	(3,929,837,913)	1,014,266,719	4,460,871,712	2,859,961,878
Materials and supplies	163,724,457	569,745,265	(23,245,945)	(66,262,090)
Other current assets	750,839,070	1,320,477,828	276,155,292	286,423,200
Other non-current assets	3,532,271,058	(2,840,624,562)	(138,156,822)	(4,366,179,695)
Increase (decrease) in operating liabilities				
Trade accounts payable	5,427,773,030	(4,423,593,035)	(3,574,849,919)	(7,704,054,506)
Other accounts payable	(12,110,159,957)	(9,090,151,528)	(4,719,653,186)	(163,527,676)
Other current liabilities	(422,135,421)	(1,292,551,347)	(373,845,669)	(744,707,150)
Deposits on LPG cylinders	154,307,880	55,368,970	-	55,368,970
Other non-current liabilities	(2,500,187,184)	(5,214,949,067)	77,345,551	14,647,075
	(7,862,713,319)	(9,321,974,785)	11,039,493,570	(4,036,259,497)
Cash received from operating activities	71,810,544,461	82,403,965,363	26,491,182,252	25,576,705,643
Income tax paid	(1,873,846,780)	(1,446,095,050)	(394,982,906)	(321,196,404)
Net cash provided by operating activities	69,936,697,681	80,957,870,313	26,096,199,346	25,255,509,239

Notes to interim financial statements are an integral part of these financial statements.

(TRANSLATION)

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019

Unit: Baht

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Cash flows from investing activities				
Payment of property, plant and equipment and investment properties	(33,259,950,500)	(27,767,411,137)	(5,475,129,499)	(7,199,127,418)
Payment of intangible assets	(625,863,456)	(701,221,142)	(43,044,825)	(179,821,302)
Payment of exploration and evaluation assets	(1,280,501,575)	(337,550,613)	-	-
Payment of long-term rental contracts on land and building	-	(19,250,582)	-	(19,000,000)
Payment for available-for-sale investments	(43,873,386)	(679,692,614)	(43,873,386)	-
Payment for business acquisition	(78,513,214,436)	-	-	-
Payment of investments in subsidiaries	-	-	-	(35,428,101,300)
Payment of investments in joint ventures	(325,235,920)	(37,954,800)	(490,000)	-
Payment of investments in associates	(188,345,250)	(244,053,000)	-	-
Payment of short-term lending loans	-	(366,402,123)	(27,000,000,000)	(523,325,173)
Payment of long-term lending loans	(250,903,593)	(53,863,133)	-	(200,000,000)
Payment of other long-term investments	(1,393,221,683)	(802,431,345)	(1,302,547,455)	(786,550,095)
Proceeds from disposals of property, plant and equipment, intangible assets and investment properties	133,167,534	147,997,916	2,160,000	275,557,769
Proceeds from disposals of available-for-sale investments	9,743,956,342	112,132,374	-	-
Proceeds from disposals of investments in subsidiaries	-	-	-	782,953,275
Proceeds from short-term lending loans	45,000,000	45,000,000	2,500,000,000	-
Proceeds from long-term lending loans	438,289,054	256,856,835	1,707,211,864	21,422,414,916
Proceeds from disposal of other long-term investments	38,742,470	-	-	-
Proceeds from cancellation of leasehold in gas stations	-	1,400,000	-	1,400,000
Decrease in current investments	26,294,538,440	69,355,366,921	6,030,431,781	35,327,272,706
Interest received	1,858,089,085	2,134,748,181	928,089,839	944,381,934
Dividends received	179,193,707	448,016,888	18,116,355	306,822,232
Net cash provide by (used in) investing activities	(77,150,133,167)	41,491,688,626	(22,679,075,326)	14,724,877,544

Notes to interim financial statements are an integral part of these financial statements.

(TRANSLATION)

Unaudited
but reviewed

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019

Unit: Baht

Notes	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Cash flows from financing activities				
Proceeds from issuance of ordinary shares of subsidiaries	87,352,000	-	-	-
Proceeds from short-term borrowing loans	-	-	115,570,553	-
Proceeds from long-term borrowing loans	5,260,819,833	9,929,107,541	-	-
Proceeds from change in ownership in subsidiaries	-	782,953,275	-	-
Repayment of short-term borrowing loans	-	-	(958,911,967)	(221,227,869)
Repayment of long-term borrowing loans	(9,315,490,577)	(20,379,610,441)	-	(9,756,040,732)
Repayment of finance lease instalments	(242,886,090)	(199,844,368)	(151,744,565)	(134,190,496)
Payment for change in ownership in subsidiaries	-	(13,872,690,000)	-	-
Increase in bank overdrafts and short-term loans from financial institutions	67,281,444,265	5,961,497,432	-	-
Finance costs paid	(5,988,662,809)	(6,825,459,622)	(1,333,609,907)	(2,080,146,429)
Dividend paid	(2,524,054)	-	-	-
Net cash provided by (used in) financing activities	57,080,052,568	(24,604,046,183)	(2,328,695,886)	(12,191,605,526)
Effects of exchange rates on cash and cash equivalents	(7,867,313)	138,452,402	170,630,713	(242,564,555)
Currency translation differences	(1,880,086,260)	465,983,376	-	-
Net increase in cash and cash equivalents	47,978,663,509	98,449,948,534	1,259,058,847	27,546,216,702
Cash and cash equivalents at the beginning of period	292,184,322,373	166,189,023,655	86,204,049,166	38,691,660,939
Cash and cash equivalents at the end of period	4 340,162,985,882	264,638,972,189	87,463,108,013	66,237,877,641
Non cash items				
Accounts payable from purchases of property, plant and equipment and investment properties	25,972,620,792	31,697,130,390	2,054,730,058	5,718,412,670
Accounts payable from purchases of intangible assets	16,626,614	259,142,508	16,323,856	55,594,584
Accounts payable from purchase securities	24,008,547	36,491,653	-	-

Notes to interim financial statements are an integral part of these financial statements.

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO INTERIM FINANCIAL STATEMENTS
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019
(UNAUDITED BUT REVIEWED)

NOTES	CONTENTS
1	General Information
2	Basis of Interim Financial Statements Preparation
3	Accounting Policies
4	Cash and Cash Equivalents
5	Trade Accounts Receivable
6	Other Accounts Receivable
7	Lending Loans
8	Related Party Transactions
9	Inventories
10	The Restructuring of the Oil Business Unit
11	Available-for-sale Investments
12	Investments in Subsidiaries, Joint Ventures and Associates
13	Other Long-term Investments
14	Investment Properties
15	Property, Plant and Equipment
16	Goodwill
17	Intangible Assets
18	Exploration and Evaluation Assets
19	Other Non-current Assets
20	Long-term Loans
21	Changes in liabilities arising from financing activities
22	Provisions for Employee Benefit
23	Provision for Decommissioning Costs
24	Other Non-current Liabilities
25	Basic Earnings per Share
26	Other Income
27	Expenses by Nature
28	Operating Segments
29	Fair Value Measurement
30	Business Acquisition
31	Proceeding regarding the Central Administrative Court's Ordering the Temporary Suspension of Projects in the Map Ta Phut Area
32	Commitments and Contingent Liabilities
33	Other Events
34	Events after the Reporting Period

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO INTERIM FINANCIAL STATEMENTS
FOR THE THREE-MONTH PERIOD ENDED MARCH 31, 2019
(UNAUDITED BUT REVIEWED)

1. General Information

PTT Public Company Limited (the Company) is incorporated as a public limited company in Thailand, and is listed on the Stock Exchange of Thailand. The address of its incorporated and registered office is as follows:

The Head Office of the Company is located at 555 Vibhavadi-Rangsit Road, Chatuchak, Bangkok, Thailand.

The Group has a status of a state enterprise while the Ministry of Finance is the largest shareholder and is under the supervision of Ministry of Energy.

The Company's principal activity is the operation of its petroleum business. The Company has invested in subsidiaries, joint arrangements and associates (the Group), which are engaged in upstream petroleum and natural gas, downstream petroleum, Technology and Engineering, and other related businesses as described in Note 28 Operating Segments.

2. Basis of Financial Statements Preparation

2.1 Purpose of the Interim Financial Statements

These interim financial statements are prepared in order to provide additional information other than that included in the latest annual financial statements. Accordingly, these interim financial statements focus on the reporting of new activities, events and circumstances so as not to duplicate information previously reported. These interim financial statements should therefore be read in conjunction with the latest annual financial statements.

2.2 Basis of Interim Financial Statement Preparation

These interim financial statements are prepared in accordance with Thai Accounting Standard No. 34 (revised 2018) "Interim Financial Reporting", and Thai Financial Reporting Standards under the Accounting Act, B.E. 2543. These are Thai Financial Reporting Standards under the Accounting Profession Act, B.E. 2547, including guidelines promulgated by the Federation of Accounting Professions (FAP), and applicable rules and regulations of the Securities and Exchange Commission under the Securities and Exchange Act, B.E. 2535. The content of the interim financial statements comprises the statement of financial position, statement of income, statement of comprehensive income, statement of changes in equity and statement of cash flows in the same format as that used for the annual financial statements and condensed notes.

The consolidated and the separate financial statements are prepared and presented in Thai Baht and are rounded in the notes to financial statements to the nearest million unless otherwise stated.

This English translation of the financial statements has been prepared from the statutory financial statements that were issued in Thai language. In the event of a conflict or a difference in interpretation between the two languages, the Thai language statutory financial statements shall prevail.

3. Accounting Policies

- 3.1 New Thai Financial Reporting Standards (TFRSs) which are published in the Government Gazette, effective for accounting periods on or after January 1, 2020

TFRS Group of Financial Instruments

◆ TAS 32	Financial Instruments: Presentation
◆ TFRS 7	Financial Instruments: Disclosures
◆ TFRS 9	Financial Instruments
◆ TFRIC 16	Hedges of a Net Investment in a Foreign Operation
◆ TFRIC 19	Extinguishing Financial Liabilities with Equity Instruments

The above financial instruments standards will replace the following standards.

◆ TAS 101	Doubtful Accounts and Bad Debts
◆ TAS 103	Disclosures in the Financial Statements of Banks and Similar Financial Institutions
◆ TAS 104 (revised 2016)	Accounting for Troubled Debt Restructuring
◆ TAS 105 (revised 2016)	Accounting for Investments in Debt and Equity Securities
◆ TAS 106	Accounting For Investment Entities
◆ TAS 107 (revised 2016)	Financial Instruments: Disclosure and Presentation
◆ TI-9	Assets Transferred by Debtors for Debt Settlement

TFRS 16 Lease will replace the following standards.

◆ TAS 17 (revised 2018)	Leases
◆ TSIC 15 (revised 2018)	Operating Leases - Incentives
◆ TSIC 27 (revised 2018)	Evaluating the Substance of Transactions Involving the Legal Form of a Lease
◆ TFRIC 4 (revised 2018)	Determining Whether an Arrangement Contains a Lease

The Group's management is in the process of assessing the impact of the first time applying new TFRSs and Interpretations. The Group does not plan to early adopt this standard.

3.2 Accounting Policies

In preparing the interim financial statements, the Group uses the same accounting policies and computation methods in the financial statements for the year ended December 31, 2018 are applied, except the revised and new TASs, TFRSs and Interpretations, which are effective for accounting periods beginning on or after January 1, 2019. Such application has no any significant impact on the consolidated and the separate financial statements.

4. Cash and Cash Equivalents

Cash and cash equivalents as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Cash on hand	373.27	1,885.77	22.00	9.77
Call deposits held at banks	157,858.08	119,956.06	46,619.24	40,015.70
Fixed deposits within 3 months	129,802.13	126,019.92	14,166.99	21,237.82
Treasury bills	7,158.62	16,736.58	-	-
Promissory notes	9,488.00	50.07	-	-
Bonds	18,748.15	24,940.76	18,748.15	24,940.76
Restricted bank cash*	7,037.64	1,087.99	-	-
Other investments	9,697.10	1,507.17	7,906.73	-
Total	<u>340,162.99</u>	<u>292,184.32</u>	<u>87,463.11</u>	<u>86,204.05</u>

Call deposits held at banks, fixed deposits within 3 months, treasury bills, promissory notes, bonds, restricted bank cash and other investments, as at March 31, 2019 bear the interest at rates ranging from 0.00% - 7.27% per annum (December 31, 2018: interest rates ranging from 0.00% - 6.08% per annum).

*As at March 31, 2019, The PTTEP Group has restricted cash that is a deposit in Escrow Account at a financial institution used as collateral according to Share Sale and Purchase Agreement (SSPA), to acquire all business of Murphy Oil Corporation (Murphy) in Malaysia, amounting to USD 205.20 million (Baht 6,527.76 million) as described in Note 33.2.

5. Trade Accounts Receivable

Trade accounts receivable as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Trade accounts receivable - others	181,427.20	169,681.36	65,085.49	69,440.91
<u>Less</u> Allowance for doubtful accounts	(3,051.67)	(3,083.52)	(1,889.00)	(1,889.06)
Trade accounts receivable - others - net	178,375.53	166,597.84	63,196.49	67,551.85
Trade accounts receivable - related parties - net (Note 8.1)	6,483.60	8,006.86	67,632.52	71,124.00
Total	184,859.13	174,604.70	130,829.01	138,675.85

Aging analysis is as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Within credit terms	181,037.34	171,248.71	128,917.96	137,068.82
Overdue				
- Within 3 months	3,446.82	2,730.43	1,547.03	993.14
- Over 3 - 6 months	173.36	506.99	115.34	517.70
- Over 6 - 12 months	223.46	198.70	217.25	147.44
- Over 12 months	3,072.94	3,046.51	1,920.43	1,837.81
	187,953.92	177,731.34	132,718.01	140,564.91
<u>Less</u> Allowance for doubtful accounts	(3,094.79)	(3,126.64)	(1,889.00)	(1,889.06)
Total	184,859.13	174,604.70	130,829.01	138,675.85

Trade accounts receivable - others as at March 31, 2019 include receivables from government agencies and state enterprises in the consolidated financial statements amounting to Baht 20,741.62 million (December 31, 2018: Baht 20,834.35 million), and in the separate financial statements amounting to Baht 17,331.12 million (December 31, 2018: Baht 17,945.50 million).

6. Other Accounts Receivable

Other accounts receivable as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Other accounts receivable	39,064.79	37,906.98	1,536.34	1,473.57
<u>Less</u> Allowance for doubtful accounts	(567.63)	(628.18)	(426.30)	(427.97)
Other accounts receivable	38,497.16	37,278.80	1,110.04	1,045.60
Advance payments	18,744.56	16,199.20	692.97	270.44
Refund receivable from the Oil Stabilization Fund	12,765.85	19,691.94	6,399.52	13,204.37
Current tax assets	4,182.61	3,491.54	-	-
Other accounts receivable - others - net	74,190.18	76,661.48	8,202.53	14,520.41
Other accounts receivable - related parties - net (Note 8.2)	1,255.93	1,709.97	10,795.42	2,440.04
Advance payments - related parties (Note 8.2)	347.07	455.62	239.41	353.73
Total	75,793.18	78,827.07	19,237.36	17,314.18

The refund receivable from the Oil Stabilization Fund mostly comprises compensation for locally manufactured oil and liquefied petroleum gas (LPG), or imported LPG for local uses, as well as compensation for Natural Gas for Vehicles (NGV) prices. The compensation rates are determined by the Committee of Energy Policy Administration.

7. Lending Loans

7.1 Short-term lending loans as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Current portion of finance lease receivable - others	1,180.69	700.86	-	-
Current portion of finance lease receivable - related parties (Note 8.2)	3.99	3.95	-	-
Short-term lending loans - others	653.50	835.97	-	-
Short-term lending loans - related parties	827.19	843.83	31,981.65	7,334.32
<u>Less</u> Allowance for doubtful accounts	(589.86)	(601.69)	-	-
Short-term lending loans - related parties - net (Note 8.2)	237.33	242.14	31,981.65	7,334.32
Total	2,075.51	1,782.92	31,981.65	7,334.32

7.2 Long-term lending loans as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Long-term finance lease receivable - others	7,284.11	4,653.33	-	-
Long-term finance lease receivable - related parties (Note 8.3)	51.70	52.71	-	-
Long-term lending loans - others	2,536.79	2,979.62	-	-
Long-term lending loans - related parties	6,573.37	6,177.05	30,992.02	32,895.68
<u>Less</u> Allowance for doubtful accounts	-	-	-	-
Long-term lending loans - related parties - net (Note 8.3)	6,573.37	6,177.05	30,992.02	32,895.68
Total	16,445.97	13,862.71	30,992.02	32,895.68

8. Related Party Transactions

In the separate financial statements, significant transactions carried out with related parties include discontinued operations

Significant transactions carried out with related parties are as follows:

8.1 Trade accounts receivable - related parties as at March 31, 2019 and December 31, 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Subsidiaries	-	-	63,359.53	65,585.72
Joint ventures	2,549.74	3,747.90	1,431.62	2,213.24
Associates	1,477.38	1,318.08	343.91	341.80
Other related parties	2,499.60	2,984.00	2,497.46	2,983.24
	6,526.72	8,049.98	67,632.52	71,124.00
<u>Less</u> Allowance for doubtful accounts	(43.12)	(43.12)	-	-
Total (Note 5)	6,483.60	8,006.86	67,632.52	71,124.00

Aging analysis is as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Within credit terms	6,435.11	7,982.56	67,560.76	71,040.94
Overdue				
- Within 3 months	44.56	23.87	13.53	10.06
- Over 3 - 6 months	3.50	-	-	73.00
- Over 6 - 12 months	0.01	-	58.23	-
- Over 12 months	43.54	43.55	-	-
	6,526.72	8,049.98	67,632.52	71,124.00
<u>Less</u> Allowance for doubtful accounts	(43.12)	(43.12)	-	-
Total (Note 5)	6,483.60	8,006.86	67,632.52	71,124.00

8. Related Party Transactions (Continued)

8.2 Other accounts receivable, advance payments, current portion of finance lease receivable, and short-term lending loans -related parties as at March 31, 2019 and December 31, 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
<u>Other accounts receivable</u>				
Subsidiaries	-	-	10,557.06	2,420.38
Joint ventures	648.53	416.42	221.85	16.18
Associates	267.28	358.17	15.77	2.91
Other related parties	429.48	1,018.76	0.74	0.57
	1,345.29	1,793.35	10,795.42	2,440.04
<u>Less Allowance for doubtful accounts</u>	(89.36)	(83.38)	-	-
Total (Note 6)	1,255.93	1,709.97	10,795.42	2,440.04
 <u>Advance payments</u>				
Subsidiaries	-	-	51.49	73.77
Associates	5.33	-	0.75	-
Other related parties	341.74	455.62	187.17	279.96
Total (Note 6)	347.07	455.62	239.41	353.73

8. **Related Party Transactions (Continued)**

8.2 Other accounts receivable, advance payments, current portion of finance lease receivable, and short-term lending loans - related parties as at March 31, 2019 and December 31, 2018 (Continued)

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
<u>Current portion of finance lease receivable</u>				
Joint ventures (Note 7.1)	3.99	3.95	-	-
<u>Short-term lending loans</u>				
Subsidiaries	-	-	31,981.65	7,334.32
Joint ventures	827.19	843.83	-	-
	827.19	843.83	31,981.65	7,334.32
<u>Less</u> Allowance for doubtful accounts	(589.86)	(601.69)	-	-
Total (Note 7.1)	237.33	242.14	31,981.65	7,334.32

Movements in short-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Balance as at January 1	242.14	-	2,500.00	-
- Payment for loans granted	-	366.40	27,000.00	490.02
- Receipt from loans granted	-	-	(2,500.00)	-
- Loss on exchange rate	(4.81)	(1.89)	-	(19.22)
- Currency translation differences	-	4.69	-	-
- Reversal (recognition) of allowance for doubtful accounts	-	(136.27)	-	19.22
Balance as at March 31	237.33	232.93	27,000.00	490.02
<u>Add</u> Current portion (Note 8.3)	-	-	4,981.65	5,107.41
Balance as at March 31 - net	237.33	232.93	31,981.65	5,597.43

Short-term lending loans - related parties as at March 31, 2019 in the consolidated financial statements bear the interest at rates ranging from 3.50% - 3.71% per annum (December 31, 2018: interest at rates ranging from 3.21% - 3.71% per annum), and in the separate financial statements bear the interest at rate 3.25% per annum (December 31, 2018: interest at rate 2.81% per annum).

8. Related Party Transactions (Continued)

8.3 Long-term finance lease receivable and long-term lending loans - related parties as at March 31, 2019 and December 31, 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
<u>Long-term finance lease receivable</u>				
Joint ventures (Note 7.2)	51.70	52.71	-	-
<u>Long-term lending loans</u>				
Subsidiaries	-	-	30,992.02	32,895.68
Joint ventures	3,829.30	3,651.76	-	-
Associates	2,744.07	2,525.29	-	-
Total (Note 7.2)	<u>6,573.37</u>	<u>6,177.05</u>	<u>30,992.02</u>	<u>32,895.68</u>

Details of finance lease receivable - related parties as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Financial lease receivable				
- Within 1 year	6.00	6.00	-	-
- Over 1 year but not over 5 years	24.00	24.00	-	-
- Over 5 years	38.50	40.00	-	-
Future finance income	(12.81)	(13.34)	-	-
Total	<u>55.69</u>	<u>56.66</u>	<u>-</u>	<u>-</u>

8. Related Party Transactions (Continued)

8.3 Long-term finance lease receivable and long-term lending loans -related parties as at March 31, 2019 and December 31, 2018 (Continued)

Movements in long-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Balance as at January 1	6,177.05	9,282.31	37,730.00	27,403.48
- Business acquisition	220.00	-	-	-
- Payment for loans granted	250.90	6.53	-	200.00
- Receipt from loans granted	-	-	(1,707.21)	(21,422.42)
- Loss on exchange rate	(71.37)	(303.28)	(49.12)	(1,307.08)
- Currency translation differences	(3.21)	(2.39)	-	-
- Reversal of allowance for doubtful accounts	-	-	-	22,120.52
Balance as at March 31	6,573.37	8,983.17	35,973.67	26,994.50
<u>Less</u> Current portion (Note 8.2)	-	-	(4,981.65)	(5,107.41)
Balance as at March 31 - net	<u>6,573.37</u>	<u>8,983.17</u>	<u>30,992.02</u>	<u>21,887.09</u>

Long-term lending loans - related parties as at March 31, 2019 in the consolidated financial statements bear the interest at rates ranging from 3.66% - 7.38% per annum (December 31, 2018: interest at rates ranging from 3.66% - 6.94% per annum), and in the separate financial statements bear the interest at rates ranging from 2.88% - 4.68% per annum (December 31, 2018: interest at rates ranging from 2.88% - 4.68% per annum).

8. Related Party Transactions (Continued)

8.4 Trade accounts payable - related parties as at March 31, 2019 and December 31, 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Subsidiaries	-	-	39,481.04	38,012.70
Joint ventures	691.14	1,078.38	247.37	260.85
Associates	311.22	320.34	-	-
Other related parties	2.90	8.51	-	-
Total	1,005.26	1,407.23	39,728.41	38,273.55

8.5 Other accounts payable, current portion of finance lease liabilities, and short-term loans - related parties as at March 31, 2019 and December 31, 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
<u>Other accounts payable</u>				
Subsidiaries	-	-	8,810.31	11,927.90
Joint ventures	55.32	46.58	16.24	7.25
Associates	20.50	24.23	13.27	16.31
Other related parties	76.49	88.86	31.88	57.51
Total	152.31	159.67	8,871.70	12,008.97
<u>Current portion of finance lease liabilities</u>				
Subsidiaries	-	-	0.72	-
Joint venture	393.94	400.42	393.94	400.42
Total	393.94	400.42	394.66	400.42
<u>Short-term loans*</u>				
Subsidiaries	-	-	2,489.35	3,332.70

* The Company has liquidity management policies within the Group include the use of the cash pooling method. Inter-company loans were used for short-term financial management of cash surpluses or deficits of each affiliate. Interests on these were calculated by using market interest rates.

8. Related Party Transactions (Continued)

8.6 Long-term finance lease liabilities - related parties as at March 31, 2019 and December 31, 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Subsidiaries	-	-	3.57	-
Joint ventures	3,662.88	3,841.51	3,662.88	3,841.51
Total	3,662.88	3,841.51	3,666.45	3,841.51

Details of finance lease liabilities - related parties as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Finance lease liabilities				
- Within 1 year	445.91	453.54	446.97	453.54
- Over 1 year but not over 5 years	1,780.00	1,815.42	1,784.21	1,815.42
- Over 5 years	2,115.04	2,270.20	2,115.04	2,270.20
Future finance charges	(284.13)	(297.23)	(285.11)	(297.23)
Total	4,056.82	4,241.93	4,061.11	4,241.93

8. Related Party Transactions (Continued)

8.7 Revenue and expense transactions carried out with related parties

For the three-month periods ended March 31, 2019 and 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Revenues				
<u>Sales and service income</u>				
Subsidiaries	-	-	161,131.29	168,754.85
Joint ventures	6,095.68	6,657.18	3,558.02	3,704.44
Associates	3,129.38	3,868.62	930.68	789.17
Other related parties	3,269.60	3,196.27	3,265.01	3,193.31
<u>Interest income</u>				
Subsidiaries	-	-	372.04	270.45
Joint ventures	54.47	66.79	-	-
Associates	39.48	39.48	-	-
<u>Dividend income</u>				
Subsidiaries	-	-	8,442.46	146.12
Joint ventures	-	-	211.85	19.67
Other related parties	72.00	-	-	-
<u>Other income</u>				
Subsidiaries	-	-	1,829.28	1,220.30
Joint ventures	84.13	41.96	15.98	18.54
Associates	47.34	16.18	5.46	13.11
Other related parties	13.06	15.70	12.42	15.67
Expenses				
<u>Cost of goods purchased and services</u>				
Subsidiaries	-	-	70,605.53	146,662.40
Joint ventures	2,036.09	2,292.91	350.81	381.28
Associates	796.53	866.19	0.15	584.44
Other related parties	325.92	305.74	63.62	65.71
<u>Interest expenses</u>				
Subsidiaries	-	-	9.52	5.88
Joint ventures	13.10	14.33	13.10	14.33
<u>Other expenses</u>				
Subsidiaries	-	-	773.78	194.17
Joint ventures	7.57	139.04	-	0.05
Associates	12.93	12.87	2.10	0.30
Other related parties	86.21	79.72	29.85	40.88

8. Related Party Transactions (Continued)

8.7 Revenue and expense transactions carried out with related parties (Continued)

The aforementioned related party transactions exclude transactions carried out with government agencies and state enterprises.

Stipulation prices between the Company and its related parties are based on normal prices for the same types of business transactions carried out with non-related parties. Goods purchased from subsidiaries are charged at the normal prices determined by the subsidiaries with reference to global market prices.

8.8 Details of commitments to subsidiaries and joint ventures are stated in Note 32.1.

8.9 Crude oil and refined product purchase and sale transactions carried out with related parties without physical delivery, with the objective of maintaining crude oil and refined product reserves and inventory management, were reversed in the financial statements.

Details of these transactions for the three-month periods ended March 31, 2019 and 2018 are as follow:

	Consolidated		Unit: Million Baht	
	financial statements		Separate	financial statements
	2019	2018	2019	2018
<u>Sales</u>				
Subsidiaries	-	-	3,143.00	637.83
<u>Purchases</u>				
Subsidiaries	-	-	3,192.05	657.20

8.10 Executive remunerations

Details of executive remunerations for the three-month periods ended March 31, 2019 and 2018 are as follows:

	Consolidated		Unit: Million Baht	
	financial statements		Separate	financial statements
	2019	2018	2019	2018
<u>Directors remuneration</u>				
Meeting remuneration and bonuses	90.53	85.94	15.78	15.97
<u>Managements remuneration</u>				
Salaries, bonuses, and other employee benefits	244.92	272.93	19.22	35.03
Post-employment benefits	6.47	1.59	0.47	0.62
Total (Note 27)	341.92	360.46	35.47	51.62

Managements are those persons who have authority and responsibility for planning, directing and controlling the activities of an entity, directly or indirectly.

9. Inventories

Inventories as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Inventories	111,805.52	98,897.63	5,014.64	9,394.42
Inventories - legal reserves	22,241.73	26,382.19	818.03	853.07
Total	<u>134,047.25</u>	<u>125,279.82</u>	<u>5,832.67</u>	<u>10,247.49</u>

10. The Restructuring of the Oil Business Unit

On June 18, 2018, the Company and PTT Oil and Retail Business Public Co., Ltd. (OR) successfully executed the Business Transfer Agreement to transfer various assets and liabilities, and shares of related companies (BAFS, PTTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT) to OR. The Company has commenced the process of transferring various assets and liabilities, and shares of related companies to OR since July 1, 2018. The business transfer price is Baht 117,203.26 million. On June 28, 2018, OR made the initial payment of Baht 85,366.92 million to the Company. Then, OR made the remaining payment of Baht 31,836.34 million on September 28, 2018.

The valuation of the business transferred had been evaluated by financial advisors following relevant international standards in order to provide the most reasonable prices.

In cases where the registration process for the transfer of various assets and liabilities is not completed within 6 months after the date of the business transfer, the Company must comply with the conditions under the Business Transfer Agreement, whereby the Company has to transfer the right of ownership and use in assets to OR, which is entitled to benefits, interests or profits from the assets under the agreement from the date of the business transfer until the registration process is completed.

As at March 31, 2019, some assets and contracts have not yet been transferred. The Company and OR are in the process of executing the memorandum for the revision of the Business Transfer Agreement for extending the period for the process of registering the transfer of ownership in assets, rights, duties and responsibilities under agreements, in accordance with the Business Transfer Agreement, whereby it is to be completed within December 31, 2019.

As a result of the Business Transfer Agreement, the Company presented the operating results of the related oil business unit as discontinued segment. The Company presented the operating results of the discontinued segment separately from those of the normal operation in the separate financial statements. The Company reclassified the transactions of this segment that were undertaken in 2018. However, the Company presented the statement of cash flows before the deduction of discontinued operations' portion.

Overall, there is no impact on the consolidated financial statements from the disposal of discontinued operations since this transaction is the business combination under common control.

10. The Restructuring of the Oil Business Unit (Continued)

The operating results of the discontinued operations in the financial information for the three-month period ended March 31, 2018 are as follows:

	Unit: Million Baht Separate financial statements <u>2018</u>
Statement of income	
Sales and service income	144,370.51
Cost of sales and services	<u>(135,639.44)</u>
Gross profit	8,731.07
Other income	880.81
Loss on foreign exchange rates	<u>(182.50)</u>
Profit before expenses	9,429.38
Selling and distribution expenses	(3,244.82)
Administrative expenses	<u>(1,517.70)</u>
Profit before finance costs and income taxes	4,666.86
Finance costs	<u>(2.02)</u>
Profit before income taxes	4,664.84
Income taxes	<u>(1,193.51)</u>
Profit for the period from discontinued operations, net of tax	<u><u>3,471.33</u></u>

	Unit: Million Baht Separate financial statements <u>2018</u>
Statement of comprehensive income	
Items that will be reclassified subsequently to profit or loss	
Loss on measurement of available-for-sale investments	(483.75)
Income taxes related to available-for-sale investments	96.75
Other comprehensive loss for the period from discontinued operations, net of tax	<u><u>(387.00)</u></u>

10. The Restructuring of the Oil Business Unit (Continued)

Net cash flows of the discontinued operations for the three-month period ended March 31, 2018 are as follows:

	Unit: Million Baht Separate <u>financial statements</u> <u>2018</u>
Net cash used in operating activities	(908.42)
Net cash used in investing activities	(1,381.60)
Net cash provided by (used in) financing activities	<u>-</u>
Net cash used in the discontinued operations	<u>(2,290.02)</u>

11. Available-for-sale Investments

11.1 Details of available-for-sale investments

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Available-for-sale Investments of the Company</u>				
<u>Investments in Equity Securities</u>				
Dhipaya Insurance Public Co., Ltd. (TIP)	Thailand	Insurance	13.33	13.33
<u>Investments in Mutual Funds</u>				
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
Corporate Venture Capital Fund (CVC)	United States of America/ England	Mutual fund		
<u>Available-for-sale Investments of Subsidiaries</u>				
<u>Investments in Equity Securities</u>				
<i>PTTEP Group</i>				
Wentworth Resources Limited (WRL)	Canada	Oil and natural gas exploration	1.18	1.18
<i>OR Group</i>				
Bangkok Aviation Fuel Services Public Co., Ltd. (BAFS)	Thailand	Aircraft refuelling services	7.06	7.06
<i>IRPC Group</i>				
Bangkok Union Insurance Public Co., Ltd. (BUI)	Thailand	Insurance	0.35	0.35
TPI Polene Public Co., Ltd. (TPIPL)	Thailand	Property, construction and petrochemicals	0.14	0.14
<i>PTTGM Group</i>				
Xanadu Mines Ltd. (XML)	Mongolia	Mineral exploration	3.80	3.80
<u>Investment in Debt Securities</u>				
<i>PTTGC Group</i>				
Debt Securities Available for Sale (in Private Fund) (DSAFS)	Thailand	Private Fund		

11. Available-for-sale Investments (Continued)

11.1 Details of available-for-sale investments (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Available-for-sale Investments of Subsidiaries</u> (Continued)				
<u>Investments in Mutual Funds</u>				
<i>PTTLNG</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTNGD Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>EnCo</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>OR Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTT TANK</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTT Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTGC Group</i>				
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
<i>TOP Group</i>				
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
<i>PTTER Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTRTC</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		

11. Available-for-sale Investments (Continued)

11.2 Details of available-for-sale investments as at March 31, 2019 and December 31, 2018 are as follows:

Unit: Million Baht

Company name	Ownership interest (%)		Consolidated financial statements		Separate financial statements		Dividends income for the three-month periods ended March 31	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018	2019	2018
<u>Investments in Equity Securities</u>								
1. TIP	13.33	13.33	312.00	312.00	312.00	312.00	-	-
2. WRL	1.18	1.18	35.37	34.91	-	-	-	-
3. BAFS	7.06	7.06	24.00	24.00	-	-	-	-
4. BUI	0.35	0.35	2.35	2.35	-	-	-	-
5. TPIPL	0.14	0.14	64.86	64.86	-	-	0.57	-
6. XML	3.80	3.80	233.45	238.13	-	-	-	-
Total			672.03	676.25	312.00	312.00		
<u>Investment in Debt Securities</u>								
7. DSAFS			1,732.11	5,967.16	-	-	-	-
Total			1,732.11	5,967.16	-	-		
<u>Investments in Mutual Funds</u>								
8. CIMB - PRINCIPAL EPIF			854.03	854.03	254.02	254.03	21.70	8.68
9. VAYU1			14.95	15.00	10.00	10.00	0.04	-
10. CVC			430.35	386.48	430.35	386.48	-	-
Total			1,299.33	1,255.51	694.37	650.51		
Total available-for-sale investments before changes in value of investments			3,703.47	7,898.92	1,006.37	962.51		
Allowance for changes in value			3,179.89	3,015.36	1,618.78	1,617.05		
Less Allowance for impairment			(37.59)	(38.35)	-	-		
Total			6,845.77	10,875.93	2,625.15	2,579.56	22.31	8.68

12. Investments in Subsidiaries, Joint Ventures and Associates

12.1 Details of subsidiaries and joint ventures of the Company

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Subsidiaries</u>				
PTT Exploration and Production Public Co., Ltd. (PTTEP)	Thailand	Petroleum exploration and production	65.29	65.29
PTT LNG Co., Ltd. (PTTLNG)	Thailand	Natural gas	100.00	100.00
PTT Natural Gas Distribution Co., Ltd. (PTTNGD)	Thailand	Natural gas	58.00	58.00
PTT Global LNG Co., Ltd. (PTTGL) (The Group holds 100% shareholding)	Thailand	Investing in LNG business	50.00	50.00
Energy Complex Co., Ltd. (EnCo) (The Group holds 100% shareholding)	Thailand	Real estate development for rent	50.00	50.00
PTT Energy Solutions Co., Ltd. (PTTES) (The Group holds 100% shareholding)	Thailand	Technical and operational services	40.00	40.00
Global Power Synergy Public Co., Ltd. (GPSC) (The Group holds 75% shareholding)	Thailand	Generation and supply of electricity, steam and water for industries	22.58	22.58
PTT Oil and Retail Business Public Co., Ltd. (OR)	Thailand	Management services and oil marketing	100.00	100.00
PTT Tank Terminal Co., Ltd. (PTT TANK)	Thailand	Terminal and warehouse	100.00	100.00
PTT International Trading Pte. Ltd. (PTTT)	Singapore	International trading	100.00	100.00
PTT International Trading London Limited (PTTT LDN)	England	International trading	100.00	100.00
PTT Global Chemical Public Co., Ltd. (PTTGC)	Thailand	Petrochemicals and refining	48.18	48.18
Thai Oil Public Co., Ltd. (TOP)	Thailand	Oil refining	48.03	48.03
IRPC Public Co., Ltd. (IRPC)	Thailand	Petrochemicals and refining	48.05	48.05
Thai Oil Power Co., Ltd. (TP) (The Group holds 100% shareholding)	Thailand	Generation and supply of electricity and steam	26.00	26.00
PTT Energy Resources Co., Ltd. (PTTER)	Thailand	Investment consulting in energy and mining business	100.00	100.00
PTT Global Management Co., Ltd. (PTTGM)	Thailand	Domestic and international investment	100.00	100.00
PTT Green Energy Pte. Ltd. (PTTGE)	Singapore	Investing in palm oil business	100.00	100.00
PTT Regional Treasury Center Pte. Ltd. (PTTRTC)	Singapore	Treasury services	100.00	100.00
PTT Treasury Center Co., Ltd. (PTT TCC)	Thailand	Treasury services	100.00	100.00
Business Services Alliance Co., Ltd. (BSA)	Thailand	Management services	100.00	100.00
PTT Digital Solutions Co., Ltd. (PTT DIGITAL) (The Group holds 100% shareholding)	Thailand	Information technology and communication services	20.00	20.00

12. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

12.1 Details of subsidiaries and joint ventures of the Company (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Joint Ventures</u>				
Trans Thai-Malaysia (Thailand) Co., Ltd. (TTM(T))	Thailand	Natural gas	50.00	50.00
Trans Thai-Malaysia (Malaysia) Sdn. Bhd. (TTM(M))	Malaysia	Natural gas	50.00	50.00
District Cooling System and Power Plant Co., Ltd. (DCAP)	Thailand	Generation and supply of electricity and chilled water	35.00	35.00
Map Ta Phut Air Products Company Limited (MAP) (The Group holds 51.00% shareholding)	Thailand	Production and distribution of industrial gas	49.00	-

12. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

12.2 Details of investments in joint ventures and associates of subsidiaries

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Joint Ventures</u>				
<i>PTTEP Group</i>				
Erawan 2 FSO Bahamas Limited (Erawan 2)	Bahamas	FSO rental services	13.11	13.11
<i>GPSC Group</i>				
Thai Solar Renewable Co., Ltd. (TSR)	Thailand	Invest in other company	40.00	40.00
Nam Lik 1 Power Co., Ltd. (NL1PC)	Laos	Generate and supply electricity	40.00	40.00
Nava Nakorn Electricity Generating Co., Ltd. (NNEG)	Thailand	Generate and supply electricity	30.00	30.00
<i>PTTGC Group</i>				
Thai Ethoxylate Co., Ltd. (TEX)	Thailand	Manufacturing and distributing of petrochemical products	50.00	50.00
Emery Oleochemicals (M) Sdn. Bhd. (EOM)	Malaysia	Manufacturing and distributing of biochemical products	50.00	50.00
Emery Specialty Chemicals Sdn. Bhd. (ESC)	Malaysia	Manufacturing and distributing of chemical specialties	50.00	50.00
NatureWorks LLC (NTR)	United States of America	Manufacturing and distributing of bioplastic products	50.00	50.00
PTT MCC Biochem Co., Ltd. (PTTMCC)	Thailand	Petrochemicals	50.00	50.00
PTT Asahi Chemicals Co., Ltd. (PTTAC)	Thailand	Petrochemicals	50.00	50.00
HMC Polymers Co., Ltd. (HMC)	Thailand	Petrochemicals	41.44	41.44
GGC KTIS Bioindustrial Company Limited (GKBI)	Thailand	Manufacturing and distributing of biofuel	50.00	-
Revolve Group Limited (RGL)	England	Manufacturing and distributing of chemical	49.00	-
<i>TOP Group</i>				
TOP-NTL Pte. Ltd. (TOP-NTL)	Singapore	Fund management services	50.00	50.00
TOP-NTL Shipping Trust (TOP-NTL(BT))	Singapore	Investing in other companies	50.00	50.00
TOP-NYK MarineOne Pte. Ltd. (TOP-NYK)	Singapore	Marine transportation services	50.00	50.00
TOP Nautical Star Co., Ltd. (TOP-NS)	Thailand	Storage and marine transportation services	35.00	35.00
<i>IRPC Group</i>				
IRPC Polyol Co., Ltd. (IRPCP)	Thailand	Manufacturing and sales of chemical products for polyurethanes	50.00	50.00

12. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

12.2 Details of investments in joint ventures and associates of subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Joint Ventures</u> (Continued)				
<i>IRPC Group</i> (Continued)				
WHA Industrial Estate Rayong Co., Ltd. (WHA IER)	Thailand	Industrial estate development	40.00	40.00
<i>PTTGM Group</i>				
OGP Energy Solutions Company Limited (OGPS)	Thailand	Energy management and energy-related services	40.00	40.00
FEE (Bru) Pte. Ltd. (FEEBRU)	Singapore	Coal mines	35.00	35.00
Map Ta Phut Air Products Company Limited (MAP) (The Group holds 51.00% shareholding)	Thailand	Production and distribution of industrial gas	2.00	-
<i>PTTGE Group</i>				
Chancellor Oil Pte. Ltd. (Chancellor)	Singapore	Investing in other companies	77.56	77.56
<u>Associates</u>				
<i>PTTEP Group</i>				
PTTEP AP Group's associates*	Australia	Airbase services	50.00	50.00
Leismer Aerodrome Limited (LAL)	Canada	Air transportation	32.00	32.00
<i>GPSC Group</i>				
Bangpa-in Cogeneration Co., Ltd. (BIC)	Thailand	Generate and supply electricity	25.00	25.00
Xayaburi Power Co., Ltd. (XPCL)	Laos	Generate and supply electricity	25.00	25.00
Eastern Seaboard Clean Energy Company Limited (ESCE)	Thailand	Studying, generating and supply electricity for industrial use including generating electricity from renewable energy	33.33	-
<i>OR Group</i>				
FST Aviation Services Limited (FST)	Hong Kong	Aircraft refuelling services	25.00	25.00
Thai Petroleum Pipeline Co., Ltd. (THAPPLINE) (The Group holds 49.21% shareholding)	Thailand	Oil transmission pipelines	40.53	40.53
Petro Asia (Thailand) Co., Ltd. (PAT)	Thailand	Oil marketing	35.00	35.00

* Associates of PTTEP AP Group consist of Mungalalu Truscott Airbase Pty Ltd. and Troughton Island Pty Ltd.

12. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

12.2 Details of investments in joint ventures and associates of subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Associates</u> (Continued)				
<i>PTTGC Group</i>				
PT Indo Thai Trading (ITT)	Indonesia	Petrochemicals	49.00	49.00
Vinythai Plc. (VNT)	Thailand	Petrochemicals	24.98	24.98
Eastern Fluid Transport Co., Ltd. (EFT) (The Group holds 37.65% shareholding)	Thailand	Infrastructure	22.65	22.65
Thai Eastern Topseeds Oil Co., Ltd. (TETSO)	Thailand	Petrochemicals	30.00	30.00
S.P. Petpack Inter Group Co., Ltd. (SPPETPACK)	Thailand	Petrochemicals	25.00	25.00
Kuraray GC Advanced Materials Co., Ltd. (KGC)	Thailand	Manufacturing of chemical specialties	33.40	33.40
<i>TOP Group</i>				
T.I.M Ship Management Co., Ltd. (TIM)	Thailand	Marine transportation services	33.33	33.33
Ubon Bio Ethanol Co., Ltd. (UBE)	Thailand	Manufacturing and distributing of ethanol	21.28	21.28
<i>IRPC Group</i>				
UBE Chemicals (Asia) Public Co., Ltd. (UCHA)	Thailand	Manufacturing and sales of petrochemical products	25.00	25.00
<i>PTTER Group</i>				
East Mediterranean Gas Company S.A.E. (EMG)	Egypt	Natural gas transmission pipelines	25.00	25.00

12. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

12.3 Details of investments in joint ventures in the consolidated financial statements as at March 31, 2019 and December 31, 2018

Unit: Million Baht

Company name	Ownership interest (%)		March 31, 2019		December 31, 2018		Dividends income for the three-month periods ended March 31	
	March 31, 2019	December 31, 2018	Cost method	Equity method	Cost method	Equity method	2019	2018
1. TTM(T)	50.00	50.00	4,341.80	4,348.18	4,341.80	4,360.08	73.81	-
2. TTM(M)	50.00	50.00	1,001.31	1,133.29	1,001.31	1,287.38	119.34	-
3. DCAP	35.00	35.00	584.50	932.44	584.50	936.03	18.70	19.67
4. MAP	51.00	-	0.51	0.13	-	-	-	-
5. Erawan 2	13.11	13.11	496.30	574.75	506.26	565.02	-	-
6. TSR	40.00	40.00	1,697.00	1,614.69	1,697.00	1,638.80	108.03	60.67
7. NL1PC	40.00	40.00	452.84	493.41	427.63	463.49	-	-
8. NNEG	30.00	30.00	488.40	561.28	488.40	536.28	-	-
9. TEX	50.00	50.00	210.00	746.29	210.00	735.69	-	91.35
10. EOM	50.00	50.00	4,965.77	4,498.79	4,965.77	4,519.32	-	-
11. ESC	50.00	50.00	407.04	-	407.04	-	-	-
12. NTR	50.00	50.00	4,793.33	3,017.42	4,793.33	2,842.40	-	-
13. PTTMCC	50.00	50.00	930.12	191.05	930.12	214.68	-	-
14. PTTAC	50.00	50.00	6,909.41	9,868.70	6,909.41	9,569.39	-	-
15. HMC	41.44	41.44	9,117.12	13,037.44	9,117.12	12,885.23	-	-
16. GKBI	50.00	-	30.00	29.95	-	-	-	-
17. RGL	49.00	-	269.54	269.54	-	-	-	-
18. TOP-NTL	50.00	50.00	0.25	16.25	0.25	15.80	-	-
19. TOP-NTL(BT)	50.00	50.00	24.05	72.47	24.05	67.29	-	-
20. TOP-NYK	50.00	50.00	273.88	434.17	273.88	432.28	-	-
21. TOP-NS	35.00	35.00	52.50	121.73	52.50	110.19	-	-
22. IRPCP	50.00	50.00	150.00	21.61	150.00	45.92	-	-
23. WHA IER	40.00	40.00	65.00	64.29	65.00	64.50	-	-
24. OGPS	40.00	40.00	37.47	25.33	38.23	27.29	-	-
25. FEEBRU	35.00	35.00	209.13	131.59	213.32	134.23	-	-
26. Chancellor	77.56	77.56	2,891.97	1,263.22	2,949.98	1,288.56	-	-
			40,399.24	43,468.01	40,146.90	42,739.85		
Less Allowance for impairment			(3,101.10)	(1,394.81)	(3,163.31)	(1,422.79)		
Total			37,298.14	42,073.20	36,983.59	41,317.06	319.88	171.69

12. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

12.4 Details of investments in associates in the consolidated financial statements as at March 31, 2019 and December 31, 2018

Unit: Million Baht

Company name	Ownership interest (%)		March 31, 2019		December 31, 2018		Dividends income for the three-month periods ended March 31	
	March 31, 2019	December 31, 2018	Cost method	Equity method	Cost method	Equity method	2019	2018
1. PTTEP AP Group's associates	50.00	50.00	47.64	227.34	48.59	231.54	-	-
2. LAL	32.00	32.00	131.57	124.12	131.78	125.65	-	-
3. BIC	25.00	25.00	923.75	843.73	923.75	879.02	67.63	13.53
4. XPCL	25.00	25.00	6,860.87	6,332.87	6,672.53	6,168.79	-	-
5. ECSE	33.33	-	339.27	328.93	-	-	-	-
6. FST	25.00	25.00	0.71	1.28	0.72	1.30	-	-
7. THAPPLINE	49.21	49.21	3,952.72	5,356.05	3,952.72	5,086.82	-	-
8. PAT	35.00	35.00	131.25	-	131.25	-	-	-
9. ITT	49.00	49.00	125.28	233.76	125.28	220.27	-	-
10. VNT	24.98	24.98	3,297.39	5,252.22	3,297.39	5,130.10	-	-
11. EFT	37.65	22.65	3.77	23.97	2.27	20.15	-	-
12. TETSO	30.00	30.00	66.60	39.74	66.60	57.06	-	-
13. SPETPACK	25.00	25.00	50.00	45.61	50.00	45.84	-	-
14. KGC	33.40	33.40	470.10	469.42	470.10	469.52	-	-
15. TIM	33.33	33.33	1.00	-	1.00	-	-	-
16. UBE	21.28	21.28	769.55	836.71	769.55	818.57	-	-
17. UCHA	25.00	25.00	5,299.82	5,096.82	5,299.82	5,113.63	-	-
18. EMG	25.00	25.00	15,552.16	12,516.69	15,864.11	12,767.76	-	-
			38,023.45	37,729.26	37,807.46	37,136.02		
<u>Less Allowance for impairment</u>			(15,683.41)	(12,516.69)	(15,995.36)	(12,767.76)		
Total			22,340.04	25,212.57	21,812.10	24,368.26	67.63	13.53

12. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

12.5 Details of investments in subsidiaries and joint ventures in the separate financial statements as at March 31, 2019 and December 31, 2018

Unit: Million Baht

Company name	Ownership interest (%)		Cost method		Dividends income for the three-month periods ended March 31	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018	2019	2018
<u>Subsidiaries</u>						
1. PTTEP	65.29	65.29	71,390.42	71,390.42	8,423.54	-
2. PTTLNG	100.00	100.00	18,913.89	18,913.89	-	-
3. PTTNGD	58.00	58.00	418.14	418.14	-	-
4. PTTGL	50.00	50.00	5,210.72	5,210.72	-	-
5. EnCo	50.00	50.00	900.00	900.00	-	-
6. PTTES	40.00	40.00	62.50	62.50	-	-
7. GPSC	22.58	22.58	4,949.93	4,949.93	-	-
8. OR	100.00	100.00	90,000.00	90,000.00	-	-
9. PTT TANK	100.00	100.00	2,500.37	2,500.37	-	-
10. PTTT	100.00	100.00	2.50	2.50	8.07	-
11. PTTT LDN	100.00	100.00	347.75	347.75	10.85	-
12. PTTGC	48.18	48.18	47,426.03	47,426.03	-	-
13. TOP	48.03	48.03	11,132.20	11,132.20	-	-
14. IRPC	48.05	48.05	42,339.93	42,339.93	-	-
15. TP	26.00	26.00	2,304.76	2,304.76	-	146.12
16. PTTER	100.00	100.00	33,702.67	33,702.67	-	-
17. PTTGM	100.00	100.00	54,404.22	54,404.22	-	-
18. PTTGE	100.00	100.00	12,403.10	12,403.10	-	-
19. PTTRTC	100.00	100.00	31.40	31.40	-	-
20. PTT TCC	100.00	100.00	20.00	20.00	-	-
21. BSA	100.00	100.00	0.50	0.50	-	-
22. PTT DIGITAL	20.00	20.00	30.00	30.00	-	-
Investments in subsidiaries			398,491.03	398,491.03		
<u>Less Allowance for impairment</u>			(82,836.89)	(82,836.89)		
Total			315,654.14	315,654.14	8,442.46	146.12
<u>Joint Ventures</u>						
23. TTM(T)	50.00	50.00	4,341.80	4,341.80	73.81	-
24. TTM(M)	50.00	50.00	1,001.31	1,001.31	119.34	-
25. DCAP	35.00	35.00	584.50	584.50	18.70	19.67
26. MAP	49.00	-	0.49	-	-	-
Total			5,928.10	5,927.61	211.85	19.67
Grand total			321,582.24	321,581.75	8,654.31	165.79

12. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

12.6 Significant events during the period ended March 31, 2019

MAP

On November 16, 2018, at the Board of Directors Meeting of the Company No. 11/2018, the Board passed a resolution to approve the establishment of Map Ta Phut Air Products Company Limited. (MAP), which is the joint venture of the Company (holds a 49% shareholding), a company of the Group (holds a 2% shareholding), and Bangkok Industrial Gas Company Limited (BIG) (holds a 49% shareholding), to engage in the business of the production and distribution of industrial gas. MAP has an initial registered share capital of Baht 1.00 million. The Company made the payment amounting to Baht 0.49 million on January 14, 2019.

13. Other Long-term Investments

13.1 Details of other long-term investments

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Other Long-term Investments of the Company</u>				
<u>Long-term Investments in Equity Securities</u>				
Petro Asia (Sanshui) Co., Ltd. (PA (Sanshui))	China	Oil marketing	25.00	25.00
Petro Asia (Maoming) Co., Ltd. (PA (Maoming))	China	Oil marketing	20.00	20.00
Sarn Palung Social Enterprise Co., Ltd. (SPSE) <small>(The Group holds 100% shareholding)</small>	Thailand	Social enterprise	20.00	20.00
Baania (Thailand) Co.,Ltd. (Baania)	Thailand	Integrated online real estate platform	3.57	3.57
Colour Vision International Co., Ltd. (Corpus)	Thailand	Finished yarn production	0.48	0.48
HG Robotics Co., Ltd. (HG Robotics)	Thailand	Autonomous and robotics solutions	9.49	9.49
<u>Long-term Investments in Debt Securities</u>				
Bangkok Dusit Medical Services Public Co., Ltd. (BDMS)	Thailand	Health care services		
Indorama Ventures Public Co., Ltd. (IVL)	Thailand	Petrochemicals and chemicals		
The Commercial Bank (P.S.Q.C.) (CBQ)	Qatar	Banking		
Emirates NBD (ENBD)	United Arab Emirates	Banking		
The Siam Cement Public Co., Ltd. (SCC)	Thailand	Property and Construction		
Thai Beverage Public Co., Ltd. (TBEV)	Thailand	Manufacturing and distributing of food and beverage		

13. Other Long-term Investments (Continued)

13.1 Details of other long-term investments (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Other Long-term Investments of the Company</u> (Continued)				
<u>Long-term Investments in Debt Securities</u> (Continued)				
Bangchak Corporation Public Co., Ltd. (BCP)	Thailand	Energy & Utilities		
Charoen Pokphand Foods Public Co., Ltd. (CPF)	Thailand	Food & Beverage		
Gulf Energy Development Public Co., Ltd. (GULF)	Thailand	Energy & Utilities		
<u>Other Long-term Investments of Subsidiaries</u>				
<u>Long-term Investments in Equity Securities</u>				
<i>PTTEP Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (SPSE) <small>(The Group holds 100% shareholding)</small>	Thailand	Social enterprise	15.00	15.00
Mozambique LNG1 Company Pte. Ltd. (MZ LNG1)	Singapore	Petroleum	8.50	8.50
<i>PTTGL Group</i>				
Petronas LNG 9 Sdn. Bhd. (PL9SB)	Malaysia	LNG liquefaction	10.00	10.00
<i>GPSC Group</i>				
24M Technologies, Inc. (24M)	United States of America	Research and development in battery	29.50	29.50
Ratchaburi Power Co., Ltd. (RPCL)	Thailand	Generate and supply electricity	15.00	15.00
Sarn Palung Social Enterprise Co., Ltd. (SPSE) <small>(The Group holds 100% shareholding)</small>	Thailand	Social enterprise	10.00	10.00
<i>OR Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (SPSE) <small>(The Group holds 100% shareholding)</small>	Thailand	Social enterprise	10.00	10.00
Intoplane Services Co., Ltd. (IPS)	Thailand	Aircraft refuelling services	16.67	16.67
Fuel Pipeline Transportation Co., Ltd. (FPT)*	Thailand	Oil transmission pipelines	-	-

* As at March 31, 2019 and December 31, 2018, the Group holds 0.0000090% of ownership interest.

13. Other Long-term Investments (Continued)

13.1 Details of other long-term investments (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			March 31, 2019	December 31, 2018
<u>Other Long-term Investments of Subsidiaries</u> (Continued)				
<u>Long-term Investments in Equity Securities</u> (Continued)				
<i>PTTT Group</i>				
KIC Oil Terminal Sdn. Bhd. (KOT)	Malaysia	Logistics services	10.00	10.00
Kadriah Integrated Facilities Sdn. Bhd. (KIF)	Malaysia	Logistics services	10.00	10.00
Kadriah I Ltd. (K I)	Malaysia	Logistics services	10.00	10.00
Kadriah II Ltd. (K II)	Malaysia	Logistics services	10.00	10.00
<i>PTTGC Group</i>				
Exeltium SAS (EXS)	France	Electricity business	4.00	4.00
Sarn Palung Social Enterprise Co., Ltd. (SPSE) <small>(The Group holds 100% shareholding)</small>	Thailand	Social enterprise	15.00	15.00
TPBI & Myanmar Star Co., Ltd. (TPBIMS)	Myanmar	Manufacturing and distributing of polymer products	10.00	10.00
<i>TOP Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (SPSE) <small>(The Group holds 100% shareholding)</small>	Thailand	Social enterprise	15.00	15.00
<i>IRPC Group</i>				
TPI EOEG Co., Ltd. (TPIE)	Thailand	Finance service	36.31	36.31
TPI Holding Co., Ltd. (TPIH)	Thailand	Investment in other companies	35.01	35.01
Pornchai Enterprises Co., Ltd. (PEC)	Thailand	Real estate for rent	23.65	23.65
Thai Special Steel Industries Public Co., Ltd. (TSSI)	Thailand	Steel wire manufacturing	16.24	16.24
Rayong Acetylene Co., Ltd. (RAC)	Thailand	Industrial gas manufacturing	13.04	13.04
DIA Polyacrylate Co., Ltd. (DIA)	Thailand	Plastic resin manufacturing	3.65	3.65
Sarn Palung Social Enterprise Co., Ltd. (SPSE) <small>(The Group holds 100% shareholding)</small>	Thailand	Social enterprise	15.00	15.00

13. Other Long-term Investments (Continued)

13.2 Details of other long-term investments as at March 31, 2019 and December 31, 2018 are as follows:

Unit: Million Baht

Company	Ownership interest (%)		Cost/Cost amortized				Dividends income for the three-month periods ended March 31	
			Consolidated financial statements		Separate financial statements			
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018	2019	2018
<u>Long-term investments in Equity Securities</u>								
1. PA (Sanshui)	25.00	25.00	6.06	6.06	6.06	6.06	-	-
2. PA (Maoming)	20.00	20.00	14.83	14.83	14.83	14.83	-	-
3. SPSE	100.00	100.00	2.48	2.49	0.50	0.50	-	-
4. Baania	3.57	3.57	10.00	10.00	10.00	10.00	-	-
5. Corpus	0.48	0.48	0.60	0.60	0.60	0.60	-	-
6. HG Robotics	9.49	9.49	18.50	18.50	18.50	18.50	-	-
7. PL9SB	10.00	10.00	9,481.47	9,671.67	-	-	-	-
8. MZ LNG1	8.50	8.50	6.76	6.90	-	-	-	-
9. 24M	29.50	29.50	1,005.81	1,005.80	-	-	-	-
10. RPCL	15.00	15.00	888.75	888.75	-	-	72.00	-
11. IPS	16.67	16.67	0.02	0.02	-	-	-	-
12. FPT*	-	-	0.02	0.02	-	-	-	-
13. KOT	10.00	10.00	111.78	114.02	-	-	-	-
14. KIF	10.00	10.00	46.32	47.25	-	-	-	-
15. K I	10.00	10.00	232.82	237.49	-	-	-	-
16. K II	10.00	10.00	62.23	63.48	-	-	-	-
17. EXS	4.00	4.00	282.88	282.88	-	-	-	-
18. TPBIMS	10.00	10.00	15.88	15.88	-	-	-	-
19. TPIE	36.31	36.31	828.94	828.94	-	-	-	-
20. TPIH	35.01	35.01	1,415.90	1,415.90	-	-	-	-
21. PEC	23.65	23.65	1,118.95	1,118.95	-	-	-	-
22. TSSI	16.24	16.24	673.35	673.35	-	-	-	-
23. RAC	13.04	13.04	15.00	15.00	-	-	-	-
24. DIA	3.65	3.65	8.50	8.50	-	-	-	-
25. Other	-	-	133.87	43.22	-	-	-	-
Long-term investments in equity securities			16,381.72	16,490.50	50.49	50.49		
<u>Less Allowance for impairment</u>			(3,945.43)	(3,954.52)	(14.14)	(14.14)		
Total			12,436.29	12,535.98	36.35	36.35	72.00	-

* As at March 31, 2019 and December 31, 2018, the Group holds 0.0000090% of ownership interest, totaling 66 shares, amounting to Baht 22,220.00.

13. Other Long-term Investments (Continued)

13.2 Details of other long-term investments as at March 31, 2019 and December 31, 2018 are as follows: (Continued)

Unit: Million Baht

Company name	Ownership interest (%)		Cost/ Cost amortized				Dividends income for the three-month periods ended March 31	
			Consolidated financial statements		Separate financial statements			
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018	2019	2018
<u>Long-term investments in Debt Securities</u>								
26. BDMS			-	420.37	-	420.37	-	-
27. IVL			500.00	500.00	500.00	500.00	-	-
28. CBQ			6,328.98	6,456.96	6,328.98	6,456.96	-	-
29. ENBD			4,430.28	4,519.87	4,430.28	4,519.87	-	-
30. SCC			103.04	103.36	103.04	103.36	-	-
31. TBEV			1,400.00	300.00	1,400.00	300.00	-	-
32. BCP			500.00	500.00	500.00	500.00	-	-
33. CPF			1,150.00	1,150.00	1,150.00	1,150.00	-	-
34. GULF			203.30	-	203.30	-	-	-
35. Other			474.68	484.27	-	-	-	-
Total			15,090.28	14,434.83	14,615.60	13,950.56	-	-
Grand total			27,526.57	26,970.81	14,651.95	13,986.91	72.00	-

14. Investment Properties

Details of investment properties are as follows:

Unit: Million Baht

	Consolidated financial statements			
	Land	Buildings and building improvements	Other assets	Total
As at January 1, 2019				
Cost	4,593.38	2,342.43	3.69	6,939.50
<u>Less</u> Accumulated depreciation	-	(1,117.49)	(0.11)	(1,117.60)
Allowance for impairment of assets	(216.20)	-	-	(216.20)
Net book value	4,377.18	1,224.94	3.58	5,605.70
For the three-month period ended March 31, 2019				
Beginning net book value	4,377.18	1,224.94	3.58	5,605.70
- Additions	-	8.27	0.02	8.29
- Reclassifications	325.60	3.43	-	329.03
- Depreciation for the period	-	(29.07)	(0.09)	(29.16)
- Classify as Assets-held-for-sale*	(465.05)	-	-	(465.05)
Ending net book value	4,237.73	1,207.57	3.51	5,448.81
As at March 31, 2019				
Cost	4,453.93	2,354.13	3.71	6,811.77
<u>Less</u> Accumulated depreciation	-	(1,146.56)	(0.20)	(1,146.76)
Allowance for impairment of assets	(216.20)	-	-	(216.20)
Net book value	4,237.73	1,207.57	3.51	5,448.81

*A subsidiary of the Group entered into a sale of land agreement with a joint venture. As at 31 March 2019, the Group classified the land as assets-held-for-sale.

14. Investment Properties (Continued)

Details of investment properties are as follows: (Continued)

	Unit: Million Baht		
	Separate financial statements		
	Land	Buildings and building improvements	Total
As at January 1, 2019			
Cost	1,644.64	1,229.13	2,873.77
<u>Less</u> Accumulated depreciation	-	(841.05)	(841.05)
Net book value	1,644.64	388.08	2,032.72
For the three-month period ended March 31, 2019			
Beginning net book value	1,644.64	388.08	2,032.72
- Reclassifications	325.60	-	325.60
- Depreciation for the period	-	(9.92)	(9.92)
Ending net book value	1,970.24	378.16	2,348.40
As at March 31, 2019			
Cost	1,970.24	1,229.13	3,199.37
<u>Less</u> Accumulated depreciation	-	(850.97)	(850.97)
Net book value	1,970.24	378.16	2,348.40

15. Property, Plant and Equipment

Details of property, plant and equipment are as follows:

	Consolidated financial statements						Unit: Million Baht	
	Land	Buildings and building improvements*	Machinery and equipment*	Exploration and production properties	Mining Properties	Other assets		Construction in progress
As at January 1, 2019								
Cost	47,367.30	295,642.92	1,004,656.42	859,932.18	54,380.77	27,210.84	90,219.80	2,379,410.23
<u>Less Accumulated depreciation</u>	-	(159,918.43)	(444,453.82)	(586,991.28)	(28,130.33)	(16,334.64)	-	(1,235,828.50)
Allowance for impairment of assets	(99.65)	(662.74)	(2,394.98)	(10,861.42)	(13,774.62)	(17.09)	(1,596.49)	(29,406.99)
Net book value	47,267.65	135,061.75	557,807.62	262,079.48	12,475.82	10,859.11	88,623.31	1,114,174.74

* The Group reclassified the cost, accumulated depreciation and allowance for impairment of property, plant and equipment as of 1 January 2019.

15. **Property, Plant and Equipment (Continued)**

Details of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements							Total
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets	Construction in progress	
For the three-month period ended March 31, 2019								
Beginning net book value	47,267.65	135,061.75	557,807.62	262,079.48	12,475.82	10,859.11	88,623.31	1,114,174.74
- Business acquisition (Note 30)	648.51	252.80	70,369.05	-	-	3.59	207.01	71,480.96
- Additions	129.71	1,246.92	778.24	9,239.39	495.86	252.87	15,993.18	28,136.17
- Borrowing costs	-	-	-	-	-	-	402.31	402.31
- Reclassifications	156.66	568.28	4,408.38	4,737.73	-	70.60	(5,615.38)	4,326.27
- Disposals - net	(0.29)	(21.83)	(35.04)	-	-	(32.39)	(1.21)	(90.76)
- Depreciation for the period	-	(2,905.72)	(11,082.90)	(14,179.87)	(720.41)	(544.51)	-	(29,433.41)
- Reversal of loss on impairment	-	11.27	-	-	-	-	-	11.27
- Currency translation differences	(36.70)	(114.70)	(279.82)	(5,153.84)	(246.65)	(3.40)	(111.35)	(5,946.46)
Ending net book value	48,165.54	134,098.77	621,965.53	256,722.89	12,004.62	10,605.87	99,497.87	1,183,061.09
As at March 31, 2019								
Cost	48,265.19	297,368.95	1,078,979.84	857,087.62	53,810.21	27,443.73	101,068.28	2,464,023.82
<u>Less</u> Accumulated depreciation	-	(162,629.07)	(454,664.18)	(589,716.91)	(28,301.83)	(16,820.77)	-	(1,252,132.76)
Allowance for impairment of assets	(99.65)	(641.11)	(2,350.13)	(10,647.82)	(13,503.76)	(17.09)	(1,570.41)	(28,829.97)
Net book value	48,165.54	134,098.77	621,965.53	256,722.89	12,004.62	10,605.87	99,497.87	1,183,061.09

Unit: Million Baht

15. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Other assets	Construction in progress	
As at January 1, 2019						
Cost	7,371.17	38,360.19	369,986.08	17,819.69	20,752.34	454,289.47
<u>Less</u> Accumulated depreciation	-	(15,008.77)	(154,630.64)	(11,265.55)	-	(180,904.96)
Allowance for impairment of assets	-	(26.56)	(36.32)	-	-	(62.88)
Net book value	7,371.17	23,324.86	215,319.12	6,554.14	20,752.34	273,321.63
For the three-month period ended March 31, 2019						
Beginning net book value	7,371.17	23,324.86	215,319.12	6,554.14	20,752.34	273,321.63
- Additions	-	3.05	20.17	14.27	4,471.06	4,508.55
- Borrowing costs	-	-	-	-	205.99	205.99
- Reclassifications	(325.60)	(10.39)	161.16	(14.42)	(165.45)	(354.70)
- Disposals - net	-	(12.32)	(1.51)	(10.45)	-	(24.28)
- Depreciation for the period	-	(433.29)	(3,560.79)	(349.53)	-	(4,343.61)
- Reversal of loss on impairment	-	11.27	-	-	-	11.27
Ending net book value	7,045.57	22,883.18	211,938.15	6,194.01	25,263.94	273,324.85
As at March 31, 2019						
Cost	7,045.57	38,312.59	370,012.61	17,789.41	25,263.94	458,424.12
<u>Less</u> Accumulated depreciation	-	(15,414.12)	(158,038.14)	(11,595.40)	-	(185,047.66)
Allowance for impairment of assets	-	(15.29)	(36.32)	-	-	(51.61)
Net book value	7,045.57	22,883.18	211,938.15	6,194.01	25,263.94	273,324.85

Borrowing costs were capitalized as a part of costs of property, plant and equipment. During the period, the Group used capitalization rates ranging from 1.10% - 5.25% per annum (2018: 1.10% - 5.67% per annum).

As at March 31, 2019, the Group had pledged assets amounting to Baht 82,207.15 million (December 31, 2018: Baht 50,740.55 million).

15. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

As at March 31, 2019 and December 31, 2018, details of assets under finance leases which were recorded as machinery and equipment, and other assets include natural gas pipeline and vehicles are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Cost	10,672.39	10,664.03	9,492.69	9,516.59
<u>Less</u> Accumulated depreciation	(5,017.81)	(4,849.07)	(4,524.65)	(4,406.14)
Net book value	<u>5,654.58</u>	<u>5,814.96</u>	<u>4,968.04</u>	<u>5,110.45</u>

16. Goodwill

Movements of goodwill are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2019	2018
Net book value as at January 1	48,924.92	46,688.26
- Business acquisition (Note 30)	61,916.05	-
- Currency translation differences	(707.01)	(1,496.04)
Net book value as at March 31	<u>110,133.96</u>	<u>45,192.22</u>

17. Intangible Assets

Details of intangible assets are as follows:

	Unit: Million Baht			
	Consolidated financial statements			
	Computer Software*	Right of use*	Other Intangible assets	Total
As at January 1, 2019				
Cost	23,171.62	33,800.25	10,348.07	67,319.94
<u>Less</u> Accumulated amortization	(12,837.88)	(14,578.88)	(4,936.79)	(32,353.55)
Allowance for impairment of assets	-	(744.14)	(21.85)	(765.99)
Net book value	10,333.74	18,477.23	5,389.43	34,200.40
For the three-month period ended March 31, 2019				
Beginning net book value	10,333.74	18,477.23	5,389.43	34,200.40
- Business acquisition (Note 30)	59.55	646.54	-	706.09
- Additions	166.96	186.87	188.39	542.22
- Reclassifications	(669.72)	1,863.10	120.80	1,314.18
- Disposals - net	-	-	(0.27)	(0.27)
- Amortization for the period	(589.93)	(291.37)	(124.82)	(1,006.12)
- Currency translation differences	(46.47)	(30.57)	(66.93)	(143.97)
Ending net book value	9,254.13	20,851.80	5,506.60	35,612.53
As at March 31, 2019				
Cost	22,568.40	36,710.76	10,530.63	69,809.79
<u>Less</u> Accumulated amortization	(13,314.27)	(15,129.44)	(5,002.18)	(33,445.89)
Allowance for impairment of assets	-	(729.52)	(21.85)	(751.37)
Net book value	9,254.13	20,851.80	5,506.60	35,612.53

* The Group reclassified the cost and accumulated amortization of intangible assets as of 1 January 2019.

17. Intangible Assets (Continued)

Details of intangible assets are as follows: (Continued)

	Unit: Million Baht		
	Separate financial statements		
	Computer software	Right of use	Total
As at January 1, 2019			
Cost	7,178.44	20,129.18	27,307.62
<u>Less</u> Accumulated amortization	(4,641.21)	(8,852.47)	(13,493.68)
Net book value	2,537.23	11,276.71	13,813.94
For the three-month period ended March 31, 2019			
Beginning net book value	2,537.23	11,276.71	13,813.94
- Additions	20.20	-	20.20
- Reclassifications	(4.68)	6.59	1.91
- Amortization for the period	(236.98)	(130.01)	(366.99)
Ending net book value	2,315.77	11,153.29	13,469.06
As at March 31, 2019			
Cost	7,193.88	20,135.77	27,329.65
<u>Less</u> Accumulated amortization	(4,878.11)	(8,982.48)	(13,860.59)
Net book value	2,315.77	11,153.29	13,469.06

18. Exploration and evaluation assets

Details of exploration and evaluation assets are as follows:

Unit: Million Baht

	Consolidated financial statements		
	Petroleum exploration and evaluation assets	Mining properties	Total
As at January 1, 2019			
Cost	160,814.99	839.34	161,654.33
<u>Less</u> Allowance for impairment of assets	(53,329.80)	(161.96)	(53,491.76)
Net book value	107,485.19	677.38	108,162.57
For the three-month period ended March 31, 2019			
Beginning net book value	107,485.19	677.38	108,162.57
- Additions	1,280.50	1.38	1,281.88
- Reclassifications	(4,737.73)	-	(4,737.73)
- Currency translation differences	(2,108.58)	(16.56)	(2,125.14)
Ending net book value	101,919.38	662.20	102,581.58
As at March 31, 2019			
Cost	155,291.87	820.97	156,112.84
<u>Less</u> Allowance for impairment of assets	(53,372.49)	(158.77)	(53,531.26)
Net book value	101,919.38	662.20	102,581.58

19. Other Non-current Assets

Details of other non-current assets as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Long-term other accounts receivable	1,343.65	1,375.95	7.24	8.39
Advance payments and deferred charge	21,206.85	20,628.08	1,157.88	1,176.88
Advance payments for gas purchases	-	-	146.49	61.83
Decommissioning fund	5,170.68	5,247.82	-	-
Others*	10,272.08	12,227.14	4,554.08	4,509.39
Total	<u>37,993.26</u>	<u>39,478.99</u>	<u>5,865.69</u>	<u>5,756.49</u>

The Company made advance payments for some gas that cannot take-up as the minimum volumes committed in the Gas Sales Agreements (Take-or-Pay). The Company has the right to take those volumes of prepaid gas (Make-up Right) in subsequent years, with no maturity period.

As at March 31, 2019, advance payments for gas purchases comprised the balance of advance payments made for gas purchases, from the Sirikit gas fields in Thailand, for the untaken-up gas volumes in 2017-2018.

* As at March 31, 2019, the Company has a restricted bank cash amounting to Baht 4,372.75 million (December 31, 2018: Baht 4,372.75 million) placed as a security to stay the enforcement of the judgement as described in Note 32.7.

20. Long-term Loans

Details of long-term loans as at March 31, 2019 and December 31, 2018 are as follows:

Current portion of long-term loans

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Loans - Baht currency	13,529.12	12,344.94	-	-
Loans - foreign currencies	5,048.58	2,439.19	-	-
Debentures - Baht currency	47,905.45	47,504.98	26,000.00	26,000.00
Finance leases liabilities	802.19	819.49	502.76	511.16
Total	67,285.34	63,108.60	26,502.76	26,511.16

Long-term loans

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Loans - Baht currency	123,894.55	118,096.85	1,000.00	1,000.00
Loans - foreign currencies	29,622.80	21,304.70	6,686.19	6,830.15
Debentures - Baht currency	160,022.98	147,477.25	83,715.20	83,715.20
Debentures - foreign currencies	160,279.56	163,462.61	27,421.03	27,969.16
Finance leases liabilities	4,407.41	4,622.90	3,921.50	4,124.45
Total	478,227.30	454,964.31	122,743.92	123,638.96

20. Long-term Loans (Continued)

Original currency of loans and debentures in foreign currencies as at March 31, 2019 and December 31, 2018 are as follows:

Current portion of long-term loans and debentures

	Unit: Million			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Loans - foreign currencies				
-USD	77.75	47.74	-	-
-EURO	65.00	10.92	-	-
-JPY	408.57	408.57	-	-
-LAK	12,855.64	12,855.64	-	-
-VND	28,879.60	228,506.04	-	-

Long-term loans and debentures

	Unit: Million			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Loans - foreign currencies				
-USD	533.96	219.80	-	-
-EURO	93.69	141.01	-	-
-JPY	29,751.28	29,749.62	23,000.00	23,000.00
-LAK	35,353.02	38,566.93	-	-
-VND	231,297.00	-	-	-
Debentures - foreign currencies				
-USD	5,020.82	5,020.33	857.48	857.56

20. Long-term Loans (Continued)

Finance leases liabilities

Details of finance leases liabilities as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Finance leases liabilities				
- Within 1 year	907.42	928.78	577.90	588.63
- Over 1 year but not over 5 years	2,598.57	2,679.59	2,074.07	2,138.29
- Over 5 years	2,115.04	2,270.20	2,115.04	2,270.20
Future finance charges	(411.43)	(436.18)	(342.75)	(361.51)
Present value of finance leases liabilities	<u>5,209.60</u>	<u>5,442.39</u>	<u>4,424.26</u>	<u>4,635.61</u>
Present value of finance leases liabilities				
- Current liabilities	802.19	819.49	502.76	511.16
- Non-current liabilities	<u>4,407.41</u>	<u>4,622.90</u>	<u>3,921.50</u>	<u>4,124.45</u>
Total	<u>5,209.60</u>	<u>5,442.39</u>	<u>4,424.26</u>	<u>4,635.61</u>

21. Changes in liabilities arising from financing activities

Changes in liabilities arising from financing activities are as follows:

	Consolidated financial statements							Unit: Million Baht	
	As at January 1, 2019	Cash flows from financing			Non-cash items				As at March 31, 2019
		Additions	Repayments	Leases liabilities - Addition	(Gain) loss on exchange rates	Currency translation differences	Business acquisition (Note 30)		
Short-term loans from financial institutions	25,561.80	85,119.92	(17,838.48)	-	-	(202.00)	-	(478.18)	92,163.06
Short-term loans	-	-	-	-	-	-	701.55	-	701.55
Loans - Baht currency	130,441.79	1,875.00	(2,886.41)	-	-	-	7,975.83	17.46	137,423.67
Loans - foreign currencies	23,743.89	3,385.82	(3,429.08)	-	(265.87)	(278.87)	11,501.72	13.77	34,671.38
Debentures - Baht currency	194,982.23	-	(3,000.00)	-	480.08	(480.64)	15,943.28	3.48	207,928.43
Debentures - foreign currencies	163,462.61	-	-	-	(2,138.97)	(1,065.83)	-	21.75	160,279.56
Finance leases liabilities	5,442.39	-	(242.89)	81.25	(77.24)	(1.24)	-	7.33	5,209.60
Total	543,634.71	90,380.74	(27,396.86)	81.25	(2,002.00)	(2,028.58)	36,122.38	(414.39)	638,377.25

21. Changes in liabilities arising from financing activities (Continued)

Changes in liabilities arising from financing activities are as follows: (Continued)

Unit: Million Baht

	Separate financial statements						As at March 31, 2019
	As at January 1, 2019	Cash flows from financing		Non-cash items		Others	
		Additions	Repayments	Leases liabilities - Additions	Gain on exchange rates		
Short-term loans - related party	3,332.70	115.56	(958.91)	-	-	-	2,489.35
Loans - Baht currency	1,000.00	-	-	-	-	-	1,000.00
Loans - foreign currencies	6,830.15	-	-	-	(143.96)	-	6,686.19
Debentures - Baht currency	109,715.20	-	-	-	-	-	109,715.20
Debentures - foreign currencies	27,969.16	-	-	-	(552.85)	4.72	27,421.03
Finance leases liabilities	4,635.61	-	(151.74)	4.29	(78.00)	14.10	4,424.26
Total	153,482.82	115.56	(1,110.65)	4.29	(774.81)	18.82	151,736.03

22. Provisions for Employee Benefit

Movements in the present value of provisions for employee benefit are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
As at January 1	23,921.03	23,313.07	6,906.65	8,877.98
Service cost	408.04	446.57	126.88	177.17
Interest cost	156.37	147.84	54.54	65.30
Actuarial (gain) loss from provisions for post-employment benefit	6.45	(0.08)	-	-
Actuarial loss from provisions for other long-term employee benefit	0.09	-	-	-
Actual payment	(365.89)	(222.99)	(12.26)	(20.60)
Business acquisition (Note 30)	255.61	-	-	-
Currency translation differences	(24.31)	(21.57)	-	-
As at March 31	<u>24,357.39</u>	<u>23,662.84</u>	<u>7,075.81</u>	<u>9,099.85</u>

Expenses recognized in the statements of income and comprehensive income for the three-month periods ended March 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Cost of sales and services	203.27	193.90	31.81	35.90
Selling and distribution expenses	36.14	51.47	7.10	50.00
Administrative expenses	318.56	347.44	142.04	155.95
Management remuneration	6.53	1.60	0.47	0.62
Other comprehensive (gain) loss	6.45	(0.08)	-	-
Total	<u>570.95</u>	<u>594.33</u>	<u>181.42</u>	<u>242.47</u>

22. Provisions for Employee Benefit (Continued)

The Labor Protection Act (No. 7) B.E. 2562 has been announced in the Royal Thai Government Gazette on April 5, 2019, which will be effective after 30 days from the date announced in Royal Thai Government Gazette. This Labor Protection Act stipulates additional legal severance pay rates in the event of termination of an employee who has worked for an uninterrupted period of 20 years or more, whereby the employee is entitled to receive compensation of not less than 400 days at the employee's last wage rate. This change is considered an amendment to a post-employment benefits plan, and results in the increase of Baht 3,171.59 million in employee benefits liabilities in the consolidated financial statements. However, there is no impact on the separate financial statements because the Company is covered by the State Enterprise Labor Relations Act B.E. 2543. The Group will record the effect of this change by recognizing the past service costs as expenses in the income statement of the period in which the law is effective.

23. Provision for Decommissioning Costs

Movements in the provision for decommissioning costs which will occur in the future are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2019	2018
As at January 1	74,722.52	74,865.44
- Additional provision	771.49	634.18
- Use during the period	-	(126.69)
- Reversal of non-occurred provision	(1.82)	(2.81)
- Currency translation differences	(1,458.69)	(3,317.22)
As at March 31	74,033.50	72,052.90
- Current portion	(1,078.81)	-
- Long-term portion	72,954.69	72,052.90

24. Other Non-current Liabilities

Other non-current liabilities as at March 31, 2019 and December 31, 2018 are as follows:

Unit: Million Baht

	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
Long-term other accounts payable	4,027.02	3,603.00	3,652.35	3,490.10
Provision for remuneration for the renewal of petroleum production	7,065.20	7,744.52	-	-
Long-term liability: Make-up	10,782.35	10,782.35	10,782.35	10,782.35
Deferred revenue	18,319.54	6,609.13	5,190.34	5,244.77
Others	4,670.52	4,232.06	347.11	340.25
Total	<u>44,864.63</u>	<u>32,971.06</u>	<u>19,972.15</u>	<u>19,857.47</u>

Long-term liability (Make-up) arises from the amount of the difference between the natural gas price for the committed gas volumes that the Company paid in advance and the natural gas price as at the date of taking the gas that exceeds the interest paid for the advance payment for untaken-up gas volume (Take-or-Pay). The Company has to distribute the difference to the parties who paid for the Take-or-Pay interest for the Yadana and Yetagun gas fields.

25. Basic Earnings per Share

Basic earnings per share for the three-month periods ended March 31, 2019 and 2018 are as follows:

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Profit attributable to owners of the parent from continuing operations	29,312,075,916	39,788,257,848	17,101,131,550	17,202,396,265
Adjustment of profit	(283,402,784)	(329,262,738)	-	-
Profit for calculation of earnings per share from continuing operations	29,028,673,132	39,458,995,110	17,101,131,550	17,202,396,265
Profit for calculation of earnings per share from discontinued operations	-	-	-	3,471,333,923
Total profit	29,028,673,132	39,458,995,110	17,101,131,550	20,673,730,188
Number of weighted average of ordinary shares (shares)	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Earnings per share from continuing operations (Baht/share)	1.02	1.38	0.60	0.60
Earnings per share from discontinued operations (Baht/share)	-	-	-	0.12
Earnings per share (Baht/share)	1.02	1.38	0.60	0.72

26. Other Income

Details of other income for the three-month periods ended March 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018*	2019	2018*
Transportation income	1,348.07	868.94	2,015.77	1,059.87
Dividend income	94.33	34.02	8,661.58	168.68
Interest income	2,794.87	2,504.74	915.66	740.10
Compensation for loan interest on advance payments for gas purchases	(0.57)	(0.54)	(0.57)	(0.54)
Gain (loss) on disposal of assets and investments	(24.58)	0.20	(4.59)	783.95
Gain (loss) on derivatives	(3,780.02)	355.39	377.11	647.49
Others	1,614.33	1,295.96	988.50	587.60
Total	2,046.43	5,058.71	12,953.46	3,987.15

Compensation for loan interests on advance payments for gas purchases (Take-or-Pay) represents the compensation, which the Company received from the Electricity Generating Authority of Thailand (EGAT) and the Independent Power Plants (IPP) in order to absorb the interests on loans that the Company obtains to make advance payments for gas purchases.

*The Company has reclassified the financial information to be comparable with the financial statement presentation the three-month period ended March 31, 2019.

27. Expenses by Nature

Details of expenses by nature for the three-month periods ended March 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Changes in finished goods and work in process	9,587.22	2,829.19	4,414.03	815.52
Goods purchased and raw materials used	422,460.19	404,891.52	283,578.24	270,338.74
Executive remunerations (Note 8.10)	341.92	360.46	35.47	51.62
Staff costs	13,068.80	11,812.30	2,177.77	1,751.15
Outsourcing	2,411.71	1,694.90	1,226.65	209.63
Transportation	5,233.82	3,981.70	2,020.24	1,065.70
Depreciation and amortization	31,194.61	28,519.49	4,749.48	4,513.95
Repairment	3,264.78	2,880.97	571.77	374.33
Utilities	3,211.71	2,987.25	2,951.64	2,604.41
Rental fees and property insurance premium	2,240.62	2,260.21	633.99	451.50
Petroleum exploration expenses	268.96	86.52	-	-
(Reversal of) doubtful accounts	(19.50)	130.88	(1.72)	(22,314.92)
Loss on impairment of assets and investments	0.20	-	-	21,624.66
Others	7,079.19	7,604.48	1,009.15	841.09
Total	500,344.23	470,039.87	303,366.71	282,327.38

28. Operating Segments

These operating segments are consistent with the internal management reports provided to the Chief Operating Decision Maker (CODM), who makes decisions related to the allocation of resources to the segments and assesses their performance.

For management purposes, the Group is organized into business groups based on types of products and services. The major segments of the Group are as follows:

Upstream Petroleum and Natural Gas Business Group

1. Petroleum exploration and production business:
The Group conducts petroleum exploration and production business both domestically and overseas. The Group is the operator and jointly invests with leading petroleum exploration and production companies. Most domestic projects are located in the Gulf of Thailand, while overseas projects are located in Southeast Asia, Australia, America and Africa.
2. Natural gas business:
The Group conducts natural gas business including procurement, natural gas pipeline transmission, distribution, and natural gas separation. Products from the natural gas separation plants are used as feedstock for the petrochemical industry and as fuel in the household, transportation and industry sectors.
3. Coal business:
The Group conducts coal mining business, involving overseas exploration, production and distribution of coals.

Downstream Petroleum Business Group

1. Oil business:
The Group conducts marketing of petroleum products and lube oil in both domestic and overseas markets under an efficient operating system of procurement, storage, and distribution of products as well as the retail business at service stations.
2. International trading business:
The Group conducts international trading business including the import and export of petroleum and petrochemical products as well as other related products. This includes the price risk management and international chartering.
3. Petrochemical and Refining business:
The Group conducts refining business including the production and distribution of petroleum and petrochemicals products in both domestic and overseas markets.

Technology and Engineering Group

The Group conducts innovation, digital, technology, engineering, the production and distribution of electricity, steam and water for industrial purpose, and the project management of the Group. This includes seeking the business opportunities for the sustainability of the Group.

Other operations of the Group are included in other segments, none of which constitutes a separately reportable segment.

28. Operating Segments (Continued)

The Group changed the operating segment by detaching Technology and Engineering from the Other business segment in order to reflect the business operations and internal Group reporting. The Group therefore reorganised the operating segment information of 2018 to enable comparison with the current period's information.

Pricing among business groups is based on normal market prices except for pricing among business groups within the Company, for which net market prices, after deducting management fees for petroleum terminals and operating fees, are applied.

28. Operating Segments (Continued)

Consolidated financial statements

For the three-month period ended March 31, 2019

	Upstream petroleum and natural gas				Downstream petroleum			Technology and Engineering	Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining					
Sales - others	5,838.52	90,945.21	4,216.04	145,131.49	141,502.69	157,136.41	6,061.09	42.08	-	-	550,873.53
- related parties	37,021.53	35,193.76	-	751.74	127,705.04	97,542.18	4,377.58	719.07	(303,310.90)	-	-
Net sales	42,860.05	126,138.97	4,216.04	145,883.23	269,207.73	254,678.59	10,438.67	761.15	(303,310.90)	(303,310.90)	550,873.53
Gross profit (loss)*	38,319.92	20,538.26	1,596.23	9,938.96	1,600.42	25,697.85	2,863.72	(86.88)	(2,390.06)	(2,390.06)	98,078.42
EBITDA	32,811.68	17,948.30	1,209.51	5,728.94	828.55	20,920.26	2,696.06	(454.86)	(1,165.47)	(1,165.47)	80,522.97
Depreciation and amortization expenses	(14,524.39)	(4,615.45)	(831.03)	(1,010.28)	(26.42)	(8,891.52)	(1,218.58)	(76.94)	-	-	(31,194.61)
Segment operating profit (loss)	18,287.29	13,332.85	378.48	4,718.66	802.13	12,028.74	1,477.48	(531.80)	(1,165.47)	(1,165.47)	49,328.36
Share of profit from investments in joint ventures and associates	19.44	180.82	-	269.23	-	920.66	145.41	-	-	-	1,535.56
Others	0.01	(1.30)	(1.02)	28.94	(9.76)	2.19	71.31	(1.61)	-	-	88.76
Unallocated revenue and expenses:											
Interest income											2,794.87
Loss on derivatives											(3,780.02)
Gain on foreign exchange rate											3,875.19
EBIT											53,842.72
Profit for the period											39,584.40

* Gross profit (loss) excludes depreciation and amortization expenses in cost of sales.

28. **Operating Segments (Continued)**

Consolidated financial statements

As at March 31, 2019

	Upstream petroleum and natural gas				Downstream petroleum			Technology and Engineering	Others	Elimination	Unit: Million Baht Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining					
Segment assets	589,263.10	407,188.21	27,457.95	125,982.66	83,731.21	810,692.52	237,649.85	136,511.80	-	2,418,477.30	
Inter-company assets	25,923.80	18,917.75	288.72	7,190.93	46,014.18	35,659.73	4,429.19	72,920.08	(211,344.38)	-	
Investments in joint ventures and associates	92621	5,506.92	-	5,357.33	-	44,387.96	11,107.35	-	-	67,285.77	
Total segment assets	616,113.11	431,612.88	27,746.67	138,530.92	129,745.39	890,740.21	253,186.39	209,431.88	(211,344.38)	2,485,763.07	
Non-allocated assets										35,337.69	
Total assets										2,521,100.76	

28. Operating Segments (Continued)

Consolidated financial statements

For the three-month period ended March 31, 2018

	Upstream petroleum and natural gas						Downstream petroleum				Technology and Engineering	Others	Elimination	Total
	Petroleum exploration and production		Natural gas		Coal		Oil	International trading	Petrochemicals and Refining					
	Petroleum exploration and production	Natural gas	Natural gas	Coal	Oil	Petrochemicals and Refining								
Sales - others	5,623.96	77,587.10	5,156.77	149,240.62	129,617.63	162,584.37	3,128.19	33.34	3,128.19	33.34	-	532,971.98		
- related parties	31,719.49	31,943.66	-	2,074.16	128,064.49	104,317.33	3,894.16	678.67	3,894.16	678.67	(302,691.96)	-		
Net sales	37,343.45	109,530.76	5,156.77	151,314.78	257,682.12	266,901.70	7,022.35	712.01	7,022.35	712.01	(302,691.96)	532,971.98		
Gross profit (loss) *	32,823.36	25,296.05	1,652.48	9,820.20	501.25	33,743.59	2,107.43	(78.77)	2,107.43	(78.77)	(398.82)	105,466.77		
EBITDA	28,053.49	23,244.43	1,178.99	6,318.15	(126.79)	29,172.39	1,958.27	(261.10)	1,958.27	(261.10)	578.46	90,116.29		
Depreciation and amortization expenses	(12,866.21)	(4,373.68)	(559.96)	(1,221.46)	(7.95)	(8,486.33)	(917.13)	(86.77)	(917.13)	(86.77)	-	(28,519.49)		
Segment operating profit (loss)	15,187.28	18,870.75	619.03	5,096.69	(134.74)	20,686.06	1,041.14	(347.87)	1,041.14	(347.87)	578.46	61,596.80		
Share of profit from investments in joint ventures and associates	21.09	154.70	-	250.60	-	1,878.13	167.95	-	167.95	-	-	2,472.47		
Others	0.03	1.41	0.01	(0.65)	-	33.44	-	(136.10)	-	(136.10)	-	(101.86)		
Unallocated revenue and expenses:														
Interest income												2,504.74		
Gain on derivatives												355.39		
Gain on foreign exchange rate												4,741.99		
EBIT												71,569.53		
Profit for the period												56,587.02		

* Gross profit (loss) excludes depreciation and amortization expenses in cost of sales.

28. Operating Segments (Continued)

Consolidated financial statements

As at December 31, 2018

	Upstream petroleum and natural gas				Downstream petroleum			Technology and Engineering	Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining					
Segment assets	588,195.26	413,776.38	27,195.61	126,978.19	77,049.54	815,640.67	69,186.31	143,277.66	-	2,261,299.62	
Inter-company assets	24,184.24	21,277.41	329.60	8,513.94	42,484.39	29,233.93	4,472.01	42,202.59	(172,698.11)	-	
Investments in joint ventures and associates	922.20	5,674.75	-	5,088.13	-	43,377.82	10,622.42	-	-	65,685.32	
Total segment assets	613,301.70	440,728.54	27,525.21	140,580.26	119,533.93	888,252.42	84,280.74	185,480.25	(172,698.11)	2,326,984.94	
Non-allocated assets										28,498.93	
Total assets										<u>2,355,483.87</u>	

29. Fair Value Measurement

The fair value of the current portions of financial assets and liabilities approximates the carrying value due to the relatively short-term maturity of these financial instruments.

The fair value of long-term lending loans and borrowings carrying interest at market rates approximates the carrying values.

As at March 31, 2019 and December 31, 2018, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows:

As at March 31, 2019

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	3,520.16	-	-	3,520.16
Mutual funds	1,163.43	-	430.00	1,593.43
Debt instruments	-	1,732.18	-	1,732.18
Derivatives				
Foreign currency forward contracts	-	797.81	-	797.81
Cross-currency swap contracts	-	1,429.61	-	1,429.61
Interest rate swap contracts	-	1,190.26	-	1,190.26
Commodity swap contracts	16.59	446.62	-	463.21
Other derivative contracts	-	875.27	-	875.27
Financial liabilities measured at fair value				
Other accounts payable				
Deferred considerations acquired through business acquisition	-	-	15,245.45	15,245.45
Derivatives				
Foreign currency forward contracts	-	1,324.79	-	1,324.79
Cross-currency swap contracts	-	336.97	-	336.97
Interest rate swap contracts	-	467.76	-	467.76
Commodity swap contracts	-	1,660.03	-	1,660.03
Other derivative contracts	-	84.31	-	84.31

29. Fair Value Measurement (Continued)

As at March 31, 2019 and December 31, 2018, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2018

Unit: Million Baht

	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	3,425.91	-	-	3,425.91
Mutual funds	1,104.59	-	388.27	1,492.86
Debt instruments	-	5,957.16	-	5,957.16
Derivatives				
Foreign currency forward contracts	-	985.65	-	985.65
Cross-currency swap contracts	-	1,672.28	-	1,672.28
Interest rate swap contracts	-	257.46	-	257.46
Commodity swap contracts	1,731.90	1,373.50	-	3,105.40
Other derivative contracts	-	1,156.39	-	1,156.39
Financial liabilities measured at fair value				
Other accounts payable				
Deferred considerations acquired through business acquisition	-	-	15,120.70	15,120.70
Derivatives				
Foreign currency forward contracts	-	556.87	-	556.87
Cross-currency swap contracts	-	471.79	-	471.79
Interest rate swap contracts	-	366.14	-	366.14
Commodity swap contracts	-	1,738.15	-	1,738.15
Other derivative contracts	-	81.84	-	81.84

29. Fair Value Measurement (Continued)

As at March 31, 2019 and December 31, 2018, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows: (Continued)

As at March 31, 2019

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	1,800.00	-	-	1,800.00
Mutual funds	395.15	-	430.00	825.15
Derivatives				
Cross-currency swap contracts	-	24.90	-	24.90
Interest rate swap contracts	-	1,016.15	-	1,016.15
Financial liabilities measured at fair value				
Derivatives				
Cross-currency swap contracts	-	54.14	-	54.14
Interest rate swap contracts	-	157.16	-	157.16

As at December 31, 2018

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	1,816.00	-	-	1,816.00
Mutual funds	375.29	-	388.27	763.56
Derivatives				
Cross-currency swap contracts	-	703.07	-	703.07
Interest rate swap contracts	-	5.12	-	5.12
Financial liabilities measured at fair value				
Derivatives				
Cross-currency swap contracts	-	103.22	-	103.22
Interest rate swap contracts	-	152.34	-	152.34

29. Fair Value Measurement (Continued)

Fair value valuation techniques and inputs for Level 2 valuation

The fair values of debt securities and derivatives were determined based on discounted future cash flow and valuation model techniques, using an appropriate risk-adjusted discount rate. Most of the inputs used for the valuation are observable in the relevant markets such as spot rates of foreign currencies, yield curves of the respective currencies, interest rate yield curves, bonds yield curves, and commodity price yield curves, etc.

Fair value valuation techniques and inputs for Level 3 valuation

The fair values of available-for-sale investments in mutual funds were determined based on the net asset value as reported in the Capital Call Statement and translated by using the closing exchange rate.

During the period, there was no transfer within the fair value hierarchy.

30. Business Acquisition

On June 20, 2018, GPSC entered into a Share Purchase Agreement with ENGIE Global Developments B.V. (ENGIE) to acquire shares totalling 1,010,976,033 shares both directly and indirectly in Glow Energy Public Company Limited (GLOW), a company that generates and supplies electricity, steam and water. The share acquisition represents 69.11% of total registered and paid-up capital at the purchase price of Baht 91.99 per share, totalling Baht 93,000.93 million. The acquisition of GLOW's shares was achieved by acquiring 218,696,260 direct shares and 792,279,773 indirect shares from acquiring all the shares of ENGIE Holding (Thailand) Company Limited. Sources of funding are a financial institution and related parties. GPSC made a full payment to ENGIE and changed a shareholder's name on March 14, 2019.

On March 22, 2019, GPSC submitted the Tender Offer for Securities (Form 247-4) to make a tender offer for all of the remaining shares at 30.89% of total registered and paid-up capital. The net offer price is Baht 90.57 per share (net from dividend at the rate of Baht 1.177 per share and after deducting the brokerage fee and Value Added Tax). The offer period will be from March 25, 2019 to May 17, 2019.

Details of net assets acquired and goodwill at the acquisition date are as follows:

	Unit: Million Baht
Purchase consideration	93,000.93
Fair value of net assets acquired	<u>(31,084.88)</u>
Goodwill (Note 16)	<u>61,916.05</u>

30. Business Acquisition (Continued)

Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	14,487.72
Trade accounts receivable	6,133.04
Other accounts receivable	285.91
Short-term lending loans	306.66
Inventories	1,027.23
Materials and supplies	4,342.64
Other current assets	34.90
Investments in associates	330.03
Long-term lending loans	3,028.78
Property, plant and equipment (Note 15)	71,480.96
Intangible assets (Note 17)	706.09
Deferred tax assets	2,821.25
Other non-current assets	2,670.30
Trade accounts payable	(3,128.52)
Other accounts payable	(1,592.04)
Short-term loans (Note 21)	(701.55)
Current portion of long-term loans (Note 21)	(4,802.84)
Income tax payable	(677.25)
Other current liabilities	(778.22)
Long-term loans (Note 21)	(30,617.99)
Deferred tax liabilities	(1,132.92)
Provisions for employee benefit (Note 22)	(255.61)
Other non-current liabilities	(12,558.94)
Fair value of net assets	51,409.63
<u>Less</u> Non-controlling interests	(20,324.75)
Fair value of net assets acquired	31,084.88
<u>Add</u> Goodwill (Note 16)	61,916.05
Total purchase consideration transferred	93,000.93
<u>Less</u> Cash and cash equivalents of subsidiaries	(14,487.72)
Cash outflow on the business acquisition	78,513.21

30. Business Acquisition (Continued)

GPSC measured non-controlling interests by the ownership proportion in the recognized amounts of the acquiree's identifiable net assets.

As at March 31, 2019, GPSC is additional reviewing the fair value of net assets acquired. The aforementioned fair value of the net assets will be revised when the initial purchase price allocation is completed.

31. Proceeding regarding the Central Administrative Court's Ordering Temporary Suspension of Projects in Map Ta Phut Area

On June 19, 2009, the Stop Global Warming Association and a group of individuals totaling 43 parties (the Petitioners) filed a complaint with the Central Administrative Court (the Court) as the black case No. 908/2552, against eight government agencies, together with a motion seeking the Court injunction to temporarily suspend all operations and activities of 76 industrial projects in the Map Ta Phut area in Rayong Province.

On September 29, 2009, the Court ordered the temporary injunction by requiring the eight accused government agencies to issue the order to temporarily suspend all 76 projects pending the Court's judgment or order otherwise, except for those projects or activities which received the permits before the effective date of the Constitution of Kingdom of Thailand B.E. 2550 or which were not required to prepare the Environmental Impact Assessment (EIA) reports pursuant to the Ministerial Announcement of Ministry of Natural Resources and Environment dated June 16, 2009. 25 projects of the Group were under the suspension order, and 3 of those 25 projects belonged to the Company.

On October 16, 2009, the Group, as an interested person, submitted a motion to appeal the Court's order to the Supreme Administrative Court.

On December 2, 2009, the Supreme Administrative Court issued an order No. 592/2552 amending the Court's injunction by requiring the eight accused government agencies to order the temporary suspension of all projects or activities listed in the complaint except for 11 projects, which clearly, according to the Supreme Administrative Court, did not severely affect the community but were projects intended to mitigate pollution or only additional installation to the existing projects. Among those 11 projects, 7 of them belonged to the Group, comprising 1 project of the Company and 6 projects of the other companies in the Group. 2 projects of the Company were still under the Court's order to suspend.

On December 18, 2009, the public prosecutor submitted the answer rejecting all allegations in the complaint.

On September 2, 2010, the Court rendered a judgment revoking the permit of the projects listed in the complaint which, according to the law, were categorized as project that might severely affect the community and did not comply with the procedures set forth in Section 67 paragraph 2 of the Constitution, B.E. 2550. The revocation was effective as of the date of the judgment. 1 project of the Group is within the scope of the judgment.

On October 1, 2010, the 43 prosecutors appealed the Court's judgment to the Supreme Administrative Court. On December 7, 2010, the eight accused government agencies by the public prosecutors submitted a reply to the appeal. The appeal is currently under the consideration of the Supreme Administrative Court.

32. Commitments and Contingent Liabilities

Details of significant changes in commitments and contingent liabilities are as follows:

32.1 Details of commitments to subsidiaries and joint ventures are as follows:

32.1.1 The Company has provided loans to its subsidiaries with credit limits totalling Baht 112,243.00 million. As at March 31, 2019, the Company made these loans payments to its subsidiaries totalling Baht 63,213.31 million. The remaining credit limits were Baht 49,029.69 million.

32.1.2 The Company entered into the Sponsor Support Agreements with subsidiaries and joint ventures with credit limits equal to the sum of the loan obligations to financial institutions of such subsidiaries and joint ventures. Under these agreements, as at March 31, 2019, the Company had commitments of USD 56.91 million or equivalent to Baht 1,819.90 million.

32.1.3 The Company had obligations under the Shareholder Agreements to pay for ordinary shares in proportion to its shareholding. As at March 31, 2019, the Company had remaining obligations amounting to Baht 6,113.93 million.

32.2 Commitments under operating leases - the Group as a lessee, the future minimum lease payments under uncancellable operating leases as at March 31, 2019 and December 31, 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	March 31, 2019	December 31, 2018	March 31, 2019	December 31, 2018
- Within 1 year	2,068.86	2,190.36	25.37	24.86
- Over 1 year but not over 5 years	5,963.75	4,912.73	153.33	155.23
- Over 5 years	24,826.35	25,221.61	471.60	481.10
Total	<u>32,858.96</u>	<u>32,324.70</u>	<u>650.30</u>	<u>661.19</u>

32.3 As at March 31, 2019, the Group had capital commitments of Baht 40,057.12 million in the consolidated financial statements.

32.4 As at March 31, 2019, the Group had outstanding letters of credit of Baht 40,865.77 million in the consolidated financial statements and Baht 2,434.36 million in the separate financial statements.

32.5 As at March 31, 2019, the Group had contingent liabilities in the form of letter of guarantee amounting to Baht 26,889.51 million in the consolidated financial statements and Baht 76.80 million in the separate financial statements.

32. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 32.6 A subsidiary entered into a contract to sell a product to the Company and the Company entered into a contract to resell the same product to a listed company. The term of the two contracts was 15 years, expiring on January 31, 2012. Before the expiration of the contract, the subsidiary notified the Company that the contract would not be renewed. Consequently, the Company had to notify the listed company that the contract would also not be renewed. The Company's notice was served to the listed company in accordance with the terms and conditions set forth in the contract. On December 3, 2009, the listed company submitted claims with the Thai Arbitration Institute (the Institute) requesting the Company and the subsidiary, as the seller and the supplier, respectively, to comply with the contracts by continuing to sell the product to the listed company or be jointly liable to pay damages.

On February 10, 2010, the subsidiary submitted motion with the Institute asking to dismiss the claims against it from the case list. The Institute issued an order to dismiss the claims relating to the subsidiary.

The Company forwarded the case to the Office of the Attorney General to submit a defense to the Institute. On April 28, 2010, the public prosecutor submitted the defense with the Institute for the Company. The tribunal finished the witness examination. Consequently, on March 25, 2016, the tribunal ruled that the Company make a partial payment for compensations to the listed company. However, the Company was of the opinion that the arbitral award might be both factually and legally inconsistent. Therefore, the Company could exercise its legal right by filing a motion with the court requesting the arbitral award to be revoked. On June 30, 2016, the Company by the public prosecutor filed a motion to revoke the arbitral award with the Civil Court. Currently, this case is under the consideration of the Civil Court. Subsequently, on December 16, 2016, the listed company submitted a motion with the Civil Court asking for the enforcement of the arbitral award. The Company by the public prosecutor submitted the objection with the Civil Court. Currently, the case is under the consideration of the Civil Court.

32. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

32.7 On May 26, 2010, the contractor for an onshore natural gas pipeline construction project (the "Contractor") submitted claims to the Thai Arbitration Institute (the Institute) seeking overdue payment and damages for the work performed in the aforementioned project from the Company. The Company, however, considered that the submission of the claims was incompliant with the dispute resolution procedure agreed upon the contract. Therefore, the Company filed an opposition to the Contractor's claim submission with the Institute and reserved right to protest such contractually incompliant claim submission in the arbitration procedure. After the claim submission, the Central Bankruptcy Court ordered the Contractor to be under an absolute receivership which rendered the official receiver to have sole power in any litigation pertaining to the Contractor's assets. Subsequently, the Contractor's official receiver has petitioned the Institute to substitute the Contractor in the dispute against the Company. Regarding the Contractor's bankruptcy case, the Company submitted a motion for receiving a debt payment in accordance with the law as a creditor. With respect to the arbitration process, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the arbitral tribunal rendered an award ordering the Company to partially pay for the Contractor's claims. However, the Company considered that the arbitral award is materially both factually and legally inconsistent. The Company, therefore, filed a motion to revoke the arbitral award, while the contractor submitted a motion with the Civil Court to enforce the arbitral award. On October 17, 2017, the Civil Court delivered a judgement to enforce the arbitral award whereby some penalty amounts were reduced. However, The Company submitted with the Supreme Court an appeal of the Civil Court's judgment and, together with the appeal, the Company also placed with the Civil Court a Company's book bank as a security to stay the enforcement of the judgment as stated in Note 19. Subsequently, the Contractor also submitted with the Supreme Court an appeal of the Civil Court's judgment. The case is under the consideration of the Supreme Court.

On September 8, 2010, the Contractor by the official receiver submitted another claim to the Institute seeking overdue payment and damages from the Company for the work performed in connection with another pipeline construction project. The Company, however, considered that the submission of the claims was incompliant with the dispute resolution procedure agreed upon the contract. Therefore, the Company filed an opposition to the Contractor's claim submission with the Institute and reserved the right to protest such contractually incompliant claim submission in the arbitration procedure. In contention against the alleged claims, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the arbitral tribunal was mutually appointed to consider the disputes. On November 30, 2018, the tribunal rendered an award that both claims and counterclaims were dismissed. However, the Company already submitted the application of repayment of debt in the bankruptcy case. The Contractor, then, file a motion for revocation of the arbitral award with the Civil Court and the Company is submitting the case to the Office of the Attorney General for submission of the objection with the Civil Court.

32.8 On February 25, 2014, the contractor for an onshore natural gas pipeline construction project (the "Contractor") filed a lawsuit against the Company with the Civil Court on the grounds of wrongful termination and breach of contract and claimed for outstanding payment of the work and damages. On the contrary, the Company considered that all of the Company's actions have been in accordance with the terms and conditions of the contract. Therefore, the Company forwarded the case to the Office of the Attorney General for consideration to arguing the case for the Company and the prosecutor has submitted the answer with the Court. Consequently, the Civil Court ordered the case be transferred to the Central Administrative Court for consideration and

judgment because the Civil Court and the Central Administrative Court has the corresponding opinions that this case was an administrative case. The Civil Court transferred this case to the Central Administrative Court. Currently, the case is under the consideration of the Central Administrative Court.

32. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 32.8 After the Company terminated the contract with the Contractor, the Company completed an onshore natural gas pipeline construction project. Subsequently, on June 20, 2018, the Company filed a lawsuit against the Contractor with the Central Administrative Court on the grounds of breach of contract and absent from service and claimed for damages. Currently, the case is under the consideration of the Central Administrative Court.
- 32.9 On March 11, 2016, PTTEP AA received a letter from a firm of Australia lawyers representing a group of West Timorese seaweed farmers, notifying PTTEP AA of their intention to commence a legal action for compensation relating to the Montera oil spill incident in the Temor Sea in 2009. Subsequently, on August 9, 2016, PTTEP AA was notified of a claim made in the Sydney Registry of the Federal Court of Australia seeking damages on behalf of a group of seaweed farmers (Class Action). The Statement of Claim as filed does not quantify the claim, and no supporting evidence has yet been presented to the court. PTTEP AA has appointed lawyers and is defending the claim.

PTTEP considers that the claims from representative of West Timorese seaweed farmers related to Montara oil spill incident remain unproven due to insufficient evidence to support the claim.

- 32.10 During the third quarter of 2014, the number of people in Rayong filed several lawsuits with the Civil Court and Rayong Provincial Court against PTTGC to claim the extra compensation from oil spill incident and to perform the rehabilitation of the sea and natural environmental recovery. Some cases have been dismissed and some cases have been passed a judgement by the Civil Court on August 25, 2016 ordered PTTGC to compensate for damages, including interest and rehabilitation, of approximately Baht 11.26 million. PTTGC has appealed on February 17, 2017. Subsequently, on May 11 2018, PTTGC made a compromise agreement with most plaintiffs at the Civil Court. On December 20, 2018, the Appeal Court has passed their judgement according to the compromise contracts which PTTGC has already paid compensation in full amount. For the remaining plaintiffs, the Appeal Court orders PTTGC to pay compensation and interest according to the Civil Court's judgement and reduced the amount of interest. PTTGC has paid compensation to all plaintiff completely, and no petition is submitted to Supreme Court by any of plaintiff. This case has become final.

On September 28, 2018, the Rayong Provincial Court has made the judgement ordering PTTGC to pay damage cost with its interest approximately Bath 37.74 million by deducting the remedy payment paid to the plaintiffs of Baht 24.00 million. PTTGC deposited the remaining damage cost with its interest cost to the Civil Court on February 26, 2019. Some plaintiffs have filed an Appeal with the Rayong Provincial Court. PTTGC shall arrange the counter of Appeal once a copy of such is delivered to PTTGC thereafter.

33. Other Event

33.1 On April 4, 2016, the Ombudsman of Thailand submitted a complaint to the Administrative Court against the Minister of Finance, the Minister of Energy, the Company and other defendants as a black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on December 18, 2007 and August 10, 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of September 30, 2001 amounting to Baht 68,569.69 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On May 26, 2016, the Administrative Court ordered the Company to submit a defense, responding to the particular issue that was whether the Company completely transferred the assets of the Petroleum Authority of Thailand (the tenth defendant), which were public assets, to the first defendant (the Minister of Finance) in accordance with the Cabinet Resolution on December 18, 2007. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. On May 11, 2018, the Administrative Court issued an order to end the fact finding process. Currently, the case is under the consideration of the Administrative Court.

Nevertheless, on December 14, 2007, the Supreme Administrative Court in a red case No. Fo. 35/2550, ordered the defendants to jointly segregate the public assets to the Minister of Finance, in accordance with the judgment. Therefore, on December 18, 2007, the Cabinet acknowledged the aforesaid judgment and assigned the Minister of Finance and the Minister of Energy to jointly segregate the public assets to comply with the judgment. Consequently, on December 26, 2008, the Supreme Administrative Court declared that the defendants had completely complied with the judgment of the Court. Furthermore, the plaintiff and the co-plaintiffs had submitted complaints regarding such segregation of public assets to the Court for four times but the Court ordered to dismiss such complaints and reaffirmed that the judgment of the Supreme Administrative Court in the red case No. Fo. 35/2550 was completed. Consequently, on August 10, 2010, the Cabinet acknowledged the conduct followed the Supreme Administrative Court's judgment in accordance with the proposals of the Minister of Energy and the Minister of Finance.

33.2 On March 21, 2019, PTTEP HK Offshore Limited (PTTEP HKO), a subsidiary of the PTTEP Group, had signed the Share Sale and Purchase Agreement (SSPA) to acquire the 100% shareholding interests of Murphy Oil Corporation (Murphy) in Malaysia through acquisition of shares in subsidiaries, which are Murphy Sabah Oil Co. Ltd. (Murphy Sabah) and Murphy Sarawak Oil Co. Ltd. (Murphy Sarawak). The acquisition covers the petroleum exploration, development and production projects of 5 projects, which are the Sabah K project, the SK309 and SK311 project, the Sabah H project, the SK314A project and the SK405B project with total acquisition value of approximately USD 2,127 million, to be adjusted for changes in working capital until the completion date. There may be additional considerations of not exceeding USD 100 million if there is significant petroleum found from exploration of SK405B project. The acquisition is expected to be completed within the second quarter of 2019.

The PTTEP Group has restricted cash that is a deposit in Escrow Account at a financial institution used as collateral according to SSPA, to acquire all business of Murphy in Malaysia, amounting to USD 205.20 million (Baht 6,527.76 million). This amount included in restricted bank cash under cash and cash equivalents in the statement of financial position as stated in Note 4.

34. Events after the Reporting Period

- 34.1 On February 15, 2019, at the Board of Directors Meeting of PTT LNG Co., Ltd. (PTTLNG) No. 2/2019, the Board passed a resolution to approve the call up of remaining additional share capital of Baht 1,069.00 million. The Company made the additional payment on April 22, 2019.
- 34.2 On April 1, 2019, at the Extraordinary General Meeting of the shareholders of PTT Global Management Co., Ltd. (PTTGM) No. 1/2019, the shareholders passed an extraordinary resolution to increase the authorized share capital at Baht 100.00 per share in respect of 40,300 shares, amounting to Baht 4.03 million. The Company made the additional payment amounting to Baht 1.43 million on April 29, 2019.
- On April 25, 2019, at the 2019 Annual General Meeting of the shareholders of PTTGM, the shareholders passed a resolution to increase the authorized share capital at Baht 100.00 per share in respect of 120,000 shares, amounting to Baht 12.00 million. The Company made the additional payment amounting to Baht 3.00 million on May 7, 2019.
- 34.3 On April 11, 2019, at the 2019 Annual General Meeting of the shareholders of the Company, the shareholders approved a dividend payment of Baht 2.00 per share for the year 2018 or approximately Baht 57,123.07 million. On October 26, 2018, the Company paid an interim dividend for the first half of 2018 of Baht 0.80 per share for 28,562,591,709 shares, or amounting to Baht 22,850.07 million. The remaining dividend would be paid in respect of the earnings of the second half of 2018 at Baht 1.20 per share for 28,560,830,446 shares or amounting to Baht 34,273.00 million. The Company paid the above remaining dividend on April 30, 2019.
- 34.4 On April 23, 2019, at the Extraordinary General Meeting of the shareholders of Map Ta Phut Air Products Co., Ltd. (MAP) No. 2/2019, the shareholders passed a resolution to approve the call up of additional share capital of Baht 33.81 million. The Company made the additional payment on April 29, 2019.
- 34.5 The Audit Committee of the Company approved these financial statements for public issuance on May 13, 2019.
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AUDITOR'S REPORT AND FINANCIAL STATEMENTS
OF
PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
FOR THE YEAR ENDED DECEMBER 31, 2019

(UNOFFICIAL TRANSLATION)

- 1 -

AUDITOR'S REPORT

TO : THE SHAREHOLDERS OF PTT PUBLIC COMPANY LIMITED

Opinion

The State Audit Office of the Kingdom of Thailand has audited the accompanying consolidated financial statements of PTT Public Company Limited and its subsidiaries (the Group) and the separate financial statements of PTT Public Company Limited (the Company), which comprise the consolidated and separate statements of financial position, as at December 31, 2019, the consolidated and separate statements of income, the consolidated and separate statements of comprehensive income, the consolidated and separate statements of changes in equity and the consolidated and separate statements of cash flows for the year then ended, and notes to the consolidated and separate financial statements, including a summary of significant accounting policies.

In the State Audit Office of the Kingdom of Thailand's opinion, the above mentioned consolidated and separate financial statements present fairly, in all material respects, the consolidated financial position of PTT Public Company Limited and its subsidiaries and separate financial position of PTT Public Company Limited, respectively, as at December 31, 2019, and their consolidated and separate financial performance and cash flows for the year then ended in accordance with Thai Financial Reporting Standards (TFRSs).

Basis for Opinion

The State Audit Office of the Kingdom of Thailand conducted the audit in accordance with the State Audit Standards and Thai Standards on Auditing (TSAs). The State Audit Office of the Kingdom of Thailand's responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements section of the State Audit Office of the Kingdom of Thailand's report. The State Audit Office of the Kingdom of Thailand is independent of the Group and the Company in accordance with the State Audit Committee's State Audit Standards and the Federation of Accounting Professions' Code of Ethics for Professional Accountants that are relevant to the State Audit Office of the Kingdom of Thailand's audit of the consolidated and separate financial statements, and has fulfilled other ethical responsibilities in accordance with these requirements. The State Audit Office of the Kingdom of Thailand believes that the audit evidence the State Audit Office of the Kingdom of Thailand has obtained is sufficient and appropriate to provide a basis for the State Audit Office of the Kingdom of Thailand's opinion.

State Audit Office of the Kingdom of Thailand

(UNOFFICIAL TRANSLATION)

- 2 -

Emphasis of Matter

The State Audit Office of the Kingdom of Thailand draws attention to Note 47 to the financial statements, which describes the event that Ombudsman of Thailand submitted a complaint to the Administrative Court (the Court) against the Company as the black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on December 18, 2007 and August 10, 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of September 30, 2001 amounting to Baht 68,569.69 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On May 26, 2016, the Administrative Court ordered the Company to submit a defense. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. On May 11, 2018, the Administrative Court issued an order to end the fact finding process. Currently, the case is under the consideration of the Administrative Court.

In conclusion, the State Audit Office of the Kingdom of Thailand's opinion is not qualified in respect of these matters.

Key Audit Matters

Key audit matters are those matters that, in the State Audit Office of the Kingdom of Thailand's professional judgment, were of most significance in the audit of the consolidated and separate financial statements of the current period. These matters were addressed in the context of the State Audit Office of the Kingdom of Thailand's audit of the consolidated and separate financial statements as a whole, and in forming the State Audit Office of the Kingdom of Thailand's opinion thereon, and the State Audit Office of the Kingdom of Thailand does not provide a separate opinion on these matters.

The State Audit Office of the Kingdom of Thailand identifies the followings as key audit matters to communicate:

1. Estimation of petroleum reserves

Estimation of petroleum proved reserves have a significant impact on the consolidated financial statements for impairment testing and calculation of depreciation, depletion, and amortization expenses of petroleum exploration and production assets. Estimated proved reserves may differ from the actual reserves to be recoverable in the future because the estimation is based on available information at the time of the estimation. At the beginning of each project, the estimation

State Audit Office of the Kingdom of Thailand

(UNOFFICIAL TRANSLATION)

- 3 -

may be subject to a high variance, but the variance will decrease when the project approaches the end of its production life. This may impact the management's investment decisions to sustain the Group's business. The management relies on the Group's internal teams of experts in estimating the proved reserves using the estimation methods consistent with those generally employed by the petroleum exploration and production industry. The experts have to exercise significant judgment as well as experience in determining the appropriate estimation methods for the available information at the time of the estimation. Therefore, the amount of proved reserves may vary with individual judgment and experience. In addition, changes in the estimated proved reserves will impact the recognition of depreciation, depletion, and amortization expenses in the financial statements. As a result, the State Audit Office of the Kingdom of Thailand considers this as a key audit matter.

The Group disclosed estimation of petroleum proved reserves information in Note 3.2.14 Accounting Policies - Property, Plant and Equipment, Note 3.2.29 Use of Estimates and Significant Assumptions - Estimates of Petroleum Reserves, and Note 18 Property, Plant and Equipment.

The State Audit Office of the Kingdom of Thailand performed significant audit procedures as follow;

1. Obtaining an understanding of the proved reserve estimation processes, assess the adequacy of the designed key internal controls, and perform tests of key internal controls of such process, especially the controls over the reliability of the data used in the preparation of reports related to the Group's proved reserves, and the use of proved reserves data in the calculation of depreciation, depletion, and amortization expenses, as well as the assessment of impairment of assets.
2. Assessing the qualifications of the Group's internal experts who are responsible for estimating proved reserves and preparing the Group's proved reserves data.
3. Using the results of reserves estimation audit performed by the energy regulatory agency in Thailand, which has its own processes and experts for verifying the estimation of domestic petroleum reserves for projects of which the operators have submitted the required reports. The State Audit Office of the Kingdom of Thailand compared the Group's proved reserves for the year 2018 with those verified by the regulatory agency and reconciled with the estimated proved reserves presented in internal reports related to the proved reserves during the year to determine the estimated proved reserves of domestic projects of which the Group was the operator at the end of 2019.

State Audit Office of the Kingdom of Thailand

(UNOFFICIAL TRANSLATION)

- 4 -

4. Verifying the Group recognized significant changes in the estimated proved reserves in the appropriate accounting period and in accordance with the Group's accounting policy and those changes were applied to the calculation of depreciation, and amortization expenses appropriately.

2. Provision for decommissioning costs

Provision for decommissioning costs is the significant item which included in provision for decommissioning costs in the consolidated financial statements. Decommissioning activities occur at the end of projects. Decommissioning methods vary with the locations of petroleum exploration and production, which are classified into onshore and offshore production areas, where the main infrastructure, including Central Processing Platforms, Well Head Platform, Development Well, Pipeline, and other producing properties. Also, the regulations in each country have varying requirements for decommissioning activities, which can be either total or partial removal. In addition, only a small number of decommissioning activities in the past or subject to certain natures have taken place, resulting in limited decommissioning cost information that can be used as a reference in the Group's estimation of future expenses. Due to these factors, the calculation of the provision for decommissioning costs has to rely significantly on the exercise of judgment in determining assumptions around decommissioning costs, inflation rates, discount rates, and timing of the decommissioning based on the estimated field life of a project. These assumptions are subject to change over time. The management relies on the Group's teams of experts, comprising those from Engineering and Development Group, Production Asset Group, Operations Support Group, and Finance and Accounting Group in estimating the provision for decommissioning costs. As a result, the State Audit Office of the Kingdom of Thailand considers this as a key audit matter.

The Group disclosed information about provision for decommissioning costs in Note 3.2.22 Significant Accounting Policies - Provision for Decommissioning Costs, Note 3.2.29 Use of Estimates and Significant Assumptions - Provisions, and Note 28 Provision for Decommissioning Costs.

The State Audit Office of the Kingdom of Thailand performed significant audit procedures as follow;

1. Obtaining an understanding of the decommissioning cost estimation processes, assess the adequacy of the designed internal controls and perform tests of controls over the estimation, review and adjustment of the provision for decommissioning costs, as well as related approval.

State Audit Office of the Kingdom of Thailand

(UNOFFICIAL TRANSLATION)

- 5 -

2. Assessing the qualifications of the Group's experts who are responsible for estimating the provision for decommissioning costs and who are responsible for inspection and control the quality of engineering work.
3. Evaluating the reasonableness of the assumptions used in the calculation of provision for decommissioning costs by
 - 3.1 Evaluating the reasonableness of the decommissioning costs through inquiry of the experts about the assumptions used, relying on the State Audit Office of the Kingdom of Thailand's knowledge of the business, decommissioning information of other comparable projects and related laws;
 - 3.2 Evaluating the appropriateness of the expected timing used in calculation provision of decommissioning cost, by considering its consistency with investment plans, initial decommissioning plan submitted to the energy regulatory agency in Thailand, or any other related information; and
 - 3.3 Evaluating the reasonableness of inflation rates and discount rates through inquiry of the experts and comparison with the information from external sources.
4. Agreeing decommissioning costs used in the calculation of the provision for decommissioning costs to the information obtained from the Group's engineers, both for projects of which the Group is operator and for projects of which the Group is non-operator.
5. Validating significant changes in the estimated decommissioning costs incurred during the year and changes that impact the statements of income against supporting evidence.
6. Testing the calculation of the provision for decommissioning costs.
7. In case of project for which the Group had submitted the initial decommissioning plan and the decommissioning cost estimation report, required to be audited and verified by the Group's external experts, to the energy regulatory agency in Thailand, the State Audit Office of the Kingdom of Thailand assessed the reliability of the external experts by ensuring that their qualifications, work experience and independence were in compliance with the requirements imposed by the regulatory agency for the appointment of third parties in auditing and verifying the accuracy of decommissioning cost estimates.
8. Comparing the actual decommissioning cost incurred with those estimation by the Group to evaluate the appropriateness of the estimation process. In case that there is significant difference, consider the reasonableness of the clarification from the Group about the cause of difference, and also consider that the Group used the experience from the actual decommissioning cost incurred within the current year to be the information for reviewing the estimation preparation process appropriately.

(UNOFFICIAL TRANSLATION)

- 6 -

3. Business combination

As disclosed in Note 43.1, Business Acquisition - Glow Energy Public Company Limited (GLOW), Note 43.3, Business Acquisition - Murphy Oil Corporation (Murphy) in Malaysia, and Note 43.5, Business Acquisition - Partex Holding B.V. (Partex), the Group acquired GLOW's business, that generates and supplies electricity, steam and water for industrial, representing 69.11% of GLOW's registered capital, the Group acquired the 100% shareholding interests of Murphy Oil Corporation (Murphy) in Malaysia through the acquisition of 100% shares interests in Murphy's subsidiaries, which are Murphy Sabah Oil Co., Ltd. (Murphy Sabah) and Murphy Sarawak Oil Co., Ltd. (Murphy Sarawak), as well as, the Group acquired the 100% shareholding interests of Partex Holding B.V. (Partex) which operated in a petroleum business, located in Middle East region. According to the acquisition of Murphy and Partex, the Group has to pay the total considerations for the acquisition of Baht 93,000.93 million, Baht 65,724.27 million, and Baht 21,604.53 million, respectively, with the fair value of the acquired identifiable net assets of Baht 89,003.01 million, Baht 46,873.69 million, and Baht 15,406.56 million, respectively. The Group's management assesses that the participating interests acquired is the business combination according to the definition under Thai Financial Reporting Standard (TFRS) 3, Business Combinations.

According to TFRS 3, Business Combinations, the Group has to recognize and measure the fair value on the acquisition date of the identifiable assets acquired, liabilities assumed, and the considerations transferred (the value of considerations for the acquisition), and recognize the deferred tax assets or liabilities, and goodwill, as well as disclose relevant information in accordance with the TFRS. The Group enlisted an independent valuer to estimate the fair value of the participating interests acquired. The fair value estimation requires the selection of valuation techniques, and various assumptions, which may vary with individual judgement and experience of the valuer. The information which the valuer obtained and used in the fair value calculation also significantly affects the fair value. As a result, the State Audit Office of the Kingdom of Thailand considers this as a key audit matter.

The State Audit Office of the Kingdom of Thailand performed significant audit procedures as follow;

1. Examining the Sales and Purchase Agreement of the shares to obtain an understanding in terms and conditions, including any transactions occurred with the management.
2. Examining the evidence of payments and related documents used in transaction recording to assess the appropriateness of the identification of the assets acquired and liabilities assumed, as well as the considerations transferred.

State Audit Office of the Kingdom of Thailand

(UNOFFICIAL TRANSLATION)

- 7 -

3. Communicating with the auditors of the companies within the Group regarding risks, as well as reviewing their significant audit regarding the recognition and measurement of the assets, liabilities assumed and the considerations transferred (the value of considerations for the acquisition) on the acquisition date as follows;

3.1 Evaluating the use of management's judgement for classification the investment as a purchase of investment in subsidiaries and compliance with the business combinations principle

3.2 Evaluating the appropriateness of the identifiable assets acquired and liabilities assumed on the acquisition date, as well as evaluating estimation procedure for fair value of net assets acquired that made by the management.

3.3 Assessing the knowledge, ability, independence, qualifications, and past experience of the experts that the management assorted.

3.4 Testing the calculation of fair value of the identifiable assets acquired and liabilities assumed, and testing by inquiring the management for the judgement regarding to the significant assumptions of future cash flow estimation including comparison significant assumptions with related contracts and information from external sources.

3.5 Evaluating discount rates by considering and comparing with companies in the same industry in which are able to refer from general disclosure information.

4. Reviewing the relevant presentation and disclosures in accordance with TFRS.

Other Information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated and separate financial statements and auditor's report thereon. The annual report is expected to be made available to the State Audit Office of the Kingdom of Thailand after the date of this auditor's report.

The State Audit Office of the Kingdom of Thailand's opinion on the consolidated and separate financial statements does not cover the other information and the State Audit Office of the Kingdom of Thailand will not express any form of assurance conclusion thereon.

In connection with the audit of the consolidated and separate financial statements, the State Audit Office of the Kingdom of Thailand's responsibility is to read the other information identified above when it becomes available and, in doing so, consider whether the other information is materially inconsistent with the consolidated and separate financial statements or the State Audit Office of the Kingdom of Thailand's knowledge obtained in the audit, or otherwise appears to be materially misstated.

State Audit Office of the Kingdom of Thailand

(UNOFFICIAL TRANSLATION)

- 8 -

When the State Audit Office of the Kingdom of Thailand reads the annual report, if the State Audit Office of the Kingdom of Thailand concludes that there is a material misstatement therein, the State Audit Office of the Kingdom of Thailand is required to communicate the matter to those charged with governance.

Responsibilities of Management and Those Charged with Governance for the Consolidated and Separate Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated and separate financial statements in accordance with TFRSs, and for such internal control as management determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated and separate financial statements, management is responsible for assessing the Group's and the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group and the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's and the Company's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements

The State Audit Office of the Kingdom of Thailand's objectives are to obtain reasonable assurance about whether the consolidated and separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes the State Audit Office of the Kingdom of Thailand's opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with State Audit Standards and TSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated and separate financial statements.

As part of an audit in accordance with State Audit Standards and TSAs, the State Audit Office of the Kingdom of Thailand exercises professional judgment and maintains professional skepticism throughout the audit, The State Audit Office of the Kingdom of Thailand also:

- Identifies and assesses the risks of material misstatement of the consolidated and separate financial statements, whether due to fraud or error, designs and performs audit procedures responsive to those risks, and obtains audit evidence that is sufficient and appropriate to provide a basis for the State Audit Office of the Kingdom of Thailand's opinion. The risk of not detecting

State Audit Office of the Kingdom of Thailand

(UNOFFICIAL TRANSLATION)

- 9 -

a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtains an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's and the Company's internal control.

- Evaluates the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the management.

- Concludes on the appropriateness of the management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's and the Company's ability to continue as a going concern. If the State Audit Office of the Kingdom of Thailand concludes that a material uncertainty exists, the State Audit Office of the Kingdom of Thailand is required to draw attention in the auditor's report of the State Audit Office of the Kingdom of Thailand to the related disclosures in the consolidated and separate financial statements or, if such disclosures are inadequate, to modify the State Audit Office of the Kingdom of Thailand's opinion. The State Audit Office of the Kingdom of Thailand's conclusions are based on the audit evidence obtained up to the date of the auditor's report of the State Audit Office of the Kingdom of Thailand. However, future events or conditions may cause the Group and the Company to cease to continue as a going concern.

- Evaluates the overall presentation, structure and content of the consolidated and separate financial statements, including the disclosures, and whether the consolidated and separate financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

- Obtains sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. The State Audit Office of the Kingdom of Thailand is responsible for the direction, supervision and performance of the group audit. The State Audit Office of the Kingdom of Thailand remains solely responsible for the State Audit Office of the Kingdom of Thailand's audit opinion.

The State Audit Office of the Kingdom of Thailand communicates with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that the State Audit Office of the Kingdom of Thailand identifies during the State Audit Office of the Kingdom of Thailand's audit.

State Audit Office of the Kingdom of Thailand

(UNOFFICIAL TRANSLATION)

- 10 -

The State Audit Office of the Kingdom of Thailand also provides those charged with governance with a statement that the State Audit Office of the Kingdom of Thailand has complied with the State Audit Standards and relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on the State Audit Office of the Kingdom of Thailand's independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, the State Audit Office of the Kingdom of Thailand determines those matters that were of most significance in the audit of the consolidated and separate financial statements of the current period and are therefore the key audit matters. The State Audit Office of the Kingdom of Thailand describes these matters in the auditor's report of the State Audit Office of the Kingdom of Thailand unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, the State Audit Office of the Kingdom of Thailand determines that a matter should not be communicated in the State Audit Office of the Kingdom of Thailand's report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

(Signed) *Pasutnicha Jumpathes*
(Pasutnicha Jumpathes)
Deputy Auditor General

(Signed) *Mayuree Juntamat*
(Mayuree Juntamat)
Director of Financial and Procurement Audit Office No. 14

State Audit Office of the Kingdom of Thailand
February 20, 2020

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2019

Unit: Baht

Notes	Consolidated financial statements			
	December 31, 2019	December 31, 2018	January 1, 2018	
		(Restated)	(Restated)	
Assets				
Current assets				
Cash and cash equivalents	5	292,542,457,953	292,184,322,373	166,189,023,655
Current investments	6	38,263,305,589	142,420,735,568	229,651,255,278
Trade accounts receivable	7	167,641,021,249	174,604,696,553	174,916,243,685
Other accounts receivable	8	49,611,747,735	78,827,069,774	50,602,704,855
Short-term lending loans	9.1	2,669,222,092	1,782,916,135	1,231,329,558
Inventories	11	117,746,964,312	125,279,815,840	121,871,798,713
Materials and supplies	12	34,379,141,870	28,871,647,153	28,942,454,106
Current derivative assets		3,686,309,104	5,097,686,415	1,997,546,512
Other current assets		10,558,543,395	7,894,466,941	6,768,006,749
Total current assets		717,098,713,299	856,963,356,752	782,170,363,111
Non-current assets				
Available-for-sale investments	14	6,687,351,993	10,875,929,781	17,602,408,397
Investments in joint ventures	15.2	49,512,818,297	41,317,061,064	37,937,145,910
Investments in associates	15.3	25,670,169,643	24,368,261,034	21,979,621,626
Other long-term investments	16.1	17,931,829,711	26,970,809,757	27,668,655,084
Long-term lending loans	9.2	12,474,409,002	13,862,709,357	19,078,604,450
Investment properties	17	7,987,227,078	6,583,172,619	7,210,899,284
Property, plant and equipment	18	1,294,979,084,151	1,120,513,021,057	1,082,415,861,982
Goodwill	19	111,933,136,559	53,896,299,825	51,695,037,397
Intangible assets	20	79,967,673,324	34,200,400,854	32,107,682,512
Exploration and evaluation assets	21	80,268,342,040	100,360,331,426	100,901,922,674
Deferred tax assets	22.3	47,611,099,702	28,498,932,833	15,101,219,955
Non-current derivative assets		3,810,602,110	2,079,494,926	3,734,359,338
Other non-current assets	23	28,506,223,083	33,192,551,665	30,925,373,850
Total non-current assets		1,767,339,966,693	1,496,718,976,198	1,448,358,792,459
Total assets		2,484,438,679,992	2,353,682,332,950	2,230,529,155,570

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2019

Unit: Baht

Notes	Consolidated financial statements			
	December 31, 2019	December 31, 2018 (Restated)	January 1, 2018 (Restated)	
Liabilities and Equity				
Current liabilities				
Bank overdrafts and short-term loans from financial institutions	26	44,440,533,236	25,561,803,923	18,126,630,943
Trade accounts payable		158,301,915,916	160,323,070,746	160,301,286,194
Other accounts payable		80,763,972,530	98,429,474,944	72,994,649,729
Current portion of long-term loans	25, 26	51,782,356,222	63,108,598,300	66,433,929,171
Income tax payable		30,136,899,332	46,487,811,196	24,094,727,080
Short-term provision for decommissioning costs	28	1,289,373,133	1,090,300,309	-
Current derivative liabilities		2,522,074,028	2,545,871,892	4,954,839,016
Other current liabilities	24	10,548,182,486	10,801,967,333	8,958,513,286
Total current liabilities		379,785,306,883	408,348,898,643	355,864,575,419
Non-current liabilities				
Long-term loans	25, 26	562,745,766,480	454,964,315,364	444,919,659,683
Deferred tax liabilities	22.3	56,673,547,421	30,527,618,830	33,438,381,058
Provisions for employee benefit	27	32,590,214,665	23,921,033,707	23,313,066,000
Long-term provision for decommissioning costs	28	90,599,917,383	73,632,219,096	74,865,436,241
Deposits on LPG cylinders		11,656,784,200	11,082,662,040	10,519,247,338
Non-current derivative liabilities		2,702,433,432	668,918,447	2,104,348,790
Other non-current liabilities	29	46,645,091,954	32,971,055,231	37,844,233,080
Total non-current liabilities		803,613,755,535	627,767,822,715	627,004,372,190
Total liabilities		1,183,399,062,418	1,036,116,721,358	982,868,947,609

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2019

Unit: Baht

	Notes	Consolidated financial statements		
		December 31, 2019	December 31, 2018	January 1, 2018
			(Restated)	(Restated)
Liabilities and Equity (Continued)				
Equity				
Share capital				
Authorized share capital				
28,562,996,250 ordinary shares of Baht 1 each				
(1 January 2018: 2,857,245,725 ordinary shares of Baht 10 each)	30.1	28,562,996,250	28,562,996,250	28,572,457,250
Issued and paid-up share capital				
28,562,996,250 ordinary shares of Baht 1 each				
(1 January 2018: 2,856,299,625 ordinary shares of Baht 10 each)	30.2	28,562,996,250	28,562,996,250	28,562,996,250
Premium on ordinary shares	30.2	29,211,131,966	29,211,131,966	29,211,131,966
Deficit from the change in the ownership interests in subsidiaries		(36,250,864,803)	(28,483,967,693)	(24,311,625,093)
Retained earnings				
Appropriated				
Legal reserve	31.1	2,857,245,725	2,857,245,725	2,857,245,725
Reserve for self-insurance fund	31.2	1,243,656,319	1,222,675,618	1,199,991,563
Unappropriated		869,016,087,473	837,421,994,002	775,209,114,009
Other components of equity		(16,036,143,473)	3,533,173,443	5,218,737,399
Total equity attributable to owners of the parent		878,604,109,457	874,325,249,311	817,947,591,819
Non-controlling interests		422,435,508,117	443,240,362,281	429,712,616,142
Total equity		1,301,039,617,574	1,317,565,611,592	1,247,660,207,961
Total liabilities and equity		2,484,438,679,992	2,353,682,332,950	2,230,529,155,570

The accompanying notes are an integral part of these financial statements.

(Signed) Chansin Treenuchagron
(Chansin Treenuchagron)
President & Chief Executive Officer

(Signed) Phannalin Mahawongtikul
(Phannalin Mahawongtikul)
Chief Financial Officer

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PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2019

Unit: Baht

	Notes	Separate financial statements		
		December 31, 2019	December 31, 2018 (Restated)	January 1, 2018 (Restated)
Assets				
Current assets				
Cash and cash equivalents	5	46,480,809,912	86,204,049,166	38,691,660,939
Current investments	6	15,002,337,892	21,971,964,949	68,056,258,825
Trade accounts receivable	7	111,557,959,067	138,675,854,879	144,265,155,266
Other accounts receivable	8	8,404,192,746	17,314,183,668	16,923,203,980
Short-term lending loans	9.1	21,369,269,521	7,334,315,325	4,648,737,018
Inventories	11	4,797,200,993	10,247,494,259	27,103,531,169
Materials and supplies	12	5,744,178,058	5,540,731,086	5,749,466,246
Current derivative assets		1,089,388,849	-	-
Other current assets		7,332,818,164	4,648,056,425	3,956,768,710
Total current assets		221,778,155,202	291,936,649,757	309,394,782,153
Non-current assets				
Available-for-sale investments	14	2,986,699,279	2,579,555,315	4,533,102,500
Investments in subsidiaries	15.4	335,213,563,656	315,654,139,538	218,929,325,063
Investments in joint ventures	15.5	5,961,911,690	5,927,614,973	5,927,614,973
Investments in associates		-	-	3,173,227,030
Other long-term investments	16.1	4,257,167,950	13,986,905,648	15,164,124,801
Long-term lending loans	9.2	24,981,890,696	32,895,679,795	22,754,737,237
Investment properties	17	3,742,809,674	2,032,718,766	3,851,133,751
Property, plant and equipment	18	273,820,653,535	274,350,952,691	288,795,950,908
Intangible assets	20	13,375,222,267	13,813,942,896	14,403,623,166
Deferred tax assets	22.3	1,256,718,197	-	-
Non-current derivative assets		912,740,713	708,186,115	754,506,988
Other non-current assets	23	1,388,658,118	5,756,487,773	6,695,815,983
Total non-current assets		667,898,035,775	667,706,183,510	584,983,162,400
Total assets		889,676,190,977	959,642,833,267	894,377,944,553

Notes to interim financial statements are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2019

Unit: Baht

Notes	Separate financial statements		
	December 31, 2019	December 31, 2018 (Restated)	January 1, 2018 (Restated)
Liabilities and Equity			
Current liabilities			
Trade accounts payable	100,570,030,799	120,085,364,132	139,418,539,503
Other accounts payable	22,743,735,200	27,715,747,119	25,092,296,348
Current portion of long-term loans	25, 26	27,602,800,610	26,511,158,464
Short-term loans	26	3,487,561,436	3,332,695,376
Income tax payable		2,947,212,120	22,063,437,824
Current derivative liabilities		-	94,600,356
Other current liabilities	24	3,370,344,316	4,503,619,289
Total current liabilities		160,721,684,481	204,306,622,560
Non-current liabilities			
Long-term loans	25, 26	93,735,310,442	123,638,958,453
Deferred tax liabilities	22.3	-	210,202,677
Provisions for employee benefit	27	7,312,721,428	6,906,650,387
Deposits on LPG cylinders		-	-
Non-current derivative liabilities		324,316,495	160,953,165
Other non-current liabilities	29	20,275,424,442	19,857,469,279
Total non-current liabilities		121,647,772,807	150,774,233,961
Total liabilities		282,369,457,288	355,080,856,521

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2019

Unit: Baht

	Notes	Separate financial statements		
		December 31, 2019	December 31, 2018 (Restated)	January 1, 2018 (Restated)
Liabilities and Equity (Continued)				
Equity				
Share capital				
Authorized share capital				
28,562,996,250 ordinary shares of Baht 1 each				
(1 January 2018: 2,857,245,725 ordinary shares of Baht 10 each)	30.1	<u>28,562,996,250</u>	<u>28,562,996,250</u>	<u>28,572,457,250</u>
Issued and paid-up share capital				
28,562,996,250 ordinary shares of Baht 1 each				
(1 January 2018: 2,856,299,625 ordinary shares of Baht 10 each)	30.2	<u>28,562,996,250</u>	<u>28,562,996,250</u>	<u>28,562,996,250</u>
Premium on ordinary shares	30.2	<u>29,211,131,966</u>	<u>29,211,131,966</u>	<u>29,211,131,966</u>
Retained earnings				
Appropriated				
Legal reserve	31.1	<u>2,857,245,725</u>	<u>2,857,245,725</u>	<u>2,857,245,725</u>
Reserve for self-insurance fund	31.2	<u>1,243,656,319</u>	<u>1,222,675,618</u>	<u>1,199,991,563</u>
Unappropriated		<u>544,005,237,331</u>	<u>541,414,286,420</u>	<u>432,667,781,421</u>
Other components of equity		<u>1,426,466,098</u>	<u>1,293,640,767</u>	<u>2,979,265,871</u>
Total equity		<u>607,306,733,689</u>	<u>604,561,976,746</u>	<u>497,478,412,796</u>
Total liabilities and equity		<u>889,676,190,977</u>	<u>959,642,833,267</u>	<u>894,377,944,553</u>

The accompanying notes are an integral part of these financial statements.

(Signed) Chansin Treenuchagron
(Chansin Treenuchagron)
President & Chief Executive Officer

(Signed) Phannalin Mahawongtikul
(Phannalin Mahawongtikul)
Chief Financial Officer

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF INCOME
FOR THE YEAR ENDED DECEMBER 31, 2019

		Unit: Baht			
		Consolidated financial statements		Separate financial statements	
Notes	2019	2018	2019	2018	
		(Restated)		(Restated)	
Sales and service income	33	2,219,738,671,119	2,336,154,915,594	1,200,462,897,055	1,411,021,051,033
Cost of sales and services	35	1,967,529,006,367	2,023,038,549,872	1,144,029,399,068	1,327,673,913,481
Gross profit		252,209,664,752	313,116,365,722	56,433,497,987	83,347,137,552
Other income	34	19,979,952,680	16,935,097,726	46,685,267,551	54,224,423,007
Gain on foreign exchange rates		15,312,831,823	6,353,510,623	7,923,624,559	6,304,992,162
Profit before expenses		287,502,449,255	336,404,974,071	111,042,390,097	143,876,552,721
Selling and distribution expenses	35	27,573,729,167	26,653,497,122	10,167,504,226	8,185,037,318
Administrative expenses	35	65,002,297,170	55,183,564,436	24,614,415,403	20,618,164,425
Petroleum royalties and remuneration	36	17,882,466,882	16,435,234,907	-	-
Operating profit		177,043,956,036	238,132,677,606	76,260,470,468	115,073,350,978
Share of profit from investments in joint ventures	15.6.1	3,990,793,333	6,461,651,677	-	-
Share of profit from investments in associates	15.6.2	2,017,196,234	2,053,368,348	-	-
Profit before finance costs and income taxes		183,051,945,603	246,647,697,631	76,260,470,468	115,073,350,978
Finance costs	37	27,971,463,717	27,627,592,591	6,164,047,845	8,009,448,341
Profit before income taxes		155,080,481,886	219,020,105,040	70,096,422,623	107,063,902,637
Income taxes	22.1	32,988,881,950	53,646,552,942	8,439,114,919	12,588,484,038
Profit for the years from continuing operations		122,091,599,936	165,373,552,098	61,657,307,704	94,475,418,599
Profit for the year from discontinued operations, net of tax	13	-	-	-	70,761,721,267
Profit for the years		122,091,599,936	165,373,552,098	61,657,307,704	165,237,139,866
Profit attributable to					
Owners of the parent					
Continuing operations		92,950,604,143	119,647,246,552	61,657,307,704	94,475,418,599
Discontinued operations, net of tax		-	-	-	70,761,721,267
		92,950,604,143	119,647,246,552	61,657,307,704	165,237,139,866
Non-controlling interests					
Continuing operations		29,140,995,793	45,726,305,546	-	-
Discontinued operations, net of tax		-	-	-	-
		29,140,995,793	45,726,305,546	-	-
Basic earnings per share					
Continuing operations	32	3.20	4.15	2.16	3.31
Discontinued operations	32	-	-	-	2.48
		3.20	4.15	2.16	5.79

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF COMPREHENSIVE INCOME
FOR THE YEAR ENDED DECEMBER 31, 2019

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
		(Restated)		(Restated)
Profit for the years from continuing operations	122,091,599,936	165,373,552,098	61,657,307,704	94,475,418,599
Other comprehensive income (loss)				
Items that will be reclassified subsequently to profit or loss				
Currency translation differences	(27,899,835,334)	(2,588,215,649)	-	-
Gain (loss) on measurements of available-for-sale investments	43,161,764	(881,069,476)	166,031,664	(27,281,381)
Income taxes related to available-for-sale investments	(21,425,435)	410,455,036	(33,206,333)	5,456,277
Gain (loss) on cash flow hedges	(1,182,552,979)	684,960,036	-	-
Income taxes related to cash flow hedges	(92,552,256)	(3,027,287)	-	-
Share of other comprehensive loss of joint ventures and associates	(503,105,474)	(380,456,659)	-	-
Items that will not be reclassified subsequently to profit or loss				
Gain (loss) on remeasurements of defined benefits plans	(1,095,553,888)	946,683,776	1,167,004,596	799,889,519
Income taxes related to remeasurements of defined benefits plans	408,798,991	(183,163,864)	(233,400,919)	(159,977,904)
Share of other comprehensive income (loss) from joint ventures and associates	(97,637,110)	27,573,904	-	-
Other comprehensive income (loss) for the years, net of tax	<u>(30,440,701,721)</u>	<u>(1,966,260,183)</u>	<u>1,066,429,008</u>	<u>618,086,511</u>
Comprehensive income for the years from continuing operations	91,650,898,215	163,407,291,915	62,723,736,712	95,093,505,110
Comprehensive income for the year from discontinued operations, net of tax	-	-	-	69,097,921,267
Total comprehensive income for the years	<u>91,650,898,215</u>	<u>163,407,291,915</u>	<u>62,723,736,712</u>	<u>164,191,426,377</u>
Total comprehensive income attributable to				
Owners of the parent				
Continuing operations	73,509,914,687	118,782,047,402	62,723,736,712	95,093,505,110
Discontinued operations, net of tax	-	-	-	69,097,921,267
	<u>73,509,914,687</u>	<u>118,782,047,402</u>	<u>62,723,736,712</u>	<u>164,191,426,377</u>
Non-controlling interests				
Continuing operations	18,140,983,528	44,625,244,513	-	-
Discontinued operations, net of tax	-	-	-	-
	<u>18,140,983,528</u>	<u>44,625,244,513</u>	<u>-</u>	<u>-</u>

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED DECEMBER 31, 2019

Notes	Consolidated financial statements													Unit: Baht
	Equity attributable to owners of the parent												Total equity attributable to owners of the parent	
	Retained earnings											Total other components of equity		
	Issued and paid-up share capital	Premium on ordinary shares	Deficit from the change in the ownership interests in subsidiaries	Legal reserve	Reserve for self-insurance fund	Unappropriated	Currency translation differences	Available-for-sale investments	Cash flow hedges	Share of other comprehensive loss of joint ventures and associates	Total other components of equity			
4	28,562,996,250	29,211,131,966	(24,311,625,093)	2,857,245,725	1,199,991,563	775,950,276,682	1,971,688,038	3,259,238,757	74,024,494	(112,215,260)	5,192,734,029	429,883,989,506	1,248,555,700,628	
	-	-	(750,162,673)	-	-	(750,162,673)	26,003,370	-	-	-	(724,159,303)	(171,373,364)	(895,532,667)	
	28,562,996,250	29,211,131,966	(24,311,625,093)	2,857,245,725	1,199,991,563	775,200,114,009	1,997,691,408	3,259,238,757	74,024,494	(112,215,260)	5,218,737,399	429,712,616,142	1,247,660,207,961	
	Changes in equity for the year													
31.2	-	-	-	-	22,684,055	(22,684,055)	-	-	-	-	-	-	-	
	-	-	-	-	-	(1,224,235,598)	-	-	-	-	(1,225,235,598)	(651,473,178)	(1,876,708,776)	
	-	-	-	-	-	10,050,715	-	-	-	-	10,050,715	53,729,937	154,790,652	
	-	-	-	-	-	-	-	-	-	-	(2,600,765)	(2,600,765)	-	
42	-	-	-	-	-	(57,107,862,427)	-	-	-	-	(57,107,862,427)	-	(57,107,862,427)	
	-	-	-	-	-	-	-	-	-	-	(27,845,037,703)	(27,845,037,703)	-	
	-	-	-	-	-	-	-	-	-	-	2,363,403,595	2,363,403,595	(9,187,862,860)	
	-	-	-	-	-	(4,172,342,600)	-	-	-	-	(4,172,342,600)	(5,015,520,260)	(9,187,862,860)	
	-	-	-	-	-	-	-	-	-	-	119,647,246,552	45,726,305,546	165,373,552,098	
	-	-	-	-	-	119,647,246,552	-	-	-	-	(865,199,150)	(1,101,066,103)	(1,966,260,183)	
	-	-	-	-	-	-	-	-	-	-	333,274,017	(1,101,066,103)	(1,101,066,103)	
	-	-	-	-	-	830,364,806	(1,435,038,672)	(609,801,919)	333,274,017	(173,997,382)	(1,685,563,956)	(865,199,150)	(865,199,150)	
	-	-	-	-	-	837,421,994,002	562,652,736	2,849,434,838	407,298,511	(286,212,642)	3,533,173,443	443,240,362,281	1,317,565,611,592	
	28,562,996,250	29,211,131,966	(28,483,967,693)	2,857,245,725	1,222,675,618	837,421,994,002	562,652,736	2,849,434,838	407,298,511	(286,212,642)	3,504,891,116	443,410,523,895	1,318,494,350,324	
4	-	-	-	-	-	(786,859,445)	28,282,327	-	-	-	(786,859,445)	(786,859,445)	(928,738,732)	
	28,562,996,250	29,211,131,966	(28,483,967,693)	2,857,245,725	1,222,675,618	837,421,994,002	562,652,736	2,849,434,838	407,298,511	(286,212,642)	3,533,173,443	443,240,362,281	1,317,565,611,592	
	Changes in equity for the year													
31.2	-	-	-	-	20,980,701	(20,980,701)	-	-	-	-	-	-	-	
	-	-	-	-	-	6,500,542	-	-	-	-	6,500,542	3,456,420	9,956,962	
	-	-	-	-	-	(467,640,221)	-	-	-	-	(467,640,221)	(32,213,730,233)	(32,681,360,454)	
	-	-	-	-	-	(1,085,692,828)	-	-	-	-	(1,085,692,828)	(825,926,719)	(1,911,619,547)	
	-	-	-	-	-	61,654,845	-	-	-	-	61,654,845	32,782,656	94,437,501	
42	-	-	-	-	-	(59,978,979,769)	-	-	-	-	(59,978,979,769)	-	(59,978,979,769)	
	-	-	-	-	-	-	-	-	-	-	(22,112,552,296)	(22,112,552,296)	-	
	-	-	-	-	-	-	-	-	-	-	32,105,157,138	32,105,157,138	(2,105,157,138)	
	-	-	-	-	-	-	-	-	-	-	(34,321,536,220)	(34,321,536,220)	(42,088,433,330)	
	-	-	-	-	-	92,950,604,143	-	-	-	-	92,950,604,143	18,386,501,562	18,386,501,562	
	-	-	-	-	-	-	-	-	-	-	(19,440,689,456)	(11,000,012,265)	(30,440,701,721)	
	-	-	-	-	-	128,627,460	(18,961,746,168)	9,305,536	(387,457,536)	(229,418,748)	(19,569,316,916)	(11,000,012,265)	(30,440,701,721)	
	-	-	-	-	-	869,016,087,473	(18,399,093,423)	2,888,740,374	19,840,975	(515,631,290)	(16,006,133,473)	878,604,109,457	1,301,039,617,574	
	28,562,996,250	29,211,131,966	(28,250,864,803)	2,857,245,725	1,243,656,319	869,016,087,473	(18,399,093,423)	2,888,740,374	19,840,975	(515,631,290)	878,604,109,457	422,435,508,117	1,301,039,617,574	

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED DECEMBER 31, 2019

Unit: Baht

Notes	Separate financial statements							Total equity
	Retained earnings			Other components of equity				
	Issued and paid-up share capital	Premium on ordinary shares	Legal reserve	Reserve for self-insurance fund	Unappropriated	Available-for-sale investments	Other comprehensive income (loss)	
	28,562,996,250	29,211,131,966	2,857,245,725	1,199,991,563	433,069,636,210	2,979,265,871	497,880,267,585	
4	-	-	-	-	(401,854,789)	-	(401,854,789)	
Balance as at January 1, 2018 after adjustment	28,562,996,250	29,211,131,966	2,857,245,725	1,199,991,563	432,667,781,421	2,979,265,871	497,478,412,796	
Changes in equity for the year								
Dividends paid	-	-	-	-	(57,107,862,427)	-	(57,107,862,427)	
Reserve for self-insurance fund	-	-	-	22,684,055	(22,684,055)	-	-	
Other comprehensive loss from discontinued operations	-	-	-	-	-	(1,663,800,000)	(1,663,800,000)	
Profit for the year	-	-	-	-	165,237,139,866	-	165,237,139,866	
Other comprehensive income (loss) for the year	-	-	-	-	639,911,615	(21,825,104)	618,086,511	
Balance as at December 31, 2018	28,562,996,250	29,211,131,966	2,857,245,725	1,222,675,618	541,414,286,420	1,293,640,767	604,561,976,746	
	28,562,996,250	29,211,131,966	2,857,245,725	1,222,675,618	541,852,837,981	1,293,640,767	605,000,528,307	
4	-	-	-	-	(438,551,561)	-	(438,551,561)	
Balance as at January 1, 2019 after adjustment	28,562,996,250	29,211,131,966	2,857,245,725	1,222,675,618	541,414,286,420	1,293,640,767	604,561,976,746	
Changes in equity for the year								
Dividends paid	-	-	-	-	(59,978,979,709)	-	(59,978,979,709)	
Reserve for self-insurance fund	-	-	-	20,980,701	(20,980,701)	-	-	
Profit for the year	-	-	-	-	61,657,307,704	-	61,657,307,704	
Other comprehensive income for the year	-	-	-	-	933,603,677	132,825,331	1,066,429,008	
Balance as at December 31, 2019	28,562,996,250	29,211,131,966	2,857,245,725	1,243,656,319	544,005,237,331	1,426,466,098	607,306,733,689	

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2019

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
		(Restated)		(Restated)
Cash flows from operating activities				
Profit attributable to owners of the parent	92,950,604,143	119,647,246,552	61,657,307,704	165,237,139,866
Adjustment of profit to net cash provided by (used in) operating activities				
Depreciation and amortization	133,204,181,804	123,592,966,745	19,350,137,045	20,225,546,733
(Gain) loss on disposal of assets	31,182,090	2,154,902,333	(191,508,782)	(4,721,245,342)
(Gain) loss on disposal of investments	221,275,460	(299,334)	(1,564,028,226)	(3,673,261,900)
Gain on disposal of discontinued operations	-	-	-	(80,659,172,274)
Gain on bargain purchase	(31,482,857)	(1,354,901,971)	-	-
(Reversal of) loss on impairment of assets	291,120,355	16,833,146	506,848,142	(33,926,202)
(Reversal of) loss on impairment of investments	(434,016,938)	-	7,347,996	22,706,862,123
Share of profit from investments in joint ventures	(3,990,793,333)	(6,461,651,677)	-	-
Share of profit from investments in associates	(2,017,196,234)	(2,053,368,348)	-	-
Profit attributable to non-controlling interests	29,140,995,793	45,726,305,546	-	-
Provision for employee benefit	7,063,158,543	2,487,981,308	1,839,534,053	866,200,264
(Gain) loss on exchange rates	(8,259,060,713)	(809,179,160)	(2,557,930,652)	50,548,585
Unrealized (gain) loss on derivatives	3,123,608,032	(4,032,097,039)	(1,225,180,475)	169,989,298
(Reversal of) allowance for doubtful accounts	(77,020,600)	2,320,284,952	920,415	(22,636,081,165)
Write-off exploration assets	2,368,682,811	21,470,147	-	-
(Reversal of) allowance for loss on decline in value of inventories	(3,079,361,551)	4,217,015,603	65,420,262	252,179,770
Allowance for obsolete materials and supplies	453,008,357	157,216,972	40,302,822	32,955,250
Dividends income	(383,031,136)	(347,322,347)	(29,676,712,760)	(35,265,935,239)
Income taxes	32,988,881,950	53,646,552,942	8,439,114,919	30,796,871,638
Interest income	(7,836,966,421)	(9,435,815,591)	(3,342,143,771)	(3,024,402,378)
Finance costs	27,971,463,717	27,627,592,591	6,164,047,845	8,013,269,693
Others	4,462,664	93,326,065	354,945,076	317,895,230
Profit from operating activities before changes in operating assets and liabilities	303,703,695,936	357,215,059,435	59,868,421,613	98,655,433,950

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED DECEMBER 31, 2019

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
		(Restated)		(Restated)
(Increase) decrease in operating assets				
Trade accounts receivable	19,001,930,521	2,430,378,448	27,250,869,944	(15,930,100,711)
Other accounts receivable	19,903,908,602	(16,941,081,482)	9,069,258,034	(13,611,836,950)
Inventories	11,866,201,784	(5,503,049,394)	5,379,178,863	(9,382,918,320)
Materials and supplies	(512,841,370)	(339,304,377)	(137,217,232)	(141,923,476)
Other current assets	(2,264,690,933)	(1,193,783,986)	596,834,211	669,686,381
Other non-current assets	6,910,377,794	(5,765,733,296)	(111,213,792)	(2,553,304,770)
Increase (decrease) in operating liabilities				
Trade accounts payable	(7,439,616,831)	(2,080,698,278)	(19,932,742,937)	9,250,098,045
Other accounts payable	(14,050,557,920)	(77,973,082)	(4,856,296,140)	8,181,472,744
Other current liabilities	(1,955,970,779)	2,860,720,649	(1,133,000,617)	(505,988,331)
Deposits on LPG cylinders	574,122,160	563,414,702	-	177,938,200
Other non-current liabilities	(5,369,946,427)	(16,391,850,009)	128,310,633	393,556,331
	<u>26,662,916,601</u>	<u>(42,438,960,105)</u>	<u>16,253,980,967</u>	<u>(23,453,320,857)</u>
Cash received from operating activities	330,366,612,537	314,776,099,330	76,122,402,580	75,202,113,093
Income tax paid	<u>(65,259,229,065)</u>	<u>(45,370,805,621)</u>	<u>(29,288,868,748)</u>	<u>(12,330,372,203)</u>
Net cash provided by operating activities	<u>265,107,383,472</u>	<u>269,405,293,709</u>	<u>46,833,533,832</u>	<u>62,871,740,890</u>

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED DECEMBER 31, 2019

	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
		(Restated)		(Restated)
Cash flows from investing activities				
Payment of property, plant and equipment and investment properties	(144,336,347,465)	(108,747,405,008)	(19,013,996,689)	(22,631,738,393)
Payment of intangible assets	(2,861,367,080)	(2,398,008,012)	(197,386,569)	(360,209,801)
Payment of exploration and evaluation assets	(3,700,244,754)	(1,962,665,601)	-	-
Payment of long-term rental contracts on land and building	-	(105,000,000)	-	(105,000,000)
Payment for available-for-sale investments	(241,112,299)	(540,509,638)	(241,112,299)	(203,209,504)
Payment for business acquisition	(164,377,947,967)	(36,464,068,838)	-	-
Payment of investments in subsidiaries	-	-	(20,607,908,492)	(120,635,433,946)
Payment of investments in joint ventures	(4,072,414,141)	(155,360,767)	(34,296,717)	-
Payment of investments in associates	(783,882,750)	(1,368,071,960)	-	-
Payment of short-term lending loans	-	(1,984,409,281)	(33,114,580,995)	(2,500,000,000)
Payment of long-term lending loans	(837,243,815)	(118,546,111)	(30,992,122,156)	(26,310,000,000)
Payment of other long-term investments	(2,855,860,697)	(5,226,943,008)	(1,827,467,081)	(4,597,024,955)
Proceeds from disposals of property, plant and equipment, intangible assets and investment properties	929,635,294	4,646,909,629	1,007,259,109	7,235,425,913
Proceeds from disposals of available-for-sale investments	10,693,125,237	2,944,665,157	-	24,501,220
Proceeds from disposal of discontinued operations	-	-	-	117,203,264,773
Proceeds from disposals of investments in subsidiaries	-	-	2,612,512,600	4,618,593,100
Proceeds from disposals of investments in joint ventures	276,267,877	33,871,046	-	-
Proceeds from disposals of investments in associates	212,663,057	-	-	-
Proceeds from short-term lending loans	269,913,000	1,659,754,291	29,709,927,871	409,068,377
Proceeds from long-term lending loans	3,490,281,246	4,294,182,245	28,115,283,133	36,683,534,122
Proceeds from disposal of other long-term investments	28,289,253	2,740,995,830	-	2,494,600,000
Proceeds from cancellation of leasehold in gas stations	16,679,180	4,712,511	-	1,400,000
Decrease in current investments	108,719,156,318	93,820,520,816	17,760,919,841	49,529,998,963
Interest received	6,424,633,174	8,358,990,106	3,357,868,462	3,500,206,798
Dividends received	4,787,566,316	4,814,106,863	29,676,712,760	35,646,436,864
Net cash provide by (used in) investing activities	(188,218,211,016)	(35,752,279,730)	6,211,612,778	80,004,413,531

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED DECEMBER 31, 2019

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
Notes	2019	2018	2019	2018
		(Restated)		(Restated)
Cash flows from financing activities				
Proceeds from issuance of ordinary shares of subsidiaries	18,346,174,140	92,811,501	-	-
Proceeds from short-term loans	-	-	154,866,060	1,564,470,776
Proceeds from long-term loans	174,649,440,702	143,626,648,847	24,031,000,790	-
Proceeds from change in ownership in subsidiaries	3,960,400	4,670,961,898	-	-
Payment for treasury shares	(1,187,603,325)	-	-	-
Repayment of short-term loans	(701,550,500)	-	-	(1,034,818,082)
Repayment of long-term loans	(101,517,722,881)	(136,795,441,261)	(50,044,500,790)	(28,305,510,732)
Repayment of finance lease instalments	(1,358,237,107)	(974,563,334)	(613,345,103)	(658,200,961)
Payment for change in ownership in subsidiaries	(40,806,272,121)	(13,872,690,000)	-	-
Payment for redemption of subordinated capital debentures	(30,750,894,428)	-	-	-
Increase in bank overdrafts and short-term loans				
from financial institutions	19,910,183,786	4,967,935,595	-	-
Finance costs paid	(25,462,319,325)	(28,147,863,087)	(6,720,225,233)	(10,187,617,565)
Dividend paid	(81,350,824,835)	(85,035,352,791)	(59,978,979,769)	(57,107,862,427)
Net cash used in financing activities	(70,225,665,494)	(111,467,552,632)	(93,171,184,045)	(95,729,538,991)
Effects of exchange rates on cash and cash equivalents	(3,075,298,506)	636,628,646	402,798,181	365,772,797
Currency translation differences	(3,230,072,876)	3,173,208,725	-	-
Net increase (decrease) in cash and cash equivalents	358,135,580	125,995,298,718	(39,723,239,254)	47,512,388,227
Cash and cash equivalents at the beginning of periods	292,184,322,373	166,189,023,655	86,204,049,166	38,691,660,939
Cash and cash equivalents at the end of periods	5 <u>292,542,457,953</u>	<u>292,184,322,373</u>	<u>46,480,809,912</u>	<u>86,204,049,166</u>
Non cash items				
Accounts payable from purchases of property, plant and equipment				
and investment properties	21,829,487,413	39,104,581,381	4,072,072,617	3,403,535,367
Accounts payable from purchases of intangible assets	212,468,939	268,340,332	91,630,970	39,762,075

The accompanying notes are an integral part of these financial statements.

(UNOFFICIAL TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2019

NOTES	CONTENTS
1	General Information
2	Basis of Financial Statements Preparation
3	Accounting Policies
4	Reclassification and Adjustment
5	Cash and Cash Equivalents
6	Current Investments
7	Trade Accounts Receivable
8	Other Accounts Receivable
9	Lending Loans
10	Related Party Transactions
11	Inventories
12	Materials and Supplies
13	The Restructuring of the Oil Business Unit
14	Available-for-sale Investments
15	Investments in Subsidiaries, Joint Ventures and Associates
16	Other Long-term Investments
17	Investment Properties
18	Property, Plant and Equipment
19	Goodwill
20	Intangible Assets
21	Exploration and Evaluation Assets
22	Income Taxes and Deferred Taxes
23	Other Non-current Assets
24	Other Current Liabilities
25	Long-term Loans
26	Changes in liabilities arising from financing activities
27	Provisions for Employee Benefit
28	Provision for Decommissioning Costs
29	Other Non-current Liabilities
30	Share Capital
31	Reserves
32	Basic Earnings per Share
33	Sales and Service Income
34	Other Income
35	Expenses by Nature
36	Petroleum Royalties and Remuneration

(UNOFFICIAL TRANSLATION)

**PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2019**

NOTES	CONTENTS
37	Finance Costs
38	Operating Segments
39	Disclosure of Financial Instruments
40	Fair Value Measurement
41	Subordinated Capital Debentures
42	Dividend Payment
43	Business Acquisition
44	Promotional Privileges
45	Proceeding regarding the Central Administrative Court's Ordering the Temporary Suspension of Projects in the Map Ta Phut Area
46	Commitments and Contingent Liabilities
47	Other Events
48	Events after the Reporting Period

(UNOFFICIAL TRANSLATION)

**PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2019**

1. General Information

PTT Public Company Limited (the Company) is incorporated as a public limited company in Thailand, and is listed on the Stock Exchange of Thailand. The address of its incorporated and registered office is as follows:

The Head Office of the Company is located at 555 Vibhavadi-Rangsit Road, Chatuchak, Bangkok, Thailand.

The Company has a status of a state enterprise while the Ministry of Finance is the largest shareholder and is under the supervision of Ministry of Energy.

The Company's principal activity is the operation of its petroleum business. The Company has invested in subsidiaries, joint arrangements and associates (the Group), which are engaged in upstream petroleum and natural gas, downstream petroleum, and other related businesses as described in Note 38 Operating Segments.

2. Basis of Financial Statements Preparation

The consolidated and the separate financial statements have been prepared in accordance with Thai Financial Reporting Standards under the Accounting Act, B.E. 2543. These are Thai Financial Reporting Standards under the Accounting Profession Act, B.E. 2547, including guidelines promulgated by the Federation of Accounting Professions (FAP), and the financial reporting requirements of the Securities and Exchange Commission under the Securities and Exchange Act, B.E. 2535.

The Company has presented the financial statements in compliance with the notification of the Department of Business Development "Definition of the abbreviated components required in the financial statements (No.2), B.E. 2559", dated October 11, 2016, under the third paragraph of section 11 of the Accounting Act, B.E. 2543.

The consolidated and the separate financial statements have been prepared based on the assumption that users of the financial statements have an understanding of Thai generally accepted accounting principles and practices, which may differ from generally accepted accounting principles adopted in other countries.

The consolidated and the separate financial statements have been prepared under the historical cost convention with the exception of certain amounts, which are accounted for using the fair value method as disclosed in Note 3.2 Significant Accounting Policies.

The significant transactions arising between the Company and its subsidiaries have been eliminated from the consolidated financial statements.

The consolidated and the separate financial statements are prepared and presented in Thai Baht and are rounded in the notes to financial statements to the nearest million unless otherwise stated.

This English translation of the financial statements has been prepared from the statutory financial statements that were issued in Thai language. In the event of a conflict or a difference in interpretation between the two languages, the Thai language statutory financial statements shall prevail.

3. Accounting Policies

3.1 Thai Financial Reporting Standards (TFRSs) effective for accounting periods on or after the current periods and will become effective in the future are as follows:

Effective for accounting periods on or after January 1, 2019

◆TAS 1 (revised 2018)	Presentation of Financial Statements
◆TAS 2 (revised 2018)	Inventories
◆TAS 7 (revised 2018)	Statement of Cash Flows
◆TAS 8 (revised 2018)	Accounting Policies, Changes in Accounting Estimates and Errors
◆TAS 10 (revised 2018)	Events after the Reporting Period
◆TAS 12 (revised 2018)	Income Taxes
◆TAS 16 (revised 2018)	Property, Plant and Equipment
◆TAS 17 (revised 2018)	Leases
◆TAS 19 (revised 2018)	Employee Benefits
◆TAS 20 (revised 2018)	Accounting for Government Grants and Disclosure of Government Assistance
◆TAS 21 (revised 2018)	The Effects of Changes in Foreign Exchange Rates
◆TAS 23 (revised 2018)	Borrowing Costs
◆TAS 24 (revised 2018)	Related Party Disclosures
◆TAS 26 (revised 2018)	Accounting and Reporting by Retirement Benefit Plans
◆TAS 27 (revised 2018)	Separate Financial Statements
◆TAS 28 (revised 2018)	Investments in Associates and Joint Ventures
◆TAS 29 (revised 2018)	Financial Reporting in Hyperinflationary Economies
◆TAS 33 (revised 2018)	Earnings per Share
◆TAS 34 (revised 2018)	Interim Financial Reporting
◆TAS 36 (revised 2018)	Impairment of Assets
◆TAS 37 (revised 2018)	Provisions, Contingent Liabilities and Contingent Assets
◆TAS 38 (revised 2018)	Intangible Assets
◆TAS 40 (revised 2018)	Investment Property
◆TAS 41 (revised 2018)	Agriculture
◆TFRS 1	First-time Adoption of Thai Financial Reporting Standards
◆TFRS 2 (revised 2018)	Share-based Payment
◆TFRS 3 (revised 2018)	Business Combinations
◆TFRS 4 (revised 2018)	Insurance Contracts
◆TFRS 5 (revised 2018)	Non-current Assets Held for Sale and Discontinued Operations
◆TFRS 6 (revised 2018)	Exploration for and Evaluation of Mineral Resources
◆TFRS 8 (revised 2018)	Operating Segments
◆TFRS 10 (revised 2018)	Consolidated Financial Statements
◆TFRS 11 (revised 2018)	Joint Arrangements
◆TFRS 12 (revised 2018)	Disclosure of Interests in Other Entities
◆TFRS 13 (revised 2018)	Fair Value Measurement
◆TFRS 15	Revenue from Contracts with Customers

3. Accounting Policies (Continued)

3.1 Thai Financial Reporting Standards (TFRSs) effective for accounting periods on or after the current periods and will become effective in the future are as follow (Continued)

Effective for accounting periods on or after January 1, 2019 (Continued)

◆TSIC 10 (revised 2018)	Government Assistance - No Specific Relation to Operating Activities
◆TSIC 15 (revised 2018)	Operating Leases - Incentives
◆TSIC 25 (revised 2018)	Income Taxes - Changes in the Tax Status of an Entity or its Shareholders
◆TSIC 27 (revised 2018)	Evaluating the Substance of Transactions Involving the Legal Form of a Lease
◆TSIC 29 (revised 2018)	Service Concession Arrangements: Disclosure
◆TSIC 32 (revised 2018)	Intangible Assets - Web Site Costs
◆TFRIC 1 (revised 2018)	Changes in Existing Decommissioning, Restoration and Similar Liabilities
◆TFRIC 4 (revised 2018)	Determining whether an Arrangement contains a Lease
◆TFRIC 5 (revised 2018)	Rights to Interests arising from Decommissioning, Restoration and Environmental Rehabilitation Funds
◆TFRIC 7 (revised 2018)	Applying the Restatement Approach under TAS 29 (revised 2018) Financial Reporting in Hyperinflationary Economies
◆TFRIC 10 (revised 2018)	Interim Financial Reporting and Impairment
◆TFRIC 12 (revised 2018)	Service Concession Arrangements
◆TFRIC 14 (revised 2018)	TAS 19 (revised 2018) - The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction
◆TFRIC 17 (revised 2018)	Distributions of Non-cash Assets to Owners
◆TFRIC 20 (revised 2018)	Stripping Costs in the Production Phase of a Surface Mine
◆TFRIC 21 (revised 2018)	Levies
◆TFRIC 22	Foreign Currency Transactions and Advance Consideration

Effective for accounting periods on or after January 1, 2020

◆TAS 1	Presentation of Financial Statements
◆TAS 2	Inventories
◆TAS 7	Statement of Cash Flows
◆TAS 8	Accounting Policies, Changes in Accounting Estimates and Errors
◆TAS 10	Events after the Reporting Period
◆TAS 12	Income Taxes
◆TAS 16	Property, Plant and Equipment
◆TAS 19	Employee Benefits
◆TAS 20	Accounting for Government Grants and Disclosure of Government Assistance

3. Accounting Policies (Continued)

3.1 Thai Financial Reporting Standards (TFRSs) effective for accounting periods on or after the current periods and will become effective in the future are as follow (Continued)

Effective for accounting periods on or after January 1, 2020 (Continued)

◆TAS 21	The Effects of Changes in Foreign Exchange Rates
◆TAS 23	Borrowing Costs
◆TAS 24	Related Party Disclosures
◆TAS 26	Accounting and Reporting by Retirement Benefit Plans
◆TAS 27	Separate Financial Statements
◆TAS 28	Investments in Associates and Joint Ventures
◆TAS 29	Financial Reporting in Hyperinflationary Economies
◆TAS 32	Financial Instruments: Presentation
◆TAS 33	Earnings per Share
◆TAS 34	Interim Financial Reporting
◆TAS 36	Impairment of Assets
◆TAS 37	Provisions, Contingent Liabilities and Contingent Assets
◆TAS 38	Intangible Assets
◆TAS 40	Investment Property
◆TAS 41	Agriculture
◆TFRS 1	First-time Adoption of International Financial Reporting Standards
◆TFRS 2	Share-based Payment
◆TFRS 3	Business Combinations
◆TFRS 4	Insurance Contracts
◆TFRS 5	Non-current Assets Held for Sale and Discontinued Operations
◆TFRS 6	Exploration for and Evaluation of Mineral Resources
◆TFRS 7	Financial Instruments: Disclosures
◆TFRS 8	Operating Segments
◆TFRS 9	Financial Instruments
◆TFRS 10	Consolidated Financial Statements
◆TFRS 11	Joint Arrangements
◆TFRS 12	Disclosure of Interests in Other Entities
◆TFRS 13	Fair Value Measurement
◆TFRS 15	Revenue from Contracts with Customers
◆TFRS 16	Lease
◆TSIC 10	Government Assistance - No Specific Relation to Operating Activities
◆TSIC 25	Income Taxes - Changes in the Tax Status of an Entity or its Shareholders
◆TSIC 29	Service Concession Arrangements: Disclosure
◆TSIC 32	Intangible Assets - Web Site Costs

3. Accounting Policies (Continued)

- 3.1 Thai Financial Reporting Standards (TFRSs) effective for accounting periods on or after the current periods and will become effective in the future are as follow (Continued)

Effective for accounting periods on or after January 1, 2020 (Continued)

◆TFRIC 1	Changes in Existing Decommissioning, Restoration and Similar Liabilities
◆TFRIC 5	Rights to Interests arising from Decommissioning, Restoration and Environmental Rehabilitation Funds
◆TFRIC 7	Applying the Restatement Approach under TAS 29 Financial Reporting in Hyperinflationary Economies
◆TFRIC 10	Interim Financial Reporting and Impairment
◆TFRIC 12	Service Concession Arrangements
◆TFRIC 14	TAS 19 - The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction
◆TFRIC 16	Hedges of a Net Investment in a Foreign Operation
◆TFRIC 17	Distributions of Non-cash Assets to Owners
◆TFRIC 19	Extinguishing Financial Liabilities with Equity Instruments
◆TFRIC 20	Stripping Costs in the Production Phase of a Surface Mine
◆TFRIC 21	Levies
◆TFRIC 22	Foreign Currency Transactions and Advance Consideration
◆TFRIC 23	Uncertainty over Income Tax Treatments

The management of the Group has assessed impacts of the application of the amended Thai Financial Reporting Standards (TFRS), which are applicable to annual reporting periods beginning on or after January 1, 2020. Besides TFRS Groups of Financial Instruments and TFRS 16 - Leases, it is believed that employing the amended TFRS have no significant impact on both the Consolidated Financial Statements and Separate Financial Statements.

TFRS Group of Financial Instruments

◆TAS 32	Financial Instruments: Presentation
◆TFRS 7	Financial Instruments: Disclosures
◆TFRS 9	Financial Instruments
◆TFRIC 16	Hedges of a Net Investment in a Foreign Operation
◆TFRIC 19	Extinguishing Financial Liabilities with Equity Instruments

TFRS Group of Financial Instruments have been set approaches of classification and measurement of financial instruments at fair value or amortized cost, which are determined from types of financial instruments, contractual cash flow characteristics, and business model. The new TFRS also introduces standards in calculating asset impairment, using expected credit loss concept and standards of hedge accounting, including financial instrument presentation and disclosures.

3. Accounting Policies (Continued)

- 3.1 Thai Financial Reporting Standards (TFRSs) effective for accounting periods on or after the current periods and will become effective in the future are as follow (Continued)

TFRS 16 - Leases

TFRS 16 has been set approaches for the identification, recognition, measurement, presentation and disclosure of leases from both lessees and lessors. Major changed principle is cancellation for lessees to identify the classification between operating leases and financial leases as specified in TAS 17; and lessors should recognized a right of use assets and lease liabilities at the commencement date for all leases, except short-term leases and leases for which the underlying asset is of low value. Accounting by lessors is still required to classify leases as operating or finance according to TAS 17.

The Group will apply TFRS – group of financial instruments and TFRS 16 – Leases on January 1, 2020, **acknowledging the cumulative effects of applying modified retrospective method.** However, the Group is assessing impacts of applying such standards.

The Group has subordinated capital debentures reported in equity section as such debentures offering a single payment of principal when the business ceases operations or when the issuer uses the right of call options complying to stated conditions. Moreover, the issuer has the right, at its sole discretion, to defer payment without time limitations and number of times. The overdue payment will be accumulated with no interest. However, according to Paragraph 25 in TAS 32 - Financial Instruments: Presentation, effective for annual reporting periods beginning on or after January 1, 2020. The Group has to classify such debentures as liabilities. Due to conditions in “The indenture of subordinated capital debentures”, it can be interpreted as the debentures’ holders will have the right to redeem the debentures prior to the liquidation. Owing to the announcement No. 95/2562 of the Federation of Accounting Professions, it allows relaxation in classifying the issued (subordinated) capital debentures and paid-up before December 31, 2019 still to be the part of issuer until December 31, 2022.

On December 31, 2019, the Group has subordinated capital debentures in a total of Baht 6,018.03 million in the consolidated financial statements, which will be classified as non-controlling interests in the equity section in annual reporting periods beginning on or after January 1, 2020.

3.2 Significant Accounting Policies

3.2.1 Cash and Cash Equivalents

Cash and cash equivalents comprise cash on hand, deposits held at call with banks and other short-term highly liquid investments which have original maturities within three months. Bank overdrafts and short-term loans from financial institutions are included in current liabilities in the statements of financial position.

3.2.2 Trade Accounts and Other Accounts Receivable

Trade accounts and other accounts receivable are carried at net realizable value. Allowance for doubtful accounts are estimated based on uncollectible amounts estimating from outstanding receivables at the statement of financial position date based on collection experience of their current financial status, also with percentage of debt aging. Doubtful account is recorded as administrative expenses in profit or loss.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.3 Inventories

Inventories are stated at the lower of cost and net realizable value. The cost is calculated by using the weighted average cost method. The cost of inventory comprises total purchasing costs, payments related to purchasing, discounts, quantity discounts, as well as contributions to or compensation from taxes and several funds. Net realizable value is calculated from estimated selling price in the ordinary course of business, less the costs of completion and related selling expenses. When net realizable value of inventories is lower than cost of acquisition, it is presented under cost of goods sold in the statement of income. An allowance for obsolescence of inventories will be recognized when inventories are obsoleted or defected.

3.2.4 Materials and Supplies

Materials and supplies are stated at cost calculated by using the weighted average cost method, less allowance for obsolescence of material and supplies when there are obsolete, defective or unserviceable items.

3.2.5 Non-current Assets and Liabilities Held-for-sale

Disposed assets or asset groups, including non-current assets and liabilities held-for-sale, are classified as asset held-for-sale if their carrying amounts will be recovered through a sale transaction rather than through continuing use. This condition is met only when the sale is highly probable and the asset is available for immediate sale in its present condition, subject only to terms that are usual and customary for sales of such assets. Management must commit to the sale of the assets and they must be actively marketed at a price that is reasonable compared to their current fair value, with the expectation that sale should be recorded as completed within one year from the date of classification. These disposed assets or asset groups are measured at the lower of carrying amount and fair value less costs to sell.

The Group ceases to depreciate and amortize property, plant and equipment and intangible assets from the date the assets meet the criteria for classification as assets held-for-sale. The Group continues to recognize liabilities, including interests and other expenses attributable to liabilities classified as held-for-sale.

3.2.6 Investments in Subsidiaries

Subsidiaries are those companies which directly or indirectly controlled by the parent company. Control exists when the parent company has the power over the subsidiaries so as to obtain variable returns from the involvement with the subsidiaries and has the ability to affect those returns through the power over the subsidiaries. In case of the parent company has voting rights less than half of total voting rights in subsidiaries, the parent company will reconsider the related facts and circumstances in order to determine whether the parent company has the power to control over such subsidiaries or not.

The financial statements of subsidiaries are included in the consolidated financial statements from the date that the control commences until the date that the control ceases.

The parent company allocates profit or loss and each component of other comprehensive income or loss to the equity attributable to owners of the parent and the non-controlling interests even if this results in a deficit non-controlling interest balance.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.6 Investments in Subsidiaries (Continued)

The purchase method of accounting is used to account for business combinations, except the business combination under common control. The cost of a business combination is measured as the sum of fair value of any consideration transferred, the recognized amount of any non-controlling interest in the acquiree, and the fair value of the existing equity interest as of the purchasing date (if the business combination is achieved in stages).

- For each business combination, the Group measures the recognized amount of any non-controlling interest in the acquiree at either the fair value or the non-controlling interest's proportionate share of the net of identifiable assets of the acquiree.
- In the case of a business combination achieved in stages, the Group measures the acquisition-date fair value of the acquirer's previously-held equity interest in the acquiree and recognized gains or losses in statement of income.
- Costs related to the acquisition, including professional fees, appraisal fees and other consulting fees, are recognized as expenses in statement of income.

The Group measures the identifiable assets and liabilities acquired at fair value as of the acquisition date.

Any changes in the equity interest in subsidiaries of the Group while control is retained are recorded as surplus (deficit) from the changes in the ownership interests in subsidiaries in equity.

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount of the investments is recorded in profit or loss.

Investments in subsidiaries have been presented in the separate financial statements under the cost method.

The list of investments in subsidiaries of the Group and proportion of ownership interests have been set out in Note 15.

3.2.7 Investments in Joint Ventures and Associates

Joint ventures are joint arrangement whereby the Group has joint control of the arrangement and has rights to the net assets of the arrangement. The joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

Associates are those companies whereby the Group has significant influence, but not control or joint control, over the financial and operating policies.

The Group uses the purchase method to record the acquisition of joint ventures and associates, except the business combination under common control. Acquisition costs which are higher than fair value of identifiable assets and liabilities of the Group's equity interest in joint ventures and associates are recorded as goodwill and included in the investment in joint ventures and associates.

The consolidated financial statements of the Group include the share of profit and loss from joint ventures and associates under equity method, from the date that significant influence commences until the date that significant influence ceases. Unrealized gains or losses on transactions between the Group and its joint ventures and associates are eliminated to the extent of the Group's interest in the joint ventures and associates unless the transactions provide evidence of impairment of the transferred assets.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.7 Investments in Joint Ventures and Associates (Continued)

The Group records share of profit or loss from joint ventures and associates in proportion to the Group's equity interest in those gains and losses. Any dividends received from joint ventures and associates are deducted from the book value of the investments.

When the Group's share of loss in joint ventures and associates equals or exceeds its interest in the joint ventures and associates, the Group does not recognize further losses, unless the Group has incurred collateral or constructive obligations or made payments on behalf of the joint ventures and associates.

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount of the investments is recorded in profit or loss.

Investments in joint ventures and associates have been presented under the cost method in the separate financial statements and under the equity method in the consolidated financial statements.

The list of investments in joint ventures and associates of the Group and proportion of ownership interests have been set out in Note 15.

3.2.8 Joint Operations

Joint operations are joint arrangement whereby the Group has rights to assets and obligations relating to the joint arrangement. The Group has recognized assets, liabilities, revenues and expenses by the portion of joint operations in the separate and the consolidated financial statements from the date that joint control commences until the date that joint control ceases.

The list of joint operations of the Group and transactions relating to its involvements have been set out in Note 15.

3.2.9 Other Investments

Investments other than investments in subsidiaries, joint ventures, and associates are classified as available-for-sale investments and other long-term investments.

Investments in equity securities and mutual funds that are marketable securities are classified as available-for-sale investments and carried at fair value in the statements of financial position. Any changes in value are recognized as gain (loss) from fair value measurement of available-for-sale investments in other comprehensive income or loss and accumulated amounts are accumulated differences are presented in other components of equity under equity.

Investments in non-marketable equity securities, which are classified as other long-term investments, are carried at cost net of allowance for impairment in the statement of financial position. Impairment testing is performed when there is a factor indicating that the investment might be impaired. If the carrying amount of the investment is higher than its recoverable amount, impairment losses are recognized in profit or loss immediately.

Investment in held-to-maturity debt securities which an entity intends and has an ability to hold until the maturity date are classified as other long-term investments and carried at amortised cost in the statement of financial position. The Group will record loss on impairment in the statement of income immediately when it is highly probable that the Group cannot collect entire/some principals or interests as state in contracts.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.9 Other Investments (Continued)

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount is recognized in profit or loss. When the available-for-sale investments are disposed, the Group will record the cumulative amount of fair value in other components of equity under equity as gain (loss) on disposal of investments. When disposing of some parts of the Group's particular investment in debt or equity securities, the carrying amount of the part disposed is calculated by using the weighted average carrying amount of the total holding of the investment.

3.2.10 Related Parties

Related parties of the Company are those enterprises or individuals that control or are controlled by the Company, or are under common control with the Company, including holding companies of subsidiaries and fellow Group subsidiaries, as well as those that have equity interests in the Company that result in significant influence or joint control over the Company. In addition, related parties include associates, joint ventures, the management and directors of the Company, and entities which the management or directors of the Company, directly or indirectly, control, jointly controlled, or have significant influence.

In considering each possible related party relationship, attention is directed more to the substance of the relationship than to the legal form.

3.2.11 Foreign Currency Translation

The consolidated financial statements and the separate financial statements have been presented in Thai Baht, which is the Company's functional currency. Transactions of each company included in the consolidated financial statements are recorded in their own functional currencies.

Foreign currency transactions are translated into functional currency at the exchange rates prevailing at the transaction date. Monetary assets and liabilities at the statements of financial position date denominated in foreign currencies are translated into functional currency at the exchange rate prevailing at that date. Gains and losses resulting from the settlement of such transactions and from the translation of monetary assets and liabilities denominated in foreign currencies are recognized in profit or loss.

Assets and liabilities of foreign operations, that presentation currencies are foreign currencies, are translated into Thai Baht using the closing rate at the statements of financial position date. Revenues and expenses are translated into Thai Baht using the average rate during the period. Differences arising from currency translation are included in other comprehensive income and accumulated differences are presented in other components of equity under equity.

Upon the disposal of self-sustaining foreign entities, accumulated currency translation differences under shareholders' equity are recognized as gains or losses on disposal.

3. **Accounting Policies** (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.12 Borrowing Costs

Borrowing costs comprise interest and other costs associated with the borrowings. Borrowing costs incurred on qualifying assets are capitalized as a cost of the qualifying property until all the activities necessary to prepare the property for its intended use are substantially completed. When funds are specifically borrowed for the construction or the production of asset, the amount of borrowing costs capitalized is determined from the actual borrowing costs during the year less any income on the temporary investment of those borrowings. When funds are borrowed for general purpose, the Group multiplies the capitalization rate by the capital expenditure in allocating borrowing costs to costs of assets.

All other borrowing costs are expensed in the period they incurred.

3.2.13 Investment Properties

Investment properties are initially recognized at cost, including expenses directly associated with the asset acquisition, less accumulated depreciation and allowance for impairment.

The Group has selected the cost model for accounting for its investment properties. This model is in accordance with that described in the accounting policy for property, plant and equipment.

Depreciation is recorded as expenses in profit or loss and is calculated using the straight-line method over the estimated useful lives of the assets, which range from 5 to 30 years. Land and construction in progress are not depreciated.

3.2.14 Property, Plant and Equipment

Property, plant and equipment are initially recognized at cost less accumulated depreciation and allowance for impairment. The costs comprise any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating. These include decommissioning costs, delivery and restoration costs, and any obligation associated with either its acquisition or a consequence of having used the items.

Repair and maintenance costs are recognized in profit or loss during the financial period in which they are incurred. The costs of significant asset improvements, major turnarounds and inspections are included in the carrying amount of the asset. In case of replacement, the Group writes off carrying value of replaced items.

The Group depreciates each significant component of property, plant and equipment separately.

The Group estimates the residual value of the property, plant and equipment based on current assessment of the amount that would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

The Group reviews the residual value, the useful lives and depreciation methods of assets at least once a year.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.14 Property, Plant and Equipment (Continued)

Depreciation is recorded as expenses in profit or loss and is calculated using the straight-line method or unit of production method over the estimated useful lives of the assets, which are as follows:

Buildings and building improvements	2 - 40 years
Machinery and equipment	2 - 40 years
Petroleum exploration and production properties	5 - 30 years or unit of production
Mining properties	Unit of production
Other assets	2 - 30 years

Land and construction in progress are not depreciated.

Gains or losses on disposal of property, plant and equipment are determined by comparing the proceeds from sales with the carrying amounts on the disposal dates, and are recorded in statement of income when incurred.

Petroleum Exploration and Production Properties

The petroleum exploration and production business accounts for its petroleum exploration and production properties in accordance with the successful efforts method for which the accounting policies are as follows:

Cost of Properties

The cost of properties comprises the total acquisition costs of petroleum rights or the acquisition costs of the portion of properties, decommissioning costs, as well as support equipment and facilities.

Exploratory drilling costs are capitalized as petroleum exploration and evaluation assets, and will be classified as petroleum exploration and production properties of the projects if their exploratory wells have identified proved reserves that have been found to be commercially producible. However, drilling costs will be expensed in the statement of income when incurred, if the exploratory wells have not identified proved reserves or have identified proved reserves but have not been found to be commercially producible.

Exploratory costs, comprising geological and geophysical costs as well as area reservation fees during the exploration stage, are charged as expenses in the statement of income when incurred.

Development costs, whether relating to successful or unsuccessful development wells, are capitalized and classified as assets.

- 3. **Accounting Policies** (Continued)
- 3.2 Significant Accounting Policies (Continued)
- 3.2.14 Property, Plant and Equipment (Continued)

Petroleum Exploration and Production Properties (Continued)

Depreciation

The capitalized acquisition costs of petroleum rights are depreciated using the unit of production method based on proved reserves. Depreciation of exploratory wells, development costs as well as decommissioning costs, except unsuccessful projects, are calculated using the unit of production method based on proved reserves or proved developed reserves. The Group recognizes changes in reserve estimates prospectively.

Proved reserves and proved developed reserves are calculated by the Group's own engineers and are based on the information received from the joint operators.

Depreciation of support equipment, facilities and Others are determined using the straight-line method over the useful lives of assets.

Carried Cost under Petroleum Sharing Contracts

The petroleum exploration and production business records the carried costs under Petroleum Sharing Contracts using the following accounting policies:

Under Petroleum Sharing Contracts in which the government has a participating interest, some contracts require the contracting parties, excluding the government, to fund the costs of all exploration operations until the first development area is determined. During the exploration period, the contracting parties will carry an agreed upon proportion of the government's exploration costs (Carried Costs). When the project commences production, such carried costs will be fully recouped or recovered without interest by the contracting parties from the production of petroleum under the agreed procedures. The Group classifies the carried costs based on petroleum activities under the successful efforts method. The majority of them are recognized in petroleum exploration and production properties, exploration and evaluation assets in the statement of financial position and exploration expenses in the statement of income.

Mining Properties

The coal business accounts for its coal exploration and production properties, including coal mining property rights and deferred mining exploration and development expenditures, by the accounting policies as follows:

Coal Mining Property Rights

Coal mining property rights comprise the total acquisition costs of concession rights in coal mining including both coal mining exploration and development expenditures.

- 3. Accounting Policies (Continued)**
- 3.2 Significant Accounting Policies (Continued)
- 3.2.14 Property, Plant and Equipment (Continued)

Mining Properties (Continued)

Deferred Mining Exploration and Development Expenditures

Development expenditures and costs of area development are capitalized as mining properties under exploration and evaluation assets and will be classified as mining properties under property, plant and equipment if they meet the criteria and it is highly probable that they can create future economic benefit. However, if it is proved that they cannot create future economic benefit, development expenditures and costs of area development will be fully expensed in the statement of income when incurred.

Depreciation

The capitalized acquisition costs of mining properties are depreciated using the unit of production method based on proved reserves.

The volume of proportional production and the useful lives of coal mining concessions are estimated and reviewed by the Group.

- 3.2.15 Goodwill

The Group initially records goodwill at cost, which equals to the excess of the acquisition costs over the fair value of the net assets acquired, and carries out a test for impairment of goodwill at least once a year or when there are circumstances indicate that an investment might be impaired. Where the fair value of the net assets exceeds the cost of acquisition at the acquisition date, the excess is recognized as a gain in the statement of income.

To test for impairment, the Group allocates goodwill from business combinations to each cash-generating unit (or group of cash-generating units) that is expected to receive benefit from the synergies of the combination. The Group evaluates the recoverable amount of each cash-generating unit (or group of cash-generating units) and if it is lower than the carrying amount of the unit, the Group recognizes impairment losses in profit or loss. Impairment losses of goodwill will not be reversed.

- 3.2.16 Intangible assets

Intangible assets are initially recognized at cost less accumulated amortization and allowance for impairment. Amortization is recorded as expenses in profit or loss.

The Group records the initial costs of intangible assets from business combination at the acquisition-date fair value of the assets. Intangible assets from other sources are initially recognized at their costs.

Intangible assets include computer software licenses, asset rights such as gas transmission pipelines, and other intangible assets, such as other operating rights, patents, and customer contracts.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.16 Intangible assets (Continued)

Intangible assets are amortized and recorded as expenses in profit or loss using the straight-line method over the useful lives of the assets which range from 1 to 40 years, except customer contracts which are amortized based on estimated sales volume.

The Group reviews the residual value, useful lives and amortization methods of intangible assets at least once a year.

3.2.17 Exploration and Evaluation Assets

Petroleum Exploration and Evaluation Assets

Petroleum exploration and evaluation expenditures are capitalized at cost as exploration and evaluation assets. If the projects have identified the proved reserves that have been found to be commercially producible, the capitalized exploration and evaluation expenditures under these projects will be transferred to petroleum exploration and production properties under property, plant and equipment, which are subsequently measured as stated in Note 3.2.14.

The capitalized exploration and evaluation expenditure is charged to statement of income in the period in which the projects have not identified proved reserves or have identified proved reserves, but have not been found to be commercially producible.

Mining Properties

Exploration and evaluation expenditures are capitalized as assets at cost, where:

- a) Such costs are expected to be recovered when the areas are successfully developed and mining operations commence, or from the sales of the areas of interest.
- b) Exploration activities in the areas of interest have not reached the stage which permits a reasonable assessment of the existence of commercial recoverable reserves, and exploration activities in the areas of interest are continuing.

Exploration and evaluation expenditures which do not meet the above criteria will be fully expensed in profit or loss. If the areas are developed and mining operations commence, exploration and evaluation expenditures that capitalized as assets will reclassify to mining properties under property, plant and equipment, which are subsequently measured as stated in Note 3.2.14.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.18 Impairment of Assets

The Group performs the following tests for impairment of assets:

- Goodwill is performed annually or whenever there is an indication that the asset may be impaired.
- Investment properties, property, plant and equipment, intangible assets and exploration and evaluation assets are performed whenever there is an indication that the assets may be impaired.

The Group recognizes an impairment loss when the recoverable amount of an asset is lower than its carrying amount, which is the higher of the asset's fair value less cost to sell and its value in use. The Group determines value in use by estimating the present value of future cash flows generated by the asset, discounted using a pre-tax discount rate which reflects current market assessments of the time value of money and the risk specific to the asset. In determining fair value less costs to sell, an appropriate valuation model is used. The calculation reflects the amount that the Group could obtain from the disposal of the asset after deducting the costs of disposal. Fair value means the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The Group recognizes an impairment loss in profit or loss.

3.2.19 Leases

Finance Leases - Where the Group is the Lessee

Leases of property, plant and equipment, where the Group assumes substantially all the risks and rewards of ownership are classified as finance leases. The leased assets are capitalized at the lower of the estimated net present value of the underlying minimum lease payments or fair value of assets. Each minimum lease payment is allocated between liabilities and finance costs in order to achieve a constant interest rate on the remaining balance of the liabilities. The finance leases' liabilities less finance costs are presented as long-term loans. Finance costs are charged to profit or loss over the lease period. Depreciation is charged over the shorter of the useful life of the asset or the lease period.

Finance Leases - Where the Group is the Lessor

Leases of property, plant and equipment under which the Group transfers substantially all the risks and rewards of ownership to lessees are classified as finance leases. The Group realizes the leased assets under asset in the statement of financial position as loans at an amount equal to the net investment in the lease, and allocates finance income based on a pattern reflecting a constant periodic rate of return on the lessor's net investment outstanding in respect of the finance lease.

Operating Leases - Where the Group is the Lessee

Leases of assets where the lessor assumes a significant portion of the risks and rewards of ownership are classified as operating leases. Payments made under operating leases are charged to profit or loss using the straight-line method over the period of the lease.

The costs incurred upon termination of the operating lease agreements prior their maturity, such as penalty paid to the lessor, are recognized as expenses in the period in which the termination takes place.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.19 Leases (Continued)

Operating Leases - Where the Group is the Lessor

Leases of assets where the lessor assumes a significant portion of the risks and rewards of ownership are classified as operating leases. The assets held for operating leases are stated at cost and presented in the statement of financial position according to the nature of the assets. The group recognizes costs, including depreciation, relating to rental income as expenses and recognizes lease income over the lease term on a straight-line basis.

Accounting for an Arrangement Contains a Lease

The Group determined whether an arrangement contains a lease based on the substance of the arrangement. The arrangement contains a lease which depends on the use of a specific asset and the arrangement conveying to the purchaser (lessee) the right to control the use of the underlying asset.

The Group separates payments for the lease and other elements on the basis of their relative fair values. If the Group concludes that it is a finance lease but it is impracticable to separate the payments reliably, the Group will recognize an asset and a liability at an amount equal to the fair value of the underlying asset. Subsequently, the liability is reduced as payments are made and an imputed finance cost on the liability recognized using the Group's incremental borrowing rate of interest.

3.2.20 Income Taxes

Current Tax

The Group is taxed on its non-promoted businesses pursuant to the Revenue Code of Thailand, the Petroleum Income Tax Act, B.E. 2514 and Amendment, B.E. 2532 and other laws and regulations related to corporate income tax of other countries in which the Group has invested.

Current tax is the expected tax payable on the taxable profit for the year, using tax rates enacted at the statements of financial position date in the taxable period, and any adjustment to tax payable in respect of previous years.

Deferred Tax

Deferred tax is recognized in the statements of financial position using the liability method for temporary differences between tax base of assets and liabilities and the carrying amounts in the financial statements. The principal temporary differences in consolidated financial statements arise from property, plant and equipment, provisions for employee benefit, provision for decommissioning costs, and cumulative loss carried forward.

Deferred tax is measured using the tax rates enacted at the statements of financial position date.

Deferred tax assets are recognized to the extent that it is highly probable that the future taxable profits of the Group will be available against which the temporary differences can be utilized. Deferred tax assets are reduced to the extent that it is no longer probable that the related tax benefits will be realized.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.20 Income Taxes (Continued)

Deferred Tax (Continued)

The Group recognized deferred tax as income or an expense and included in profit or loss for the period, except to the extent that the tax arises from a transaction or event which is recognized outside profit or loss, either in other comprehensive income or directly in equity, or a business combination.

Deferred tax assets and liabilities can only be offset if the entity has the legal right to settle on a net basis and the deferred tax balances relate to the same taxation authority.

The Group offsets deferred tax assets and deferred tax liabilities for presentation in the statement of financial position.

3.2.21 Advance Payments for Gas Purchased under Take-or-Pay Agreements

The Company has entered into gas purchase agreements with natural gas producers, under which the Company is required to take delivery of natural gas at annual minimum quantities. During each contract year, if the Company cannot accept natural gas according to the minimum quantities under the agreements, it is required to pay for the volume of natural gas which it cannot actually take (Take-or-Pay). After the end of each contract year, the Company and the natural gas producers have to agree on and accept the volume of gas that should be taken into the calculation of Take-or-Pay for that contract year, which is subject to the basis and conditions in the agreements. Under the agreements, the Company can take certain volumes of prepaid gas (Make-up) in subsequent years after taking delivery of natural gas at the minimum quantities for that given contract year. The Company recognizes its obligations under the agreements as advance payments for gas purchased.

3.2.22 Provision for Decommissioning Costs

The Group records a provision for decommissioning costs whenever it is highly probable that an obligation will arise as a result of a past event and the amount of the obligation can be reliably estimated.

The Group recognizes a provision for decommissioning costs based on an estimate of the eventual costs relate to the removal of petroleum exploration and production properties and plant and equipment. These costs are included as part of the cost of the assets and are amortized based on proved reserves using the unit of production method and the straight-line method over the estimated useful lives of the assets, respectively. The estimates of decommissioning costs are determined based on reviews and estimates by the Group's engineers and management's judgment.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.23 Provisions for Employee Benefit

Provisions for employee benefit of the Group are measured and recognized as follows:

1. Short-term employee benefits are recognized in profit or loss as expenses when incurred.
2. Post-employment benefits - defined contribution plans
The Group and its employees have jointly established a provident fund. The fund is monthly contributed by employees and by the Group. The fund's assets are held in a separate trust fund and the Group's contributions are recognized as expenses in profit or loss when incurred.
3. Post-employment benefits - defined benefit plans
The provisions under the defined benefit plan is determined based on actuarial techniques, using the projected unit credit method, in order to determine present value of the provisions and be recognized as a liability in the statements of financial position. Current service cost, past service cost, net interest on the net defined benefit liability are recognized as expenses in profit or loss. Remeasurements of the net defined benefit liability or asset, including actuarial gains and losses are recognized in other comprehensive income and accumulated amounts are recognized as retained earnings in equity.
4. Other long-term employment benefits
The provisions under the defined benefit plan is determined based on actuarial techniques, using the projected unit credit method, in order to determine present value of the provisions and be recognized as a liability in the statements of financial position. Current service cost, past service cost, net interest on the net defined benefit liability are recognized as expenses in profit or loss. Remeasurements of the net other long-term benefit liability or asset, including actuarial gains and losses are recognized in profit or loss immediately.
5. Termination benefits are recognized as a liability and an expense when, and only when, the Company is demonstrably committed to either:
 - Terminate the employment of an employee or a group of employees before the normal retirement date; or
 - Provide termination benefits as a result of an offer made in order to encourage voluntary redundancy.

3.2.24 Revenue Recognition

The Group recognizes revenue upon completion and the delivery of promised goods or services to customers at the transaction price which is entitled in exchange for transferring goods or services, in accordance with the principles below.

1. Identify contract(s) with customers
2. Evaluate goods or services in contract(s) and identify separate performance obligations to deliver to customers; it may include implied agreement following to business code of conduct.
3. Determine the reasonable transaction price which the Group expected to be entitled to receive in exchange for transferring promised goods or services to customers, regarding to variable consideration such as discount or fine, non-cash consideration, and significant financial component. The Group shall include the estimated amount of consideration only to which it is highly probable of no significant reversal in cumulative revenue.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.24 Revenue Recognition (Continued)

4. Allocate the transaction price to distinct performance obligations based on relative standalone selling prices.
5. Recognize revenue when the performance obligation is transferred the promised goods or services to customers. The recognized revenue is the amount allocating to performance obligation. The performance obligation may be satisfied at a point in time. For a performance obligation satisfied over time, the Group would measure progress of the performance obligation in order to recognize the revenue.

3.2.25 Government Grants

Government grants, including non-monetary grants, are recognized where there is reasonable assurance that the recipient will comply with all attached conditions and that the grant will be received. The Group recognizes the grants as income on a systematic basis over the periods for which the costs that the government grants are compensating. The Group recognizes the grants as a part of income in profit or loss.

3.2.26 Earnings per Share

Basic earnings per share is calculated by adjusting the profit attributable to owners of the parent with interests and other items related to subordinated capital debentures net of taxes related to such debentures and dividing the adjusted profit by the weighted average number of ordinary shares held by third parties during the year.

3.2.27 Financial Instruments

Financial assets in the statements of financial position include cash and cash equivalents, current investments, trade accounts receivable, other accounts receivable, available-for-sale investments, other long-term investments, lending loans, and derivative assets. Financial liabilities in the statements of financial position include bank overdrafts and short-term loans from financial institutions, trade accounts payable, other accounts payable, loans, and derivative liabilities. The particular recognition methods adopted are disclosed in the individual policy statements associated with each item.

The Group uses financial instruments to reduce its risk exposure associated with fluctuations in foreign currency exchange rates, interest rates as well as oil and product market prices. These instruments primarily comprise:

Forward Foreign Exchange Contracts

Forward foreign exchange contracts protect the Group from fluctuations in exchange rates by establishing the rates at which foreign currency assets will be realized or foreign currency liabilities will be settled. Forward foreign exchange contracts are recognized in the financial statements at inception. The premium or discount on the establishment of each agreement is amortized over the contract period.

- 3. Accounting Policies (Continued)**
- 3.2 Significant Accounting Policies (Continued)
- 3.2.27 Financial Instruments (Continued)

Cross-currency and Interest Rate Swap Contracts

Cross-currency and interest rate swap contracts protect the Group from fluctuations in exchange rates and interest rates. Foreign currency financial assets and liabilities as at the statements of financial position date are protected by cross-currency contracts. The Group recognizes the total amount of interest received from/paid to the counterparties, according to derivatives under cross-currency and interest rate swap contracts in finance costs using the accrual basis and recognizes derivative assets/liabilities of cross-currency and interest rate swap contracts at fair value at the end of reporting period, in the statements of financial position. The Group recognizes movements in the fair value of derivatives in profit or loss.

Oil and Products Hedging Contract

The hedging contracts of oil and product prices aim to reduce the risk exposure associated with fluctuations in the global oil and product market prices in accordance with its purchase and sale agreements by determining its future prices. Gains or losses arising from these contracts are recorded in profit or loss at the maturity date of the contracts.

The risk management policy is described in Note 39.

Hedge Accounting

The Group considers hedge accounting criteria as follows:

For fair value hedges, a change in fair value of the hedging instruments and a change in fair value of the hedged items attributable to the risk being hedged are both recognized in profit or loss.

For cash flow hedges, a change in fair value of the effective portion of the hedging instrument is recognized in other comprehensive income, while a change in fair value of the ineffective portion of the hedging instruments is recognized in profit or loss.

- 3.2.28 Fair Value Measurement

The Group has measured fair value and disclosed the information relating to fair value measurement in accordance with TFRS 13 (revised 2018) "Fair Value Measurement". The guidance under this standard will be applied when the Group requires to measure any assets and liabilities at fair value under relevant standards.

The Group uses the market approach to measure their assets and liabilities that are required to be measured at fair value by relevant financial reporting standards, except that the cost approach or income approach is used when there is no active market or a quoted market price is not available.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.28 Fair Value Measurement (Continued)

Fair Value Hierarchy

In applying the above-mentioned valuation techniques, the Group endeavors to use relevant observable inputs as much as possible by determining a fair value hierarchy that categorizes inputs into three levels as follows:

- Level 1 Use of quoted market prices in an observable active market for such assets or liabilities
- Level 2 Use of other observable inputs for such assets or liabilities, whether directly or indirectly
- Level 3 Used of unobservable inputs for such assets or liabilities such as the Group's estimates of future cash flows

3.2.29 Use of Estimates and Significant Assumptions

The preparation of financial statements in conformity with Thai Financial Reporting Standards requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, income and expenses.

Estimates and underlying assumptions used in the preparation of financial statements are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

Information about significant assumptions and the sources of contingent estimates that might impact on the carrying amounts of assets and liabilities presented in the financial statements are as follows:

Provisions

The Group recognizes a provision in the statements of financial position if, as a result of a past event, the Group has a present obligation that can be estimated reliably and it is probable that an outflow of economic benefits will be required to settle the obligation.

The Group records provisions for decommissioning costs when it is highly probable that a commitment will arise as a result of past circumstances and the amount can be estimated reliably. The Group recognizes the provisions for decommissioning costs based on estimated amount of decommissioning of completed construction that is ready for its intended use. These costs are included as part of assets and are amortized using the units of production method based on estimated proved reserves and the straight-line method over the estimated useful lives of the assets. The provision for decommissioning costs is determined based on reviews and estimates by the Group's engineers together with the management's judgment.

Provisions depend on various current circumstances such as laws and regulations, technologies and market prices. Therefore, the actual result is likely to be different from estimates and assumptions.

- 3. **Accounting Policies** (Continued)
- 3.2 Significant Accounting Policies (Continued)
- 3.2.29 Use of Estimates and Significant Assumptions (Continued)

Income Tax

The Group is responsible for the payment of tax in various countries. When income tax payable is estimated, the Group uses significant judgment due to the numerous transactions and calculations arising from its operations.

The Group recognizes income tax payable based on estimated incremental tax payments. The difference between the actual tax paid and the estimate will affect income tax and deferred tax in the period the difference occurs.

A deferred tax asset will be recognized when it is highly probable that the Group will have sufficient net income against which to utilize the temporary difference. Assumptions related to future taxable income are uncertain and may change affecting the recognition of deferred tax assets.

Estimates of Petroleum Reserves

Petroleum reserves are of fundamental importance when assessing investments in various exploration projects and petroleum production businesses, including impairment testing. Changes in proved reserves will affect the present value of net cash flows and depreciation expenses which are calculated using the unit of production method.

The proved reserves are the volume of commercial petroleum production as of a certain date with a high probability of achievement under current economic conditions and production methods, as well as government's rules and regulations. The proved reserves will be checked and assessed annually by the Group's geologists and reservoir engineers.

Exploration Costs

The petroleum exploration and production businesses capitalize drilling costs as assets. They will be amortized as expenses in profit or loss, except where there is (1) a discovery of proved reserves, or (2) a discovery of commercially adequate reserves whilst having future exploration and assessment plans. The decision to amortize drilling petroleum costs recorded as assets should be made using the assumptions under current circumstances. In case those assumptions change in subsequent accounting periods, the petroleum drilling costs that are capitalized as assets will be written off as expenses in that accounting period.

Impairment of Assets

The Group considers recording an allowance for impairment of assets when an event or a circumstance indicates that the carrying amount of an asset is higher than its recoverable amount, which is the higher of the anticipated discounted cash flows from the continuing use of the asset or the fair value of the asset less any costs of disposal. As a result, the carrying amount of an asset is written down immediately to its recoverable amount. The decrease is recorded in profit or loss. Thus, the loss on impairment of assets excluding goodwill recognized in the prior period will be reversed if the estimates for indicated recoverable amount changes.

3. **Accounting Policies** (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.29 Use of Estimates and Significant Assumptions (Continued)

Impairment of Assets (Continued)

The Group's estimate of the selling price based on global oil market prices, the expected amount of future petroleum production and margin rate in petroleum exploration and production businesses are the key factors in impairment tests. The Group believes that these are the most reasonable indicators for estimating future cash flows which is recoverable amount of value in use. The future petroleum production comprises proved reserves and unproved reserves.

The estimation of discounted future cash flows depends on various factors such as the expected amount of future production, future selling prices, demand and supply in the market, risks and gross margins. The discounted rates used in the calculation of present value of future cash flows depend on the cost of capital of the asset unit.

3.2.30 Capital Risk Management

The capital management objective of the Group is to create returns for shareholders and other stakeholders whilst maintaining a reasonable capital structure to decrease the cost of capital.

3.2.31 Operating Segment

The operating segment information is reported by business segments and based on the internal management reports that are received and regularly reviewed by the Chief Operating Decision Maker (CODM) for allocating resources to the segments and assessing its performance.

4. Reclassification and Adjustment

The Group has reclassified and adjusted the investment properties, property, plant and equipment, exploration and evaluation assets from business acquisitions, and other non-current assets in the current year and comparative consolidated financial statements. However, there is no impact on the consolidated statements of income for the year ended December 31, 2019 and consolidated statements of cash flow for the year ended December 31, 2019.

In addition, on December 18, 2019, the Supreme Court rendered a judgment to the Company on an onshore natural gas pipeline construction project as mentioned in Note 46.7. These transactions have impact on the consolidated and separate statements of financial position as at December 31, 2018 and January 1, 2018, consolidated and separate statements of income, consolidated statements of cash flow for the year ended December 31, 2018.

As aforementioned, the effect of increase (decrease) on the consolidated and separate financial statements are as follows:

	Consolidated financial statements increase (decrease)	Unit: Million Baht Separate financial statements increase (decrease)
Statement of financial position as at January 1, 2018		
• Investment properties (Note 17)	977.47	-
• Property, plant and equipment (Note 18)	5,509.96	1,066.02
• Goodwill (Note 19)	5,006.78	-
• Exploration and evaluation assets (Note 21)	(7,857.80)	-
• Other non-current assets	(5,421.41)	-
• Other accounts payable	1,467.87	1,467.87
• Deferred tax liabilities (Note 22.3)	(2,357.34)	-
• Unappropriated retained earnings	(750.16)	(401.85)
• Other components of equity	26.00	-
• Non-controlling interests	(171.37)	-
Statement of financial position as at December 31, 2018		
• Investment properties (Note 17)	977.47	-
• Property, plant and equipment (Note 18)	6,338.28	1,029.32
• Goodwill (Note 19)	4,971.38	-
• Exploration and evaluation assets (Note 21)	(7,802.24)	-
• Other non-current assets	(6,286.43)	-
• Other accounts payable	1,467.87	1,467.87
• Deferred tax liabilities (Note 22.3)	(2,340.67)	-
• Unappropriated retained earnings	(786.86)	(438.55)
• Other components of equity	28.28	-
• Non-controlling interests	(170.16)	-

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4. Reclassification and Adjustment (Continued)

	Consolidated financial statements increase (decrease)	Unit: Million Baht Separate financial statements increase (decrease)
Statement of income for the year ended December 31, 2018		
• Cost of sales	36.70	36.70
• Profit for the year	(36.70)	(36.70)
Statement of comprehensive income for the year ended December 31, 2018		
Items that will be reclassified subsequently to profit or loss		
• Currency translation differences	3.49	-
• Total comprehensive income for the year	3.49	-
Statement of cash flow for the year ended December 31, 2018		
• Net cash provided by operating activities	1,604.30	-
• Net cash used in investing activities	(1,604.30)	-

5. Cash and Cash Equivalents

Cash and cash equivalents as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Cash on hand	555.87	1,885.77	10.57	9.77
Call deposits held at banks	192,073.45	119,956.06	36,016.15	40,015.70
Fixed deposits within 3 months	87,461.44	126,019.92	5,008.14	21,237.82
Treasury bills	593.32	16,736.58	-	-
Promissory notes	1,000.00	50.07	-	-
Bonds	5,445.95	24,940.76	5,445.95	24,940.76
Restricted bank cash	575.19	1,087.99	-	-
Other investments	4,837.24	1,507.17	-	-
Total	292,542.46	292,184.32	46,480.81	86,204.05

Call deposits held at banks, fixed deposits within 3 months, treasury bills, promissory notes, bonds, restricted bank cash and other investments, as at December 31, 2019 bear the interest at rates ranging from 0.00% - 7.00% per annum (December 31, 2018: interest rates ranging from 0.00% - 6.08% per annum).

6. Current Investments

Current investments as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Fixed deposits	17,364.83	103,566.72	1,238.85	7,412.36
Treasury bills	-	398.38	-	398.38
Promissory notes	-	349.10	-	-
Bonds	-	2,293.92	-	1,297.84
Other investments	20,898.48	35,812.62	13,763.49	12,863.38
Total	38,263.31	142,420.74	15,002.34	21,971.96

Current investments as at December 31, 2019 bear the interest at rates ranging from 0.75% - 3.60% per annum (December 31, 2018: interest rates ranging from 0.00% - 3.28% per annum).

7. Trade Accounts Receivable

Trade accounts receivable as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Trade accounts receivable - others	166,557.70	169,681.36	55,462.29	69,440.91
<u>Less</u> Allowance for doubtful accounts	(3,126.99)	(3,083.52)	(1,885.88)	(1,889.06)
Trade accounts receivable - others - net	163,430.71	166,597.84	53,576.41	67,551.85
Trade accounts receivable - related parties - net (Note 10.1)	4,210.31	8,006.86	57,981.55	71,124.00
Total	167,641.02	174,604.70	111,557.96	138,675.85

Aging analysis is as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Within credit terms	161,974.85	171,248.71	108,240.53	137,068.82
Overdue				
- Within 3 months	5,216.34	2,730.43	3,005.71	993.14
- Over 3 - 6 months	82.97	506.99	43.58	517.70
- Over 6 - 12 months	381.51	198.70	249.01	147.44
- Over 12 months	3,112.34	3,046.51	1,905.01	1,837.81
	170,768.01	177,731.34	113,443.84	140,564.91
<u>Less</u> Allowance for doubtful accounts	(3,126.99)	(3,126.64)	(1,885.88)	(1,889.06)
Total	167,641.02	174,604.70	111,557.96	138,675.85

Trade accounts receivable - others as at December 31, 2019 include receivables from government agencies and state enterprises in the consolidated financial statements amounting to Baht 21,957.74 million (December 31, 2018: Baht 20,834.35 million), and in the separate financial statements amounting to Baht 14,679.54 million (December 31, 2018: Baht 17,945.50 million).

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8. Other Accounts Receivable

Other accounts receivable as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2019	2018	2019	2018
Other accounts receivable	18,649.87	37,906.98	1,660.41	1,473.57
<u>Less Allowance for doubtful accounts</u>	<u>(713.13)</u>	<u>(628.18)</u>	<u>(432.07)</u>	<u>(427.97)</u>
Other accounts receivable	17,936.74	37,278.80	1,228.34	1,045.60
Advance payments	8,546.03	16,199.20	291.65	270.44
Refund receivable from the Oil Stabilization Fund	16,115.89	19,691.94	5,538.52	13,204.37
Current tax assets	5,557.52	3,491.54	-	-
Other accounts receivable - others - net	48,156.18	76,661.48	7,058.51	14,520.41
Other accounts receivable - related parties - net (Note 10.2)	1,009.94	1,709.97	1,099.34	2,440.04
Advance payments - related parties (Note 10.2)	445.63	455.62	246.34	353.73
Total	<u>49,611.75</u>	<u>78,827.07</u>	<u>8,404.19</u>	<u>17,314.18</u>

The refund receivable from the Oil Stabilization Fund mostly comprises compensation for locally manufactured oil and liquefied petroleum gas (LPG), or imported LPG for local uses, as well as compensation for Natural Gas for Vehicles (NGV) prices. The compensation rates are determined by the Committee of Energy Policy Administration.

9. Lending Loans

9.1 Short-term lending loans as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Current portion of finance lease receivable - others	1,106.23	700.86	-	-
Current portion of finance lease receivable - related parties (Note 10.2)	4.59	3.95	-	-
Short-term lending loans - others	-	835.97	-	-
Short-term lending loans - related parties	1,558.40	843.83	21,369.27	7,334.32
<u>Less</u> Allowance for doubtful accounts	-	(601.69)	-	-
Short-term lending loans - related parties - net (Note 10.2)	1,558.40	242.14	21,369.27	7,334.32
Total	2,669.22	1,782.92	21,369.27	7,334.32

9.2 Long-term lending loans as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Long-term finance lease receivable - others	7,578.47	4,653.33	-	-
Long-term finance lease receivable - related parties (Note 10.3)	50.90	52.71	-	-
Long-term lending loans - others	1,230.39	2,979.62	-	-
Long-term lending loans - related parties	3,614.65	6,177.05	24,981.89	32,895.68
<u>Less</u> Allowance for doubtful accounts	-	-	-	-
Long-term lending loans - related parties - net (Note 10.3)	3,614.65	6,177.05	24,981.89	32,895.68
Total	12,474.41	13,862.71	24,981.89	32,895.68

10. Related Party Transactions

In the separate financial statements, significant transactions carried out with related parties include discontinued operations

Significant transactions carried out with related parties are as follows:

10.1 Trade accounts receivable - related parties as at December 31, 2019 and 2018

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Subsidiaries	-	-	55,738.66	65,585.72
Joint ventures	2,188.15	3,747.90	1,000.49	2,213.24
Associates	1,055.66	1,318.08	286.88	341.80
Other related parties	996.50	2,984.00	955.52	2,983.24
	4,210.31	8,049.98	57,981.55	71,124.00
<u>Less</u> Allowance for doubtful accounts	-	(43.12)	-	-
Total (Note 7)	4,210.31	8,006.86	57,981.55	71,124.00

Aging analysis is as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Within credit terms	4,163.60	7,982.56	57,981.38	71,040.94
Overdue				
- Within 3 months	34.53	23.87	0.17	10.06
- Over 3 - 6 months	2.88	-	-	73.00
- Over 6 - 12 months	9.27	-	-	-
- Over 12 months	0.03	43.55	-	-
	4,210.31	8,049.98	57,981.55	71,124.00
<u>Less</u> Allowance for doubtful accounts	-	(43.12)	-	-
Total (Note 7)	4,210.31	8,006.86	57,981.55	71,124.00

10. Related Party Transactions (Continued)

10.2 Other accounts receivable, advance payments, current portion of finance lease receivable, and short-term lending loans - related parties as at December 31, 2019 and 2018

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
<u>Other accounts receivable</u>				
Subsidiaries	-	-	1,061.99	2,420.38
Joint ventures	322.26	416.42	29.09	16.18
Associates	207.52	358.17	6.06	2.91
Other related parties	480.16	1,018.76	2.20	0.57
	1,009.94	1,793.35	1,099.34	2,440.04
<u>Less</u> Allowance for doubtful accounts	-	(83.38)	-	-
Total (Note 8)	1,009.94	1,709.97	1,099.34	2,440.04
<u>Advance payments</u>				
Subsidiaries	-	-	6.38	73.77
Other related parties	445.63	455.62	239.96	279.96
Total (Note 8)	445.63	455.62	246.34	353.73

10. Related Party Transactions (Continued)

10.2 Other accounts receivable, advance payments, current portion of finance lease receivable, and short-term lending loans - related parties as at December 31, 2019 and 2018 (Continued)

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
<u>Current portion of finance lease receivable</u>				
Joint ventures (Note 9.1)	4.59	3.95	-	-
<u>Short-term lending loans</u>				
Subsidiaries	-	-	21,369.27	7,334.32
Joint ventures	1,558.40	843.83	-	-
	1,558.40	843.83	21,369.27	7,334.32
<u>Less Allowance for doubtful accounts</u>	-	(601.69)	-	-
Total (Note 9.1)	1,558.40	242.14	21,369.27	7,334.32

Movements in short-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Balance as at January 1	242.14	-	2,500.00	-
- Payment for loans granted	-	369.65	33,114.58	2,990.02
- Receipt from loans granted	(224.91)	-	(29,709.93)	(899.08)
- Gain (loss) on exchange rate	(17.23)	7.33	8.08	(19.78)
- Disposal	(575.64)	-	-	-
- Reversal (recognition) of allowance for doubtful accounts	575.64	(134.84)	-	428.84
Balance as at December 31	-	242.14	5,912.73	2,500.00
<u>Add Current portion (Note 10.3)</u>	1,558.40	-	15,456.54	4,834.32
Balance as at December 31 - net	1,558.40	242.14	21,369.27	7,334.32

Short-term lending loans - related parties as at December 31, 2019 in the separate financial statements bear the interest at rates ranging from 1.15% - 3.25% per annum (December 31, 2018 in the consolidated financial statements bear the interest at rates ranging from 3.21% - 3.71% per annum and in the separate financial statements bear the interest at rates 2.81% per annum).

10. Related Party Transactions (Continued)

10.3 Long-term finance lease receivable and long-term lending loans - related parties as at December 31, 2019 and 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
<u>Long-term finance lease receivable</u>				
Joint ventures (Note 9.2)	50.90	52.71	-	-
<u>Long-term lending loans</u>				
Subsidiaries	-	-	24,981.89	32,895.68
Joint ventures	803.69	3,651.76	-	-
Associates	2,810.96	2,525.29	-	-
	3,614.65	6,177.05	24,981.89	32,895.68
<u>Less Allowance for doubtful accounts</u>	-	-	-	-
Total (Note 9.2)	3,614.65	6,177.05	24,981.89	32,895.68

10. Related Party Transactions (Continued)

10.3 Long-term finance lease receivable and long-term lending loans - related parties as at December 31, 2019 and 2018 (Continued)

Details of finance lease receivable - related parties as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2019	2018	2019	2018
Finance lease receivable				
- Within 1 year	6.67	6.00	-	-
- Over 1 year but not over 5 years	26.60	24.00	-	-
- Over 5 years	34.00	40.00	-	-
Future finance income	(11.78)	(13.34)	-	-
Total	<u>55.49</u>	<u>56.66</u>	<u>-</u>	<u>-</u>

Movements in long-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2019	2018	2019	2018
Balance as at January 1	6,177.05	9,282.31	37,730.00	27,403.48
- Payment for loans granted	837.24	9.95	30,992.12	26,310.00
- Receipt from loans granted	(1,834.84)	(3,212.38)	(28,115.28)	(36,949.24)
- Gain (loss) on exchange rate	(215.66)	98.22	(168.41)	(1,154.76)
- Business acquisition	220.00	-	-	-
- Currency translation differences	(10.74)	(1.05)	-	-
- Reversal of allowance of doubtful accounts	-	-	-	22,120.52
Balance as at December 31	<u>5,173.05</u>	<u>6,177.05</u>	<u>40,438.43</u>	<u>37,730.00</u>
<u>Less</u> Current portion (Note 10.2)	<u>(1,558.40)</u>	<u>-</u>	<u>(15,456.54)</u>	<u>(4,834.32)</u>
Balance as at December 31 - net	<u>3,614.65</u>	<u>6,177.05</u>	<u>24,981.89</u>	<u>32,895.68</u>

Long-term lending loans - related parties as at December 31, 2019 in the consolidated financial statements bear the interest at rates ranging from 3.00% - 7.38% per annum (December 31, 2018: interest at rates ranging from 3.66% - 6.94% per annum), and in the separate financial statements bear the interest at rates ranging from 2.57% - 4.68% per annum (December 31, 2018: interest at rates ranging from 2.88% - 4.68% per annum).

10. Related Party Transactions (Continued)

10.4 Trade accounts payable - related parties as at December 31, 2019 and 2018

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Subsidiaries	-	-	29,990.07	38,012.70
Joint ventures	807.72	1,078.38	245.62	260.85
Associates	337.71	320.34	-	-
Other related parties	4.49	8.51	-	-
Total	1,149.92	1,407.23	30,235.69	38,273.55

10.5 Other accounts payable, current portion of finance lease liabilities, and short-term loans - related parties as at December 31, 2019 and 2018

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
<u>Other accounts payable</u>				
Subsidiaries	-	-	6,696.00	11,927.90
Joint ventures	58.38	46.58	15.48	7.25
Associates	19.37	24.23	12.12	16.31
Other related parties	51.18	88.86	35.43	57.51
Total	128.93	159.67	6,759.03	12,008.97

Current portion of finance lease liabilities

Subsidiaries	-	-	0.77	-
Joint venture	374.86	400.42	374.86	400.42
Total	374.86	400.42	375.63	400.42

Short-term loans*

Subsidiaries	-	-	3,487.56	3,332.70
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*The Company has liquidity management policies within the Group include the use of the cash pooling method. Inter-company loans were used for short-term financial management of cash surpluses or deficits of each affiliate. Interests on these were calculated by using market interest rates.

10. Related Party Transactions (Continued)

10.6 Long-term finance lease liabilities and long-term loans - related parties as at December 31, 2019 and 2018

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
<u>Long-term finance lease liabilities</u>				
Subsidiaries	-	-	2.98	-
Joint venture	3,180.60	3,841.51	3,180.60	3,841.51
Total	3,180.60	3,841.51	3,183.58	3,841.51

Long-term loans

Subsidiaries	-	-	23,872.73	-
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Details of finance lease liabilities - related parties as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Finance lease liabilities				
- Within 1 year	422.95	453.54	424.00	453.54
- Over 1 year but not over 5 years	1,688.31	1,815.42	1,691.73	1,815.42
- Over 5 years	1,688.31	2,270.20	1,688.31	2,270.20
Future finance charges	(244.11)	(297.23)	(244.83)	(297.23)
Total	3,555.46	4,241.93	3,559.21	4,241.93

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10. Related Party Transactions (Continued)

10.6 Long-term finance lease liabilities and long-term loans - related parties as at December 31, 2019 and 2018 (Continued)

Movements in long-term loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Balance as at January 1	-	-	-	-
- Receipt from loans	-	-	24,031.00	-
- Gain on exchange rate	-	-	(158.27)	-
Balance as at December 31	-	-	23,872.73	-
<u>Less</u> Current portion	-	-	-	-
Balance as at December 31 - net	-	-	23,872.73	-

Long-term loans - related parties as at December 31, 2019 in the separate financial statements bear the interest at rates ranging from 4.95% - 6.38% per annum.

10. Related Party Transactions (Continued)

10.7 Revenue and expense transactions carried out with related parties

For the years ended December 31, 2019 and 2018

	Consolidated		Unit: Million Baht	
	financial statements		Separate financial statements	
	2019	2018	2019	2018
Revenues				
<u>Sales and service income</u>				
Subsidiaries	-	-	634,492.33	779,669.46
Joint ventures	23,455.62	26,668.00	12,630.61	14,684.61
Associates	13,679.54	15,619.60	3,595.99	3,508.30
Other related parties	11,885.12	14,117.04	11,868.71	14,104.03
<u>Interest income</u>				
Subsidiaries	-	-	1,834.77	1,183.95
Joint ventures	161.44	280.09	-	-
Associates	170.44	160.11	-	-
<u>Dividend income</u>				
Subsidiaries	-	-	28,896.20	33,810.30
Joint ventures	-	-	657.21	610.12
Associates	-	-	-	684.21
Other related parties	293.00	253.43	116.00	112.00
<u>Other income</u>				
Subsidiaries	-	-	8,103.35	90,701.41
Joint ventures	389.53	311.71	117.72	84.00
Associates	244.43	75.00	18.63	45.94
Other related parties	107.00	47.51	43.47	46.67
Expenses				
<u>Cost of goods purchased and services</u>				
Subsidiaries	-	-	288,485.19	475,921.74
Joint ventures	8,369.60	9,571.74	1,406.76	1,530.35
Associates	3,469.02	3,487.43	0.31	1,126.98
Other related parties	1,335.03	1,294.43	257.36	304.35
<u>Interest expenses</u>				
Subsidiaries	-	-	224.32	35.18
Joint ventures	53.12	58.10	53.12	58.10
<u>Other expenses</u>				
Subsidiaries	-	-	3,878.49	3,739.28
Joint ventures	11.47	166.20	0.03	0.14
Associates	82.09	54.40	4.20	4.52
Other related parties	381.57	408.66	144.13	226.10

10. Related Party Transactions (Continued)

10.7 Revenue and expense transactions carried out with related parties (Continued)

The aforementioned related party transactions exclude transactions carried out with government agencies and state enterprises.

Stipulation prices between the Company and its related parties are based on normal prices for the same types of business transactions carried out with non-related parties. Goods purchased from subsidiaries are charged at the normal prices determined by the subsidiaries with reference to global market prices.

10.8 Details of commitments to subsidiaries and joint ventures are stated in Note 46.1.

10.9 Crude oil and refined product purchase and sale transactions carried out with related parties without physical delivery, with the objective of maintaining crude oil and refined product reserves and inventory management, were reversed in the financial statements.

Detail of these transactions for the years ended December 31, 2019 and 2018 are as follow:

	Consolidated		Unit: Million Baht Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
<u>Sales</u>				
Subsidiaries	-	-	4,752.72	3,135.86
<u>Purchases</u>				
Subsidiaries	-	-	4,820.16	3,249.95

10.10 Executive remunerations

Detail of executive remunerations for the years ended December 31, 2019 and 2018 are as follows:

	Consolidated		Unit: Million Baht Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
<u>Directors remuneration</u>				
Meeting remuneration and bonuses	503.67	386.42	64.41	62.35
<u>Managements remuneration</u>				
Salaries, bonuses, and other employee benefits	1,230.29	1,100.95	94.67	97.57
Post-employment benefits	56.02	14.52	2.14	2.35
Total (Note 35)	1,789.98	1,501.89	161.22	162.27

Managements are those persons who have authority and responsibility for planning, directing and controlling the activities of an entity, directly or indirectly.

11. Inventories

Inventories as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Oil products	86,698.62	88,625.35	2,492.12	5,653.44
Gas products	2,867.37	4,648.77	2,398.14	4,150.09
Petrochemicals products	25,173.33	32,596.48	33.59	502.44
Others	4,623.42	4,022.72	509.85	512.93
	119,362.74	129,893.32	5,433.70	10,818.90
<u>Less</u> Allowance for decline in value of inventories and obsolescence	(1,615.78)	(4,613.50)	(636.50)	(571.41)
Total	117,746.96	125,279.82	4,797.20	10,247.49

The Fuel Oil Trading Act B.E. 2543 was amended by The Fuel Oil Trading Act (No.2) B.E. 2550 in accordance with Notification of the Department of Energy Business "Determination of Types, Rates, Criteria, Methods, and Conditions for Calculation of Oil Reserves B.E. 2558". This Act prescribes that oil traders under section 7 must reserve crude oil and petroleum products at rates ranging from 1% - 20% of the total production output or imported volume. Inventories - legal reserves as at December 31, 2019 in the consolidated financial statements amounting to Baht 24,732.99 million (December 31, 2018: Baht 26,382.19 million), and in the separate financial statements amounting to Baht 802.20 million (December 31, 2018: Baht 853.07 million). These amounts were net of allowance for net realizable value.

The cost of inventories recognized as expenses and included in cost of sales for the years ended December 31, 2019 and 2018 comprise:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Cost of sales	1,891,038.67	1,734,967.60	1,140,733.49	1,567,916.35
Allowance for (reversal of) decline in value of inventories and obsolescence	(2,997.72)	4,211.19	65.09	242.13
Total	1,888,040.95	1,739,178.79	1,140,798.58	1,568,158.48

12. Materials and Supplies

Materials and supplies as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Spare parts, equipment and others	36,269.15	30,390.29	5,838.42	5,594.67
<u>Less</u> Allowance for obsolescence	<u>(1,890.01)</u>	<u>(1,518.64)</u>	<u>(94.24)</u>	<u>(53.94)</u>
Total	<u>34,379.14</u>	<u>28,871.65</u>	<u>5,744.18</u>	<u>5,540.73</u>

13. The Restructuring of the Oil Business Unit

On June 18, 2018, the Company and PTT Oil and Retail Business Public Co., Ltd. (OR) successfully executed the Business Transfer Agreement to transfer various assets and liabilities, and shares of related companies (BAFS, PTTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT) to OR. The Company has commenced the process of transferring various assets and liabilities, and shares of related companies to OR since July 1, 2018. The business transfer price is Baht 117,203.26 million. On June 28, 2018, OR made the initial payment of Baht 85,366.92 million to the Company. Then, OR made the remaining payment of Baht 31,836.34 million on September 28, 2018.

The valuation of the business transferred had been evaluated by financial advisors following relevant international standards in order to provide the most reasonable prices.

In cases where the registration process for the transfer of various assets and liabilities is not completed within 6 months after the date of the business transfer, the Company must comply with the conditions under the Business Transfer Agreement, whereby the Company has to transfer the right of ownership and use in assets to OR, which is entitled to benefits, interests or profits from the assets under the agreement from the date of the business transfer until the registration process is completed.

On February 28, 2019, the Company and OR successfully executed the memorandum for the revision of the Business Transfer Agreement for extending the period for the process of registering the transfer of ownership in assets, rights, duties and responsibilities under agreements, in accordance with the Business Transfer Agreement. In cases where the registration process is not completed within December 31, 2019, the Company and OR will consider the best solution in order to achieve their interests.

On January 12, 2020, the Company and OR successfully executed the memorandum for the revision of the Business Transfer Agreement for extending the period for the process of registering the transfer of ownership in assets, rights, duties and responsibilities under agreements, in accordance with the Business Transfer Agreement, whereby it is to be completed within December 31, 2020. This Agreement is effective on January 1, 2020. As at December 31, 2019, some assets and contracts have not yet been transferred.

As a result of the Business Transfer Agreement, the Company presented the operating results of the related oil business unit as discontinued segment. The Company presented the operating results of the discontinued segment separately from those of the normal operation in the separate financial statements. The Company reclassified the transactions of this segment that were undertaken in 2018. However, the Company presented the statement of cash flows before the deduction of discontinued operations' portion.

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13. The Restructuring of the Oil Business Unit (Continued)

The operating results of the discontinued operations in the financial information for the year ended December 31, 2018 are as follows:

	Unit: Million Baht Separate financial statements
	<u>2018</u>
Statement of income	
Sales and service income	288,790.50
Cost of sales and services	<u>(271,949.15)</u>
Gross profit	16,841.35
Other income	2,432.59
Gain on foreign exchange rates	<u>285.71</u>
Profit before expenses	19,559.65
Selling and distribution expenses	(7,424.75)
Administrative expenses	<u>(3,820.15)</u>
Profit before finance costs and income taxes	8,314.75
Finance costs	<u>(3.82)</u>
Profit before income taxes	8,310.93
Income taxes	<u>(1,967.25)</u>
Profit for the year from discontinued operations, net of tax	6,343.68
Gain on disposal of discontinued operations	80,659.17*
Income taxes on gain on disposal of discontinued operations	<u>(16,241.13)*</u>
Total profit for the year from discontinued operations, net of tax	<u><u>70,761.72</u></u>

* Include gain and income taxes relating to the reclassification adjustment resulting from sale of available-for-sale investment.

13. The Restructuring of the Oil Business Unit (Continued)

The operating results of the discontinued operations in the financial information for the year ended December 31, 2018 are as follows: (Continued)

	Unit: Million Baht Separate financial statements
	<u>2018</u>
Statement of comprehensive income	
Items that may be reclassified to profit or loss in subsequent periods	
Loss on measurement of available-for-sale investments	(2,079.75)
Income taxes related to available-for-sale investments	<u>415.95</u>
Other comprehensive loss for the year from discontinued operations, net of tax	<u>(1,663.80)*</u>

* Include losses relating to the reclassification adjustment of Baht 1,114.80 million due to sale of available-for-sale investment.

Overall, there is no impact on the consolidated financial statements from the disposal of discontinued operations since this transaction is the business combination under common control, except for the impact of income taxes related to the disposal of discontinued operations of Baht 6,032.97 million to the consolidated financial statements. Income taxes stand for current tax net of deferred tax.

Net cash flows of the discontinued operations for the year ended December 31, 2018 are as follows:

	Unit: Million Baht Separate financial statements
	<u>2018</u>
Net cash provided by operating activities	1,273.75
Net cash used in investing activities	<u>(3,563.77)</u>
Net cash used in the discontinued operations	<u>(2,290.02)</u>

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14. Available-for-sale Investments**14.1 Details of available-for-sale investments as at December 31, 2019 and 2018**

Company name	Country of Incorporation	Business	Unit: Million Baht							
			Ownership interest (%)		Consolidated financial statements		Separate financial statements		Dividends income	
			2019	2018	2019	2018	2019	2018	2019	2018
Investments in Equity Securities										
<i>The Company</i>										
Dhipaya Insurance Public Co., Ltd. (TIP)	Thailand	Insurance	13.33	13.33	312.00	312.00	312.00	312.00	116.00	112.00
<i>PTTEP Group</i>										
Wentworth Resources Limited (WRL)	Canada	Oil and natural gas exploration	1.18	1.18	33.59	34.91	-	-	0.32	-
<i>OR Group</i>										
Bangkok Aviation Fuel Services Public Co., Ltd. (BAFS)	Thailand	Aircraft refuelling services	7.06	7.06	24.00	24.00	-	-	61.65	56.70
<i>IRPC Group</i>										
Bangkok Union Insurance Public Co., Ltd. (BUJ)	Thailand	Insurance	0.35	0.35	2.35	2.35	-	-	-	-
TPI Polene Public Co., Ltd. (TIPL)	Thailand	Property, construction and petrochemicals	0.14	0.14	64.86	64.86	-	-	1.43	0.62
<i>PTTGM Group</i>										
Xanadu Mines Ltd. (XML)	Mongolia	Mineral exploration	3.46	3.80	221.28	238.13	-	-	-	-
Total					658.08	676.25	312.00	312.00		
Investment in Debt Securities										
<i>PTTGC Group</i>										
Debt Securities Available for Sale (in Private Fund) (DSAFS)	Thailand	Private Fund			1,481.91	5,967.16	-	-	-	-
Total					1,481.91	5,967.16	-	-		

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14. Available-for-sale Investments (Continued)

14.1 Details of available-for-sale investments as at December 31, 2019 and 2018 (Continued)

Company name	Country of Incorporation	Business	Unit: Million Baht							
			Ownership interest (%)		Consolidated financial statements		Separate financial statements		Dividends income	
			2019	2018	2019	2018	2019	2018	2019	2018
Investments in Mutual Funds										
<i>The Company</i>										
Corporate Venture Capital Fund (CVC)	United States of America/England/Japan/Netherlands	Mutual fund			627.59	386.48	627.59	386.48	-	-
<i>The Group</i>										
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)*	Thailand	Mutual fund			854.03	854.03	254.03	254.03	21.70	8.68
Vayupak Fund 1 (VAYU1)**	Thailand	Mutual fund			14.64	15.00	10.00	10.00	0.09	0.09
Total					1,496.26	1,255.51	891.62	650.51		
Total available-for-sale investments before changes in value of investments					3,636.25	7,898.92	1,203.62	962.51		
Allowance for changes in value					3,086.73	3,015.36	1,783.08	1,617.05		
Less Allowance for impairment					(35.63)	(38.35)	-	-		
Total					6,687.35	10,875.93	2,986.70	2,579.56	201.19	178.09

* Held by the Company, PTTGC Group and TOP Group

** Held by the Company, PTTPLNG, EnCo, PTTTFC, PTT TANK Group, PTTNGD Group, OR Group, PTTT Group and PTTER Group

14. Available-for-sale Investments (Continued)

14.2 Movements in available-for-sale investments are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
As at January 1,	10,875.93	17,602.41	2,579.56	4,533.10
- Additional investments	241.11	177.49	241.11	177.49
- Reclassifications	-	(3,284.29)	-	-
- Disposal of investments	(4,485.58)	(2,737.43)	-	(24.00)
- Unrealized gain (loss) on available-for-sale investments	60.26	(880.56)	166.03	(2,107.03)
- Currency translation differences	(4.37)	(1.69)	-	-
As at December 31,	<u>6,687.35</u>	<u>10,875.93</u>	<u>2,986.70</u>	<u>2,579.56</u>

15. Investments in Subsidiaries, Joint Ventures and Associates

15.1 Details of subsidiaries and joint operations of the subsidiaries

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of PTTEP Group:</u>				
PTTEP International Limited (PTTEPI)	Thailand	Petroleum	100.00	100.00
PTTEP Offshore Investment Company Limited (PTTEPO)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Southwest Vietnam Company Limited (PTTEP SV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Kim Long Vietnam Company Limited (PTTEP KV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Hoang-Long Company Limited (PTTEP HL)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Hoan-Vu Company Limited (PTTEP HV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Algeria Company Limited (PTTEP AG)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Services Limited (PTTEP Services)	Thailand	Human resource support	100.00	100.00
PTTEP Siam Limited (PTTEPS)	Thailand	Petroleum	100.00	100.00
PTTEP Holding Company Limited (PTTEPH)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Indonesia Company Limited (PTTEP ID)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Africa Investment Limited (PTTEP AI)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Australia Pty Limited (PTTEP AU)	Australia	Petroleum	100.00	100.00
PTTEP South Asia Limited (PTTEP SA)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Semai II Limited (PTTEP SM)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Australia Perth Pty Limited (PTTEP AP)	Australia	Petroleum	100.00	100.00
PTTEP International Holding Co., Ltd. (PTTEP IH)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Southwest Vietnam Pipeline Co., Ltd. (PTTEP SVPC)	Cayman Islands	Gas transmission pipelines	100.00	100.00
PTTEP FLNG Holding Co., Ltd. (PTTEP FH)*	Hong Kong	Petroleum	100.00	100.00
PTTEP Netherland Holding Limited (PTTEP NL)	Cayman Islands	Petroleum	100.00	100.00
JV Marine Limited (JV Marine)	Cayman Islands	Petroleum	100.00	100.00
PTTEP South Mandar Limited (PTTEP SMD)	Cayman Islands	Petroleum	100.00	100.00
PTTEP South Sageri Limited (PTTEP SS)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Sadang Limited (PTTEP SD)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Malunda Limited (PTTEP ML)	Cayman Islands	Petroleum	100.00	100.00

* On August 24, 2017, PTTEP approved for the registration for the dissolution of PTTEP FH. It is currently in process of dissolution.

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of PTTEP Group: (Continued)</u>				
PTTEP Netherlands Coöperatie U.A. (PTTEP NC)	Netherlands	Petroleum	100.00	100.00
PTTEP Canada Limited (PTTEP CA)	Canada	Petroleum	100.00	100.00
PTTEP Canada International Finance Limited (PTTEP CIF)	Canada	Funding services for the Group's business	100.00	100.00
PTTEP HK Holding Limited (PTTEP HK)	Hong Kong	Petroleum	100.00	100.00
PTTEP Netherlands Holding Coöperatie U.A. (PTTEP NH)	Netherlands	Petroleum	100.00	100.00
PTTEP Brazil Investment B.V. (PTTEP BI)	Netherlands	Petroleum	100.00	100.00
PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL)	Brazil	Petroleum	100.00	100.00
PTTEP Australia Offshore Pty Ltd (PTTEP AO)	Australia	Petroleum	100.00	100.00
PTTEP Australia Browse Basin Pty Ltd (PTTEP AB)	Australia	Petroleum	100.00	100.00
PTTEP Australia Timor Sea Pty Ltd (PTTEP AT)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Operations) Pty Ltd (PTTEP AAO)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AAA)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Staff) Pty Ltd (PTTEP AAS)	Australia	Petroleum	100.00	100.00
Cove Energy Limited (Cove)	England	Petroleum	100.00	100.00
Cove Energy Mozambique Rovuma Onshore Limited (CEMROL)*	Cyprus	Petroleum	100.00	100.00
Cove Energy East Africa Limited (CEEAL)	Cyprus	Petroleum	100.00	100.00
PTTEP Mozambique Area 1 Limited (PTTEP MZA1)	Cyprus	Petroleum	100.00	100.00
Cove Energy Kenya Limited (CEKL)*	Kenya	Petroleum	100.00	100.00
Sinphuhorm Holdings Limited (SHL)	Cayman Islands	Petroleum	100.00	100.00
PTTEP SP Limited (PTTEP SP)	England	Petroleum	100.00	100.00
PTTEP G7 Limited (PTTEP G7)	Thailand	Petroleum	100.00	100.00
PTTEP HK Offshore Limited (PTTEP HKO)	Hong Kong	Petroleum	100.00	100.00
PTTEP Treasury Center Company Limited (PTTEP TC)	Thailand	Treasury center for the Group's business	100.00	100.00
PTTEP Business Center Company Limited (PTTEP BC)	Thailand	Petroleum	100.00	100.00
PTTEP Mexico E&P Limited, S. de R.L. de C.V. (PTTEP MEP)	Mexico	Petroleum	100.00	100.00

* On May 22, 2017, PTTEP approved for the registration for the dissolution of CEMROL and CEKL. They are currently in process of dissolution.

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of PTTEP Group: (Continued)</u>				
PTTEP Energy Holding (Thailand) Company Limited (PTTEP EH)	Thailand	Petroleum	100.00	100.00
PTTEP Energy Development Company Limited (PTTEP ED)	Thailand	Petroleum	100.00	100.00
EP-Tech Ventures Holding Company Limited (EP-Tech)	Thailand	Petroleum related Technology	100.00	100.00
AI and Robotics Ventures Company Limited (ARV)	Thailand	Technology	100.00	100.00
PTTEP MENA Limited (PTTEP MENA)	Hong Kong	Petroleum	100.00	100.00
PTTEP Sabah Oil Limited (PTTEP SBO)	Bahamas	Petroleum	100.00	-
PTTEP Sarawak Oil Limited (PTTEP SKO)	Bahamas	Petroleum	100.00	-
Partex Holding B.V. (PHBV)	Netherlands	Petroleum	100.00	-
Partex Oil and Gas (Holdings) Corporation (POGHC)	Cayman Islands	Petroleum	100.00	-
Partex (Kazakhstan) Corporation (PKC)	Cayman Islands	Petroleum	100.00	-
Partex (Angola) Corporation (PANG)	Cayman Islands	Petroleum	100.00	-
Partex (Brazil) Corporation (PBC)	Cayman Islands	Petroleum	100.00	-
Partex Gas Corporation (PGC)	Panama	Petroleum	100.00	-
Partex Services Corporation (PSC)	Panama	Human resource support	100.00	-
Participations and Explorations Corporation (PEC)	Panama	Petroleum	100.00	-
Partex (Oman) Corporation (POC)	Panama	Petroleum	100.00	-
Partex Services Portugal – Serviços para a Indústria Petrolífera, S.A. (PSP)	Portugal	Human resource support	100.00	-
Partex Brasil Ltda. (PBL)	Brazil	Petroleum	100.00	-
Partex Brasil Operações Petrolíferas Ltda (PBO)	Brazil	Human resource support	100.00	-
<u>Subsidiary of PTTNGD Group:</u>				
Amata Natural Gas Distribution Co., Ltd. (AMATA NGD)	Thailand	Natural gas	80.00	80.00
<u>Subsidiary of PTTGL Group:</u>				
PTTGL Investment Limited (PTTGLI)	Hong Kong	Investing in LNG business	100.00	100.00

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of GPSC Group:</u>				
Combined Heat and Power Producing Co., Ltd. (CHPP)	Thailand	Production and distribution of electricity and chilled water/construction and installation of electricity generating system	100.00	100.00
Natee Synergy Co., Ltd. (NSC)	Thailand	Holding company	100.00	100.00
IRPC Clean power Co.,Ltd. (IRPCCP) (The Group holds 100% shareholding)	Thailand	Production and distribution of electricity, steam and water for industrial purpose	51.00	51.00
Ichinoseki Solar Power 1 GK (ICHINOSEKI)	Japan	Production and distribution of electricity	99.00	99.00
GPSC International Holdings Limited (GPSCIH)	Hong Kong	Holding company	100.00	100.00
Global Renewable Power Co., Ltd. (GRP)	Thailand	Holding company	100.00	100.00
Glow Energy Public Company Limited (GEN) (Former : GLOW)	Thailand	Production and distribution of electricity	99.83	-
GPSC Holding (Thailand) Co., Ltd. (GHT) (Former : ENGIE Holding (Thailand) Co., Ltd. (EHT))	Thailand	Holding company	100.00	-
Energy Recovery Unit Co., Ltd. (ERU)	Thailand	Production and distribution of electricity	100.00	-
Glow Company Limited (GCO)	Thailand	Consultant management service for related companies	100.00	-
Glow SPP 2 Company Limited (GSPP2)	Thailand	Production and distribution of electricity power and steam for industrial	100.00	-
Glow SPP 3 Company Limited (GSPP3)	Thailand	Production and distribution of electricity power, steam and water for industrial	100.00	-
Glow SPP 11 Company Limited (GSPP11)	Thailand	Production and distribution of electricity power and water for industrial	100.00	-
Glow IPP 3 Company Limited (GIPP3)	Thailand	Development of electricity power production project	100.00	-
Glow IPP 2 Holding Company Limited (GIPP2)	Thailand	Investing in other companies	100.00	-
Houay Ho Thai Company Limited (HHTC)	Thailand	Investing in other companies	49.00	-
Glow IPP Company Limited (GIPP)	Thailand	Production and distribution of electricity to EGAT	95.00	-
GHECO-One Company Limited (GHECO1)	Thailand	Production and distribution of electricity power to EGAT	65.00	-
Houay Ho Power Company Limited (HHPC)	Lao	Production and distribution of electricity power to EGAT and EDL	67.25	-
Glow Energy Myanmar Company Limited (GEMM)	Myanmar	Technical consultants for electricity businesses	100.00	-

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of OR Group:</u>				
PTT Retail Management Co., Ltd. (PTTRM)	Thailand	Petrol station and convenience store management	100.00	100.00
PTT Retail Service Co., Ltd. (PTTRS)	Thailand	Human resource management	100.00	100.00
Thai Lube Blending Co., Ltd. (TLBC)	Thailand	Blending and bottling of lube oil	100.00	100.00
PTT Philippines Trading Corporation (PTTTC)	Philippines	Oil marketing	100.00	100.00
PTT Philippines Corporation (PTTPC)	Philippines	Oil marketing	100.00	100.00
PTT (Cambodia) Limited (PTTCL)	Cambodia	Oil marketing	100.00	100.00
PTT Oil Myanmar Co., Ltd. (PTTOM)	Myanmar	Business services	100.00	100.00
PTT (Lao) Co., Ltd. (PTT Lao)	Lao	Oil marketing	100.00	100.00
PTTOR China (Shanghai) Co., Ltd. (PTTOR China)	China	Lube products	100.00	100.00
PTTOR Singapore Pte. Ltd. (PTTORSG)	Singapore	Retail business	100.00	100.00
PTTOR International Holdings (Thailand) Company Limited (THHOLDCO)	Thailand	Investing in other companies	100.00	-
PTTOR International Holdings (Singapore) Pte. Ltd. (SGHOLDCO)	Singapore	Investing in other companies	100.00	-
<u>Subsidiary of PTTT Group:</u>				
PTT International Trading DMCC (PTTT DMCC)	United Arab Emirates	International oil trading	100.00	100.00
<u>Subsidiaries of PTTGC Group:</u>				
PTT Phenol Co., Ltd. (PPCL)	Thailand	Manufacturing and distributing petrochemical products	100.00	100.00
GC Maintenance & Engineering Co., Ltd. (GCME)	Thailand	Factory maintenance and engineering services	100.00	100.00
Thai Tank Terminal Limited (TTT)	Thailand	Service for the storage and handling of liquid chemicals, oil and gas	51.00	51.00
NPC Safety and Environmental Service Co., Ltd. (NPCSE)	Thailand	Safety and environmental services	100.00	100.00
GC Styrenics Co., Ltd. (GCS)	Thailand	Manufacturing and distributing petrochemical products	100.00	100.00
PTTGC International (Netherlands) B.V. (GCINTERNL)	Netherlands	Holding and operating international business	100.00	100.00
GC Glycol Co., Ltd. (Glycol)	Thailand	Manufacturing and distributing petrochemical products	100.00	100.00
Global Green Chemicals Plc. (GGC)	Thailand	Manufacturing and distributing biochemical products	72.29	72.29
Solution Creation Co., Ltd. (SOLUTIONCRE)	Thailand	Manufacturing and distributing petrochemical products and health and nutrition products	100.00	100.00

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of PTTGC Group: (Continued)</u>				
Bio Spectrum Co., Ltd. (BIOSPEC)*	Thailand	Manufacturing and distributing biochemical products	-	100.00
Auria BioChemicals Co., Ltd. (AURIA)**	Thailand	Research and development of bio-based chemicals	-	100.00
PTTGC International Private Limited (GC Inter)	Singapore	Holding and operating international business	100.00	100.00
GC Oxirane Co., Ltd. (GCO)	Thailand	Manufacturing and distributing petrochemicals products	100.00	100.00
GC Polyols Co., Ltd. (GCP)	Thailand	Manufacturing and distributing petrochemicals products	82.10	82.10
GC Treasury Co., Ltd. (GCTC)	Thailand	Financial service management for the group	100.00	100.00
GC Logistics Solutions Co., Ltd. (GCL)	Thailand	Transportation, warehouse and bagging packing management of polyethylene	100.00	100.00
GC Marketing Solutions Co., Ltd. (GCM)	Thailand	Development, marketing and distributing polymers products, by products and other polymers-related products	100.00	100.00
PTTGC International (USA) Inc. (GCINTERUSA)	United States of America	Holding and operating international business	100.00	100.00
Thai Fatty Alcohols Co., Ltd. (TFA)	Thailand	Manufacturing and distributing biochemical products	72.29	72.29
PTTGC Innovation America Corporation (GCIA)	United States of America	Research and development of bio-based chemicals	100.00	100.00
PTTGC America Corporation (AMERICACORP)	United States of America	Holding and operating international business	100.00	100.00
PTTGC America LLC (AMERICALLC)	United States of America	Operating in petrochemical business	100.00	100.00
NPC S&E Security Guard Co., Ltd. (NPCSG)	Thailand	Safety services	100.00	100.00
Vencorex (Thailand) Co., Ltd. (VENCOREXTH)	Thailand	Manufacturing and distributing chemical specialties	100.00	100.00
Vencorex France S.A.S. (VCF)	France	Manufacturing and distributing chemical specialties	100.00	100.00
Vencorex Holding (VCR)	France	Manufacturing and distributing chemical specialties	90.82	90.82
PL Global Transport Co., Ltd. (PLGT)	Thailand	Transportation of polyethylene	100.00	100.00
GCM Polymer Marketing DMCC (GCM DMCC) (Former : Polymer Marketing DMCC (PM DMCC))	United Arab Emirates	Distributing polymer products and other polymers-related products	100.00	100.00
GC Marketing Solutions Vietnam Company Ltd. (GCM Vietnam) (Former : Polymer Marketing Vietnam Company Limited (PM Vietnam))	Vietnam	Distributing polymer products and other polymers-related products	100.00	100.00

* The liquidation process was completed on January 18, 2019.

** The liquidation process was completed on April 4, 2019.

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of PTTGC Group:</u> (Continued)				
GC Estate Co., Ltd. (GCEC)	Thailand	Real estate development for rent and to invest in petrochemical and related industries	100.00	100.00
GC Ventures Co., Ltd. (GCV)	Thailand	Invest in form of Corporate Venture Capital (CVC)	100.00	100.00
GC Ventures America Corporation (GCVA)	United States of America	Invest in form of Corporate Venture Capital (CVC) outside Thailand	100.00	100.00
GC Marketing Solutions Myanmar Company Limited (GCM Myanmar) (Former : Polymer Marketing Myanmar Company Limited (PM Myanmar))	Myanmar	Distributing polymer products and other polymers-related products	100.00	100.00
GC-M PTA Company Limited (GCM PTA) (Former : Siam Mitsui PTA Co., Ltd. (SMPC))	Thailand	Manufacturing and distributing petrochemical products	74.00	74.00
Thai PET Resin Co., Ltd. (TPRC)	Thailand	Manufacturing and distributing petrochemical products	74.00	74.00
GGC Biochemicals Co., Ltd. (GGC Biochemicals)	Thailand	Holding and operating in Thailand	100.00	100.00
GC Logistics Solutions (Vietnam) Co., Ltd. (GCLSVN)	Vietnam	Logistics, warehouse management and polyethylene resin containment	100.00	-
PT GCM Marketing Solutions Indonesia (GCMINDONESIA)	Indonesia	Distribution of polymers products and other polymers-related products	67.00	-
<u>Subsidiaries of TOP Group:</u>				
Thaioil Power Co., Ltd. (TP) (The Group holds 100% shareholding)	Thailand	Power and steam generation and distribution	73.99	73.99
Thai Paraxylene Co., Ltd. (TPX)	Thailand	Paraxylene manufacturing and distribution	99.99	99.99
Thai Lube Base Public Company Limited (TLB)	Thailand	Lube base oil refining and distribution	99.99	99.99
Thaioil Marine Co., Ltd. (TM)	Thailand	Providing marine transportation services for petroleum and liquid chemical products	99.99	99.99
Thaioil Ethanol Co., Ltd. (TET)	Thailand	Investment in ethanol business and alternative energy products	99.99	99.99
Thaioil Energy Services Co., Ltd. (TES)	Thailand	Providing human resource management	99.99	99.99
Thaioil Solvent Co., Ltd. (TOS)	Thailand	Investment in solvent and chemical businesses	99.99	99.99
TOP SPP Co., Ltd. (TOPSPP)	Thailand	Power and steam generation and distribution	99.99	99.99
Thaioil Treasury Center Co., Ltd. (TTC)	Thailand	Treasury center for the Group's business	99.99	99.99

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of TOP Group:</u> (Continued)				
Sapthip Co., Ltd. (SAPTHIP)	Thailand	Ethanol products manufacturing and distribution	50.00	50.00
TOP Solvent Co., Ltd. (TS)	Thailand	Distribution of solvent and chemical products	99.99	99.99
Sak Chaisidhi Co., Ltd. (SAKC)	Thailand	Solvent and chemical products manufacturing and distribution	80.52	80.52
TOP Solvent (Vietnam) LLC. (TSV)	Vietnam	Distribution of solvent and chemical products	100.00	100.00
Thaioil Marine International Pte. Ltd. (TOMI)	Singapore	Investment in marine transportation for crude oil and petroleum product business	100.00	100.00
TOP Maritime Service Co., Ltd. (TMS)	Thailand	Providing marine transportation services for crew and utilities in Gulf of Thailand	99.99	99.99
LABIX Co., Ltd. (LABIX)	Thailand	Linear Alkyl Benzene manufacturing and distribution	75.00	75.00
Sapthip Green Energy Co., Ltd. (SGE)	Thailand	Biogas power generation and distribution	99.99	99.99
PT.Tirta Surya Raya (PTSR)	Indonesia	Distribution of solvent and chemical products	67.00	-
TOP Venture Company Limited (TVT)	Thailand	Invest in Corporate Venture Capital (CVC) and/or Startups business	99.99	-
TOP Ventures Hong Kong Limited (TVHK)	Hongkong	Invest in Corporate Venture Capital (CVC) and/or Startups business	100.00	-
TOP Ventures America LLC (TVUSLLC)	United States of America	Invest in Corporate Venture Capital (CVC) and/or Startups business	100.00	-
<u>Subsidiaries of IRPC Group:</u>				
Thai ABS Co., Ltd. (TABS)*	Thailand	Manufacturing and sales of plastic resin	-	99.99
IRPC A&L Company Limited (IRPCAL)	Thailand	Distributing petrochemical products	57.48	59.98
IRPC Oil Company Limited (OIRPC)	Thailand	Sales of oil products and gas	99.99	99.99
Rak Phasak Company Limited (RAKPHASAK)	Thailand	Oil vessel renting	99.99	99.99
IRPC Technology Company Limited (TECHIRPC)	Thailand	Vocational school	99.99	99.99
R. Solution Co., Ltd. (IRPCS)**	Thailand	Service for security	-	99.50
I-polymer Company Limited (IPOL)	Thailand	Distributing plastic resin and chemical products via E-Commerce system	55.00	99.99

* In the second quarter of 2019, IRPC disposed all of the investment in TABS.

** In the first quarter of 2019, IRPC disposed all of the investment in IRPCS.

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of PTTGM Group:</u>				
PTT Mining Limited (PTTML)	Hong Kong	Investing in other companies	100.00	100.00
Straits (Brunei) Pte. Ltd. (Straits (Brunei))	Singapore	Investing in other companies	100.00	100.00
Sakari Resources Ltd. (SAR)	Singapore	Investing in coal mine business	95.82	95.82
Yoxford Holdings (YOXFORD)	Mauritius	Investing in other companies	100.00	100.00
Madagascar Consolidated Mining SA (MCM)	Madagascar	Coal mines	80.00	80.00
Tiger Energy Trading Pte. Ltd. (TET)	Singapore	Coal mine marketing	100.00	100.00
Sakari Energy Pte. Ltd. (SAEnergy)	Singapore	Investing in other companies	100.00	100.00
Reyka Wahana Digdjaya Pte. Ltd. (RWD)	Singapore	Investing in other companies	100.00	100.00
Sakari Energy Trading Pte. Ltd. (SET)	Singapore	Investing in other companies	100.00	100.00
Sakari Marine & Infrastructure Pte. Ltd. (SMI)	Singapore	Marine engineering	100.00	100.00
PT Straits Consultancy Services (SCS)	Indonesia	Management services	100.00	100.00
PT Bahari Perdana Persada (BPPD)	Indonesia	Investing in other companies	100.00	100.00
PT Bahari Putra Perdana (BPPN)	Indonesia	Investing in other companies	100.00	100.00
PT Reyka Wahana Digdjaya (RWD)	Indonesia	Investing in other companies	100.00	100.00
PT Bahari Cakrawala Sebuk (BCS)	Indonesia	Coal mines	100.00	100.00
PT Bumi Borneo Metalindo (BBM)	Indonesia	Investing in other companies	100.00	100.00
PT Citra Pertiwi Nusantara (CPN)	Indonesia	Coal transport equipment and delivery service	100.00	100.00
PT Bumiborneo Pertiwi Nusantara (BPN)	Indonesia	Investing in other companies	100.00	100.00
PT Karbon Mahakam (KM)	Indonesia	Coal mines	100.00	100.00
PT Metalindo Bumi Raya (MBR)	Indonesia	Coal mines	100.00	100.00
PT Borneo Citrapertiwi Nusantara (BCN)	Indonesia	Investing in other companies	100.00	100.00
PT Separi Energy (SE)	Indonesia	Investing in other companies	100.00	100.00
PT Jembayan Muarabara (JMB)	Indonesia	Coal mines	100.00	100.00
PT Kemilau Rindang Abadi (KRA)	Indonesia	Coal mines	100.00	100.00
PT Arzara Baraindo Energitama (ABE)	Indonesia	Coal mines	100.00	100.00
PT Cakrawala Abadi Jaya (CAJ)	Indonesia	Investing in other companies	100.00	100.00
PT Sakti Utama Luas (SUL)	Indonesia	Investing in other companies	100.00	100.00
Tri Tunggal Lestari Bersama (TTLB)	Indonesia	Infrastructure business	100.00	100.00

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.1 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company name	Country of Incorporation	Business	Ownership interest (%)	
			2019	2018
<u>Subsidiaries of PTTGM Group: (Continued)</u>				
PT Makassar Prima Coal (MPC)*	Indonesia	Coal mines	-	70.00
PTT International Holding Limited (PTTIH)	Hong Kong	Investing in other companies	100.00	100.00
PTT International Investment Limited (PTTII)	Hong Kong	Investing in other companies	100.00	100.00
PTT International (Singapore) Company Pte. Limited (PTT Inter (Sing))	Singapore	Investing in other companies	100.00	100.00
Sakari Royal Limited (SRL)**	Cambodia	Coal mines	70.00	70.00
Global Management Holding Co., Ltd. (GMH)	Thailand	Domestic investment	100.00	-
Siam Management Holding Co., Ltd. (SMH)	Thailand	Domestic investment	100.00	-
PT Sentika Mitra Persada (SMP)	Indonesia	Coal mines	100.00	-
PT Mutiara Kapuas (MK)	Indonesia	Coal mines	100.00	-
<u>Subsidiaries of PTTGE Group:</u>				
Sabran Brothers Pte. Ltd. (Sabran)***	Singapore	Investing in other companies	-	100.00
PTT Green Energy (Thailand) Co., Ltd. (PTTGE TH)	Thailand	Management services for PTTGE Group	100.00	100.00
<u>Subsidiary of BSA Group:</u>				
Sport Services Alliance Co., Ltd. (SSS) (Former : SSA)	Thailand	Football club management	100.00	100.00
Business Professional Solutions Co., Ltd. (BPS)	Thailand	Business management	100.00	100.00
<u>Joint operations of PTTEP Group:</u>				
Carigali - PTTEPI Operating Company Sdn. Bhd. (CPOC)	Malaysia	Petroleum	50.00	50.00
Moattama Gas Transportation Company (MGTC)	Bermuda	Gas pipeline transportation	25.50	25.50
Taninthayi Pipeline Company LLC (TPC)	Cayman Islands	Gas pipeline transportation	19.32	19.32
Orange Energy Limited (Orange)	Thailand	Petroleum	53.95	53.95
B8/32 Partners Limited (B8/32 Partners)	Thailand	Petroleum	25.00	25.00
Andaman Transportation Limited (ATL)	Cayman Islands	Gas pipeline transportation	80.00	80.00
Groupement Bir Seba (GBRS)	Algeria	Petroleum	35.00	35.00
Natuna 2 B.V. (Natuna 2)	Netherlands	Petroleum	50.00	50.00
Hoang-Long Joint Operating Company (HL JOC)	Vietnam	Petroleum	28.50	28.50
Hoan-Vu Joint Operating Company (HV JOC)	Vietnam	Petroleum	25.00	25.00
Petroleum Development Oman LLC (PDO)	Oman	Petroleum	2.00	-
Abu Dhabi Gas Industries Limited (ADGP)	United Arab Emirates	Petroleum	2.00	-
Private Oil Holdings Oman Limited (POHOL)	England	Petroleum	5.00	-

* Completely closed PT Makassar Prima Coal on August 15, 2019.

** Under liquidation process.

*** The Board of Directors of the Company passed a resolution to approve Sabran closed, consistent with the restructuring policy of the Group. Sabran was completely closed on November 14, 2019.

(UNOFFICIAL TRANSLATION)

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.2 Details of investments in joint ventures in the consolidated financial statements as at December 31, 2019 and 2018

Company name	Country of Incorporation	Business	Consolidated financial statements								Dividends income
			Ownership interest (%)		Cost method		Equity method		Dividends income		
			2019	2018	2019	2018	2019	2018	2019	2018	
Joint Ventures											
<i>The Company</i>											
Trans Thai-Malaysia (Thailand) Co., Ltd. (TTM(T))	Thailand	Natural gas	50.00	50.00	4,341.80	4,341.80	4,124.60	4,360.08	438.52	408.13	
Trans Thai-Malaysia (Malaysia) Sdn. Bhd. (TTM(M))	Malaysia	Natural gas	50.00	50.00	1,001.31	1,001.31	1,096.73	1,287.38	199.99	182.33	
District Cooling System and Power Plant Co., Ltd. (DCAP)	Thailand	Generation and supply of electricity and chilled water	35.00	35.00	584.50	584.50	985.60	936.03	18.70	19.67	
<i>PTTEP Group</i>											
Erawan 2 FSO Bahamas Limited (Erawan 2)	Bahamas	FSO rental services	13.11	13.11	470.43	506.26	545.78	565.02	77.31	95.26	
APICO LLC (APICOLLC)	United States of America	Petroleum	72.82	-	3,938.96	-	3,841.17	-	196.99	-	
Oman LNG LLC (OLNG)	Oman	Petroleum	2.00	-	2,501.44	-	2,408.86	-	95.29	-	
<i>GPSC Group</i>											
Thai Solar Renewable Co., Ltd. (TSR)	Thailand	Invest in other company	40.00	40.00	1,697.00	1,697.00	1,579.05	1,638.80	404.37	382.43	
Nam Lik 1 Power Co., Ltd. (NL1PC)	Laos	Generate and supply electricity	40.00	40.00	494.33	427.63	554.92	463.49	-	-	
Nava Nakom Electricity Generating Co., Ltd. (NNEG)	Thailand	Generate and supply electricity	30.00	30.00	488.40	488.40	482.37	536.28	120.00	108.00	
<i>PTTGC Group</i>											
Thai Ethoxylate Co., Ltd. (TEX)	Thailand	Manufacturing and distributing of petrochemical products	50.00	50.00	210.00	210.00	584.84	735.69	222.60	91.35	
Emery Oleochemicals (M) Sdn. Bhd. (EOM)	Malaysia	Manufacturing and distributing of biochemical products	50.00	50.00	4,965.77	4,965.77	4,494.76	4,519.32	-	-	
Emery Specialty Chemicals Sdn. Bhd. (ESC)	Malaysia	Manufacturing and distributing of chemical specialties	50.00	50.00	407.04	407.04	-	-	-	-	
NatureWorks LLC (NTR)	United States of America	Manufacturing and distributing of bioplastic products	50.00	50.00	4,793.33	4,793.33	3,274.20	2,842.40	316.09	321.00	

Unit: Million Baht

(UNOFFICIAL TRANSLATION)

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.2 Details of investments in joint ventures in the consolidated financial statements as at December 31, 2019 and 2018 (Continued)

Unit: Million Baht

Company name	Country of Incorporation	Business	Consolidated financial statements							
			Ownership interest (%)		Cost method		Equity method		Dividends income	
			2019	2018	2019	2018	2019	2018	2019	2018
Joint Ventures (Continued)										
<i>PTTGC Group (Continued)</i>										
PTT MCC Biochem Co., Ltd. (PTTMCC)	Thailand	Petrochemicals	50.00	50.00	930.12	930.12	176.14	214.68	-	-
PTT Asahi Chemicals Co., Ltd. (PTTAC)	Thailand	Petrochemicals	50.00	50.00	6,909.41	6,909.41	10,877.75	9,569.39	-	-
HMC Polymers Co., Ltd. (HMC)	Thailand	Petrochemicals	41.44	41.44	9,117.12	9,117.12	12,337.39	12,885.23	827.86	1,242.21
GGC KTIS Bioindustrial Company Limited (GKBI)	Thailand	Manufacturing and distributing of bio fuel	50.00	-	523.75	-	512.34	-	-	-
Revolve Group Limited (RGL)	England	Manufacturing and distributing of chemical	49.00	-	269.54	-	195.53	-	-	-
<i>TOP Group</i>										
TOP-NTL Pte. Ltd. (TOP-NTL)	Singapore	Fund management services	50.00	50.00	0.25	0.25	17.96	15.80	-	-
TOP-NTL Shipping Trust (TOP-NTL(BT))	Singapore	Investing in other companies	50.00	50.00	24.05	24.05	73.54	67.29	-	-
TOP-NYK MarineOne Pte. Ltd. (TOP-NYK)	Singapore	Marine transportation services	50.00	50.00	273.88	273.88	404.89	432.28	-	34.00
TOP Nautical Star Co., Ltd. (TOP-NS)	Thailand	Storage and marine transportation services	35.00	35.00	52.50	52.50	119.93	110.19	-	-
<i>IRPC Group</i>										
IRPC Polyol Co., Ltd. (IRPCP)	Thailand	Manufacturing and sales of chemical products for polyurethanes	50.00	50.00	150.00	150.00	-	45.92	-	-
WHA Industrial Estate Rayong Co., Ltd. (WHA IER)	Thailand	Industrial estate development	40.00	40.00	260.00	65.00	257.28	64.50	-	-

(UNOFFICIAL TRANSLATION)

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.2 Details of investments in joint ventures in the consolidated financial statements as at December 31, 2019 and 2018 (Continued)

Unit: Million Baht

Company name	Country of Incorporation	Business	Consolidated financial statements							
			Ownership interest (%)		Cost method		Equity method		Dividends income	
			2019	2018	2019	2018	2019	2018	2019	2018
Joint Ventures (Continued)										
<i>PTTGM Group</i>										
OGP Energy Solutions Company Limited (OGPS)	Thailand	Energy management and energy-related services	40.00	40.00	55.46	38.23	41.79	27.29	-	-
FEE (Bru) Pte. Ltd. (FEEBRU)	Singapore	Coal mines	35.00	35.00	198.23	213.32	124.73	134.23	-	-
<i>PTTGE Group</i>										
Chancellor Oil Pte. Ltd. (Chancellor)*	Singapore	Investing in other companies	-	77.56	-	2,949.98	-	1,288.56	-	-
<i>OR Group</i>										
Brighter PTT Oil and Retail Business Company Limited (BOR)	Myanmar	Investing in oil market and retail business	51.00	-	7.15	-	6.34	-	-	-
Brighter Energy Company Limited (BE)	Myanmar	Warehousing and distribution of petroleum	35.00	-	494.14	-	486.83	-	-	-
<i>The Group</i>										
Map Ta Phut Air Products Company Limited (MAP)	Thailand	Production and distribution of industrial gas	51.00	-	35.63	-	32.23	-	-	-
(The Company holds 49.00% shareholding)										
					45,195.54	40,146.90	49,637.55	42,739.85		
					(348.23)	(3,163.31)	(124.73)	(1,422.79)		
<u>Less Allowance for impairment</u>					44,847.31	36,983.59	49,512.82	41,317.06	2,917.72	2,884.38
Total										

* On April 30, 2019, PTTGE sold all investment in Chancellor.

(UNOFFICIAL TRANSLATION)

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.3 Details of investments in associates in the consolidated financial statements as at December 31, 2019 and 2018

Unit: Million Baht

Company name	Country of Incorporation	Business	Consolidated financial statements							
			Ownership interest (%)		Cost method		Equity method		Dividends income	
			2019	2018	2019	2018	2019	2018		2019
Associates										
<i>PTTEP Group</i>										
PTTEP AP Group's associates*	Australia	Airbase services	50.00	50.00	45.16	48.59	149.90	231.54	-	-
Leismer Aerodrome Limited (LAL)	Canada	Air transportation	32.00	32.00	128.31	131.78	115.66	125.65	-	-
<i>GPSC Group</i>										
Bangpa-in Cogeneration Co., Ltd. (BIC)	Thailand	Generate and supply electricity	25.00	25.00	923.75	923.75	866.26	879.02	131.87	81.15
Xayaburi Power Co., Ltd. (XPCL)	Laos	Generate and supply electricity	25.00	25.00	6,993.51	6,672.53	6,727.87	6,168.79	-	-
Eastern Seaboard Clean Energy Company Limited (ESCE)	Thailand	Studying, generating and supply electricity for industrial use including generating electricity from renewable energy	33.33	-	339.27	-	332.90	-	-	-
<i>OR Group</i>										
FST Aviation Services Limited (FST)	Hong Kong	Aircraft refuelling services	25.00	25.00	0.69	0.72	1.20	1.30	-	-
Petro Asia (Thailand) Co., Ltd. (PAT)	Thailand	Oil marketing	35.00	35.00	131.25	131.25	8.87	-	-	-
<i>PTTGC Group</i>										
PT Indo Thai Trading (ITT)**	Indonesia	Petrochemicals	-	49.00	-	125.28	-	220.27	-	-
Vinythai Plc. (VNT)	Thailand	Petrochemicals	24.98	24.98	3,297.39	3,297.39	5,641.76	5,130.10	384.85	266.43
Thai Eastern Topseeds Oil Co., Ltd. (TETSO)	Thailand	Petrochemicals	30.00	30.00	66.60	66.60	28.17	57.06	-	-
S.P. Petpack Inter Group Co., Ltd. (SPPETPACK)	Thailand	Petrochemicals	25.00	25.00	50.00	50.00	48.94	45.84	-	-

* Associates of PTTEP AP Group consist of Mungkalahu Trusecor Airbase Pty Ltd. and Troughton Island Pty Ltd.

** On July 31, 2019, a subsidiary of PTTGC Group sold all investment in ITT.

(UNOFFICIAL TRANSLATION)

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.3 Details of investments in associates in the consolidated financial statements as at December 31, 2019 and 2018 (Continued)

Company name	Country of Incorporation	Business	Consolidated financial statements						Dividends income	
			Ownership interest (%)		Cost method		Equity method			
			2019	2018	2019	2018	2019	2018		2019
Associates (Continued)										
<i>PTTGC Group (Continued)</i>										
Kurary GC Advanced Materials Co., Ltd. (KGC)	Thailand	Manufacturing of chemical specialties	33.40	33.40	670.51	470.10	629.40	469.52	-	-
<i>TOP Group</i>										
T.I.M Ship Management Co., Ltd. (TIM)	Thailand	Marine transportation services	33.33	33.33	1.00	1.00	2.73	-	-	-
Ubon Bio Ethanol Co., Ltd. (UBE)	Thailand	Manufacturing and distributing of ethanol	21.28	21.28	769.55	769.55	809.71	818.57	-	-
<i>IRPC Group</i>										
UBE Chemicals (Asia) Public Co., Ltd. (UCHA)	Thailand	Manufacturing and sales of petrochemical products	25.00	25.00	5,299.82	5,299.82	4,916.85	5,113.63	99.34	34.91
<i>PTTER Group</i>										
East Mediterranean Gas Company S.A.E. (EMG)	Egypt	Natural gas transmission pipelines	25.00	25.00	14,741.74	15,864.11	11,864.45	12,767.76	-	-
<i>PTT TANK Group</i>										
Gulf/MTP LNG Terminal Co., Ltd. (GMTP)		Boat picking up service, Unloading and storage of liquefied natural gas, as well as transforming from liquid to gas	30.00	-	262.50	-	262.73	-	-	-
<i>The Group</i>										
Thai Petroleum Pipeline Co., Ltd. (THAPPLINE)	Thailand	Oil transmission pipelines	49.21	49.21	3,952.72	3,952.72	5,113.05	5,086.82	860.37	831.28
(OR Group holds 40.53% shareholding)										
Eastern Fluid Transport Co., Ltd. (EFT)	Thailand	Infrastructure	37.65	22.65	3.77	2.27	14.17	20.15	21.08	7.48
(PTTGC Group holds 22.65% shareholding)										
<u>Less Allowance for impairment</u>					37,677.54	37,807.46	37,534.62	37,136.02		
					(14,872.99)	(15,995.36)	(11,864.45)	(12,767.76)		
Total					22,804.55	21,812.10	25,670.17	24,368.26	1,497.51	1,221.25

Unit: Million Baht

(UNOFFICIAL TRANSLATION)

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.4 Details of investments in subsidiaries in the separate financial statements as at December 31, 2019 and 2018

Unit: Million Baht

Company name	Country of Incorporation	Business	Separate financial statements					
			Ownership interest (%)		Cost method		Dividends income	
			2019	2018	2019	2018	2019	2018
Subsidiaries								
PTT Exploration and Production Public Co., Ltd. (PTTEP)	Thailand	Petroleum exploration and production	65.29	65.29	71,390.42	71,390.42	14,255.23	11,663.37
PTT LNG Co., Ltd. (PTTLNG)	Thailand	Natural gas	100.00	100.00	22,422.34	18,913.89	2,117.14	1,728.87
PTT Natural Gas Distribution Co., Ltd. (PTTINGD)	Thailand	Natural gas	58.00	58.00	418.14	418.14	986.00	1,160.00
PTT Global LNG Co., Ltd. (PTTGL)	Thailand	Investing in LNG business	50.00	50.00	5,210.72	5,210.72	-	-
(The Group holds 100% shareholding)								
Energy Complex Co., Ltd. (EnCo)	Thailand	Real estate development for rent	50.00	50.00	900.00	900.00	69.90	64.00
(The Group holds 100% shareholding)								
PTT Energy Solutions Co., Ltd. (PTTES)	Thailand	Technical and operational services	40.00	40.00	62.50	62.50	-	-
(The Group holds 100% shareholding)								
Global Power Synergy Public Co., Ltd. (GPSC)	Thailand	Generation and supply of electricity, steam and water for industries	22.81	22.58	22,024.95	4,949.93	439.75	422.83
(The Group holds 75.23% shareholding)								
PTT Oil and Retail Business Public Co., Ltd. (OR)	Thailand	Management services and oil marketing	100.00	100.00	90,000.00	90,000.00	-	-
(Former : PTTOR)								
PTT Tank Terminal Co., Ltd. (PTT TANK)	Thailand	Terminal and warehouse	100.00	100.00	2,500.37	2,500.37	120.00	121.00
PTT International Trading Pte. Ltd. (PTTI)	Singapore	International trading	100.00	100.00	2.50	2.50	8.09	38.21
PTT International Trading London Limited (PTTI LDN)	England	International trading	100.00	100.00	347.75	347.75	10.85	-
PTT Global Chemical Public Co., Ltd. (PTTGC)	Thailand	Petrochemicals and refining	47.92	48.18	46,933.98	47,426.03	7,581.07	9,301.33
(The Group holds 48.42% shareholding)								

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.4 Details of investments in subsidiaries in the separate financial statements as at December 31, 2019 and 2018 (Continued)

Unit: Million Baht

Company name	Country of Incorporation	Business	Separate financial statements								
			Ownership interest (%)		Cost method		Dividends income				
			2019	2018	2019	2018	2019	2018			
Subsidiaries (Continued)											
Thai Oil Public Co., Ltd. (TOP) (The Group holds 48.03% shareholding)	Thailand	Oil refining	47.53	48.03	11,016.30	11,132.20	2,096.29	5,225.83			
IRPC Public Co., Ltd. (IRPC) (The Group holds 48.05% shareholding)	Thailand	Petrochemicals and refining	47.55	48.05	41,899.40	42,339.93	883.77	3,829.68			
Thai Oil Power Co., Ltd. (TP) (The Group holds 100% shareholding)	Thailand	Generation and supply of electricity and steam	26.00	26.00	2,304.76	2,304.76	237.45	182.65			
PTT Energy Resources Co., Ltd. (PTTER)	Thailand	Investment consulting in energy and mining business	100.00	100.00	33,702.67	33,702.67	-	-			
PTT Global Management Co., Ltd. (PTTGM)	Thailand	Domestic and international investment	100.00	100.00	54,428.65	54,404.22	-	-			
PTT Green Energy Pte. Ltd. (PTTGE)	Singapore	Investing in palm oil business	100.00	100.00	12,403.10	12,403.10	-	-			
PTT Regional Treasury Center Pte. Ltd. (PTTRTC)	Singapore	Treasury services	100.00	100.00	31.40	31.40	39.61	-			
PTT Treasury Center Co., Ltd. (PTT TCC)	Thailand	Treasury services	100.00	100.00	20.00	20.00	-	-			
Business Services Alliance Co., Ltd. (BSA)	Thailand	Management services	100.00	100.00	0.50	0.50	33.45	55.00			
PTT Digital Solutions Co., Ltd. (PTT DIGITAL) (The Group holds 100% shareholding)	Thailand	Information technology and communication services	20.00	20.00	30.00	30.00	17.60	16.40			
					418,050.45	398,491.03					
					(82,836.89)	(82,836.89)					
Less Allowance for impairment					335,213.56	315,654.14	28,896.20	33,809.17			
Total											

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.5 Details of investments in joint ventures in the separate financial statements as at December 31, 2019 and 2018

Unit: Million Baht

Company name	Country of Incorporation	Business	Separate financial statements					
			Ownership interest (%)		Cost method		Dividends income	
			2019	2018	2019	2018	2019	2018
Joint Ventures								
Trans Thai-Malaysia (Thailand) Co., Ltd. (TTM(T))	Thailand	Natural gas	50.00	50.00	4,341.80	4,341.80	438.52	408.13
Trans Thai-Malaysia (Malaysia) Sdn. Bhd. (TTM(M))	Malaysia	Natural gas	50.00	50.00	1,001.31	1,001.31	199.99	182.33
District Cooling System and Power Plant Co., Ltd. (DCAP)	Thailand	Generation and supply of electricity and chilled water	35.00	35.00	584.50	584.50	18.70	19.67
Map Ta Phut Air Products Company Limited (MAP)	Thailand	Production and distribution of industrial gas	49.00	-	34.30	-	-	-
(The Group holds 51.00% shareholding)								
Total					5,961.91	5,927.61	657.21	610.13

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.6 Movements in investments in the consolidated and the separate financial statements

15.6.1 Movements in investments in joint ventures under the equity method in the consolidated financial statements are as follows:

	Unit: Million Baht	
	2019	2018
As at January 1,	41,317.06	37,937.15
- Share of profit from investments in joint ventures	3,990.79	6,461.65
- Dividend income	(2,917.71)	(2,884.38)
- Additional investments	5,666.51	155.36
- Business acquisitions (Note 43.5)	2,502.52	-
- Reclassifications	-	104.79
- Disposal of investments	(2,822.29)	(5.68)
- Reversal of loss on impairment	2,822.29	-
- Share capital reduction	-	(33.87)
- Share of other comprehensive loss of joint ventures	(987.71)	(412.37)
- Currency translation differences	(58.64)	(5.59)
As at December 31,	<u>49,512.82</u>	<u>41,317.06</u>

15.6.2 Movements in investments in associates under the equity method in the consolidated financial statements are as follows:

	Unit: Million Baht	
	2019	2018
As at January 1,	24,368.26	21,979.62
- Share of profit from investments in associates	2,017.20	2,053.37
- Dividend income	(1,497.51)	(1,221.25)
- Additional investments	783.88	1,368.07
- Business acquisitions (Note 43.1)	330.03	-
- Reclassifications	-	131.15
- Disposal of investments	(212.12)	-
- Share of other comprehensive income (loss) of associates	(88.45)	58.36
- Currency translation differences	(31.12)	(1.06)
As at December 31,	<u>25,670.17</u>	<u>24,368.26</u>

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.6 Movements in investments in the consolidated and the separate financial statements (Continued)

15.6.3 Movements in investments in subsidiaries, joint ventures and associates under the cost method in the separate financial statements are as follows:

	Unit: Million Baht	
	2019	2018
As at January 1,	321,581.75	228,030.17
- Additional investments	20,642.20	120,635.44
- Disposal of investments	(1,048.48)	(4,508.24)
- Loss on impairment	-	(22,706.87)
- Reversal of loss on impairment	-	131.25
As at December 31,	<u>341,175.47</u>	<u>321,581.75</u>

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.7 Summary financial information of the material joint ventures of the Group are as follows:

Statements of financial position as at December 31, 2019 and 2018

	Unit: Million Baht									
	2019					2018				
	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	TTM(T)	TTM(M)	DCAP	PTTAC	HMC
Current assets	4,842.76	2,353.64	1,024.00	5,158.25	7,509.71	5,101.82	2,322.60	1,045.57	6,063.62	9,017.95
Non-current assets	11,276.34	3,694.31	2,263.64	21,186.05	25,477.63	13,367.07	4,599.63	2,419.54	21,710.38	26,441.47
Current liabilities	(1,400.26)	(780.85)	(466.42)	(1,428.39)	(5,364.59)	(1,583.90)	(856.05)	(716.28)	(1,415.41)	(4,826.40)
Non-current liabilities	(6,469.64)	(3,073.64)	(5.22)	(3,160.40)	(5,186.35)	(8,164.82)	(3,491.44)	(74.45)	(7,219.80)	(6,876.61)
Net assets (100%)	8,249.20	2,193.46	2,816.00	21,755.51	22,436.40	8,720.17	2,574.74	2,674.38	19,138.79	23,756.41
Group's share of net assets	4,124.60	1,096.73	985.60	10,877.75	9,297.64	4,360.08	1,287.38	936.03	9,569.39	9,844.66
Adjustment	-	-	-	-	3,039.75	-	-	-	-	3,040.57
Carrying amount of interest in joint ventures	4,124.60	1,096.73	985.60	10,877.75	12,337.39	4,360.08	1,287.38	936.03	9,569.39	12,885.23

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.7 Summary financial information of the material joint ventures of the Group are as follows: (Continued)

Statements of income for the years ended December 31, 2019 and 2018

	Unit: Million Baht									
	2019					2018				
	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	TTM(T)	TTM(M)	DCAP	PTTAC	HMC
Revenue*	3,067.96	665.04	2,776.51	13,941.63	27,557.12	3,038.23	740.81	2,686.63	18,753.80	32,416.09
Expenses	(1,946.64)	(306.19)	(2,531.19)	(11,329.33)	(25,723.51)	(2,022.33)	(351.00)	(2,423.65)	(12,726.66)	(27,855.97)
Profit before taxes	1,121.32	358.85	245.32	2,612.30	1,833.61	1,015.90	389.81	262.98	6,027.14	4,560.12
Income taxes	(91.53)	(16.96)	(49.42)	4.41	(177.48)	(143.23)	(143.78)	(52.83)	1.33	(557.89)
Net profit	1,029.79	341.89	195.90	2,616.71	1,656.13	872.67	246.03	210.15	6,028.47	4,002.23

* Including gain (loss) on foreign exchange rate

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.8 Summary financial information of the material associates of the Group are as follows:

Statements of financial position as at December 31, 2019 and 2018

	2019				2018				Unit: Million Baht
	THAPLINE	XPCL	UCHA	THAPLINE	XPCL	UCHA	THAPLINE	XPCL	
Current assets	4,763.87	2,857.48	5,879.94	4,547.65	841.16	6,917.07			
Non-current assets	6,727.03	126,999.51	8,406.22	6,861.20	124,116.66	8,393.98			
Current liabilities	(544.04)	(4,662.70)	(815.03)	(603.69)	(1,946.53)	(1,264.01)			
Non-current liabilities	(205.89)	(98,263.33)	(155.16)	(117.48)	(98,414.20)	(85.63)			
Net assets (100%)	10,740.97	26,930.96	13,315.97	10,687.68	24,597.09	13,961.41			
Group's share of net assets	5,285.63	6,732.74	3,328.99	5,259.90	6,149.27	3,490.35			
Adjustment	(172.58)	(4.87)	1,587.86	(173.08)	19.52	1,623.28			
Carrying amount of interest in associates	5,113.05	6,727.87	4,916.85	5,086.82	6,168.79	5,113.63			

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.8 Summary financial information of the material associates of the Group are as follows: (Continued)

Statements of income for the years ended December 31, 2019 and 2018

	2019				2018			Unit: Million Baht
	THAPLINE	XPCL	UCHA	THAPLINE	XPCL	UCHA		
Revenue*	3,635.95	3,154.42	10,380.63	3,584.99	-	16,074.77		
Expenses	(1,349.17)	(2,104.48)	(10,775.22)	(1,279.49)	(100.14)	(14,850.97)		
Profit (loss) before taxes	2,286.78	1,049.94	(394.59)	2,305.50	(100.14)	1,223.80		
Income taxes	(457.08)	-	72.83	(461.26)	-	(179.99)		
Net profit (loss)	1,829.70	1,049.94	(321.76)	1,844.24	(100.14)	1,043.81		

* Including gain (loss) on foreign exchange rate

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.9 Significant events during the year ended December 31, 2019

PTTLNG

On February 15, 2019, at the Board of Directors Meeting of PTT LNG Co., Ltd. (PTTLNG) No. 2/2019, the Board passed a resolution to approve the call up of remaining additional share capital of Baht 1,069.00 million. The Company made the additional payment on April 22, 2019.

On June 17, 2019, at the Board of Directors Meeting of PTTLNG No. 6/2019, the Board passed a resolution to approve the call up of remaining additional share capital of Baht 1,865.40 million. The Company made the additional payment on August 9, 2019.

On November 29, 2019, at the Board of Directors Meeting of PTTLNG No. 12/2019, the Board passed a resolution to approve the call up of remaining additional share capital of Baht 574.05 million. The Company made the additional payment on December 30, 2019.

PTTGM

On April 1, 2019, at the Extraordinary General Meeting of the shareholders of PTT Global Management Co., Ltd. (PTTGM) No. 1/2019, the shareholders passed an extraordinary resolution to increase 40,300 authorized share capital at Baht 100.00 per share amounting to Baht 4.03 million. The Company made the additional payment amounting to Baht 1.43 million on April 29, 2019.

On April 25, 2019, at the 2019 Annual General Meeting of PTTGM, the shareholders passed a resolution to increase 120,000 authorized share capital at Baht 100.00 per share amounting to Baht 12.00 million. The Company made the additional payment amounting to Baht 3.00 million on May 7, 2019.

On October 24, 2019, at the Extraordinary General Meeting of the shareholders of PTTGM No. 3/2019, the shareholders passed a resolution to increase 200,000 authorized share capital at Baht 100.00 per share amounting to Baht 20.00 million. The Company made the additional payment on November 29, 2019.

PTTGC

On March 25, 2019, at the Board of Directors Meeting of the Company No. 3/2019, the Board passed a resolution to approve the procedure of shareholding management in the Group's affiliates. During the year, the Company sold 22.54 million ordinary shares in PTT Global Chemical Public Co., Ltd. (PTTGC), amounting to Baht 1,427.01 million. The Company recognized gain on disposal of investments amounting to Baht 934.95 million in the separate financial statements. The shares were sold to a subsidiary of the Group, therefore, there is no impact on the consolidated financial statements.

On May 27, 2019, at the Board of Directors Meeting of PTTGC, the Board approved a share repurchase program for financial management purpose not exceeding the amount of 50.00 million shares, or approximately 1.1% of the total issued shares, with the maximum amount of Baht 3,000.00 million. On December 9, 2019, PTTGC has repurchased the shares under the program totalling 22.30 million shares, or approximately 0.50% of issued share and paid-up capital, at a total cost of Baht 1,187.60 million.

The result of the investments disposal and shares repurchasing, causing the Company's equity interest in PTTGC decrease to 47.92%.

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.9 Significant events during the year ended December 31, 2019 (Continued)

TOP

On March 25, 2019, at the Board of Directors Meeting of the Company No. 3/2019, the Board passed a resolution to approve the procedure of shareholding management in the Group's affiliates. During the year, the Company sold 10.20 million ordinary shares in Thai Oil Public Co., Ltd. (TOP), amounting to Baht 658.31 million, causing its equity interest in TOP decrease to 47.53%. The Company recognized gain on disposal of investments amounting to Baht 542.41 million in the separate financial statements. The shares were sold to a subsidiary of the Group, therefore, there is no impact on the consolidated financial statements.

IRPC

On March 25, 2019, at the Board of Directors Meeting of the Company No. 3/2019, the Board passed a resolution to approve the procedure of shareholding management in the Group's affiliates. During the year, the Company sold 102.17 million ordinary shares in IRPC Public Co., Ltd. (IRPC), amounting to Baht 527.20 million, causing its equity interest in IRPC decrease to 47.55%. The Company recognized gain on disposal of investments amounting to Baht 86.67 million in the separate financial statements. The shares were sold to a subsidiary of the Group, therefore, there is no impact on the consolidated financial statements.

GPSC

On July 26, 2019, at the Board of Directors Meeting of the Company No. 7/2019, the Board passed a resolution to increase authorized share capital of Global Power Synergy Public Co., Ltd. (GPSC) by purchasing ordinary shares by the existing shareholders in proportion to their holdings by way of Rights Offering and Excess Rights of 304.91 million shares, at Baht 56.00 per share amounting to Baht 17,075.02 million. The Company made the additional payment on October 4, 2019.

The result of the ordinary shares purchase, causing the Company's equity interest in GPSC increase to 22.81%.

MAP

On November 16, 2018, at the Board of Directors Meeting of the Company No. 11/2018, the Board passed a resolution to approve the establishment of Map Ta Phut Air Products Company Limited. (MAP), which is the joint venture of the Company (holds a 49.00% shareholding), a company of the Group (holds a 2.00% shareholding), and Bangkok Industrial Gas Company Limited (BIG) (holds a 49.00% shareholding), to engage in the business of the production and distribution of industrial gas. MAP has an initial registered share capital of Baht 1.00 million. The Company made the payment amounting to Baht 0.49 million on January 14, 2019.

On April 23, 2019, at the Extraordinary General Meeting of the shareholders of MAP No. 2/2019, the shareholders passed a resolution to approve the call up of additional share capital of Baht 33.81 million. The Company made the additional payment on April 29, 2019.

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.10 Material non-controlling interests

Financial information of subsidiaries that have material non-controlling interests are as follow:

Company name	Country of Incorporation	Non-controlling interests Shareholding (%)	
		2019	2018
PTT Exploration and Production Public Co., Ltd. (PTTEP)	Thailand	34.71	34.71
Thai Oil Public Co., Ltd. (TOP)	Thailand	51.97	51.97
IRPC Public Co., Ltd. (IRPC)	Thailand	51.95	51.95
PTT Global Chemical Public Co., Ltd. (PTTGC)	Thailand	51.58	51.82
Global Power Synergy Public Co., Ltd. (GPSC)	Thailand	24.77	25.00

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.10 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations:

Summary of financial position as at December 31, 2019 and 2018

	2019							2018							
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTGC	IRPC	TOP	PTTGC	GPSC
Current assets	142,124.52	134,676.29	44,267.61	104,494.27	38,919.32	186,783.42	164,743.46	46,917.65	144,310.01	12,163.88					
Non-current assets	527,339.48	148,849.69	134,578.12	348,020.12	213,015.49	448,303.91	103,870.15	136,348.55	324,945.33	52,196.15					
Current liabilities	(61,841.11)	(38,666.70)	(45,706.56)	(53,033.14)	(36,706.40)	(80,663.14)	(38,020.05)	(48,895.93)	(73,858.25)	(4,727.37)					
Non-current liabilities	(250,564.18)	(121,267.49)	(48,896.09)	(105,885.90)	(106,311.74)	(164,360.80)	(104,232.20)	(46,398.81)	(91,914.88)	(17,383.76)					
Net assets	357,058.71	123,591.79	84,243.08	293,595.35	108,916.67	390,063.39	126,361.36	87,971.46	303,482.21	42,248.90					
Owners of the parent	229,181.82	57,456.38	40,412.40	138,009.38	75,232.07	229,698.21	58,397.70	42,229.46	142,641.24	29,919.00					
Non-controlling interests	127,876.89	66,135.41	43,830.68	155,585.97	33,684.60	160,365.18	67,963.66	45,742.00	160,840.97	12,329.90					

Unit: Million Baht

(UNOFFICIAL TRANSLATION)

15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.10 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations: (Continued)

Summary of comprehensive income or loss for the years ended December 31, 2019 and 2018

	2019					2018					Unit: Million Baht
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	
Revenue*	195,796.31	369,385.42	243,440.28	423,292.72	68,635.26	174,432.71	392,200.76	282,815.92	529,734.02	25,880.89	
Expenses	(126,042.07)	(361,629.61)	(245,115.37)	(409,974.87)	(62,386.95)	(114,462.13)	(379,848.83)	(273,572.84)	(486,477.09)	(21,748.89)	
Profit (loss) before income taxes	69,754.24	7,755.81	(1,675.09)	13,317.85	6,248.31	59,970.58	12,351.93	9,243.08	43,256.93	4,132.00	
Income taxes	(20,951.70)	(1,239.41)	778.67	(649.36)	(247.49)	(23,764.29)	(1,982.79)	(1,146.59)	(2,985.96)	(242.79)	
Net profit (loss)	48,802.54	6,516.40	(896.42)	12,668.49	6,000.82	36,206.29	10,369.14	8,096.49	40,270.97	3,889.21	
Other comprehensive income (loss)	(24,950.59)	(185.79)	(1,019.52)	(1,841.68)	(902.88)	(2,929.13)	(161.55)	(1.30)	268.34	(55.09)	
Total comprehensive income (loss)	23,851.95	6,330.61	(1,915.94)	10,826.81	5,097.94	33,277.16	10,207.59	8,095.19	40,539.31	3,834.12	
Owners of the parent	15,572.08	2,928.54	(934.38)	4,922.14	2,681.58	21,725.46	4,788.58	3,873.95	19,454.10	2,478.21	
Non-controlling interests	8,279.87	3,402.07	(981.56)	5,904.67	2,416.36	11,551.70	5,419.01	4,221.24	21,085.21	1,355.91	
Total dividend paid to non-controlling interests	7,579.30	2,282.08	983.26	8,732.67	1,753.03	6,200.60	5,597.24	4,152.43	10,437.75	468.22	

* Including gain (loss) on foreign exchange rate

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15. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

15.10 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations: (Continued)

Summary of cash flows for the years ended December 31, 2019 and 2018

Unit: Million Baht

	2019						2018					
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTGC	GPSC
Net cash provided by operating activities	109,165.77	12,775.00	7,720.82	30,168.05	17,338.06	104,710.90	18,544.52	17,848.87	52,024.71	5,849.84		
Net cash provided by (used in) investing activities	(103,769.44)	23,680.90	(6,151.96)	(4fl,773.00)	(82,124.26)	5,102.58	(25,913.14)	(6,133.88)	(31,237.25)	(3,358.35)		
Net cash provided by (used in) financing activities	(17,180.75)	8,129.24	(870.39)	(6,460.64)	77,927.38	(55,685.33)	25,380.10	(11,522.20)	(27,397.36)	(718.26)		
Others	(6,287.50)	(3,446.89)	-	161.85	(52.19)	(354.06)	406.56	-	(75.45)	(25.03)		
Net increase (decrease) in cash and cash equivalents	(18,071.92)	41,138.25	698.47	(17,903.74)	13,088.99	53,774.09	18,418.04	192.79	(6,685.35)	1,748.20		

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16. Other Long-term Investments**16.1 Details of other long-term investments as at December 31, 2019 and 2018**

Unit: Million Baht

Company name	Country of Incorporation	Business	Cost /Cost amortized					
			Ownership interest (%)		Consolidated financial statements		Separate financial statements	
			2019	2018	2019	2018	2019	2018
Long-term Investments in equity securities								
<i>The Company</i>								
Petro Asia (Sanshui) Co., Ltd. (PA (Sanshui))	China	Oil marketing	25.00	25.00	6.06	6.06	6.06	-
Petro Asia (Maoming) Co., Ltd. (PA (Maoming))	China	Oil marketing	20.00	20.00	14.83	14.83	14.83	-
Baania (Thailand) Co.,Ltd. (Baania)	Thailand	Integrated online real estate platform	2.89	3.57	10.00	10.00	10.00	-
Colour Vision International Co., Ltd. (Corpus)	Thailand	Finished yam production	-	0.48	-	0.60	0.60	-
HG Robotics Co., Ltd. (HG Robotics)	Thailand	Autonomous and robotics solutions	9.49	9.49	18.50	18.50	18.50	-
InnoSpace (Thailand) (InnoSpace)	Thailand	Investment in other companies	19.42	-	25.00	-	25.00	-
<i>PTTEP Group</i>								
Mozambique LNG1 Company Pte. Ltd. (MZLNG1)*	Singapore	Petroleum	-	8.50	-	6.90	-	-
Moz LNG1 Holding Company Ltd. (HOLDCO)*	United Arab Emirates	Petroleum	8.50	-	8.97	-	-	-
<i>PTTGL Group</i>								
Petronas LNG 9 Sdn. Bhd. (PL9SB)	Malaysia	LNG liquefaction	10.00	10.00	8,987.40	9,671.67	-	-
<i>GPSC Group</i>								
24M Technologies, Inc. (24M)	United States of America	Research and development in battery	29.50	29.50	1,066.15	1,005.80	-	-
Ratchaburi Power Co., Ltd. (RPCL)	Thailand	Generate and supply electricity	15.00	15.00	888.75	888.75	-	177.00
<i>OR Group</i>								
Intoplane Services Co., Ltd. (IPS)	Thailand	Aircraft refuelling services	16.67	16.67	0.02	0.02	-	-

* On May 7, 2019, a subsidiary in PTTEP Group has transferred its participating interests in MZ LNG1 to participating interests in HOLDCO.

16. Other Long-term Investments (Continued)**16.1 Details of other long-term investments as at December 31, 2019 and 2018 (Continued)**

Unit: Million Baht

Company name	Country of Incorporation	Business	Ownership interest (%)	Cost / Cost amortized					
				Consolidated financial statements			Separate financial statements		
				2019	2018	2019	2018	2019	2018
Long-term Investments in equity securities									
(Continued)									
<i>OR Group (Continued)</i>									
Fuel Pipeline Transportation Co., Ltd. (FPT)*	Thailand	Oil transmission pipelines	-	-	0.02	-	-	-	
<i>PTTT Group</i>									
KIC Oil Terminal Sdn. Bhd. (KOT)	Malaysia	Logistics services	10.00	10.00	105.95	114.02	-	-	
Kadriah Integrated Facilities Sdn. Bhd. (KIF)	Malaysia	Logistics services	10.00	10.00	43.91	47.25	-	-	
Kadriah I Ltd. (K I)	Malaysia	Logistics services	10.00	10.00	220.69	237.49	-	-	
Kadriah II Ltd. (K II)	Malaysia	Logistics services	10.00	10.00	58.99	63.48	-	-	
ICE Futures Abu Dhabi Holdings Limited (IFAD)	United Arab Emirates	Investment in other companies	1.00	-	30.15	-	-	-	
<i>PTTGC Group</i>									
Alliance Petrochemical Investment (Singapore) Pte. Ltd. (API)	Singapore	Investment in other companies	-	-	-	-	-	6.43	
<i>IRPC Group</i>									
Exeltium SAS (EXS)	France	Electricity business	4.00	4.00	238.22	282.88	-	-	
TPBI & Myanmar Star Co., Ltd. (TPBIMS)	Myanmar	Manufacturing and distributing of polymer products	10.00	10.00	15.88	15.88	-	-	
<i>TPI Group</i>									
TPI EOEG Co., Ltd. (TPIE)	Thailand	Finance service	36.31	36.31	828.94	828.94	-	-	
TPI Holding Co., Ltd. (TPIH)	Thailand	Investment in other companies	35.01	35.01	1,415.90	1,415.90	-	-	
Pornchai Enterprises Co., Ltd. (PEC)	Thailand	Real estate for rent	23.65	23.65	1,118.95	1,118.95	-	-	
Thai Special Steel Industries Public Co.,Ltd. (TSSI)	Thailand	Steel wire manufacturing	16.24	16.24	673.35	673.35	-	-	
Rayong Acetylene Co., Ltd. (RAC)	Thailand	Industrial gas manufacturing	13.04	13.04	15.00	15.00	-	-	

* As at December 31, 2019 and 2018, the Group holds 0.00000909% of ownership interest, totaling 66 shares, amounting to Baht 22,220.00.

16. Other Long-term Investments (Continued)

16.1 Details of other long-term investments as at December 31, 2019 and 2018 (Continued)

Company name	Country of Incorporation	Business	Cost / Cost amortized							
			Ownership interest (%)		Consolidated financial statements		Separate financial statements		Dividends income	
			2019	2018	2019	2018	2019	2018	2019	2018
<u>Long-term Investments in equity securities</u>										
(Continued)										
<i>IRPC Group (Continued)</i>										
DIA Polyacrylate Co., Ltd. (DIA)	Thailand	Plastic resin manufacturing	3.65	3.65	8.50	8.50	-	-	0.69	-
Guangzhou Saiji Performance Polymet Ltd. (GZSI)	China	E-Commerce	15.00	-	600.38	-	-	-	-	-
<i>The Group</i>										
Sam Palung Social Enterprise Co., Ltd. (SPSE)*	Thailand	Social enterprise	100.00	100.00	9.94	2.49	2.00	0.50	-	-
Others			-	-	327.11	43.22	-	-	-	-
Long-term investments in equity securities					16,737.56	16,490.50	76.39	50.49		
Less Allowance for impairment					(3,487.20)	(3,954.52)	(20.89)	(14.14)		
Total					13,250.36	12,535.98	55.50	36.35	177.69	141.43
<u>Long-term investments in debt securities</u>										
<i>The Company</i>										
Bangkok Dusit Medical Services Public Co., Ltd. (BDMS)	Thailand	Health care services	-	-	420.37	-	420.37	-	-	-
Indorama Ventures Public Co., Ltd. (IVL)	Thailand	Petrochemicals and chemicals	-	-	500.00	-	500.00	-	-	-
The Commercial Bank (P.S.Q.C.) (CBQ)	Qatar	Banking	-	-	6,456.96	-	6,456.96	-	-	-
Emirates NBD (ENBD)	United Arab Emirates	Banking	-	-	2,098.37	4,519.87	2,098.37	4,519.87	-	-
The Siam Cement Public Co., Ltd. (SCC)	Thailand	Property and Construction	-	-	103.36	-	103.36	-	-	-
Thai Beverage Public Co., Ltd. (TBEV)	Thailand	Manufacturing and distributing of food and beverage	-	-	1,400.00	300.00	1,400.00	300.00	-	-

* Held by the Company 20%, PTTEP Group, PTIGC Group, TOP Group, IRPC Group 15% each and GPSC Group, OK Group 10% each.

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16. Other Long-term Investments (Continued)**16.1 Details of other long-term investments as at December 31, 2019 and 2018 (Continued)**

Unit: Million Baht

Company name	Country of Incorporation	Business	Cost / Cost amortized						
			Ownership interest (%)		Consolidated financial statements		Separate financial statements		Dividends income
			2019	2018	2019	2018	2019	2018	
Long-term investments in debt securities									
(Continued)									
<i>The Company (Continued)</i>									
Banghak Corporation Public Co., Ltd. (BCP)	Thailand	Energy & Utilities	-	500.00	-	-	500.00	-	-
Charoen Pokphand Foods Public Co., Ltd. (CPF)	Thailand	Food & Beverage	-	1,150.00	-	-	1,150.00	-	-
Gulf Energy Development Public Co., Ltd. (GULF)	Thailand	Energy & Utilities	203.30	-	203.30	-	-	-	-
BTS Group Holdings Public Co., Ltd. (BTSG)	Thailand	Transportation & Logistics	500.00	-	500.00	-	-	-	-
<i>The Group</i>									
Others			479.80	484.27	-	-	-	-	-
Total			4,681.47	14,434.83	4,201.67	13,950.56			
Grand total			17,931.83	26,970.81	4,257.17	13,986.91	177.69	141.43	

16. Other Long-term Investments (Continued)

16.2 Movements in other long-term investments are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Long-term investments in equity securities				
As at January 1,	12,535.98	12,512.43	36.35	7.89
- Additional investments	1,029.45	203.03	26.50	28.50
- Reclassifications	-	179.64	-	-
- Disposal of investments	(7.19)	(290.24)	(0.60)	(0.04)
- Reversal of (loss on) impairment	434.62	-	(6.75)	-
- Currency translation differences	(742.50)	(68.88)	-	-
Long-term investments in equity securities as at December 31,	13,250.36	12,535.98	55.50	36.35
Long-term investments in debt securities as at December 31,	4,681.47	14,434.83	4,201.67	13,950.56
Total other long-term investments as at December 31,	<u>17,931.83</u>	<u>26,970.81</u>	<u>4,257.17</u>	<u>13,986.91</u>

16.3 Significant events during the year ended December 31, 2019

SPSE

On May 14, 2019, at the Board of Directors Meeting of Sam Palung Social Enterprise Co., Ltd. (SPSE) No. 2/2019, the Board passed a resolution to approve the call up of remaining share capital of Baht 1.50 million. The Company made the payment on June 28, 2019.

InnoSpace

On August 15, 2019, at the Board of Directors Meeting of the Company No. 8/2019, the Board passed a resolution to support the development of innovation, entrepreneurs and startups in Thailand. On September 9, 2019, the Company signed on the shareholders agreement to invest in InnoSpace (Thailand) (InnoSpace) with the amount of Bath 100.00 million, totalling 100,000 shares at Baht 1,000.00 per share. The Company made payment totalling Baht 25.00 million on October 21 and November 15, 2019, respectively.

17. Investment Properties

Details of investment properties are as follows:

Unit: Million Baht

	Consolidated financial statements				Total
	Land	Buildings and building improvements	Other assets	Construction in progress	
As at January 1, 2018					
Cost	5,202.33	2,374.80	-	4.77	7,581.90
Reclassification and adjustment (Note 4)	977.47	-	-	-	977.47
<u>Less</u> Accumulated depreciation	-	(1,081.52)	-	-	(1,081.52)
Allowance for impairment of assets	(266.95)	-	-	-	(266.95)
Net book value	5,912.85	1,293.28	-	4.77	7,210.90
For the year ended December 31, 2018					
Beginning net book value	4,935.38	1,293.28	-	4.77	6,233.43
- Reclassification and adjustment (Note 4)	977.47	-	-	-	977.47
Beginning net book value after reclassification and adjustment	5,912.85	1,293.28	-	4.77	7,210.90
- Additions	12.42	123.54	3.69	27.44	167.09
- Reclassifications	(595.95)	57.98	-	(32.21)	(570.18)
- Disposals - net	(25.42)	(133.47)	-	-	(158.89)
- Depreciation for the year	-	(116.39)	(0.11)	-	(116.50)
- Reversal of loss on impairment	50.75	-	-	-	50.75
Ending net book value	5,354.65	1,224.94	3.58	-	6,583.17
As at December 31, 2018					
Cost	4,593.38	2,342.43	3.69	-	6,939.50
Reclassification and adjustment (Note 4)	977.47	-	-	-	977.47
<u>Less</u> Accumulated depreciation	-	(1,117.49)	(0.11)	-	(1,117.60)
Allowance for impairment of assets	(216.20)	-	-	-	(216.20)
Net book value	5,354.65	1,224.94	3.58	-	6,583.17

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17. Investment Properties (Continued)

Details of investment properties are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements				Total
	Land	Buildings and building improvements	Other assets	Construction in progress	
For the year ended December 31, 2019					
Beginning net book value	4,377.18	1,224.94	3.58	-	5,605.70
- Reclassification and adjustment (Note 4)	977.47	-	-	-	977.47
Beginning net book value after reclassification and adjustment	5,354.65	1,224.94	3.58	-	6,583.17
- Additions	6.42	12.05	0.02	-	18.49
- Reclassifications	1,769.37	45.60	-	-	1,814.97
- Disposals - net	(464.01)	(1.21)	-	-	(465.22)
- Depreciation for the year	-	(115.67)	(0.37)	-	(116.04)
- Reversal of loss on impairment	151.86	-	-	-	151.86
Ending net book value	6,818.29	1,165.71	3.23	-	7,987.23
As at December 31, 2019					
Cost	6,882.63	2,365.58	3.71	-	9,251.92
<u>Less</u> Accumulated depreciation	-	(1,199.87)	(0.48)	-	(1,200.35)
Allowance for impairment of assets	(64.34)	-	-	-	(64.34)
Net book value	6,818.29	1,165.71	3.23	-	7,987.23

17. Investment Properties (Continued)

Details of investment properties are as follows: (Continued)

Unit: Million Baht

	Separate financial statements			Total
	Land	Buildings and building improvements	Construction in progress	
As at January 1, 2018				
Cost	3,571.06	503.64	4.77	4,079.47
<u>Less</u> Accumulated depreciation	-	(228.34)	-	(228.34)
Net book value	3,571.06	275.30	4.77	3,851.13
For the year ended December 31, 2018				
Beginning net book value	3,571.06	275.30	4.77	3,851.13
- Additions	-	1.36	27.44	28.80
- Reclassifications	(0.05)	410.81	(32.21)	378.55
- Disposals - net	(1,926.37)	(133.47)	-	(2,059.84)
- Disposals of discontinued operations - net	-	(134.30)	-	(134.30)
- Depreciation for the year	-	(31.62)	-	(31.62)
Ending net book value	1,644.64	388.08	-	2,032.72
As at December 31, 2018				
Cost	1,644.64	1,229.13	-	2,873.77
<u>Less</u> Accumulated depreciation	-	(841.05)	-	(841.05)
Net book value	1,644.64	388.08	-	2,032.72
For the year ended December 31, 2019				
Beginning net book value	1,644.64	388.08	-	2,032.72
- Reclassifications	1,769.37	(0.09)	-	1,769.28
- Disposals - net	-	(20.64)	-	(20.64)
- Depreciation for the year	-	(38.55)	-	(38.55)
Ending net book value	3,414.01	328.80	-	3,742.81
As at December 31, 2019				
Cost	3,414.01	1,174.72	-	4,588.73
<u>Less</u> Accumulated depreciation	-	(845.92)	-	(845.92)
Net book value	3,414.01	328.80	-	3,742.81

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18. Property, Plant and Equipment

Details of property, plant and equipment are as follows:

	Consolidated financial statements						Unit: Million Baht	
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets		Construction in progress
As at January 1, 2018								
Cost	38,369.18	288,813.65	966,165.37	879,673.52	53,209.26	23,852.24	68,250.88	2,318,334.10
Reclassification and adjustment (Note 4)	(977.47)	-	8,849.67	-	-	-	-	7,872.20
<u>Less</u> Accumulated depreciation	-	(150,417.72)	(407,753.27)	(580,556.01)	(26,775.94)	(15,552.03)	-	(1,181,054.97)
Accumulated depreciation - Reclassification and adjustment (Note 4)	-	-	(2,362.24)	-	-	-	-	(2,362.24)
Allowance for impairment of assets (Note 4)	(99.65)	(707.51)	(3,227.56)	(40,207.92)	(13,872.72)	(546.36)	(1,711.51)	(60,373.23)
Net book value	37,292.06	137,688.42	561,671.97	258,909.59	12,560.60	7,753.85	66,539.37	1,082,415.86

18. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements						Unit: Million Baht	
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets		Construction in progress
For the year ended December 31, 2018								
Beginning net book value	38,269.53	137,688.42	555,184.54	258,909.59	12,560.60	7,753.85	66,539.37	1,076,905.90
- Reclassification and adjustment (Note 4)	(977.47)	-	6,487.43	-	-	-	-	5,509.96
Beginning net book value after reclassification and adjustment	37,292.06	137,688.42	561,671.97	258,909.59	12,560.60	7,753.85	66,539.37	1,082,415.86
- Business acquisition	1,922.60	337.47	7,353.87	43,209.77	-	-	70.18	52,893.89
- Additions	4,527.66	2,120.71	3,638.68	33,350.65	1,496.71	1,201.51	72,132.13	118,468.05
- Borrowing costs	-	-	-	-	-	-	1,314.84	1,314.84
- Reclassifications	2,564.16	6,944.18	35,303.37	1,675.88	101.48	4,349.88	(51,113.05)	(174.10)
- Disposals - net	-	(477.45)	(1,070.90)	(13,098.15)	(56.51)	(344.40)	(213.97)	(15,261.38)
- Depreciation for the year	-	(11,496.03)	(44,075.33)	(59,490.77)	(1,537.65)	(2,099.31)	-	(118,699.09)
- Reversal of (loss on) impairment	-	40.30	818.69	-	-	-	(41.62)	817.37
- Currency translation differences	(16.30)	(95.85)	(340.99)	(2,477.49)	(88.81)	(2.42)	(64.57)	(3,086.43)
- Others	-	-	1,824.01	-	-	-	-	1,824.01
Ending net book value	46,290.18	135,061.75	565,123.37	262,079.48	12,475.82	10,859.11	88,623.31	1,120,513.02

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18. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements						Unit: Million Baht	
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets		Construction in progress
As at December 31, 2018								
Cost	47,367.30	295,838.40	1,023,831.31	859,932.18	54,380.77	27,210.84	90,219.80	2,398,780.60
Reclassification and adjustment (Note 4)	(977.47)	-	10,530.81	-	-	-	-	9,553.34
<u>Less Accumulated depreciation</u>	-	(160,113.91)	(462,814.33)	(586,991.28)	(28,130.33)	(16,334.64)	-	(1,254,384.49)
Accumulated depreciation - Reclassification and adjustment (Note 4)	-	-	(3,215.06)	-	-	-	-	(3,215.06)
Allowance for impairment of assets (Note 4)	(99.65)	(662.74)	(3,209.36)	(10,861.42)	(13,774.62)	(17.09)	(1,596.49)	(30,221.37)
Net book value	46,290.18	135,061.75	565,123.37	262,079.48	12,475.82	10,859.11	88,623.31	1,120,513.02

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18. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements						Unit: Million Baht	
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets		Construction in progress
For the year ended December 31, 2019								
Beginning net book value	47,267.65	135,061.75	557,807.62	262,079.48	12,475.82	10,859.11	88,623.31	1,114,174.74
- Reclassification and adjustment (Note 4)	(977.47)	-	7,315.75	-	-	-	-	6,338.28
Beginning net book value after reclassification and adjustment	46,290.18	135,061.75	565,123.37	262,079.48	12,475.82	10,859.11	88,623.31	1,120,513.02
- Business acquisition (Note 43)	648.51	303.67	74,255.30	64,256.13	395.31	13.49	207.01	140,079.42
- Additions	957.23	3,485.62	6,061.54	42,792.16	1,345.61	1,127.89	98,616.74	154,386.79
- Borrowing costs	-	-	-	-	-	-	3,517.52	3,517.52
- Reclassifications	(72.75)	7,915.07	31,200.52	30,843.54	100.33	645.25	(43,179.23)	27,452.73
- Disposals - net	(0.29)	(133.89)	(311.39)	(1,078.36)	(41.06)	(189.73)	(44.64)	(1,799.36)
- Depreciation for the year	-	(11,600.83)	(48,329.86)	(61,750.25)	(2,017.92)	(2,263.83)	-	(125,962.69)
- Reversal of (loss on) impairment	27.10	154.36	(612.14)	-	-	(0.03)	-	(430.71)
- Currency translation differences	(121.15)	(420.88)	(1,473.52)	(19,448.27)	(883.26)	(20.47)	(410.09)	(22,777.64)
Ending net book value	47,728.83	134,764.87	625,913.82	317,694.43	11,374.83	10,171.68	147,330.62	1,294,979.08
As at December 31, 2019								
Cost	47,801.38	302,477.99	1,166,627.33	933,235.17	52,262.94	28,221.21	148,833.28	2,679,459.30
Less Accumulated depreciation	-	(167,200.77)	(537,817.83)	(605,447.77)	(28,088.03)	(18,032.41)	-	(1,356,586.81)
Allowance for impairment of assets	(72.55)	(512.35)	(2,895.68)	(10,092.97)	(12,800.08)	(17.12)	(1,502.66)	(27,893.41)
Net book value	47,728.83	134,764.87	625,913.82	317,694.43	11,374.83	10,171.68	147,330.62	1,294,979.08

As at December 31, 2019, the Group had pledged assets amounting to Baht 78,983.48 million (December 31, 2018: Baht 50,740.55 million.)

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18. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Other assets	Construction in progress	
As at January 1, 2018						
Cost	11,030.38	47,075.51	383,419.77	15,128.11	20,237.17	476,890.94
Adjustment (Note 4)	-	-	1,467.87	-	-	1,467.87
<u>Less</u> Accumulated depreciation	-	(19,098.62)	(158,630.96)	(11,342.11)	-	(189,071.69)
Accumulated depreciation - Adjustment (Note 4)	-	-	(401.85)	-	-	(401.85)
Allowance for impairment of assets	-	(53.00)	(36.32)	-	-	(89.32)
Net book value	11,030.38	27,923.89	225,818.51	3,786.00	20,237.17	288,795.95
For the year ended December 31, 2018						
Beginning net book value	11,030.38	27,923.89	224,752.49	3,786.00	20,237.17	287,729.93
- Adjustment (Note 4)	-	-	1,066.02	-	-	1,066.02
Beginning net book value after adjustment	11,030.38	27,923.89	225,818.51	3,786.00	20,237.17	288,795.95
- Additions	316.71	229.16	839.99	604.18	23,186.86	25,176.90
- Borrowing costs	-	-	-	-	697.49	697.49
- Reclassifications	1,206.22	1,951.04	13,220.00	4,214.04	(21,903.18)	(1,311.88)
- Disposals - net	-	(400.94)	(81.37)	(144.06)	(0.62)	(626.99)
- Disposals of discontinued operations - net	(5,182.14)	(4,565.43)	(8,336.34)	(473.12)	(1,465.38)	(20,022.41)
- Depreciation for the year	-	(1,839.30)	(15,112.35)	(1,432.90)	-	(18,384.55)
- Reversal of loss on impairment	-	26.44	-	-	-	26.44
Ending net book value	7,371.17	23,324.86	216,348.44	6,554.14	20,752.34	274,350.95
As at December 31, 2018						
Cost	7,371.17	38,360.19	369,986.08	17,819.69	20,752.34	454,289.47
Adjustment (Note 4)	-	-	1,467.87	-	-	1,467.87
<u>Less</u> Accumulated depreciation	-	(15,008.77)	(154,630.64)	(11,265.55)	-	(180,904.96)
Accumulated depreciation - Adjustment (Note 4)	-	-	(438.55)	-	-	(438.55)
Allowance for impairment of assets	-	(26.56)	(36.32)	-	-	(62.88)
Net book value	7,371.17	23,324.86	216,348.44	6,554.14	20,752.34	274,350.95

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18. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Other assets	Construction in progress	
For the year ended December 31, 2019						
Beginning net book value	7,371.17	23,324.86	215,319.12	6,554.14	20,752.34	273,321.63
- Adjustment (Note 4)	-	-	1,029.32	-	-	1,029.32
Beginning net book value after adjustment	7,371.17	23,324.86	216,348.44	6,554.14	20,752.34	274,350.95
- Additions	8.62	91.61	251.57	431.04	19,817.16	20,600.00
- Borrowing costs	-	-	-	-	995.92	995.92
- Reclassifications	(1,720.92)	879.97	6,947.55	303.78	(9,499.34)	(3,088.96)
- Disposals - net	(0.13)	(292.79)	(66.15)	(47.25)	(394.02)	(800.34)
- Depreciation for the year	-	(1,708.83)	(14,573.18)	(1,459.33)	-	(17,741.34)
- Loss on impairment	-	(6.16)	(489.39)	(0.03)	-	(495.58)
Ending net book value	5,658.74	22,288.66	208,418.84	5,782.35	31,672.06	273,820.65
As at December 31, 2019						
Cost	5,658.74	38,795.75	378,010.70	18,386.39	31,672.06	472,523.64
<u>Less</u> Accumulated depreciation	-	(16,474.37)	(169,066.15)	(12,604.01)	-	(198,144.53)
Allowance for impairment of assets	-	(32.72)	(525.71)	(0.03)	-	(558.46)
Net book value	5,658.74	22,288.66	208,418.84	5,782.35	31,672.06	273,820.65

Borrowing costs were capitalized as a part of costs of property, plant and equipment. During the year, the Group used capitalization rates ranging from 0.85% - 5.25% per annum (2018: 1.10% - 5.67% per annum)

18. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

As at December 31, 2019 and 2018, details of other assets include vehicles and natural gas pipeline acquired under finance leases which were recorded as machinery and equipment are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Cost	10,806.99	10,664.03	9,537.43	9,516.59
<u>Less Accumulated depreciation</u>	<u>(5,429.42)</u>	<u>(4,849.07)</u>	<u>(4,893.69)</u>	<u>(4,406.14)</u>
Net book value	<u>5,377.57</u>	<u>5,814.96</u>	<u>4,643.74</u>	<u>5,110.45</u>

19. Goodwill

Movements of goodwill are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2019	2018
Net book value as at January 1,	48,924.92	46,688.26
- Reclassification and adjustment (Note 4)	<u>4,971.38</u>	<u>5,006.78</u>
Net book value as at January 1, after reclassification and adjustment	53,896.30	51,695.04
- Business acquisition (Note 43)	61,151.61	2,521.18
- Reclassification	205.36	-
- Currency translation differences	<u>(3,320.13)</u>	<u>(319.92)</u>
Net book value as at December 31,	<u>111,933.14</u>	<u>53,896.30</u>

20. Intangible Assets

Details of intangible assets are as follows:

	Unit: Million Baht			
	Consolidated financial statements			
	Computer software	Right of use	Other Intangible assets	Total
As at January 1, 2018				
Cost	19,996.09	32,687.28	9,228.14	61,911.51
<u>Less</u> Accumulated amortization	(10,860.71)	(13,645.30)	(4,438.74)	(28,944.75)
Allowance for impairment of assets	-	(837.23)	(21.85)	(859.08)
Net book value	9,135.38	18,204.75	4,767.55	32,107.68
For the year ended December 31, 2018				
Beginning net book value	9,135.38	18,204.75	4,767.55	32,107.68
- Business acquisition	10.54	3.37	-	13.91
- Additions	1,235.35	103.43	1,185.34	2,524.12
- Reclassifications	2,116.54	1,261.50	(19.97)	3,358.07
- Disposals - net	(0.13)	(85.82)	(2.49)	(88.44)
- Amortization for the year	(2,148.00)	(1,069.06)	(522.14)	(3,739.20)
- Reversal of loss on impairment	-	85.82	-	85.82
- Currency translation differences	(15.94)	(26.76)	(18.86)	(61.56)
Ending net book value	10,333.74	18,477.23	5,389.43	34,200.40
As at December 31, 2018				
Cost	23,154.90	33,816.97	10,348.07	67,319.94
<u>Less</u> Accumulated amortization	(12,821.16)	(14,595.60)	(4,936.79)	(32,353.55)
Allowance for impairment of assets	-	(744.14)	(21.85)	(765.99)
Net book value	10,333.74	18,477.23	5,389.43	34,200.40

20. Intangible Assets (Continued)

Details of intangible assets are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements			
	Computer software	Right of use	Other Intangible assets	Total
For the year ended December 31, 2019				
Beginning net book value	10,333.74	18,477.23	5,389.43	34,200.40
- Business acquisition (Note 43)	138.92	45,360.16	1,124.87	46,623.95
- Addition	1,343.85	573.07	1,256.58	3,173.50
- Reclassifications	559.13	2,162.14	(548.94)	2,172.33
- Disposals - net	(2.26)	-	(95.72)	(97.98)
- Amortization for the year	(2,331.18)	(2,748.34)	(534.28)	(5,613.80)
- Currency translation differences	(172.34)	(74.14)	(244.25)	(490.73)
Ending net book value	9,869.86	63,750.12	6,347.69	79,967.67
As at December 31, 2019				
Cost	24,860.92	82,886.51	11,675.47	119,422.90
<u>Less</u> Accumulated amortization	(14,991.06)	(18,444.89)	(5,305.93)	(38,741.88)
Allowance for impairment of assets	-	(691.50)	(21.85)	(713.35)
Net book value	9,869.86	63,750.12	6,347.69	79,967.67

20. Intangible Assets (Continued)

Details of intangible assets are as follows: (Continued)

Unit: Million Baht

	Separate financial statements			Total
	Computer software	Right of use	Other Intangible assets	
As at January 1, 2018				
Cost	6,691.53	19,963.08	67.50	26,722.11
<u>Less</u> Accumulated amortization	<u>(3,982.62)</u>	<u>(8,326.24)</u>	<u>(9.63)</u>	<u>(12,318.49)</u>
Net book value	<u>2,708.91</u>	<u>11,636.84</u>	<u>57.87</u>	<u>14,403.62</u>
For the year ended December 31, 2018				
Beginning net book value	2,708.91	11,636.84	57.87	14,403.62
- Additions	226.78	-	-	226.78
- Reclassifications	1,061.40	166.10	-	1,227.50
- Disposals - net	(3.92)	-	-	(3.92)
- Disposal of discontinued operations - net	(395.65)	-	(55.82)	(451.47)
- Amortization for the year	<u>(1,060.29)</u>	<u>(526.23)</u>	<u>(2.05)</u>	<u>(1,588.57)</u>
Ending net book value	<u>2,537.23</u>	<u>11,276.71</u>	<u>-</u>	<u>13,813.94</u>
As at December 31, 2018				
Cost	7,178.44	20,129.18	-	27,307.62
<u>Less</u> Accumulated amortization	<u>(4,641.21)</u>	<u>(8,852.47)</u>	<u>-</u>	<u>(13,493.68)</u>
Net book value	<u>2,537.23</u>	<u>11,276.71</u>	<u>-</u>	<u>13,813.94</u>
For the year ended December 31, 2019				
Beginning net book value	2,537.23	11,276.71	-	13,813.94
- Additions	246.82	3.00	-	249.82
- Reclassifications	773.72	18.82	-	792.54
- Disposals - net	(27.29)	-	-	(27.29)
- Amortization for the year	<u>(925.66)</u>	<u>(528.13)</u>	<u>-</u>	<u>(1,453.79)</u>
Ending net book value	<u>2,604.82</u>	<u>10,770.40</u>	<u>-</u>	<u>13,375.22</u>
As at December 31, 2019				
Cost	8,131.08	20,151.00	-	28,282.08
<u>Less</u> Accumulated amortization	<u>(5,526.26)</u>	<u>(9,380.60)</u>	<u>-</u>	<u>(14,906.86)</u>
Net book value	<u>2,604.82</u>	<u>10,770.40</u>	<u>-</u>	<u>13,375.22</u>

21. Exploration and evaluation assets

Details of exploration and evaluation assets are as follows:

	Unit: Million Baht		
	Consolidated financial statements		
	Petroleum exploration and evaluation assets	Mining properties	Total
As at January 1, 2018			
Cost	166,614.27	847.84	167,462.11
Reclassification and adjustment (Note 4)	(7,857.80)	-	(7,857.80)
<u>Less</u> Allowance for impairment of assets	(58,539.28)	(163.11)	(58,702.39)
Net book value	100,217.19	684.73	100,901.92
For the year ended December 31, 2018			
Beginning net book value	108,074.99	684.73	108,759.72
- Reclassification and adjustment (Note 4)	(7,857.80)	-	(7,857.80)
Beginning net book value after reclassification and adjustment	100,217.19	684.73	100,901.92
- Additions	1,968.02	6.38	1,974.40
- Reclassifications	(1,675.87)	-	(1,675.87)
- Disposals - net	(2.36)	-	(2.36)
- Currency translation differences	(824.03)	(13.73)	(837.76)
Ending net book value	99,682.95	677.38	100,360.33
As at December 31, 2018			
Cost	160,814.99	839.34	161,654.33
Reclassification and adjustment (Note 4)	(7,802.24)	-	(7,802.24)
<u>Less</u> Allowance for impairment of assets	(53,329.80)	(161.96)	(53,491.76)
Net book value	99,682.95	677.38	100,360.33

21. Exploration and evaluation assets (Continued)

Details of exploration and evaluation assets are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements		
	Petroleum exploration and evaluation assets	Mining properties	Total
For the year ended December 31, 2019			
Beginning net book value	107,485.19	677.38	108,162.57
- Reclassification and adjustment (Note 4)	(7,802.24)	-	(7,802.24)
Beginning net book value after reclassification and adjustment	99,682.95	677.38	100,360.33
- Business acquisition (Note 43)	15,607.92	27.38	15,635.30
- Additions	3,700.24	27.46	3,727.70
- Reclassifications	(30,914.47)	-	(30,914.47)
- Disposals - net	(2,043.21)	-	(2,043.21)
- Currency translation differences	(6,442.37)	(54.94)	(6,497.31)
Ending net book value	79,591.06	677.28	80,268.34
As at December 31, 2019			
Cost	131,643.14	827.78	132,470.92
<u>Less</u> Allowance for impairment of assets	(52,052.08)	(150.50)	(52,202.58)
Net book value	79,591.06	677.28	80,268.34

22. Income Taxes and Deferred Taxes

Applicable tax rates for the Group are as follows:

	<u>Rates (%)</u>
Petroleum income tax on petroleum business in Thailand pursuant to the Petroleum Income Tax Act, B.E. 2514 and B.E. 2532	50
Income tax under the Revenue Code of the Company and its subsidiaries	20
Corporate income tax in foreign countries	1 - 80
Corporate Income tax from the Petroleum business in the Thai-Malaysia co-development area under the Petroleum Income Tax Act (No.5) B.E. 2541	0 - 20
Petroleum resource rent tax in Australia	40
Petroleum Income tax in foreign countries *	38

* The petroleum income tax rate for marginal field which are approved to the tax reduction incentive to 25% tax rate.

22.1 Income taxes recognized in the statements of income for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Current tax:				
Current tax	48,568.51	67,814.56	10,203.25	12,806.19
Adjustments in respect of current tax of previous year	(1,176.02)	1,495.93	(30.61)	(215.60)
	<u>47,392.49</u>	<u>69,310.49</u>	<u>10,172.64</u>	<u>12,590.59</u>
Deferred tax:				
Change in temporary differences	(13,574.05)	(15,204.04)	(1,733.53)	(2.11)
Tax effect of currency translation on tax base	(829.56)	(459.90)	-	-
	<u>(14,403.61)</u>	<u>(15,663.94)</u>	<u>(1,733.53)</u>	<u>(2.11)</u>
Total	<u>32,988.88</u>	<u>53,646.55</u>	<u>8,439.11</u>	<u>12,588.48</u>

22. Income Taxes and Deferred Taxes (Continued)

22.2 Reconciliations between income taxes and the product of profit before income taxes multiplied by the applicable tax rate are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Profit before income taxes from continuing operations	155,080.48	219,056.80	70,096.42	107,100.60
Profit before income taxes from discontinued operations	-	-	-	88,970.10
Profit before income taxes	<u>155,080.48</u>	<u>219,056.80</u>	<u>70,096.42</u>	<u>196,070.70</u>
Adjustment (Note 4)	-	(36.70)	-	(36.70)
Profit before income taxes after adjustment	<u>155,080.48</u>	<u>219,020.10</u>	<u>70,096.42</u>	<u>196,034.00</u>
Tax calculated at a tax rate of 20%	31,016.10	43,804.02	14,019.28	39,206.80
Tax effect of :				
Income not subject to tax	(4,382.39)	(8,616.73)	(5,935.34)	(8,563.77)
Non-deductible expenses	1,902.70	15,681.81	342.59	471.55
Expenses deductible at a greater amount	(418.89)	(471.64)	(81.76)	(92.88)
(Gain) loss from the entities not subject to tax	902.54	(128.74)	-	-
Adjustment in respect of prior period	(1,176.02)	1,495.93	(30.61)	(215.60)
Share of profit from investment in joint ventures and associates	(1,082.88)	(1,731.67)	-	-
Tax credit on petroleum royalty	(15,693.36)	(14,561.41)	-	-
Tax credit on foreign corporate income tax	-	(375.26)	-	-
Differences in tax rate	21,824.85	11,904.42	-	-
Deferred tax on functional currency	(829.56)	(459.90)	-	-
Effect from the restructuring of the Oil Business Unit (Note 13)	-	6,032.97	-	-
Others	925.79	1,072.75	124.95	(9.24)
Total income taxes	<u>32,988.88</u>	<u>53,646.55</u>	<u>8,439.11</u>	<u>30,796.86</u>
<u>Less</u> Income taxes of discontinued operations	-	-	-	(18,208.38)
Income taxes	<u>32,988.88</u>	<u>53,646.55</u>	<u>8,439.11</u>	<u>12,588.48</u>

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22. Income Taxes and Deferred Taxes (Continued)

22.3 Movements in deferred taxes are as follows:

Unit: Million Baht

	Consolidated financial statements										As at December 31, 2019	
	Net balance as at January 1, 2019	Reclassification and Adjustment (Note 4)	Net balance after reclassification and adjustment	Profit (loss)	Other comprehensive income (loss)	Business acquisition (Note 43)	Currency translation differences	Others	Net balance	Deferred tax assets	Deferred tax liabilities	
Property, plant and equipment	(58,068.11)	2,340.67	(55,727.44)	8,589.12	-	(21,632.13)	3,912.54	(22.37)	(64,880.28)	11,154.78	(76,035.06)	
Intangible assets	7,153.63	-	7,153.63	(203.44)	-	(9,035.08)	3.14	(0.25)	(2,082.00)	6,846.09	(8,928.09)	
Investments	70.36	-	70.36	14.56	-	-	-	-	84.92	84.92	-	
Available-for-sale investments	(333.37)	-	(333.37)	0.01	(21.43)	-	0.01	-	(354.78)	42.96	(397.74)	
Trade and other accounts receivable	(4,082.88)	-	(4,082.88)	747.20	-	-	2.23	-	(3,333.45)	464.27	(3,797.72)	
Inventories	(39.21)	-	(39.21)	210.81	-	-	(0.01)	-	171.59	211.31	(39.72)	
Loans	(128.50)	-	(128.50)	(257.65)	-	-	-	0.18	(385.97)	-	(385.97)	
Provisions for employee benefit	5,854.70	-	5,854.70	1,569.56	408.80	80.37	(186.67)	3.66	7,730.42	7,730.42	-	
Provision for decommissioning costs	26,911.88	-	26,911.88	2,313.46	-	3,448.68	(1,992.88)	-	30,681.14	30,681.14	-	
Cumulative loss carried forward	10,394.14	-	10,394.14	975.46	82.05	15.34	(592.79)	-	10,874.20	10,874.20	-	
Tax effect of currency translation on tax base	2,482.96	-	2,482.96	830.04	-	-	(225.39)	-	3,087.61	3,123.51	(35.90)	
Others	5,415.04	-	5,415.04	(385.52)	64.28	4,348.21	(276.32)	178.46	9,344.15	10,767.03	(1,422.88)	
Total before set-off of taxes	(4,369.36)	2,340.67	(2,028.69)	14,403.61	533.70	(22,774.61)	643.86	159.68	(9,062.45)	81,980.63	(91,043.08)	
Set-off of taxes									-	(34,369.53)	34,369.53	
Net deferred tax assets (liabilities)									(9,062.45)	47,611.10	(56,673.55)	

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22. Income Taxes and Deferred Taxes (Continued)

22.3 Movements in deferred taxes are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements										As at December 31, 2018	
	Net balance as at January 1, 2018	Reclassification and Adjustment (Note 4)	Net balance after reclassification and adjustment	Profit (loss)	Other comprehensive income (loss)	Business acquisition	Currency translation differences	Others	Net balance	Deferred tax assets	Deferred tax liabilities	
Property, plant and equipment	(57,969.58)	2,357.34	(55,612.24)	4,448.29	-	(3,870.02)	(693.47)	-	(55,727.44)	8,920.09	(64,647.53)	
Intangible assets	18.17	-	18.17	7,136.72	-	-	(1.26)	-	7,153.63	7,299.68	(146.05)	
Investments	55.75	-	55.75	14.61	-	-	-	-	70.36	70.36	-	
Available-for-sale investments	(743.83)	-	(743.83)	-	410.46	-	-	-	(333.37)	14.79	(348.16)	
Trade and other accounts receivable	(3,137.13)	-	(3,137.13)	(945.90)	-	-	0.30	(0.15)	(4,082.88)	481.37	(4,564.25)	
Inventories	177.41	-	177.41	(217.73)	-	1.54	-	(0.43)	(39.21)	216.19	(255.40)	
Loans	(140.50)	-	(140.50)	12.00	-	-	-	-	(128.50)	-	(128.50)	
Provisions for employee benefit	6,001.54	-	6,001.54	31.50	(183.16)	18.67	(16.37)	2.52	5,854.70	5,854.70	-	
Provision for decommissioning costs	19,992.74	-	19,992.74	3,093.89	-	4,003.69	(178.44)	-	26,911.88	26,911.88	-	
Cumulative loss carried forward	7,029.89	-	7,029.89	1,877.27	100.57	157.81	1,240.16	(11.56)	10,394.14	10,394.14	-	
Petroleum resource rent tax in Australia	2,265.76	-	2,265.76	(29.39)	-	-	(1.89)	(2,234.48)	-	-	-	
Tax effect of currency translation on tax base	2,041.88	-	2,041.88	459.91	-	-	(18.83)	-	2,482.96	2,511.42	(28.46)	
Others	3,713.40	-	3,713.40	(217.23)	(16.62)	2,098.89	(180.76)	17.36	5,415.04	6,328.98	(913.94)	
Total before set-off of taxes	(20,694.50)	2,357.34	(18,337.16)	15,663.94	311.25	2,410.58	149.44	(2,226.74)	(2,028.69)	69,003.60	(71,032.29)	
Set-off of taxes	-	-	-	-	-	-	-	-	-	(40,504.67)	40,504.67	
Net deferred tax assets (liabilities)	-	-	-	-	-	-	-	-	(2,028.69)	28,498.93	(30,527.62)	

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22. Income Taxes and Deferred Taxes (Continued)

22.3 Movements in deferred taxes are as follows: (Continued)

	Separate financial statements						Unit: Million Baht
	As at December 31, 2019						
	Net balance as at January 1, 2019	Profit (loss)	Other comprehensive loss	Net balance	Deferred tax assets	Deferred tax liabilities	
Property, plant and equipment	(587.69)	157.97	-	(429.72)	-	(429.72)	
Intangible assets	135.74	2.20	-	137.94	137.94	-	
Investments	54.89	-	-	54.89	54.89	-	
Available-for-sale investments	(323.40)	-	(33.21)	(356.61)	-	(356.61)	
Trade and other accounts receivable	(2,008.02)	1,679.13	-	(328.89)	420.52	(749.41)	
Inventories	70.68	(13.66)	-	57.02	57.02	-	
Loans	(90.53)	(245.03)	-	(335.56)	-	(335.56)	
Provisions for employee benefit	1,381.33	314.60	(233.40)	1,462.53	1,462.53	-	
Others	1,156.80	(161.68)	-	995.12	996.76	(1.64)	
Total before set-off of taxes	(210.20)	1,733.53	(266.61)	1,256.72	3,129.66	(1,872.94)	
Set-off of taxes				-	(1,872.94)	1,872.94	
Net deferred tax assets (liabilities)				1,256.72	1,256.72	-	

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22. Income Taxes and Deferred Taxes (Continued)

22.3 Movements in deferred taxes are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					
	As at December 31, 2018					
	Net balance as at January 1, 2018	Profit (loss)	Other comprehensive income (loss)	Net balance	Deferred tax assets	Deferred tax liabilities
Property, plant and equipment	(533.59)	(54.10)	-	(587.69)	-	(587.69)
Intangible assets	132.59	3.15	-	135.74	135.74	-
Investments	54.89	-	-	54.89	54.89	-
Available-for-sale investments	(744.81)	-	421.41	(323.40)	-	(323.40)
Trade and other accounts receivable	(1,914.08)	(93.94)	-	(2,008.02)	460.00	(2,468.02)
Inventories	61.71	8.97	-	70.68	70.68	-
Loans	(124.52)	33.99	-	(90.53)	-	(90.53)
Provisions for employee benefit	1,775.60	(234.29)	(159.98)	1,381.33	1,381.33	-
Others	818.47	338.33	-	1,156.80	1,156.80	-
Total before set-off of taxes	(473.74)	2.11	261.43	(210.20)	3,259.44	(3,469.64)
Set-off of taxes				-	(3,259.44)	3,259.44
Net deferred tax assets (liabilities)				(210.20)	-	(210.20)

23. Other Non-current Assets

Details of other non-current assets as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
		(Reclassification)		
Long-term other accounts receivable	1,433.93	1,375.95	45.24	8.39
Advance payments and deferred charge	9,650.46	16,283.11	1,062.72	1,176.88
Advance payments for gas purchases	-	-	82.59	61.83
Decommissioning fund	7,154.48	5,247.82	-	-
Others*	10,267.35	10,285.67	198.11	4,509.39
Total	28,506.22	33,192.55	1,388.66	5,756.49

The Company made advance payments for some gas that cannot take-up as the minimum volumes committed in the Gas Sales Agreements (Take-or-Pay). The Company has the right to take those volumes of prepaid gas (Make-up Right) in subsequent years, with no maturity period.

As at December 31, 2019, advance payments for gas purchases comprise the balance of advance payments made for gas purchases from the Sirikit gas fields in Thailand, for the untaken-up gas volumes in 2017 - 2018.

* As at December 31, 2018, the Company has a restricted bank cash amounting to Baht 4,372.75 million placed as a security to stay the enforcement of the judgment. During the year, the Company records this restricted bank cash as other current assets.

24. Other Current Liabilities

Details of other current liabilities as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Undue output VAT	3,762.68	4,945.93	2,975.26	4,364.83
Provision for remuneration for the renewal of petroleum production	2,348.14	2,890.32	-	-
Others	4,437.36	2,965.72	395.08	138.79
Total	10,548.18	10,801.97	3,370.34	4,503.62

25. Long-term Loans

Details of long-term loans as at December 31, 2019 and 2018 are as follows:

Current portion of long-term loans

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Loans - Baht currency	20,796.77	12,344.94	1,000.00	-
Loans - foreign currencies	3,525.16	2,439.19	-	-
Debentures - Baht currency	26,118.00	47,504.98	26,118.00	26,000.00
Finance leases liabilities	1,342.43	819.49	484.80	511.16
Total	51,782.36	63,108.60	27,602.80	26,511.16

Long-term loans

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Loans - Baht currency	118,469.88	118,096.85	-	1,000.00
Loans - foreign currencies	44,347.33	21,304.70	23,872.73	6,830.15
Debentures - Baht currency	204,024.66	147,477.25	57,583.70	83,715.20
Debentures - foreign currencies	188,176.39	163,462.61	8,806.94	27,969.16
Finance leases liabilities	7,727.51	4,622.90	3,471.94	4,124.45
Total	562,745.77	454,964.31	93,735.31	123,638.96

25. Long-term Loans (Continued)

Original currency of loans and debentures in foreign currencies as at December 31, 2019 and 2018 as follows:

Current portion of long-term loans

	Unit: Million			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Loans - foreign currencies				
- USD	109.17	47.74	-	-
- EURO	1.20	10.92	-	-
- JPY	408.57	408.57	-	-
- LAK	12,855.64	12,855.64	-	-
- VND	28,879.60	228,506.04	-	-

Long-term loans and debentures

	Unit: Million			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Loans - foreign currencies				
- USD	1,026.18	219.80	575.05	-
- EURO	149.14	141.01	-	-
- JPY	29,341.05	29,749.62	23,000.00	23,000.00
- LAK	25,711.28	38,566.93	-	-
- VDN	216,857.20	-	-	-
Debentures - foreign currencies				
- USD	6,239.28	5,020.33	290.36	857.56

25. Long-term Loans (Continued)

Long-term loans, including the current portion, outstanding as at December 31, 2019 and 2018 can be classified by types of interest rate as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Floating interest rate	173,324.03	143,045.16	-	-
Fixed interest rate	441,204.10	375,027.75	121,338.11	150,150.12
Total	614,528.13	518,072.91	121,338.11	150,150.12

Interest rates charged on long-term loans as at December 31, 2019 and 2018 are as follows:

	Unit: % per annum			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Loans - Baht currency	1.50 - 7.83	1.22 - 7.83	7.83	7.83
Loans - foreign currencies				
- USD	1.89 - 5.00	1.00 - 6.00	5.00 - 6.83	-
- EURO	1.65 - 2.50	2.50	-	-
- JPY	1.50 - 4.45	1.50 - 4.45	4.95	4.45
- LAK	4.75	4.75	-	-
- VND	6.40	6.40	-	-
Debentures - Baht currency	1.97 - 6.80	2.21 - 6.80	3.50 - 6.80	3.50 - 6.80
Debentures - foreign currencies				
- USD	3.50 - 6.35	3.63 - 6.51	4.50 - 5.88	4.50 - 5.88
Finance leases liabilities	1.10 - 10.73	1.15 - 12.00	1.15 - 8.28	1.15 - 8.28

25. Long-term Loans (Continued)

25.1 Loans

Loans - Baht currency

As at December 31, 2019, detail of long-term loan in Baht currency of the Company which is secured by the Ministry of Finance is as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	1,000	Fixed rate	Principal is repayable at the end of contract, in July 2020.

As at December 31, 2019, details of long-term loans from financial institutions in Baht currency of the subsidiaries are as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	10,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 24 instalments, commencing in December 2017.
THB	169	Fixed rate	Principal is repayable every 6 months, totalling 29 instalments, commencing in June 2017.
THB	3,500	6M THBFIX plus margin	Principal is repayable every 6 months, totalling 22 instalments, commencing in November 2020.
THB	1,000	3M BIBOR plus margin	Principal is repayable every 6 months, totalling 17 instalments, commencing in May 2020.
THB	500	3M BIBOR plus margin	Principal is repayable every 6 months, totalling 13 instalments, commencing in June 2020.
THB	4,000	Fixed rate	Principal is repayable at the end of contract in May 2023.
THB	9,960	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 33 instalments, commencing in October 2008.
THB	3,700	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in July 2015.
THB	3,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in September 2017.
THB	5,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in May 2020.
THB	4,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in December 2018.

25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2019, details of long-term loans from financial institutions in Baht currency of the subsidiaries are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	10,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in June 2016.
THB	15,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in November 2020.
THB	450	6M THBFIX plus margin	Principal is repayable every 3 months, totalling 14 instalments, commencing in April 2023.
THB	2,500	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in March 2022.
THB	3,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in January 2023.
THB	3,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in June 2023.
THB	3,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in July 2015.
THB	7,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 15 instalments, commencing in September 2013.
THB	3,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in March 2014.
THB	6,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in March 2016.
THB	5,000	6M THBFIX plus margin	Principal is repayable 2 times, in December 2020 and December 2023.
THB	8,654	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 17 instalments, commencing in September 2018.

25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2019, details of long-term loans from financial institutions in Baht currency of the subsidiaries are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	575	3M BIBOR plus margin	Principal is repayable every 3 months, totalling 13 instalments, commencing in September 2019.
THB	700	3M BIBOR plus margin	Principal is repayable every 3 months, totalling 16 instalments, commencing in March 2016.
THB	1,000	Fixed rate	Principal is repayable every 3 months, totalling 16 instalments, commencing in September 2016.
THB	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in April 2016.
THB	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in May 2016.
THB	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in May 2017.

25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2019, details of long-term loans from financial institutions in Baht currency of the subsidiaries are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	500	Fixed rate	Principal is repayable every 3 months, totalling 13 instalments, commencing in January 2021.
THB	14,357	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 24 instalments, commencing in February 2021.
THB	6,004	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 20 instalments, commencing in February 2021.
THB	500	Fixed rate	Principal is repayable every 3 months, totalling 10 instalments, commencing in June 2019.
THB	500	6M THBFIX plus margin	Principal is repayable at the end of contract in November 2020.
THB	5,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 17 instalments, commencing in September 2020.
THB	10,000	MLR minus discount	Principal is repayable every 6 months, totalling 16 instalments, commencing in March 2021.
THB	10,000	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in June 2021.

25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2019, details of long-term loans from financial institutions in Baht currency of the subsidiaries are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	9,500	3M BIBOR plus margin	Principal is repayable every 6 months, totalling 9 instalments, commencing in September 2020.
THB	3,000	3M BIBOR plus margin	Principal is repayable every 6 months, totalling 15 instalments, commencing in September 2020.
THB	24,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 17 instalments, commencing in September 2020.
THB	5,400	THBFIX plus margin	Principal is repayable every 6 months, totalling 20 instalments, commencing in June 2019.
THB	1,500	MLR minus discount	Principal is repayable every 6 months, totalling 24 instalments, commencing in September 2012.
THB	300	MLR minus discount	Principal is repayable every 6 months, totalling 12 instalments, commencing in September 2015.
THB	800	FDR plus margin	Principal is repayable every 3 months, totalling 36 instalments, commencing in March 2020.
THB	141	6M FDR plus margin	Principal is repayable every 6 months, totalling 8 instalments, commencing in June 2017.
THB	8,500	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 38 instalments, commencing in June 2018.
THB	1,800	6M FDR plus margin	Principal is repayable every 6 months, totalling 16 instalments, commencing in June 2015.
THB	504	THBFIX plus margin	Principal is repayable as the conditions specified in the contract.
THB	56	MLR minus discount	Principal is repayable every 6 months, totalling 8 instalments, commencing in December 2019.
THB	44	MLR minus discount	Principal is repayable every 6 months, totalling 10 instalments, commencing in June 2020.

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25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - foreign currency

As at December 31, 2019, details of long-term loans from a subsidiary in foreign currency of the Company are as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
USD	245	Fixed rate	Principal is repayable at the end of contract in August 2035.
USD	330	Fixed rate	Principal is repayable at the end of contract in October 2042.
JPY	23,000	Fixed rate	Principal is repayable at the end of contract in April 2036.

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25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - foreign currency (Continued)

As at December 31, 2019, details of long-term loans from financial institutions in foreign currency of the subsidiaries are as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
USD	86	6M USD-LIBOR plus margin	Principal is repayable at the end of contract in February 2022.
USD	82	6M LIBOR plus margin	Principal is repayable every 6 months, totalling 18 instalments, commencing in June 2015.
USD	460	3M LIBOR plus margin	Principal is repayable every 6 months, totalling 33 instalments, commencing in October 2012.
USD	200	LIBOR plus margin	Principal is repayable every 6 months, totalling 9 instalments, commencing in June 2020.
USD	480	6M LIBOR plus margin	Principal is repayable at the end of contract in October 2024.
USD	120	6M LIBOR plus margin	Principal is repayable at the end of contract in October 2024.
USD	100	6M LIBOR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in March 2016.
EURO	180	3M EURIBOR plus margin	Principal is repayable every 12 months, totalling 6 instalments, commencing in 2021.
JPY	7,900	JPY-LIBOR plus margin	Principal is repayable every 6 months, totalling 37 instalments, commencing in May 2018.
JPY	23,000*	Fixed rate	Principal is repayable at the end of contract in April 2036.
LAK	81,500	Fixed rate	Principal is repayable every 3 months, totalling 20 instalments, commencing in March 2018.
VND	310,791	Fixed rate	Principal is repayable every 6 months, totalling 18 instalments, commencing in July 2019.

* Guaranteed by the Company which the maximum liability under the guarantee will be capped at an amount equal to 125% of the principal or equivalent to JPY 28,750.00 Million.

The Group has entered into derivative contracts on long-term loans to cover foreign currency exchange risks and interest rates risks as mentioned in Note 39.2 to Note 39.4.

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25. Long-term Loans (Continued)

25.2 Debentures

Debentures - Baht currency

As at December 31, 2019, the details of unsecured, unsubordinated debentures in Baht currency of the Company are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
THB	22,000	1,000	6 years 11 months 19 days	4.75	Interest is repayable every 6 months and mature in November 2020.
THB	4,118	1,000	15	5.95	Interest is repayable every 6 months and mature in August 2020.
THB	1,030	1,000	15	6.53	Interest is repayable every 6 months and mature in May 2021.
THB	10,000	1,000	6 years 11 months	4.00	Interest is repayable every 6 months and mature in November 2021.
THB	4,200	1,000	6 years 27 days	3.50	Interest is repayable every 6 months and mature in November 2021.
THB	4,000	1,000	12	4.50	Interest is repayable every 6 months and mature in February 2022.
THB	10,000	1,000	10	6.58	Interest is repayable at the maturity date and mature in September 2023.

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25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2019, the details of unsecured, unsubordinated debentures with the debenture holders' early redemption right of the Company in Baht currency are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
THB	14,967	1,000	15	Year 1 - 5 : 5.00 Year 6 - 8 : 6.20 Year 9 - 15 : 6.80	Interest is repayable every 6 months and mature in March 2024. (The debenture holders can early redeem at the end of 8 th year.)
THB	9,387	1,000	15	Year 1 - 5 : 4.25 Year 6 - 10 : 5.50 Year 11 - 15 : 5.75	Interest is repayable every 6 months and mature in July 2024. (The debenture holders can early redeem at the end of 10 th year.)
THB	4,000	1,000	100	5.90	Interest is repayable every 6 months and mature in December 2110. (The debenture holders can early redeem at the end of 50 th and 75 th year and other cases specified in the regulations regarding the rights and obligations of the issuer and the debenture holders.)

25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2019, the details of unsecured, unsubordinated debentures in Baht currency of the subsidiaries are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
THB	3,500	1,000	4	2.21	Interest is repayable every 6 months and mature in September 2021.
THB	1,500	1,000	7	2.82	Interest is repayable every 6 months and mature in September 2024.
THB	5,555	1,000	10	5.00	Interest is repayable every 6 months and mature in August 2021.
THB	4,000	1,000	10	3.95	Interest is repayable every 6 months and mature in September 2025.
THB	3,000	1,000	10	2.81	Interest is repayable every 6 months and mature in May 2026.
THB	2,000	1,000	3	1.97	Interest is repayable every 6 months and mature in November 2022.
THB	5,000	1,000	5	2.24	Interest is repayable every 6 months and mature in November 2024.
THB	6,000	1,000	7	2.52	Interest is repayable every 6 months and mature in November 2026.
THB	8,000	1,000	10	2.86	Interest is repayable every 6 months and mature in November 2029.
THB	7,500	1,000	12	3.15	Interest is repayable every 6 months and mature in November 2031.
THB	6,500	1,000	15	3.25	Interest is repayable every 6 months and mature in November 2034.
THB	6,890	1,000	7	4.96	Interest is repayable every 6 months and mature in May 2021.

25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2019, the details of unsecured, unsubordinated debentures in Baht currency of the subsidiaries are as follows: (Continued)

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
THB	11,400	1,000	15	4.82	Interest is repayable every 6 months and mature in June 2029.
THB	15,000	1,000	3	2.26	Interest is repayable every 6 months and mature in June 2022.
THB	10,000	1,000	7	4.50	Interest is repayable every 6 months and mature in August 2021.
THB	1,500	1,000	5	2.20	Interest is repayable every 6 months and mature in September 2024.
THB	7,000	1,000	7	2.43	Interest is repayable every 6 months and mature in September 2026.
THB	1,500	1,000	10	2.75	Interest is repayable every 6 months and mature in September 2029.

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25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2019, the detail of unsecured, unsubordinated debentures with the debenture holders' early redemption right of the subsidiaries in Baht currency is as follows:

<u>Currency</u>	<u>Principal (unit: million)</u>	<u>Par value (per share)</u>	<u>Period (years)</u>	<u>Interest rate percent (per annum)</u>	<u>Repayment terms</u>
THB	10,000	1,000	4	3.05	Interest is repayable every 6 months and mature in August 2021.
THB	10,000	1,000	5	2.90	Interest is repayable every 6 months and mature in August 2024.
THB	3,000	1,000	12	4.80	Interest is repayable every 6 months and mature in April 2022.
THB	7,500	1,000	15	5.05	Interest is repayable every 6 months and mature in March 2027.
THB	3,000	1,000	7	4.61	Interest is repayable every 6 months and mature in March 2021.
THB	7,000	1,000	10	4.84	Interest is repayable every 6 months and mature in March 2024.

Debentures - foreign currency

As at December 31, 2019, the details of unsecured, unsubordinated debentures in foreign currency of the Company are as follows:

<u>Currency</u>	<u>Principal (unit: million)</u>	<u>Par value (per share)</u>	<u>Period (years)</u>	<u>Interest rate percent (per annum)</u>	<u>Repayment terms</u>
USD	53	1,000	30	5.875	Interest is repayable every 6 months and mature in August 2035.
USD	241	1,000	30	4.50	Interest is repayable every 6 months and mature in October 2042.

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25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - foreign currency (Continued)

As at December 31, 2019, the details of unsecured, unsubordinated debentures in foreign currency of the subsidiaries are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
USD	700	1,000	10	5.692	Interest is repayable every 6 months and mature in April 2021.
USD	490	1,000	30	6.35	Interest is repayable every 6 months and mature in June 2042.
USD	504	1,000	10	4.25	Interest is repayable every 6 months and mature in September 2022.
USD	496	1,000	4	4.25	Interest is repayable every 6 months and mature in September 2022.

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25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - foreign currency (Continued)

As at December 31, 2019, the detail of unsecured, unsubordinated debentures with the debenture holders' early redemption right of the subsidiaries in foreign currency are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
USD	650	1,000	40	3.903	Interest is repayable every 6 months and mature in December 2059.
USD	245*	1,000	15	5.875	Interest is repayable every 6 months and mature in August 2035.
USD	330**	1,000	23	4.50	Interest is repayable every 6 months and mature in October 2042.
USD	216	1,000	10	3.625	Interest is repayable every 6 months and mature in January 2043.
USD	172	1,000	30	4.875	Interest is repayable every 6 months and mature in January 2023.
USD	284	1,000	10	3.625	Interest is repayable every 6 months and mature in January 2023.
USD	328	1,000	30	4.875	Interest is repayable every 6 months and mature in January 2043.
USD	400	1,000	10	4.625	Interest is repayable every 6 months and mature in November 2028.
USD	600	1,000	30	5.375	Interest is repayable every 6 months and mature in November 2048.
USD	565	1,000	30	3.50	Interest is repayable every 6 months and mature in October 2049.

* Guaranteed by the Company which the maximum liability under the guarantee will be capped at an amount equal to 125% of the principal or equivalent to approximately USD 306.19 Million.

** Guaranteed by the Company which the maximum liability under the guarantee will be capped at an amount equal to 125% of the principal or equivalent to approximately USD 412.61 Million.

The Group has entered into derivative contracts on debentures to cover foreign currency exchange rates risks and interest rates risks as mentioned in Note 39.2 to Note 39.4.

25. Long-term Loans (Continued)

25.3 Finance leases liabilities

Details of finance leases liabilities as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Finance leases liabilities				
- Within 1 year	1,728.97	928.78	560.31	588.63
- Over 1 year but not over 5 years	4,982.44	2,679.59	2,017.26	2,138.29
- Over 5 years	4,060.17	2,270.20	1,688.31	2,270.20
Future finance charges	(1,701.64)	(436.18)	(309.14)	(361.51)
Present value of finance leases liabilities	<u>9,069.94</u>	<u>5,442.39</u>	<u>3,956.74</u>	<u>4,635.61</u>
Present value of finance leases liabilities				
- Current liabilities	1,342.43	819.49	484.80	511.16
- Non-current liabilities	<u>7,727.51</u>	<u>4,622.90</u>	<u>3,471.94</u>	<u>4,124.45</u>
Total	<u><u>9,069.94</u></u>	<u><u>5,442.39</u></u>	<u><u>3,956.74</u></u>	<u><u>4,635.61</u></u>

25. Long-term Loans (Continued)

25.4 Maturities of long-term loans as at December 31, 2019 and 2018 are as follows:

Unit: Million Baht

	Consolidated financial statements					
	2019					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Finance leases liabilities	Total
Within 1 year	20,796.77	3,525.16	26,118.00	-	1,342.43	51,782.36
Over 1 year but not over 5 years	71,903.85	30,705.03	137,686.69	66,340.34	4,079.36	310,715.27
Over 5 years	46,566.03	13,642.30	66,337.97	121,836.05	3,648.15	252,030.50
Total	<u>139,266.65</u>	<u>47,872.49</u>	<u>230,142.66</u>	<u>188,176.39</u>	<u>9,069.94</u>	<u>614,528.13</u>

Unit: Million Baht

	Consolidated financial statements					
	2018					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Finance leases liabilities	Total
Within 1 year	12,344.94	2,439.19	47,504.98	-	819.49	63,108.60
Over 1 year but not over 5 years	68,877.54	10,895.33	91,720.17	71,376.58	2,435.33	245,304.95
Over 5 years	49,219.31	10,409.37	55,757.08	92,086.03	2,187.57	209,659.36
Total	<u>130,441.79</u>	<u>23,743.89</u>	<u>194,982.23</u>	<u>163,462.61</u>	<u>5,442.39</u>	<u>518,072.91</u>

25. Long-term Loans (Continued)

25.4 Maturities of long-term loans as at December 31, 2019 and 2018 are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	2019					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Finance Leases Liabilities	
Within 1 year	1,000.00	-	26,118.00	-	484.80	27,602.80
Over 1 year but not over 5 years	-	-	53,583.70	-	1,838.92	55,422.62
Over 5 years	-	23,872.73	4,000.00	8,806.94	1,633.02	38,312.69
Total	1,000.00	23,872.73	83,701.70	8,806.94	3,956.74	121,338.11

Unit: Million Baht

	Separate financial statements					Total
	2018					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Finance Leases Liabilities	
Within 1 year	-	-	26,000.00	-	511.16	26,511.16
Over 1 year but not over 5 years	1,000.00	-	55,348.00	-	1,936.88	58,284.88
Over 5 years	-	6,830.15	28,367.20	27,969.16	2,187.57	65,354.08
Total	1,000.00	6,830.15	109,715.20	27,969.16	4,635.61	150,150.12

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26. Changes in liabilities arising from financing activities

Changes in liabilities arising from financing activities are as follows:

	Consolidated financial statements							Unit: Million Baht	
	Cash flows from financing			Non-cash items			As at December 31, 2019		
	As at January 1, 2019	Additions	Repayments	Finance leases liabilities - additions	(Gain) loss on exchange rates	Currency translation differences			Business acquisition (Note 43)
Bank overdrafts and short-term loans from financial institutions	25,561.80	134,671.61	(114,761.43)	-	(27.60)	(965.66)	-	(38.19)	44,440.53
Short-term loans	-	-	(701.55)	-	-	-	701.55	-	-
Loans - Baht currency	130,441.79	16,989.03	(16,932.09)	-	-	-	8,725.38	42.54	139,266.65
Loans - foreign currencies	23,743.89	32,754.84	(16,363.83)	-	(845.39)	(1,494.28)	11,071.30	(994.04)	47,872.49
Debentures - Baht currency	194,982.23	69,898.20	(50,698.40)	-	1,725.96	(1,843.72)	16,301.86	(223.47)	230,142.66
Debentures - foreign currencies	163,462.61	55,007.37	(17,523.40)	-	(7,685.59)	(5,196.84)	-	112.24	188,176.39
Finance lease liabilities	5,442.39	-	(1,358.24)	509.04	(249.48)	(99.96)	4,631.07	195.12	9,069.94
Total	543,634.71	309,321.05	(218,338.94)	509.04	(7,082.10)	(9,600.46)	41,431.16	(905.80)	658,968.66

As at December 31, 2019 and 2018, the bank overdrafts and short-term loans from financial institutions bear interest at rates ranging from 1.00% to 4.75% per annum

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26. Changes in liabilities arising from financing activities (Continued)

Changes in liabilities arising from financing activities are as follows: (Continued)

	As at January 1, 2019	Separate financial statements				As at December 31, 2019
		Cash flows from financing Additions	Repayments	Non-cash items Finance leases liabilities - additions	Gain on exchange rates Others	
Short-term loans - related party	3,332.70	240.49	(85.63)	-	-	3,487.56
Loans - Baht currency	1,000.00	-	-	-	-	1,000.00
Loans - foreign currencies	6,830.15	24,031.00	(6,507.60)	-	(480.82)	23,872.73
Debentures - Baht currency	109,715.20	-	(26,013.50)	-	-	83,701.70
Debentures - foreign currencies	27,969.16	-	(17,523.40)	-	(1,902.48)	8,806.94
Finance leases liabilities	4,635.61	-	(613.35)	127.25	(252.08)	3,956.74
Total	153,482.82	24,271.49	(50,743.48)	127.25	(2,635.38)	124,825.67

Unit: Million Baht

27. Provisions for Employee Benefit

Movements in the present value of provisions for employee benefit are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
As at January 1	23,921.03	23,313.07	6,906.65	8,877.98
Service cost	1,983.76	1,817.43	527.17	643.16
Past service cost	4,218.86	95.51	1,068.50	-
Interest cost	679.92	600.11	222.18	236.74
Actuarial (gain) loss from provisions for post-employment benefit	1,095.55	(946.68)	(1,167.00)	(799.89)
Actuarial (gain) loss from provisions for other long-term employee benefit	180.63	(25.07)	21.68	(13.70)
Actual payment	(1,023.07)	(969.83)	(266.46)	(236.52)
Business acquisition (Note 43)	1,609.69	89.61	-	-
Disposal of assets and discontinued operations	-	(10.04)	-	(1,801.12)
Others	3.93	-	-	-
Currency translation differences	(80.09)	(43.08)	-	-
As at December 31	<u>32,590.21</u>	<u>23,921.03</u>	<u>7,312.72</u>	<u>6,906.65</u>

Details of actuarial (gain) loss from provisions for post-employment benefit are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2019	2018	2019	2018
Loss from experience adjustments	639.73	335.61	0.23	493.17
(Gain) loss from changes in financial assumptions	1,584.90	(1,371.90)	(369.02)	(1,293.06)
(Gain) loss from changes in demographic assumptions	(1,129.08)	89.61	(798.21)	-
Total	<u>1,095.55</u>	<u>(946.68)</u>	<u>(1,167.00)</u>	<u>(799.89)</u>

27. Provisions for Employee Benefit (Continued)

Expenses recognized in the statements of income and comprehensive income for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Cost of sales and services	2,529.26	809.99	331.10	141.63
Selling and distribution expenses	383.74	168.28	76.96	115.44
Administrative expenses	4,093.41	1,494.87	1,429.33	606.78
Management remuneration	56.76	14.84	2.14	2.35
Other comprehensive (gain) loss	1,095.55	(946.68)	(1,167.00)	(799.89)
Total	<u>8,158.72</u>	<u>1,541.30</u>	<u>672.53</u>	<u>66.31</u>

Principal actuarial assumptions used in determining the present value of provisions for post-employment benefit of the Group are as follows:

	Annual percentage rate	
	2019	2018
Discount rate	1.18 - 7.15	1.73 - 8.15
Inflation rate	0.00 - 5.00	0.00 - 6.50
Employee turnover rate	0.00 - 70.00	0.00 - 70.00
Mortality rate	based on the published statistics of each country	based on the published statistics of each country

27. Provisions for Employee Benefit (Continued)

Sensitivity analysis of principal actuarial assumption used in determining the present value of provisions for post-employment benefits of the Group as at December 31, 2019 and 2018 are as follows:

Unit: Million Baht

	<u>Increase (decrease) in present value of the provisions</u>	
	<u>2019</u>	<u>2018</u>
Discount rate		
Increase 1%	(3,916.23)	(3,086.77)
Decrease 1%	4,942.54	4,115.71

Weighted average duration of the provisions for post-employment benefit of the Group for the years ended December 31, 2019 is 18.14 years (for the year ended December 31, 2018: 18.75 years).

The Labor Protection Act (No. 7) B.E. 2562 has been announced in the Royal Thai Government Gazette on April 5, 2019 and will be effective after 30 days from the date announced in the Royal Thai Government Gazette. This Labor Protection Act stipulates additional legal severance pay rates in the event of termination of an employee who has worked for an uninterrupted period of 20 years or more, whereby the employee is entitled to receive compensation of not less than 400 days at the employee's lastest wage rate. This change affects the Group, except the Company, which is covered by the State Enterprise Labour Relations Act, B.E. 2543.

Subsequently, the State Enterprise Labour Relations Committee, by virtue of State Enterprise Labour Relations Act, B.E. 2543, had issued the Announcement of the State Enterprise Labor Relations Committee for Minimum Standards of Employment Conditions in State Enterprises (No.4) which has been announced in the Royal Thai Government Gazette on September 26, 2019 and will be effective in the next day after the date announced in the Royal Thai Government Gazette. This Announcement of the State Enterprise Labor Relations Committee additional legal severance pay rates in the event of termination and retirement of an employee who has worked for an uninterrupted period of 20 years or more, whereby the employee is entitled to receive compensation of not less than 400 days at the employee's lastest wage rate. This change affects the Company since the Company is covered by this Act.

Consequently, these changes are considered an amendment to post-employment benefits plan, and result in the increase of Baht 4,218.86 million in provision for employee benefits liabilities in the consolidated financial statements and Baht 1,068.50 million in the separate financial statements. The Group has recorded the effects of these changes by recognizing the past service costs as expenses in the income statement of the period in which the law is effective.

28. Provision for Decommissioning Costs

Movements in the provision for decommissioning costs which will occur in the future are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2019	2018
As at January 1	74,722.52	74,865.44
- Business acquisition (Note 43)	10,367.26	8,007.39
- Additional provision	13,647.21	4,223.32
- Use during the year	(454.27)	(729.43)
- Reversal of non-occurred provision	(587.84)	(5,336.16)
- Disposals	-	(5,631.24)
- Currency translation differences	(5,805.59)	(676.80)
As at December 31	91,889.29	74,722.52
- Current portion	(1,289.37)	(1,090.30)
- Long-term portion	90,599.92	73,632.22

29. Other Non-current Liabilities

Other non-current liabilities as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Long-term other accounts payable	4,457.77	3,603.00	4,148.10	3,490.10
Provision for remuneration for the renewal of petroleum production	5,752.11	7,744.52	-	-
Long-term liability: Make-up	10,782.35	10,782.35	10,782.35	10,782.35
Deferred revenue	19,130.34	6,609.13	4,969.25	5,244.77
Others	6,522.52	4,232.06	375.72	340.25
Total	46,645.09	32,971.06	20,275.42	19,857.47

Long-term liability (Make-up) arises from the difference amount between the natural gas price for the committed gas volumes that the Company paid in advance and the natural gas price as at the date of taking the gas that exceeds the interest paid for the advance payment for untaken-up gas volume (Take-or-Pay). The Company has to distribute the difference to the parties who paid for the Take-or-Pay interest for the Yadana and Yetagun gas fields.

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30. Share Capital

30.1 Share Capital - Authorized Shares

	Par Value (Baht per share)	The number of authorized shares (Shares)	The value of authorized shares (Baht)
As at December 31, 2018	1	28,562,996,250	28,562,996,250
As at December 31, 2019	1	28,562,996,250	28,562,996,250

30.2 Share Capital - Issued and Paid-up Shares

	Number of issued and fully paid-up shares (Shares)	Value of issued and fully paid-up shares (Baht)	Premium on Ordinary shares (Baht)	Total (Baht)
As at December 31, 2018	28,562,996,250	28,562,996,250	29,211,131,966	57,774,128,216
As at December 31, 2019	28,562,996,250	28,562,996,250	29,211,131,966	57,774,128,216

31. Reserves

31.1 Legal Reserve

Under the Public Limited Companies Act B.E. 2535, the Company is required to appropriate not less than 5% of its annual net profit as legal reserve until the reserve fund reaches 10% of the authorized share capital. The reserve is non-distributable. The Company's reserve has already reached the 10% of its authorized share capital, stipulated in the Act.

31.2 Reserve for Self-insurance Fund

Movements of reserves for self-insurance fund are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Balance as at January 1	1,222.68	1,199.99	1,222.68	1,199.99
Appropriated during the year	20.98	22.69	20.98	22.69
Balance as at December 31	1,243.66	1,222.68	1,243.66	1,222.68

The self-insurance fund was set up to provide insurance coverage for the Company's business. The Company appropriates net profit from operations and the interest income of the self-insurance fund each year to the fund.

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32. Basic Earnings per Share

Basic earnings per share for the years ended December 31, 2019 and 2018 are as follows:

	Consolidated financial statements		Separate financial statements	
	2019	2018 (Reclassification)	2019	2018 (Reclassification)
Profit attributable to owners of the parent from continuing operations	92,950,604,143	119,647,246,552	61,657,307,704	94,475,418,599
Adjustment of profit	(1,491,678,204)	(1,124,184,883)	-	-
Profit for calculation of earnings per share from continuing operations	91,458,925,939	118,523,061,669	61,657,307,704	94,475,418,599
Profit for calculation of earnings per share from discontinued operations	-	-	-	70,761,721,267
Total profit	91,458,925,939	118,523,061,669	61,657,307,704	165,237,139,866
Number of weighted average of ordinary shares (shares)	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Earnings per share from continuing operations (Baht/share)	3.20	4.15	2.16	3.31
Earnings per share from discontinued operations (Baht/share)	-	-	-	2.48
Earnings per share (Baht/share)	3.20	4.15	2.16	5.79

33. Sales and Service Income

Details of sales and service income for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2019	2018	2019	2018
Oil products	1,362,258.64	1,440,216.43	665,455.01	862,501.80
Gas products	406,176.68	405,644.09	503,552.88	495,125.46
Petrochemicals products	348,250.81	423,744.74	26,467.05	49,693.12
Mining products	15,078.02	20,527.20	-	-
Non-oil businesses	17,272.74	15,914.60	416.55	300.76
Utilities	60,121.36	21,413.26	-	0.75
Services	9,159.22	7,732.32	3,814.26	1,696.63
Others	1,421.20	962.28	757.15	1,702.53
Total	2,219,738.67	2,336,154.92	1,200,462.90	1,411,021.05

Sales and services income for the years ended December 31, 2019 and 2018 include sales to government agencies and state enterprises amounting to Baht 132,609.09 million and Baht 111,936.72 million in the consolidated financial statements, and Baht 90,606.14 million and Baht 79,998.69 million in the separate financial statements, respectively.

34. Other Income

Details of other income for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2019	2018	2019	2018
Transportation income	4,921.71	3,667.94	6,916.45	5,074.53
Dividend income	383.03	347.32	29,676.71	34,534.25
Interest income	7,836.97	9,435.82	3,342.14	3,013.86
Compensation for loan interest on advance payments for gas purchases	(2.32)	(2.20)	(2.32)	(2.20)
Gain (loss) on disposal of assets and investments	(252.46)	(2,154.60)	1,759.09	8,398.04
Gain (loss) on derivatives	(417.40)	(2,369.19)	1,225.18	(575.85)
Others	7,510.42	8,010.01	3,768.02	3,781.79
Total	19,979.95	16,935.10	46,685.27	54,224.42

Compensation for loan interests on advance payments for gas purchases (Take-or-Pay) represents the compensation, which the Company received from the Electricity Generating Authority of Thailand (EGAT) and the Independent Power Plants (IPP) in order to absorb the interests on loans that the Company obtains to make advance payments for gas purchases.

35. Expenses by Nature

Details of expenses by nature for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
		(Restated)		(Restated)
Changes in finished goods and work in process	9,260.72	(6,446.60)	5,447.31	(5,569.11)
Goods purchased and raw materials used	1,736,549.42	1,829,951.29	1,106,202.44	1,302,747.62
Executive remunerations (Note 10.10)	1,789.98	1,501.89	161.22	162.27
Staff costs	60,823.22	51,285.46	9,865.35	8,387.47
Outsourcing	12,906.63	11,132.93	6,097.12	3,744.17
Transportation	19,289.32	17,511.16	6,940.73	5,058.57
Depreciation and amortization	133,204.18	123,592.97	19,350.14	18,652.95
Repairment	19,284.71	15,394.38	2,984.52	2,634.09
Utilities	13,488.16	12,451.88	11,812.36	11,109.06
Rental fees and property insurance premium	10,359.62	9,240.47	2,341.93	2,301.46
Petroleum exploration expenses	3,950.74	1,481.06	-	-
(Reversal of) doubtful accounts	(77.02)	2,320.28	0.92	(22,646.38)
(Reversal of) loss on impairment of assets and investments	(142.90)	16.83	514.20	22,706.87
Others	39,418.25	35,441.61	7,093.08	7,188.08
Total	2,060,105.03	2,104,875.61	1,178,811.32	1,356,477.12

36. Petroleum Royalties and Remuneration

Details of petroleum royalties and remuneration for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2019	2018
Petroleum royalties	17,312.40	16,435.23
Special remuneration benefits	570.07	-
Total	17,882.47	16,435.23

37. Finance Costs

Details of finance costs for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Interest expenses:				
Loans	7,696.07	6,659.17	510.34	415.45
Debentures	13,976.53	15,883.08	5,160.49	7,211.49
Finance leases liabilities	252.50	92.92	81.34	70.93
Others	4,432.60	3,881.90	0.21	0.02
Other finance costs	1,613.76	1,110.52	411.67	311.56
Total	27,971.46	27,627.59	6,164.05	8,009.45

38. Operating Segments

These operating segments are consistent with the internal management reports provided to the Chief Operating Decision Maker (CODM), who makes decisions related to the allocation of resources to the segments and assesses their performance.

For management purposes, the Group is organized into business groups based on types of products and services. The major segments of the Group are as follows:

Upstream Petroleum and Natural Gas Business Group

1. Petroleum exploration and production business:
The Group conducts petroleum exploration and production business both domestically and overseas. The Group is the operator and jointly invests with leading petroleum exploration and production companies. Most domestic projects are located in the Gulf of Thailand, while overseas projects are located in Southeast Asia, Australia, America and Africa.
2. Natural gas business:
The Group conducts natural gas business including procurement, natural gas pipeline transmission, distribution, and natural gas separation. Products from the natural gas separation plants are used as feedstock for the petrochemical industry and as fuel in the household, transportation and industry sectors.
3. Coal business:
The Group conducts coal mining business, involving overseas exploration, production and distribution of coals.

Downstream Petroleum Business Group

1. Oil business:
The Group conducts marketing of petroleum products and lube oil in both domestic and overseas markets under an efficient operating system of procurement, storage, and distribution of products as well as the retail business at service stations.
2. International trading business:
The Group conducts international trading business including the import and export of petroleum and petrochemical products as well as other related products. This includes the price risk management and international chartering.
3. Petrochemical and Refining business:
The Group conducts refining business including the production and distribution of petroleum and petrochemicals products in both domestic and overseas markets.

Technology and Engineering Group

The Group conducts innovation, digital, technology, engineering, the production and distribution of electricity, steam and water for industrial purpose, and the project management of the Group. This includes seeking the business opportunities for the sustainability of the Group.

Other operations of the Group are included in other segments, none of which constitutes a separately reportable segment.

38. Operating Segments (Continued)

The Group changed the operating segment by detaching Technology and Engineering from the Other business segment in order to reflect the business operations and internal Group reporting. In addition, The Group reclassified and adjusted as described in Note 4. The Group therefore reorganized the operating segment information of 2018 to enable comparison with the current period's information.

Pricing among business groups is based on normal market prices except for pricing among business groups within the Company, for which net market prices, after deducting management fees for petroleum terminals and operating fees, are applied.

(UNOFFICIAL TRANSLATION)

38. Operating Segments (Continued)Consolidated financial statements

For the year ended December 31, 2019

	Upstream petroleum and natural gas					Downstream petroleum			Technology and Engineering	Others	Elimination	Total	
	Petroleum exploration and production		Natural gas		Coal		Oil	International trading					Petrochemicals and Refining
Sales - others	36,329.66	349,411.22	15,078.02	575,776.68	596,179.89	594,595.85	52,173.87	193.48	-	-	2,219,738.67		
- related parties	154,723.07	152,699.51	301.93	3,890.78	488,849.61	381,553.85	20,511.34	3,210.05	(1,205,740.14)	-	-		
Net sales	191,052.73	502,110.73	15,379.95	579,667.46	1,085,029.50	976,149.70	72,685.21	3,403.53	(1,205,740.14)	(1,205,740.14)	2,219,738.67		
Gross profit (loss) *	166,295.97	83,075.64	5,044.87	37,503.29	2,844.37	67,334.75	20,098.88	(166.15)	(6,821.05)	(6,821.05)	375,210.57		
EBITDA	136,853.63	71,406.65	3,731.46	17,893.81	(136.09)	45,282.58	18,489.28	(3,003.85)	(1,545.27)	(1,545.27)	288,972.20		
Depreciation and amortization expenses	(62,810.84)	(18,923.61)	(2,437.48)	(4,109.28)	(118.00)	(35,222.68)	(9,229.25)	(353.04)	-	-	(133,204.18)		
Segment operating profit (loss)	74,042.79	52,483.04	1,293.98	13,784.53	(254.09)	10,059.90	9,260.03	(3,356.89)	(1,545.27)	(1,545.27)	155,768.02		
Share of profit (loss) from investments in joint ventures and associates	119.97	682.44	(5.50)	902.52	-	3,402.91	905.65	-	-	-	6,007.99		
Others	0.35	(2,611.40)	(13.44)	89.26	(29.93)	1,171.23	71.92	(134.45)	-	-	(1,456.46)		
Unallocated revenue and expenses:													
Interest income											7,836.97		
Loss on derivatives											(417.40)		
Gain on foreign exchange rate											15,312.83		
EBIT											183,051.95		
Profit for the year											122,091.60		

* Gross profit (loss) excludes depreciation and amortization expenses in cost of sales.

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38. Operating Segments (Continued)Consolidated financial statements

As at December 31, 2019

	Upstream petroleum and natural gas				Downstream petroleum			Technology and Engineering	Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal		Oil	International trading	Petrochemicals and Refining				
Segment assets	607,842.39	406,650.15	25,658.57		135,286.18	75,971.30	775,737.42	253,761.78	80,736.80	-	2,361,644.59
Inter-company assets	18,994.71	14,652.72	917.73		5,132.53	44,531.92	27,491.98	4,643.75	45,519.53	(161,884.87)	-
Investments in joint ventures and associates	7,061.37	5,253.56	41.79		5,616.29	-	45,681.02	11,528.96	-	-	75,182.99
Total segment assets	633,898.47	426,556.43	26,618.09		146,035.00	120,503.22	848,910.42	269,934.49	126,256.33	(161,884.87)	2,436,827.58
Non-allocated assets											47,611.10
Total assets											2,484,438.68
Segment liabilities	270,802.27	75,323.46	3,189.89		69,651.06	96,500.40	354,575.40	126,926.71	129,756.32	-	1,126,725.51
Inter-company liabilities	632.50	32,453.09	2,633.51		42,668.99	9,762.01	52,975.89	10,584.54	9,918.16	(161,628.69)	-
Total segment liabilities	271,434.77	107,776.55	5,823.40		112,320.05	106,262.41	407,551.29	137,511.25	139,674.48	(161,628.69)	1,126,725.51
Non-allocated liabilities											56,673.55
Total liabilities											1,183,399.06
Capital expenditure	48,255.29	24,867.09	2,035.38		10,381.86	154.65	73,159.04	6,390.26	586.09	(1,005.65)	164,824.01

(UNOFFICIAL TRANSLATION)

38. Operating Segments (Continued)Consolidated financial statements

For the year ended December 31, 2018

	Upstream petroleum and natural gas				Downstream petroleum			Technology and Engineering	Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining					
Sales - others	24,848.91	346,496.13	20,527.20	594,808.16	661,512.22	673,931.56	13,895.55	135.19	-	2,336,154.92	
- related parties	146,960.25	143,032.68	-	6,255.59	577,608.87	458,148.48	16,128.28	2,732.71	(1,350,886.86)	-	
Net sales	171,809.16	489,548.81	20,527.20	601,063.75	1,239,121.09	1,132,080.04	30,023.83	2,867.90	(1,350,886.86)	2,336,154.92	
Gross profit (loss) *	149,826.56	106,024.30	9,182.22	33,672.26	5,322.09	118,323.25	7,348.44	(398.60)	(2,638.19)	426,662.33	
EBITDA	126,842.63	94,083.75	7,444.80	15,270.93	2,701.46	97,820.92	7,878.25	(2,225.16)	1,578.32	351,395.90	
Depreciation and amortization expenses	(60,141.43)	(18,032.99)	(1,928.95)	(4,316.17)	(110.21)	(34,898.87)	(3,861.00)	(303.35)	-	(123,592.97)	
Segment operating profit (loss)	66,701.20	76,050.76	5,515.85	10,954.76	2,591.25	62,922.05	4,017.25	(2,528.51)	1,578.32	227,802.93	
Share of profit from investments in joint ventures and associates	83.97	558.71	-	905.82	-	6,298.16	668.36	-	-	8,515.02	
Others	(1,886.17)	(3.38)	(109.24)	(29.56)	(434.52)	(707.06)	124.17	(44.63)	-	(3,090.39)	
Unallocated revenue and expenses:											
Interest income										9,435.82	
Loss on derivatives										(2,369.19)	
Gain on foreign exchange rate										6,353.51	
EBIT										246,647.70	
Profit for the year										165,373.55	

* Gross profit (loss) excludes depreciation and amortization expenses in cost of sales.

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38. Operating Segments (Continued)Consolidated financial statements

As at December 31, 2018

	Upstream petroleum and natural gas				Downstream petroleum			Technology and Engineering	Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining	Others				
Segment assets	585,364.40	414,805.70	27,195.61	126,978.19	77,049.54	815,640.67	69,186.31	143,277.66	-	-	2,259,498.08
Inter-company assets	24,184.24	21,277.41	329.60	8,513.94	42,484.39	29,233.93	4,472.01	42,202.59	(172,698.11)	-	-
Investments in joint ventures and associates	922.20	5,674.75	-	5,088.13	-	43,377.82	10,622.42	-	-	-	65,685.32
Total segment assets	610,470.84	441,757.86	27,525.21	140,580.26	119,533.93	888,252.42	84,280.74	185,480.25	(172,698.11)	(172,698.11)	2,325,183.40
Non-allocated assets											28,498.93
Total assets											<u>2,353,682.33</u>
Segment liabilities	216,808.23	91,177.23	4,192.10	71,704.14	91,809.07	341,388.31	22,556.47	165,953.55	-	-	1,005,589.10
Inter-company liabilities	502.99	39,427.53	91.59	45,538.49	13,963.28	55,406.04	3,872.70	14,494.62	(173,297.24)	-	-
Total segment liabilities	217,311.22	130,604.76	4,283.69	117,242.63	105,772.35	396,794.35	26,429.17	180,448.17	(173,297.24)	(173,297.24)	1,005,589.10
Non-allocated liabilities											30,527.62
Total liabilities											<u>1,036,116.72</u>
Capital expenditure	36,778.18	21,656.80	1,876.49	8,170.56	82.55	54,294.83	8,093.19	468.05	(6,972.15)	(6,972.15)	124,448.50

38. Operating Segments (Continued)

Geographical information

Sales and service income are presented in respect of the geographical location of customers for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2019	2018
Thailand	1,369,540.32	1,320,864.92
Asia	745,411.14	872,716.49
Europe	53,150.17	117,831.47
America	31,870.54	11,005.66
Others	19,766.50	13,736.38
Total	<u>2,219,738.67</u>	<u>2,336,154.92</u>

Non-current assets are presented in respect of the geographical location of the assets as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2019	2018
Thailand	1,308,326.09	1,135,697.98
Asia	226,250.42	130,414.37
Europe	6,769.06	7,249.27
America	19,219.96	9,732.45
Others	111,864.68	124,413.39
Total	<u>1,672,430.21</u>	<u>1,407,507.46</u>

39. Disclosure of Financial Instruments

The Group faces the principal financial risks associated with fluctuations in exchange rates, interest rates, and global oil market prices. The Group also has certain portions of sales, purchases and loans for operations nominated in foreign currencies which are paid in both fixed and floating interest rates. Accordingly, the management has entered into derivative contracts to cover these risks. The financial instruments used for hedging risks are forward foreign exchange contracts, interest rate swap contracts, cross-currency swap contracts, participating swap contracts etc. Risk exposure relating to global oil market prices is managed by forward oil contracts.

The department responsible for managing exposure to exchange rate risks and fluctuations in oil market prices has to report details of the costs and market prices of all financial instruments to management, including outstanding forward foreign exchange contracts and forward oil contracts. The reported information principally covers risk exposure from:

- foreign exchange rate risk
- currency risk
- currency and interest rate risks
- interest rate risk
- fluctuations in oil market price risk
- credit risk

39.1 Foreign Exchange Rate Risk

The Group has entered into forward foreign exchange contracts. The contract prices and exchange rates under the forward foreign exchange contracts as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2019	2018
Forward foreign exchange purchase contracts		
Baht 0.3224 - 0.3234 = 1 JPY	338.75	-
Baht 0.2940 - 0.3234 = 1 JPY	-	461.96
Baht 29.9625 - 34.0525 = 1 USD	76,363.05	-
Baht 30.4210 - 34.1175 = 1 USD	-	86,864.07
Baht 34.1000 = 1 EUR	6.18	-
Baht 37.1600 - 37.6300 = 1 EUR	-	31.67
Baht 41.4270 = 1 GBP	-	265.13
Forward foreign exchange sale contracts		
Baht 29.9950 - 31.1025 = 1 USD	10,352.00	-
Baht 30.7540 - 32.8300 = 1 USD	-	20,697.05
Baht 0.2790 - 0.2806 = 1 JPY	5,595.50	-
Baht 0.2894 - 0.2952 = 1 JPY	-	17,506.89
EUR 1.1125 - 1.1363 = 1 USD	1,820.34	-

39. Disclosure of Financial Instruments (Continued)**39.1 Foreign Exchange Rate Risk (Continued)**

The Group has entered into forward foreign exchange contracts. The contract prices and exchange rates under the forward foreign exchange contracts as at December 31, 2019 and 2018 are as follows: (Continued)

	Unit: Million Baht	
	Separate financial statements	
	2019	2018
Forward foreign exchange purchase contracts		
Baht 30.1085 - 30.3866 = 1 USD	21,778.19	-
Baht 32.3760 - 33.0504 = 1 USD	-	24,429.29
Forward foreign exchange sale contracts		
Baht 29.9950 - 31.1025 = 1 USD	9,536.97	-
Baht 32.1780 - 32.8300 = 1 USD	-	14,753.80
Baht 0.2790 - 0.2806 = 1 JPY	5,595.50	-
Baht 0.2894 - 0.2952 = 1 JPY	-	17,506.89

39.2 Currency Risk

The Group has entered into a cross-currency swap contract of a long-term loan in the form of a participating swap contracts. The term of such contract as at December 31, 2019 and 2018 is as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
JPY 23,000.00 million/USD 196.94 million	6,430.87	6,830.15	6,430.87	6,830.15

This contract has a maturity later than five years.

39. Disclosure of Financial Instruments (Continued)**39.3 Currency and Interest Rate Risks**

The Group has entered into cross-currency swap contracts of other long-term investments, long-term loans and debentures. The terms of the outstanding cross-currency swap contracts as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Baht 26,400.00 million/USD 829.05 million	26,400.00	-	-	-
Baht 9,322.55 million/USD 280.00 million	9,322.55	-	-	-
Baht 4,000.00 million/USD 120.55 million	4,000.00	4,000.00	4,000.00	4,000.00
Baht 27,100.00 million/USD 844.85 million	-	27,100.00	-	-
Baht 8,285.45 million/USD 250.00 million	-	8,285.45	-	-
Baht 6,811.50 million/USD 200.00 million	-	6,811.50	-	-
Baht 745.00 million/USD 23.40 million	-	745.00	-	-
USD 200.00 million/THB 6,880.00 million	5,995.34	6,456.95	5,995.34	6,456.95
USD 70.00 million/THB 2,331.00 million	2,098.37	2,259.94	2,098.37	2,259.94
USD 70.00 million/THB 2,184.00 million	2,098.37	2,259.94	2,098.37	2,259.94
Total	49,914.63	57,918.78	14,192.08	14,976.83

39. Disclosure of Financial Instruments (Continued)**39.3 Currency and Interest Rate Risks (Continued)**

The maturity periods of contracts are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Due within 1 year	8,093.71	3,245.00	8,093.71	-
Over 1 year but not over 5 years	30,420.92	43,273.78	6,098.37	14,976.83
Over 5 years	11,400.00	11,400.00	-	-
Total	<u>49,914.63</u>	<u>57,918.78</u>	<u>14,192.08</u>	<u>14,976.83</u>

39.4 Interest Rate Risk

The Group has entered into interest rate swap contracts of long-term loans and debentures. The terms of the outstanding interest rate swap contracts as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Interest rate swap contracts to swap floating for fixed rate in USD currency	501.54	324.50	-	-
Interest rate swap contracts to swap fixed for floating rate in USD currency	-	16,148.53	-	16,148.53
Interest rate swap contracts to swap fixed for lower fixed rate in USD currency	3,033.13	-	3,033.13	-
Interest rate swap contracts to swap floating for fixed rate in Baht currency	6,392.66	6,241.13	-	-
Interest rate swap contracts to swap fixed for floating rate in Baht currency	16,000.00	18,000.00	16,000.00	18,000.00
Interest rate swap contracts to swap fixed for lower fixed rate in Baht currency	12,000.00	-	12,000.00	-
Interest rate swap contracts to swap floating for fixed rate in JPY currency	-	7,473.61	-	-
Total	<u>37,927.33</u>	<u>48,187.77</u>	<u>31,033.13</u>	<u>34,148.53</u>

39. Disclosure of Financial Instruments (Continued)**39.4 Interest Rate Risk (Continued)**

The maturity periods of contracts are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2019	2018	2019	2018
Due within 1 year	301.54	16,575.15	-	16,148.53
Over 1 year but not over 5 years	27,233.13	8,030.95	27,033.13	6,000.00
Over 5 years	10,392.66	23,581.67	4,000.00	12,000.00
Total	<u>37,927.33</u>	<u>48,187.77</u>	<u>31,033.13</u>	<u>34,148.53</u>

39.5 Fluctuations in Oil Market Price Risk

The Group has entered into oil price derivatives. As at December 31, 2019, the volume of oil under those contracts that mature during January to December 2020 is 40.86 million barrels in the consolidated financial statements (December 31, 2018: 20.01 million barrels), and 0.80 million barrels in the separate financial statements (December 31, 2018: 0.01 million barrels).

39.6 Credit Risk

Credit risk arises when customers do not comply with the terms of agreements or the conditions of credit agreements, causing financial losses to the Company. However, the Company has managed risk by adjusting its credit policies according to the current economic situation, focusing on using financial instruments, such as the Bank Guarantee, Letter of Guarantee or Standby Letter of Credit, making payment by using Letter of Credit (L/C), Trade Credit Insurance. The Company also manages credit risk in various ways, such as Cash collateral and Advanced payment, in order to reduce credit risk and to determine procedures for risk prevention and mitigation, including credit rating for all trading partners. In addition, the Company reviews their credit ratings regularly to be standardized and be effective for credit consideration process.

40. Fair Value Measurement

The fair value of the current portions of financial assets and liabilities approximates the carrying value due to the relatively short-term maturity of these financial instruments.

The fair value of long-term lending loans and borrowings carrying interest at market rates approximates the carrying values.

As at December 31, 2019 and 2018, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows:

As at December 31, 2019

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	3,360.42	-	-	3,360.42
Mutual funds	1,170.19	-	653.49	1,823.68
Debt instruments	-	1,503.25	-	1,503.25
Derivatives				
Foreign currency forward contracts	-	357.37	-	357.37
Cross-currency swap contracts	-	4,949.08	-	4,949.08
Interest rate swap contracts	-	264.63	-	264.63
Commodity swap contracts	-	696.00	-	696.00
Other derivative contracts	-	1,229.82	-	1,229.82
Other non-current assets				
Others	1,353.50	-	-	1,353.50
Financial liabilities measured at fair value				
Derivatives				
Foreign currency forward contracts	-	727.17	-	727.17
Cross-currency swap contracts	-	154.37	-	154.37
Interest rate swap contracts	-	2,492.38	-	2,492.38
Commodity swap contracts	1,365.19	412.14	-	1,777.33
Other derivative contracts	-	73.25	-	73.25
Other non-current liabilities				
Deferred considerations acquired through business acquisition	-	-	213.94	213.94
Contingent consideration from participating interest acquisition in joint venture	-	-	1,563.84	1,563.84

40. Fair Value Measurement (Continued)

As at December 31, 2019 and 2018, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2018

Unit: Million Baht

	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	3,425.91	-	-	3,425.91
Mutual funds	1,104.59	-	388.27	1,492.86
Debt instruments	-	5,957.16	-	5,957.16
Derivatives				
Foreign currency forward contracts	-	985.65	-	985.65
Cross-currency swap contracts	-	1,672.28	-	1,672.28
Interest rate swap contracts	-	257.46	-	257.46
Commodity swap contracts	1,731.90	1,373.50	-	3,105.40
Other derivative contracts	-	1,156.39	-	1,156.39
Financial liabilities measured at fair value				
Other accounts payable				
Deferred considerations acquired through business acquisition	-	-	15,120.70	15,120.70
Derivatives				
Foreign currency forward contracts	-	556.87	-	556.87
Cross-currency swap contracts	-	471.79	-	471.79
Interest rate swap contracts	-	366.14	-	366.14
Commodity swap contracts	-	1,738.15	-	1,738.15
Other derivative contracts	-	81.84	-	81.84

40. Fair Value Measurement (Continued)

As at December 31, 2019 and 2018, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2019

	Unit: Million Baht			
	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	1,936.00	-	-	1,936.00
Mutual funds	397.21	-	653.49	1,050.70
Derivatives				
Cross-currency swap contracts	-	1,763.13	-	1,763.13
Interest rate swap contracts	-	239.00	-	239.00
Financial liabilities measured at fair value				
Derivatives				
Interest rate swap contracts	-	324.32	-	324.32

As at December 31, 2018

	Unit: Million Baht			
	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	1,816.00	-	-	1,816.00
Mutual funds	375.29	-	388.27	763.56
Derivatives				
Cross-currency swap contracts	-	703.07	-	703.07
Interest rate swap contracts	-	5.12	-	5.12
Financial liabilities measured at fair value				
Derivatives				
Cross-currency swap contracts	-	103.22	-	103.22
Interest rate swap contracts	-	152.34	-	152.34

40. Fair Value Measurement (Continued)

As at December 31, 2019 and 2018, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows:

As at December 31, 2019

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	15,013.76	-	15,013.76
Investment properties	-	15,749.62	11,855.57	27,605.19
Derivatives				
Foreign currency forward contracts	-	11.30	-	11.30
Foreign exchange option contracts	-	604.46	-	604.46
Commodity swap contracts	-	0.50	-	0.50
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	189,826.48	-	189,826.48
Debentures - foreign currencies	-	203,316.58	-	203,316.58
Derivatives				
Foreign currency forward contracts	-	330.03	-	330.03
Cross-currency swap contracts	-	473.20	-	473.20
Interest rate swap contracts	-	1,281.22	-	1,281.22
Commodity swap contracts	-	3.95	-	3.95

40. Fair Value Measurement (Continued)

As at December 31, 2019 and 2018, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2018

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	17,262.15	-	17,262.15
Investment properties	-	11,442.89	11,322.16	22,765.05
Derivatives				
Foreign currency forward contracts	-	254.90	-	254.90
Foreign exchange option contracts	-	1,139.83	-	1,139.83
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	180,413.98	-	180,413.98
Debentures - foreign currencies	-	103,881.63	-	103,881.63
Derivatives				
Foreign currency forward contracts	-	166.14	-	166.14
Commodity swap contracts	-	2.13	-	2.13

40. Fair Value Measurement (Continued)

As at December 31, 2019 and 2018, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2019

	Unit: Million Baht			
	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	15,013.76	-	15,013.76
Investment properties	-	7,775.23	387.33	8,162.56
Derivatives				
Foreign currency forward contracts	-	11.13	-	11.13
Foreign exchange option contracts	-	604.46	-	604.46
Commodity swap contracts	-	0.50	-	0.50
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	96,925.10	-	96,925.10
Debentures - foreign currencies	-	10,123.18	-	10,123.18
Derivatives				
Foreign currency forward contracts	-	209.74	-	209.74

40. Fair Value Measurement (Continued)

As at December 31, 2019 and 2018, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2018

	Unit: Million Baht			
	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	17,262.15	-	17,262.15
Investment properties	-	4,111.04	436.71	4,547.75
Derivatives				
Foreign currency forward contracts	-	254.59	-	254.59
Foreign exchange option contracts	-	1,139.83	-	1,139.83
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	121,082.31	-	121,082.31
Debentures - foreign currencies	-	28,248.78	-	28,248.78
Derivatives				
Foreign currency forward contracts	-	166.05	-	166.05
Commodity swap contracts	-	2.13	-	2.13

40. Fair Value Measurement (Continued)

Fair value valuation techniques and inputs for Level 2 valuation

The fair values of debt securities and derivatives were determined based on discounted future cash flow and valuation model techniques, using an appropriate risk-adjusted discount rate. Most of the inputs used for the valuation are observable in the relevant markets such as spot rates of foreign currencies, yield curves of the respective currencies, interest rate yield curves, bonds yield curves, and commodity price yield curves, etc.

The fair value of land categorized as investment property was determined by independent property appraisers under the market approach.

Fair value valuation techniques and inputs for Level 3 valuation

The fair values of available-for-sale investments in mutual funds were determined based on the net asset value as reported in the Capital Call Statement and translated by using the closing exchange rate.

The fair value of other non-current liabilities categorized as deferred considerations acquired through business acquisition was determined by using income approach based on discount rate at 2.76% and other probability assumptions which is classified as fair value level 3.

The fair value of other non-current liabilities categorized as a contingent consideration from participating interest acquisition in joint venture which was resulted from discounting the contingent consideration value. The fair value was determined by using income approach based on discount rate of 2.62% and probability assumption which is classified as fair value level 3.

The fair values of land and buildings for rent categorized as investment property were determined by using the income approach. The inputs used for the valuation consisted of the rate of return and finance costs.

During the year, there was no transfer within the fair value hierarchy.

41. Subordinated Capital Debentures

During the year 2019, the PTTEP Group redeemed the US Dollar subordinated capital debentures as follows:

	Consolidated financial statements					
	Unit : Million USD			Unit : Million Baht		
	Before redeemed	(Redeemed/ Repurchase)	After redeemed	Before redeemed	(Redeemed/ Repurchase)	After redeemed
PTTEP						
Issuance and offering value	145.31	(145.31)	-	-	-	-
Net value from finance cost	144.66	(144.66)*	-	4,679.78	(4,679.78)*	-
PTTEP TC						
Issuance and offering value	354.69	(354.69)	-	-	-	-
Net value from finance cost	354.16	(354.16)*	-	11,808.63	(11,808.63)*	-
PTTEP TC						
Issuance and offering value	500.00	(469.15)	30.85	-	-	-
Net value from finance cost	499.29	(468.43)**	30.86	16,761.35	(15,725.31)**	1,036.04
Total						
Issuance and offering value	1,000.00	(969.15)	30.85	-	-	-
Net value from finance cost	998.11	(967.25)	30.86	32,249.76	(32,213.72)	1,036.04

* The redemption of subordinated capital debentures is the first exercise of the redemption rights stipulated in the offering memorandum at the par value.

** PTTEP Treasury Center Co., Ltd. (PTTEP TC) repurchased the subordinated capital debentures in accordance with specified conditions and procedures.

42. Dividend Payment

On April 11, 2019, at the 2019 Annual General Shareholders' Meeting of the Company, the shareholders approved dividend payments for the year 2018 of Baht 2.00 per share, approximately amounting to Baht 57,123.07 million. On October 26, 2018, the Company paid an interim dividend from the operating results of the first half of 2018 at Baht 0.80 per share for 28,562,591,709 shares, amounting to Baht 22,850.07 million. The remaining dividend was paid as follows:

Dividend	For operating period	Dividend payment rate (Baht/share)	Number of shares (shares)	Total dividend (Million Baht)	Payment date
For the year 2018	July 1, 2018 - December 31, 2018	1.20	28,560,830,446	34,273.00	April 30, 2019

On September 27, 2019, at the Board of Directors Meeting of the Company No.9/2019, the Board approved interim dividend payments for the first half of 2019 as follows:

Dividend	For operating period	Dividend payment rate (Baht/share)	Number of shares (shares)	Total dividend (Million Baht)	Payment date
Interim	January 1, 2019 - June 30, 2019	0.90	28,562,203,593	25,705.98	October 25, 2019

43. Business Acquisition

- 43.1 On June 20, 2018, GPSC entered into a Share Purchase Agreement with ENGIE Global Developments B.V. (ENGIE) to acquire shares totaling 1,010,976,033 both directly and indirectly in Glow Energy Public Company Limited (GLOW), a company that generates and supplies electricity, steam and water. The share acquisition represents 69.11% of total registered and paid-up capital at the purchase price of Baht 91.99 per share, totaling Baht 93,000.93 million. The acquisition of GLOW's shares was achieved by acquiring 218,696,260 direct shares and 792,279,773 indirect shares from acquiring all the shares of ENGIE Holding (Thailand) Company Limited. Sources of funding are a financial institution and related parties. GPSC made a full payment to ENGIE and changed a shareholder's name on March 14, 2019.

Details of net assets acquired and goodwill at the acquisition date are as follows:

	Unit: Million Baht
Purchase consideration	93,000.93
Fair value of net assets acquired	<u>(56,911.09)</u>
Goodwill (Note 19)	<u>36,089.84</u>

43. Business Acquisition (Continued)

43.1 Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	14,487.72
Trade accounts receivable	6,133.04
Other accounts receivable	285.91
Short-term lending loans	306.66
Inventories	1,158.31
Materials and supplies	4,342.64
Other current assets	34.89
Investments in associates (Note 15.6.2)	330.03
Long-term lending loans	4,020.32
Property, plant and equipment (Note 18)	75,335.59
Intangible assets (Note 20)	45,419.71
Deferred tax assets (Note 22.3)	3,359.89
Other non-current assets	285.63
Trade accounts payable	(3,128.52)
Other accounts payable	(1,592.04)
Short-term loans (Note 26)	(701.55)
Current portion of long-term loans (Note 26)	(4,802.84)
Income tax payable	(677.25)
Other current liabilities	(778.23)
Long-term loans (Note 26)	(31,295.70)
Deferred tax liabilities (Note 22.3)	(10,706.65)
Provisions for employee benefit (Note 27)	(255.61)
Provision for decommissioning costs (Note 28)	(192.43)
Other non-current liabilities	<u>(12,366.51)</u>
Fair value of net assets	89,003.01
<u>Less</u> Non-controlling interests	<u>(32,091.92)</u>
Fair value of net assets acquired	56,911.09
<u>Add</u> Goodwill (Note 19)	<u>36,089.84</u>
Total purchase consideration transferred	93,000.93
<u>Less</u> Cash and cash equivalents of subsidiaries	<u>(14,487.72)</u>
Cash outflow on the business acquisition	<u>78,513.21</u>

43. Business Acquisition (Continued)

- 43.1 Rights to customer contracts which represented as intangible assets are amortized using the straight line method based on their estimated useful lives between 5 - 31 years. Goodwill is not amortized but is tested annually for impairment.

On May 22, 2019 and December 2, 2019, GPSC acquired securities of GLOW from tender offer and on August 13, 2019, the Extraordinary General Meeting of Shareholders of GLOW passed a resolution to approve the delisting of Securities, and on the same date, GLOW submitted the Application for delisting of Shares (F10-7) to the Board of the Stock Exchange of Thailand. The Board of the Stock Exchange of Thailand ordered to delist the ordinary shares of GLOW from being listed securities from December 13, 2019 onwards.

During the year 2019, GPSC acquired securities by tender offer from non-controlling interests of Baht 40,806.27 million. As a result, GPSC has total investment in GLOW of Baht 133,807.21 million. This increased direct and indirect shareholding interests from 69.11% to 99.83% of registered and paid-up capital. The Group recognized deficit from the change in the ownership interests in subsidiaries amounting to Baht 6,513.00 million is presented in shareholders' equity in the consolidated financial statements.

- 43.2 On December 17, 2018, the PTTGM Group entered into a Share Purchase Agreement with PT Sentika Mitra Persada (SMP) and PT Mutiara Kapuas (MK), the companies have potential coal resources located in Indonesia. The acquisition was completed on May 3, 2019 and paid-up capital at the purchase price totaling Baht 268.12 million and Baht 101.70 million, respectively.

Details of net assets acquired and goodwill at the acquisition date are as follows:

	Unit: Million Baht	
	SMP	MK
Purchase consideration	268.12	101.70
Fair value of net assets acquired	(268.12)	(101.70)
Goodwill (Note 19)	-	-

43. Business Acquisition (Continued)

43.2 Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht	
	SMP	MK
Other accounts receivable	5.14	1.02
Property, plant and equipment (Note 18)	274.14	121.17
Intangible assets (Note 20)	20.03	-
Exploration and Evaluation Assets (Note 21)	23.64	3.74
Deferred tax liabilities (Note 22.3)	<u>(54.83)</u>	<u>(24.23)</u>
Total purchase consideration transferred	<u>268.12</u>	<u>101.70</u>

The PTTGM Group has attributed the excess of consideration paid and the fair value of the assets and liabilities in SMP and MK to mineral rights (coal reserves), which represented as intangible assets. A corresponding deferred tax liabilities was recognized.

Management is currently performing the purchase price allocation exercise to determine the fair value of the identifiable assets and liabilities at the date of acquisition. This process will to be finalized within 12 months from the date of acquisition.

43.3 On March 21, 2019, PTTEP HK Offshore Limited (PTTEP HKO), a subsidiary of the PTTEP Group, had signed the Share Sale and Purchase Agreement (SSPA) to acquire the 100% shareholding interests of Murphy Oil Corporation (Murphy) in Malaysia through acquisition of shares in Murphy's subsidiaries, which are Murphy Sabah Oil Co., Ltd. (Murphy Sabah) and Murphy Sarawak Oil Co., Ltd. (Murphy Sarawak), with total acquisition value of approximately USD 2,130.86 million (Baht 65,724.27 million). Moreover, according to the SSPA, there may be contingent consideration of not exceeding USD 100.00 million if there is significant petroleum found from exploration of SK405B project. The acquisition was completed on July 10, 2019.

Details of net assets acquired and goodwill at the acquisition date are as follows:

	Unit: Million Baht
Purchase consideration	65,724.27
Fair value of net assets acquired	<u>(46,873.69)</u>
Goodwill (Note 19)	<u>18,850.58</u>

43. Business Acquisition (Continued)

43.3 Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	1,816.86
Trade accounts receivable	4,257.70
Other accounts receivable	2,331.52
Inventories	240.00
Materials and supplies	604.51
Other current assets	347.26
Property, plant and equipment (Note 18)	50,194.82
Intangible assets (Note 20)	76.71
Exploration and Evaluation Assets (Note 21)	12,660.24
Deferred tax assets (Note 22.3)	3,026.87
Other non-current assets	1,635.75
Trade accounts payable	(193.74)
Other accounts payable	(4,918.17)
Current portion of long-term loans (Note 26)	(529.44)
Other current liabilities	(1,104.31)
Long-term loans (Note 26)	(4,101.63)
Deferred tax liabilities (Note 22.3)	(11,184.83)
Provision for decommissioning costs (Note 28)	<u>(8,286.43)</u>
Fair value of net assets acquired	46,873.69
<u>Add</u> Goodwill (Note 19)	<u>18,850.58</u>
Total purchase consideration transferred	65,724.27
<u>Less</u> Cash and cash equivalents of subsidiaries	<u>(1,816.86)</u>
Cash outflow on the business acquisition	<u><u>63,907.41</u></u>

Goodwill of USD 611.16 million (Baht 18,850.58 million) arises mainly from the recognition of deferred tax liabilities arising from the difference between the fair value of net identifiable assets acquired from the acquisition and the book value which is the tax base of these net assets. The fair value of the identifiable assets acquired and liabilities assumed may be adjusted to reflect new information obtained about facts and circumstances that existed as of the acquisition date, however, the measurement period shall not exceed one year from the date which the PTTEP Group has control.

The fair value of total considerations transferred on the acquisition date of USD 2,130.86 million (Baht 65,724.27 million) consists of cash payment on acquisition date of USD 2,123.76 million (Baht 65,505.43 million) and deferred consideration of USD 7.10 million (Baht 218.84 million), which is recognized in other non-current liabilities in the consolidated financial statements.

43. Business Acquisition (Continued)

- 43.4 On September 12, 2019, TOP Solvent Company Limited (TS), a subsidiary of the TOP Group, purchased the shares for investment in PT. Tirta Surya Raya (TSR), from the existing shareholders of TSR representing 67.00% shareholding interest. TSR is a company registered in Indonesia and engages in distributing solvent and chemical products. TS purchased 15,410 shares, totalling USD 1.28 million or equivalent to Baht 40.24 million.

Details of net assets acquired and goodwill at the acquisition date are as follows:

	Unit: Million Baht
Purchase consideration	40.24
Fair value of net assets acquired	<u>(27.02)</u>
Goodwill (Note 19)	<u>13.22</u>

Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	1.46
Trade accounts receivable	14.79
Other accounts receivable	31.11
Inventories	4.09
Property, plant and equipment (Note 18)	3.01
Other current liabilities	<u>(14.21)</u>
Fair value of net assets	40.25
<u>Less</u> Non-controlling interests	<u>(13.23)</u>
Fair value of net assets acquired	27.02
<u>Add</u> Goodwill (Note 19)	<u>13.22</u>
Total purchase consideration transferred	40.24
<u>Less</u> Cash and cash equivalents of subsidiaries	<u>(1.46)</u>
Cash outflow on the business acquisition	<u>38.78</u>

The TOP Group is under the process of determining fair value of the acquired net assets which is expected to be finalized within 12 months from the acquisition date.

43. Business Acquisition (Continued)

- 43.5 On June 17, 2019, PTTEP HK Holding Limited (PTTEP HK), a subsidiary of the PTTEP Group, signed the Share Purchase Agreement (SPA) to acquire the 100% shareholding interests of Partex Holding B.V. (Partex) from Calouste Gulbenkian Foundation with the total acquisition value of approximately USD 716.16 million (Baht 21,604.53 million). The value may be adjusted according to conditions in the SPA. The acquisition was completed on November 4, 2019.

Details of net assets acquired and goodwill at the acquisition date are as follows:

	Unit: Million Baht
Purchase consideration	21,604.53
Fair value of net assets acquired	<u>(15,406.56)</u>
Goodwill (Note 19)	<u>6,197.97</u>

Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	4,196.90
Trade accounts receivable	1,373.26
Other accounts receivable	24.16
Materials and supplies	418.87
Other current assets	17.24
Investments in associates (Note 15.6.1)	2,502.52
Property, plant and equipment (Note 18)	14,150.69
Intangible assets (Note 20)	1,107.50
Exploration and Evaluation Assets (Note 21)	2,947.68
Other non-current assets	1,776.48
Trade accounts payable	(1,800.82)
Other accounts payable	(358.44)
Income tax payable	(390.66)
Other current liabilities	(4.52)
Deferred tax liabilities (Note 22.3)	(7,190.83)
Provisions for employee benefit (Note 27)	(1,354.08)
Provision for decommissioning costs (Note 28)	(1,888.40)
Other non-current liabilities	<u>(120.99)</u>
Fair value of net assets acquired	15,406.56
<u>Add Goodwill (Note 19)</u>	<u>6,197.97</u>
Total purchase consideration transferred	21,604.53
<u>Less Cash and cash equivalents of subsidiaries</u>	<u>(4,196.90)</u>
Cash outflow on the business acquisition	<u>17,407.63</u>

43. Business Acquisition (Continued)

- 43.5 Goodwill of USD 205.46 million (Baht 6,197.97 million) arises primarily from the recognition of deferred tax liabilities arising from the difference between the fair value of net assets acquired from the acquisition and the book value which is the tax base of these net assets. The fair value of the identifiable assets acquired and liabilities assumed may be adjusted to reflect new information obtained about facts and circumstances that existed as of the acquisition date, however, the measurement period shall not exceed one year from the date which the PTTEP Group has control.

The fair value of total considerations transferred on the acquisition date of USD 716.16 million (Baht 21,604.53 million) was fully paid in cash by PTTEP HK on the acquisition date.

- 43.6 On August 8, 2018, the PTTGC Group entered into the Shares Purchase Agreement to acquire 74.00% share of Siam Mitsui PTA Company Limited, Purified Terephthalic Acid producer, and 74.00% share of Thai PET Resin Company Limited, Polyethylene Terephthalate resin producer, directly and indirectly, from SCG Chemicals Co., Ltd. and Mitsui Chemicals, Inc. Subsequently on December 27, 2018, the PTTGC Group completed the share acquisition of subsidiaries for a preliminary cash consideration of approximately Baht 4,122.83 million. The final purchase price was settled with the seller for an additional payment of approximately Baht 1,248.88 million, which already paid in March 2019.

Management of the PTTGC Group believes that the acquisition is harmonized with the business strategy of the PTTGC Group that intends to expand the downstream investment and increases market potential in polymer business to satisfy customer's need.

However, the fair value of assets acquired and liabilities have been already completed. Therefore, the fair value of assets acquired and liabilities have been adjusted and gain on bargain purchase of Baht 31.48 million, which is presented in other revenues in the consolidated income statements for the year ended December 31, 2019.

Details of net assets acquired and gain on bargain purchase at the acquisition date are as follows:

	Unit: Million Baht
Fair value of net assets acquired	6,726.61
Purchase consideration	<u>(5,371.71)</u>
Gain on bargain purchase	<u>1,354.90</u>

43. Business Acquisition (Continued)

43.6 Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	1,588.95
Trade accounts receivable	2,480.47
Inventories	2,200.85
Property, plant and equipment	9,549.91
Intangible assets	8.12
Other non-current assets	600.53
Bank overdraft and short-term loans from financial institutions	(2,955.00)
Trade accounts payable	(2,777.93)
Other accounts payable	(182.74)
Long-term loans	(750.00)
Deferred tax liabilities	(583.54)
Provisions for employee benefit	(89.61)
Fair value of net assets	9,090.01
<u>Less</u> Non-controlling interests	<u>(2,363.40)</u>
Fair value of net assets acquired	6,726.61
<u>Less</u> Gain on bargain purchase	<u>(1,354.90)</u>
Total purchase consideration transferred	5,371.71
<u>Less</u> Cash and cash equivalents of subsidiaries	<u>(1,588.95)</u>
Deferred consideration	(1,248.88)
Cash outflow on the business acquisition	<u>2,533.88</u>

44. Promotional Privileges

The Company has been granted promotional privileges for the following activities from the Board of Investment (BOI) under the Investment Promotion Act, B.E. 2520

- ◆ the Ethane Separation Plant project
- ◆ the Fourth Rayong-Kangkoi gas pipeline project
- ◆ the Thai-Myanmar onshore gas pipeline project
- ◆ the Nakhon Sawan gas pipeline project
- ◆ the Nakhon Ratchasima gas pipeline project
- ◆ the Fifth onshore gas pipeline project
- ◆ the Ratchaburi - Wang Noi 6 gas metering station to Ratchaburi province gas pipeline project
- ◆ Expansion of the First onshore gas pipeline project covering Rayong Chonburi and Saraburi new laid pipelines.

The promotional privileges include:

- ◆ an exemption from import duties on machinery approved by the BOI
- ◆ an exemption from corporate income tax on net income from the promoted business for periods of eight years starting from the date on which the income is first derived from such operations.

During the year 2018, the Company has exercised the privileges for the Ethane Separation Plant project. For the year 2019, there is no the promotional privileges for the Company.

The sales and service income of the Company from the promoted and non-promoted businesses for the years ended December 31, 2019 and 2018 are as follows:

	Unit: Million Baht
	Separate financial statements
	<u>2018</u>
Promoted businesses	27,545.26
Non-promoted businesses	<u>1,383,475.79</u>
Total	<u>1,411,021.05</u>

44. Promotional Privileges (Continued)

Some subsidiaries received the following promotional privileges from the BOI under the Investment Promotion Act, B.E. 2520

The TOP Group has been granted privileges from the BOI for its power and steam generation, petrochemical product production, chemical product production, ethanol product production, marine transportation, offshore crude oil unloading facilities and industrial zone. The promotional privileges include exemption from import duties and tax on the machinery and equipment approved by the BOI, exemption from corporate income tax on the net income from the promoted business for seven to eight years starting from the date on which income is first derived from such operations or eight years from the date on which the income is received subsequent to when the privileges were granted, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

The PTTGC Group has been granted privileges for its production of upstream, intermediate and downstream petrochemical, utilities and production support facilities, jetty for loading and storage of liquid product and transportation by marine vessels, petroleum product production, research and development of polymer products and chemical formula, lab testing services and refinery. The promotional privileges include exemption from import duties and tax on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business up to 100% of its investment excluded the cost of land and working capital for eight years starting from the date on which income is first derived from such operations and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

The GPSC Group has been granted privileges for its production of electricity, steam, water, chilled water, refuse derived fuel and Li-ion battery. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for four or eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption for some promotional privileges.

The IRPC Group has been granted privileges for its manufacture of Compounded Plastic, the cogeneration and steam power plant project (CHP), Propylene project (PRP), EBSM Upgrading for ABS Specialties project (EBSM), Multi Product Pipeline project (MPPL), Polypropylene Resin (PPE) project, Polypropylene Compound (PPC) project, High Pressure HDPE Compound project, Investment project in Industrial zone and Upstream Project for Hygiene, Value Added Products (UHV) and Floating Solar project. The promotional privileges include exemption from import duties and tax on materials and necessary parts including machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for five to eight years starting from the date on which income is first derived from such operations, a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption, and double deduction of logistics, electricity and water expenses for a period of ten years since income is first derived from such operations.

PTTLNG has been granted promotional privileges, Category 7.1: Public utilities and basic services, for its liquefied natural gas transportation business. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

44. Promotional Privileges (Continued)

Some subsidiaries received the following promotional privileges from the BOI under the Investment Promotion Act, B.E. 2520 (Continued)

The PTT TANK Group has been granted promotional privileges for its service and public utilities, Category 7.1: Public utilities and basic services. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption. Moreover, the PTT TANK Group has been granted promotional privileges for its service and public utilities, Category 7.1.4.: Public utilities and basic services for its loading/unloading facilities for sea transport. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for six years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

As promoted company, the Group must comply with certain terms and conditions prescribed in the promotional certificates.

45. Proceeding regarding the Central Administrative Court's Ordering Temporary Suspension of Projects in Map Ta Phut Area

On June 19, 2009, the Stop Global Warming Association and a group of individuals totaling 43 parties (the Petitioners) filed a complaint with the Central Administrative Court (the Court) as the black case No. 908/2552, against eight government agencies, together with a motion seeking the Court injunction to temporarily suspend all operations and activities of 76 industrial projects in the Map Ta Phut area in Rayong Province.

On September 29, 2009, the Court ordered the temporary injunction by requiring the eight accused government agencies to issue the order to temporarily suspend all 76 projects pending the Court's judgment or order otherwise, except for those projects or activities which received the permits before the effective date of the Constitution of Kingdom of Thailand B.E. 2550 or which were not required to prepare the Environmental Impact Assessment (EIA) reports pursuant to the Ministerial Announcement of Ministry of Natural Resources and Environment dated June 16, 2009. 25 projects of the Group were under the suspension order, and 3 of those 25 projects belonged to the Company.

On October 16, 2009, the Group, as an interested person, submitted a motion to appeal the Court's order to the Supreme Administrative Court.

On December 2, 2009, the Supreme Administrative Court issued an order No. 592/2552 amending the Court's injunction by requiring the eight accused government agencies to order the temporary suspension of all projects or activities listed in the complaint except for 11 projects, which clearly, according to the Supreme Administrative Court, did not severely affect the community but were projects intended to mitigate pollution or only additional installation to the existing projects. Among those 11 projects, 7 of them belonged to the Group, comprising 1 project of the Company and 6 projects of the other companies in the Group. 2 projects of the Company were still under the Court's order to suspend.

On December 18, 2009, the public prosecutor submitted the answer rejecting all allegations in the complaint.

On September 2, 2010, the Court rendered a judgment revoking the permit of the projects listed in the complaint which, according to the law, were categorized as project that might severely affect the community and did not comply with the procedures set forth in Section 67 paragraph 2 of the Constitution, B.E. 2550. The revocation was effective as of the date of the judgment. 1 project of the Group is within the scope of the judgment.

On October 1, 2010, the 43 prosecutors appealed the Court's judgment to the Supreme Administrative Court. On December 7, 2010, the eight accused government agencies by the public prosecutors submitted a reply to the appeal. The appeal is currently under the consideration of the Supreme Administrative Court.

46. Commitments and Contingent Liabilities

Details of significant changes in commitments and contingent liabilities are as follows:

46.1 Details of commitments to subsidiaries and joint ventures are as follows:

46.1.1 The Company has provided loans to its subsidiaries with credit limits totalling Baht 142,277.00 million. As at December 31, 2019, the Company made these loans payments to its subsidiaries totalling Baht 94,146.51 million. The remaining credit limits were Baht 48,130.49 million.

46.1.2 The Company entered into the Sponsor Support Agreements with subsidiaries and joint ventures with credit limits equal to the sum of the loan obligations to financial institutions of such subsidiaries and joint ventures. Under these agreements, as at December 31, 2019, the Company had commitments of USD 16.91 million or equivalent to Baht 512.90 million.

46.1.3 The Company had obligations under the Shareholder Agreements to pay for ordinary shares in proportion to its shareholding. As at December 31, 2019, the Company had remaining obligations amounting to Baht 2,656.46 million.

46.2 Commitments under operating leases - the Group as a lessee, the future minimum lease payments under uncancellable operating leases as at December 31, 2019 and 2018 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2019	2018*	2019	2018*
Within 1 year	6,422.59	2,607.35	442.66	441.86
Over 1 year but not over 5 years	11,407.19	6,210.69	1,374.01	1,453.18
Over 5 years	29,996.76	27,995.30	3,031.04	3,254.79
Total	<u>47,826.54</u>	<u>36,813.34</u>	<u>4,847.71</u>	<u>5,149.83</u>

* The Company has adjusted the financial information to be comparable with the financial statement presentation for the years ended December 31, 2019.

Operating lease commitments recognised as expense for the year ended December 31, 2019 amounting to Baht 11,633.94 million (2018: Baht 5,066.58 million) in the consolidated financial statements and Baht 1,936.39 million (2018: Baht 2,837.45 million) in the separate financial statements.

46.3 As at December 31, 2019, the Group had capital commitments of Baht 94,215.41 million in the consolidated financial statements.

46.4 As at December 31, 2019, the Group had outstanding letters of credit of Baht 44,966.06 million in the consolidated financial statements and Baht 2,745.86 million in the separate financial statements.

46.5 As at December 31, 2019, the Group had contingent liabilities in the form of letter of guarantee amounting to Baht 28,682.96 million in the consolidated financial statements and Baht 71.32 million in the separate financial statements.

46. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 46.6 A subsidiary entered into a contract to sell a product to the Company and the Company entered into a contract to resell the same product to a listed company. The term of the two contracts was 15 years, expiring on January 31, 2012. Before the expiration of the contract, the subsidiary notified the Company that the contract would not be renewed. Consequently, without product to resell, the Company had to notify the listed company that the contract would also not be renewed. The Company's notice was served to the listed company in accordance with the terms and conditions set forth in the contract. On December 3, 2009, the listed company submitted claims with the Thai Arbitration Institute (the Institute) requesting the Company and the subsidiary, as the seller and the supplier, respectively, to comply with the contracts by continuing to sell the product to the listed company or be jointly liable to pay damages.

On February 10, 2010, the subsidiary submitted motion with the Institute asking to dismiss the claims against it from the case list. The Institute issued an order to dismiss the claims relating to the subsidiary.

The Company forwarded the case to the Office of the Attorney General to submit a defense to the Institute. On April 28, 2010, the public prosecutor submitted the defense with the Institute for the Company. The tribunal finished the witness examination. Consequently, on March 25, 2016, the tribunal ruled that the Company make a partial payment for compensations to the listed company. However, the Company was of the opinion that the arbitral award might be both factually and legally inconsistent. Therefore, the Company could exercise its legal right by filing a motion with the court requesting the arbitral award to be revoked. On June 30, 2016, the Company by the public prosecutor filed a motion to revoke the arbitral award with the Civil Court. Subsequently, on December 16, 2016, the listed company submitted a motion with the Civil Court asking for the enforcement of the arbitral award. The Company by the public prosecutor submitted the objection with the Civil Court. On September 19, 2019, the Civil Court rendered a judgment to enforce the arbitral award that the Company to make payment of damages according to the abovementioned award in the amount of Baht 390.00 million per annum from February 1, 2012 to March 25, 2016 with the interest thereof at the rate of 7.50% per annum accrued from the date of the arbitral award to the date on which the Company makes full payment. However, the Company respectfully cannot concur with the judgment and, therefore, will appeal the Civil Court's judgment with the Supreme Court in accordance with the law.

- 46.7 On May 26, 2010, the contractor for an onshore natural gas pipeline construction project (the "Contractor") submitted claims to the Thai Arbitration Institute (the Institute) seeking overdue payment and damages for the work performed in the aforementioned project from the Company. The Company, however, considered that the submission of the claims was incompliant with the dispute resolution procedure agreed upon the contract. Therefore, the Company filed an opposition to the Contractor's claim submission with the Institute and reserved right to protest such contractually incompliant claim submission in the arbitration procedure. After the claim submission, the Central Bankruptcy Court ordered the Contractor to be under an absolute receivership which rendered the official receiver to have sole power in any litigation pertaining to the Contractor's assets. Subsequently, the Contractor's official receiver has petitioned the Institute to substitute the Contractor in the dispute against the Company. Regarding the Contractor's bankruptcy case, the Company submitted a motion for receiving a debt payment in accordance with the law as a creditor. With respect to the arbitration process, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the Arbitral Tribunal rendered an award ordering the Company to partially pay for the Contractor's claims. However, the Company considered that the arbitral award is materially both factually and legally inconsistent. The Company, therefore, filed a motion to revoke the arbitral award, while the contractor submitted a motion with the Civil Court to enforce the arbitral award. On October 17, 2017, the Civil Court delivered a judgment to enforce the arbitral award whereby some penalty amounts were reduced. However, The Company submitted with the Supreme Court an appeal of the Civil Court's judgment and, together with the appeal, the Company

46. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 46.7 also placed with the Civil Court a Company's book bank as a security to stay the enforcement of the judgment as stated in Note 23. Subsequently, the Contractor also submitted with the Supreme Court an appeal of the Civil Court's judgment. On December 18, 2019, the Supreme Court rendered judgment in not accepting the Company's appeal for consideration and the case was final. Therefore, the Company was obliged to make payment in accordance with the Civil Court's judgment. On January 8, 2020, the Company made payment in accordance with the Civil Court's judgment in the approximate amount of 4,543.51 million Baht with the Civil Court.

On September 8, 2010, the Contractor by the official receiver submitted another claim to the Institute seeking overdue payment and damages from the Company for the work performed in connection with another pipeline construction project. The Company, however, considered that the submission of the claims was incompliant with the dispute resolution procedure agreed upon the contract. Therefore, the Company filed an opposition to the Contractor's claim submission with the Institute and reserved the right to protest such contractually incompliant claim submission in the arbitration procedure. In contention against the alleged claims, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the Arbitral Tribunal was mutually appointed to consider the disputes. On November 30, 2018, the tribunal rendered an award that both claims and counterclaims were dismissed. However, the Company already submitted the application of repayment of debt in the bankruptcy case. The Contractor, then, file a motion for revocation of the arbitral award with the Civil Court and the Company by the Office of the Attorney General submitted the motion to object the revocation of the arbitral award with the Civil Court. The case is currently under the consideration of the Civil Court.

- 46.8 On February 25, 2014, the contractor for an onshore natural gas pipeline construction project (the "Contractor") filed a lawsuit against the Company with the Civil Court on the grounds of wrongful termination and breach of contract and claimed for outstanding payment of the work and damages. On the contrary, the Company considered that all of the Company's actions have been in accordance with the terms and conditions of the contract. Therefore, the Company forwarded the case to the Office of the Attorney General for consideration to arguing the case for the Company and the prosecutor has submitted the answer with the Court. Consequently, the Civil Court ordered the case be transferred to the Central Administrative Court for consideration and judgment because the Civil Court and the Central Administrative Court has the corresponding opinions that this case was an administrative case. The Civil Court transferred this case to the Central Administrative Court. Currently, the case is under the consideration of the Central Administrative Court.

After the Company terminated the contract with the Contractor, the Company completed an onshore natural gas pipeline construction project. Subsequently, on June 20, 2018, the Company filed a lawsuit against the Contractor with the Central Administrative Court on the grounds of breach of contract and absent from service and claimed for damages. Currently, the case is under the consideration of the Central Administrative Court.

On September 25, 2019, the Contractor filed a statement of fact with the Central Administrative Court that on March 8, 2019, the National Company Law Tribunal of India ordered that the Contractor to be under the Corporate Insolvency Resolution Process and appointed the Resolution Professional in accordance with India Law. The Company conducted an investigation and found that such statement was true. Subsequently, on November 26, 2019, the Company filed a petition to request the payment of debt with the Resolution Professional in India. Currently, the Resolution Professional is in consideration of the Company's petition. With regard to the Central Administrative Court's case, the Court is in consideration of the proceedings of the case.

46. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 46.9 On March 11, 2016, PTTEP AA received a letter from a firm of Australia lawyers representing a group of West Timorese seaweed farmers, notifying PTTEP AA of their intention to commence a legal action for compensation relating to the Montara oil spill incident in the Timor Sea in 2009. Subsequently, on August 9, 2016, PTTEP AA was notified of a claim made in the Sydney Registry of the Federal Court of Australia seeking damages on behalf of a group of seaweed farmers (Class Action). The Statement of Claim as filed does not quantify the claim, and no supporting evidence has yet been presented to the court. PTTEP AA has appointed lawyers and to defend against the claim. Currently, the case is under the court determination.

PTTEP considers that the claims from representative of West Timorese seaweed farmers related to Montara oil spill incident remain unproven due to insufficient evidence to support the claim.

- 46.10 During the third quarter of 2014, the number of people in Rayong filed several lawsuits with the Civil Court and the Rayong Provincial Court against PTTGC to claim the extra compensation from oil spill incident and to perform the rehabilitation of the sea and natural environmental recovery. Some cases have been dismissed and some cases have been passed a judgment by the Civil Court on August 25, 2016 ordered PTTGC to compensate for damages including interest and rehabilitation of approximately Baht 11.26 million. PTTGC has appealed on February 17, 2017. Subsequently, on May 11, 2018, PTTGC made a compromise agreement with majority plaintiffs at the Civil Court. On December 20, 2018, the Court of Appeal has passed the judgment according to the compromise contracts which PTTGC has already paid compensation in full amount. For the remaining plaintiffs, the Court of Appeal orders PTTGC to pay compensation with its interest according to the judgement of the Court of First Instance and reduced the amount of interest. PTTGC has paid compensation to all plaintiff completely and no petition is submitted to Supreme Court by any of plaintiff. This case has become final.

For the case at Rayong Provincial Court, on September 28, 2018, the Court has made the judgement ordering PTTGC to pay damage cost with its interest approximately Bath 37.74 million by deducting the remedy payment paid to the plaintiffs of Baht 24.00 million. PTTGC deposited the remaining damage cost with its interest to the Rayong Provincial Court on February 25, 2019. Some plaintiffs filed an appeal with the Rayong Provincial Court and PTTGC has filed an answer to the appeal with the Rayong Provincial Court on October 2, 2019. Subsequently, on January 22, 2020 the Rayong Provincial Court sent an appointment to hear the judgment of the Court of Appeal Region 2 on March 19, 2020.

47. Other Event

On April 4, 2016, the Ombudsman of Thailand submitted a complaint to the Administrative Court against the Minister of Finance, the Minister of Energy, the Company and other defendants as a black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on December 18, 2007 and August 10, 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of September 30, 2001 amounting to Baht 68,569.69 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On May 26, 2016, the Administrative Court ordered the Company to submit a defense, responding to the particular issue that was whether the Company completely transferred the assets of the Petroleum Authority of Thailand (the tenth defendant), which were public assets, to the first defendant (the Minister of Finance) in accordance with the Cabinet Resolution on December 18, 2007. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. On May 11, 2018, the Administrative Court issued an order to end the fact finding process. Currently, the case is under the consideration of the Administrative Court.

Nevertheless, on December 14, 2007, the Supreme Administrative Court in a red case No. Fo. 35/2550, ordered the defendants to jointly segregate the public assets to the Minister of Finance, in accordance with the judgment. Therefore, on December 18, 2007, the Cabinet acknowledged the aforesaid judgment and assigned the Minister of Finance and the Minister of Energy to jointly segregate the public assets to comply with the judgment. Consequently, on December 26, 2008, the Supreme Administrative Court declared that the defendants had completely complied with the judgment of the Court. Furthermore, the plaintiff and the co-plaintiffs had submitted complaints regarding such segregation of public assets to the Court for four times but the Court ordered to dismiss such complaints and reaffirmed that the judgment of the Supreme Administrative Court in the red case No. Fo. 35/2550 was completed. Consequently, on August 10, 2010, the Cabinet acknowledged the conduct followed the Supreme Administrative Court's judgment in accordance with the proposals of the Minister of Energy and the Minister of Finance.

48. Events after the Reporting Period

- 48.1 On November 29, 2019, at the Board of Directors Meeting of PTT LNG Co., Ltd. (PTTLNG) No.12/2019, the Board passed a resolution to approve the call up of remaining additional share capital of Baht 25.66 million. The Company made the additional payment on January 24, 2020.
- 48.2 On February 20, 2020, at the Board of Directors Meeting No. 2/2020 of the Company, the Board passed a resolution to propose to the Annual General Meeting of the Company's shareholders for approval a dividend payment of Baht 2.00 per share for the year 2019. On October 25, 2019, the Company paid an interim dividend of Baht 0.90 per share as described in Note 42. Accordingly, the remaining dividend of Baht 1.10 per share or approximately Baht 31,419 million will be proposed for approval by the Annual General Meeting of the Company's shareholders for the year 2020.
- 48.3 The board of directors of the Company approved these financial statements for public issuance on February 20, 2020.

AUDITOR'S REPORT AND FINANCIAL STATEMENTS
OF
PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
FOR THE YEAR ENDED DECEMBER 31, 2018



(TRANSLATION)
AUDITOR'S REPORT

TO : THE SHAREHOLDERS OF PTT PUBLIC COMPANY LIMITED

Opinion

The State Audit Office of the Kingdom of Thailand has audited the accompanying consolidated financial statements of PTT Public Company Limited and its subsidiaries (the Group) and the separate financial statements of PTT Public Company Limited (the Company), which comprise the consolidated and separate statements of financial position, as at December 31, 2018, the consolidated and separate statements of income, the consolidated and separate statements of comprehensive income, the consolidated and separate statements of changes in equity and the consolidated and separate statements of cash flows for the year then ended, and notes to the consolidated and separate financial statements, including a summary of significant accounting policies.

In the State Audit Office of the Kingdom of Thailand's opinion, the above mentioned consolidated and separate financial statements present fairly, in all material respects, the consolidated financial position of PTT Public Company Limited and its subsidiaries and separate financial position of PTT Public Company Limited, respectively, as at December 31, 2018, and their consolidated and separate financial performance and cash flows for the year then ended in accordance with Thai Financial Reporting Standards (TFRSs).

Basis for Opinion

The State Audit Office of the Kingdom of Thailand conducted the audit in accordance with the State Audit Standards and Thai Standards on Auditing (TSAs). The State Audit Office of the Kingdom of Thailand's responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements section of the State Audit Office of the Kingdom of Thailand's report. The State Audit Office of the Kingdom of Thailand is independent of the Group and the Company in accordance with the State Audit Standards and the Federation of Accounting Professions' Code of Ethics for Professional Accountants that are relevant to the State Audit Office of the Kingdom of Thailand's audit of the consolidated and separate financial statements, and has fulfilled other ethical responsibilities in accordance with these requirements. The State Audit Office of the Kingdom of Thailand believes that the audit evidence the State Audit Office of the Kingdom of Thailand has obtained is sufficient and appropriate to provide a basis for the State Audit Office of the Kingdom of Thailand's opinion.

State Audit Office of the Kingdom of Thailand



Emphasis of Matter

The State Audit Office of the Kingdom of Thailand draws attention to Note 48.1 to the financial statements, which describes the event that Ombudsman of Thailand submitted a complaint to the Administrative Court (the Court) against the Company as the black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on December 18, 2007 and August 10, 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of September 30, 2001 amounting to Baht 68,569.69 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On May 26, 2016, the Administrative Court ordered the Company to submit a defense. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. On May 11, 2018, the Administrative Court issued an order to end the fact finding process. Currently, the case is under the consideration of the Administrative Court.

In conclusion, the State Audit Office of the Kingdom of Thailand's opinion is not qualified in respect of these matters.

Key Audit Matters

Key audit matters are those matters that, in the State Audit Office of the Kingdom of Thailand's professional judgment, were of most significance in the audit of the consolidated and separate financial statements of the current period. These matters were addressed in the context of the State Audit Office of the Kingdom of Thailand's audit of the consolidated and separate financial statements as a whole, and in forming the State Audit Office of the Kingdom of Thailand's opinion thereon, and the State Audit Office of the Kingdom of Thailand does not provide a separate opinion on these matters.

The State Audit Office of the Kingdom of Thailand identifies the followings as key audit matters to communicate:

1. Estimation of petroleum reserves

Estimation of petroleum proved reserves, especially proved reserves, have a significant impact on the consolidated financial statements in impairment testing and calculations of depreciation, depletion, and amortization expenses of petroleum exploration and production assets.



Estimated proved reserves may differ from the actual reserves to be recoverable in the future because the estimation is based on available information at the time of the estimation. At the beginning of each project, an estimation may be subject to a large variance, but the variance will become smaller when the project approaches the end of its production life. This may impact the management's investment decisions to sustain the Group's businesses. The management relies on the Group's internal teams of experts in estimating the proved reserves using the estimation methods consistent with those generally employed by the petroleum exploration and production industry. The experts have to exercise significant judgment as well as experience in determining appropriate estimation methods for the available information at the time of the estimation. Therefore, the amount of proved reserves may vary with individual judgment and experience. In addition, changes in the estimated proved reserves will impact the recognition of depreciation, depletion, and amortization expenses in the financial statements. As a result, the State Audit Office of the Kingdom of Thailand considers this as a key audit matter.

The Group disclosed estimation of petroleum proved reserves information in Note 3.2.14 Accounting Policies - Property, Plant and Equipment, Note 3.2.29 Use of Estimates and Significant Assumptions - Estimates of Petroleum Reserves, and Note 17 Property, Plant and Equipment.

The State Audit Office of the Kingdom of Thailand performed significant audit procedures as follow;

1. Obtaining an understanding of the proved reserve estimation processes, assessing the adequacy of the designed key internal controls, and performing tests of key controls of such process, especially the controls over the reliability of the data used in the preparation of reports related to the Group's proved reserves, and the uses of proved reserves data in the calculation of depreciation, depletion, and amortization expenses, as well as the assessment of impairment of assets.

2. Assessing the qualifications of the Group's internal experts who are responsible for estimating proved reserves and preparing the Group's proved reserves data.

3. Using the results of the reserve estimation audit performed by the energy regulatory agency in Thailand, which has its own processes and experts for verifying the estimation of domestic petroleum reserves for projects the operators of which have submitted the required reports. The State Audit Office of the Kingdom of Thailand compared the Group's proved reserves at the end of 2017 with those verified by the regulatory agency and reconciled then with the estimated proved reserves presented in internal reports related to proved reserves during the year to determine the estimated proved reserves of domestic projects of which the Group was the operator at the end of 2018.

State Audit Office of the Kingdom of Thailand



4. Verifying that the Group recognized significant changes in the estimated proved reserves in the appropriate accounting period and in accordance with the Group's accounting policy, and those changes were applied to the calculation of depreciation, depletion, and amortization expenses appropriately.

2. Provision for decommissioning costs

Provision for decommissioning costs is the significant item which included in provision for decommissioning costs in the consolidated financial statements. Decommissioning activities occur at the end of projects. Decommissioning methods vary with the locations of petroleum exploration and production, which are classified into onshore and offshore production areas, where the main infrastructure, including Central Processing Platforms, Well Head Platform, Development Well, Pipeline, and other producing properties, is installed. Also, the regulations in each country have varying requirements for decommissioning activities, which can be either total or partial removal. In addition, only a small number of decommissioning activities in the past or with certain natures have taken place, resulting in limited decommissioning cost information that can be used as a reference in the Group's estimation of future expenses. Due to these factors, the calculation of the provision for decommissioning costs has to rely significantly on the exercise of judgment in determining assumptions around decommissioning costs, inflation rates, discount rates, and timing of the decommissioning based on the estimated field life of a project. These assumptions are subject to change over time. The management relies on the Group's teams of experts, comprising those from Engineering and Development Group, Production Asset Group, Operations Support Group, and Finance and Accounting Group, in estimating the provision for decommissioning costs. As a result, the State Audit Office of the Kingdom of Thailand considers this as a key audit matter.

The Group disclosed information about provision for decommissioning costs in Note 3.2.22 Significant Accounting Policies - Provision for Decommissioning Costs, Note 3.2.29 Use of Estimates and Significant Assumptions - Provisions, and Note 28 Provision for Decommissioning Costs.

The State Audit Office of the Kingdom of Thailand performed significant audit procedures as follow;

1. Obtaining an understanding of the decommissioning cost estimation processes, assessing the adequacy of the designed internal controls, and performing tests of controls over the estimation, review, and adjustment of the provision for decommissioning costs, as well as related approval.
2. Assessing the qualifications of the Group's experts who are responsible for estimating the provision for decommissioning costs and who are responsible for inspection and controlling the quality of engineering work.

State Audit Office of the Kingdom of Thailand



3. Evaluating the reasonableness of the assumptions used in the calculation of provision for decommissioning costs by

3.1 Evaluating the reasonableness of the decommissioning costs through inquiry of the experts about the assumptions used, relying on the State Audit Office of the Kingdom of Thailand's knowledge of the businesses and decommissioning information of other comparable projects and related laws;

3.2 Evaluating the appropriateness of the expected timing of decommissioning used in the calculation of the provision for decommissioning costs by considering its consistency with investment plans, initial decommissioning plan submitted to the energy regulatory agency in Thailand, or any other related information; and

3.3 Evaluating the reasonableness of inflation rates and discount rates through inquiry of the experts and comparison with the information from external sources.

4. Agreeing decommissioning costs used in the calculation of the provision for decommissioning costs to the information obtained from the Group's engineers, both for projects of which the Group is the operator and for projects of which the Group is non - operator.

5. Validating significant changes in the estimated decommissioning costs incurred during the year and changes that impact the statements of income against supporting evidence.

6. Testing the calculation of the provision for decommissioning costs.

7. In case of projects for which the Group had submitted the initial decommissioning plan and the decommissioning cost estimate report, required to be audited and verified by the Group's external experts, to the energy regulatory agency in Thailand, the State Audit Office of the Kingdom of Thailand assessed the reliability of the external experts by ensuring that their qualifications, work experience and independence were in compliance with the requirements imposed by the regulatory agency for the appointment of third parties in auditing and verifying of decommissioning cost estimates.

8. Comparing actual decommissioning costs incurred with those estimated by the Group to evaluate the appropriateness of the estimation. In case that there were any significant variances, the State Audit Office of the Kingdom of Thailand considered the reasonableness of the clarifications made by the Group regarding the causes of such variances, as well as considered whether the Group incorporated the experience gained from the actual decommissioning in the current year into the review of the provision appropriately.

3. Business acquisition

As disclosed in Note 43, Business Acquisition, the Group acquired the 22.2222% participating interests in the Bongkot Project, consisting of Blocks B15, B16, B17, and G12/48, which is the significant item in the consolidated financial statements. The Group has to pay the

State Audit Office of the Kingdom of Thailand



total considerations for the acquisition of Baht 36,349.65 million. The fair values of the net identifiable assets acquired by the Group is Baht 33,828.47 million. The Group's management has assessed that the acquisition of the participating interest qualifies as a business combination accordance with the definition in Thai Financial Reporting Standard (TFRS) 3, Business Combinations. The Group has to recognize and measure the fair value on the acquisition date of the identifiable assets acquired, liabilities assumed and the considerations transferred (the value of considerations for the acquisition), and recognize the deferred tax assets or liabilities and goodwill, as well as disclose relevant information in accordance with TFRS. The Group enlisted an independent valuer to estimate the fair value of the participating interest acquired. The fair value estimation requires the selection of valuation techniques and various assumptions, which may vary with individual judgement and experience of the valuer. The information which the valuer obtained and used in the fair value calculation also significantly affects the fair value. As a result, the State Audit Office of the Kingdom of Thailand considers this as a key audit matter.

The State Audit Office of the Kingdom of Thailand performed significant audit procedures as follow;

1. Examining the agreement for the sale and purchase of the 22.2222% participating interests in the Bongkot Project and inquiring the Group's management to obtain an understanding of the nature and objective of the transaction, as well as significant content, terms, and conditions in the agreement, and evaluating whether the management's exercise of judgement regarding the acquisition of the participating interests is appropriate in accordance with the definition in TFRS3, Business Combinations.
2. Examining the evidence of payments and approval of the petroleum concession transfer as required by the law, and relevant documents used in transection recording to asset the appropriateness of the identification of the assets acquired and liabilities assumed, as well as the considerations transferred.
3. Evaluating the knowledge, capabilities, and objectivity of the independent valuer associated with the preparation of the Purchase Price Allocation report.
4. Validating the fair value estimation of the identifiable assets acquired and liabilities assumed in the Purchase Price Allocation report prepared by the independent valuer by assessing the appropriateness of the valuation techniques and the information used in the estimation, as well as the significant assumptions which the independent valuer used in the fair value estimation, testing the fair value calculation, and communicating with the independent valuer regarding significant issues.
5. Reviewing the relevant presentation and disclosures in accordance with TFRS.

State Audit Office of the Kingdom of Thailand



4. Sale of oil business

As disclosed in Note 12, The Restructuring of the Oil Business Unit is the significant item in the separate financial statements. On April 28, 2017, the 2017 Annual General Meeting of the Company's shareholders approved the restructuring of the Company by means of the transfer of the oil business unit, including the assets and liabilities of the business unit and the shares of related companies from the Company to PTT Oil and Retail Business Public Company Limited (PTTOR). On June 18, 2018, the Company and PTTOR successfully executed the Business Transfer Agreement to transfer various assets and liabilities, and shares of related companies to PTTOR. The Company has commenced the process of transferring various assets and liabilities, and shares of related companies to PTTOR since July 1, 2018. The business transfer price is Baht 117,203.26 million.

The valuation of the business transferred was performed by financial advisors. In determining the value of the business, the Company had to rely on significant estimates and assumptions, which are considered to be significant judgements that have a substantial effect on the value of the Company. As a result, the State Audit Office of the Kingdom of Thailand considers this as a key audit matter.

The State Audit Office of the Kingdom of Thailand performed significant audit procedures as follow;

1. Understanding the restructuring of the oil business unit, the transfer of the oil business, the valuation of the business, assumptions used to measure the fair value, and evaluating the adequacy and appropriateness of the designed internal controls relevant to the transfer of the business.
2. Examining the business transfer agreement, the transfer of proprietary right in properties, the delivery of the assets sold, examine the evidence of receipt of payment and related documents, and examine recording of the accounting transactions.
3. Assessing the knowledge, ability, and independence of the financial advisors that were engaged by the Company to evaluate the valuation of the business and its transferred assets.
4. Reviewing the valuation method and assessing the reasonableness of the estimates and assumptions used to calculate the fair values, including the reasonableness of discount rates by comparing them with the information from external sources.
5. Inquiring with management as to the nature and objectives of the sale of the oil business.
6. Reviewing the relevant presentation and disclosures in accordance with TFRS.



Other Information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated and separate financial statements and auditor's report thereon. The annual report is expected to be made available to the State Audit Office of the Kingdom of Thailand after the date of this auditor's report.

The State Audit Office of the Kingdom of Thailand's opinion on the consolidated and separate financial statements does not cover the other information and the State Audit Office of the Kingdom of Thailand will not express any form of assurance conclusion thereon.

In connection with the audit of the consolidated and separate financial statements, the State Audit Office of the Kingdom of Thailand's responsibility is to read the other information identified above when it becomes available and, in doing so, consider whether the other information is materially inconsistent with the consolidated and separate financial statements or the State Audit Office of the Kingdom of Thailand's knowledge obtained in the audit, or otherwise appears to be materially misstated.

When the State Audit Office of the Kingdom of Thailand reads the annual report, if the State Audit Office of the Kingdom of Thailand concludes that there is a material misstatement therein, the State Audit Office of the Kingdom of Thailand is required to communicate the matter to those charged with governance.

Responsibilities of Management and Those Charged with Governance for the Consolidated and Separate Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated and separate financial statements in accordance with TFRSs, and for such internal control as management determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated and separate financial statements, management is responsible for assessing the Group's and the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group and the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's and the Company's financial reporting process.



Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements

The State Audit Office of the Kingdom of Thailand's objectives are to obtain reasonable assurance about whether the consolidated and separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes the State Audit Office of the Kingdom of Thailand's opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with State Audit Standards and TSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated and separate financial statements.

As part of an audit in accordance with State Audit Standards and TSAs, the State Audit Office of the Kingdom of Thailand exercises professional judgment and maintains professional skepticism throughout the audit, The State Audit Office of the Kingdom of Thailand also:

- Identifies and assesses the risks of material misstatement of the consolidated and separate financial statements, whether due to fraud or error, designs and performs audit procedures responsive to those risks, and obtains audit evidence that is sufficient and appropriate to provide a basis for the State Audit Office of the Kingdom of Thailand's opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtains an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's and the Company's internal control.
- Evaluates the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the management.
- Concludes on the appropriateness of the management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's and the Company's ability to continue as a going concern. If the State Audit Office of the Kingdom of Thailand concludes that a material uncertainty exists, the State Audit Office of the Kingdom of Thailand is required to draw attention in the auditor's report of the State Audit Office of the Kingdom of Thailand to the related disclosures in the consolidated and separate financial statements or, if such disclosures are inadequate, to modify the State Audit Office of the Kingdom of Thailand's



opinion. The State Audit Office of the Kingdom of Thailand's conclusions are based on the audit evidence obtained up to the date of the auditor's report of the State Audit Office of the Kingdom of Thailand. However, future events or conditions may cause the Group and the Company to cease to continue as a going concern.

- Evaluates the overall presentation, structure and content of the consolidated and separate financial statements, including the disclosures, and whether the consolidated and separate financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

- Obtains sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. The State Audit Office of the Kingdom of Thailand is responsible for the direction, supervision and performance of the group audit. The State Audit Office of the Kingdom of Thailand remains solely responsible for the State Audit Office of the Kingdom of Thailand's audit opinion.

The State Audit Office of the Kingdom of Thailand communicates with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that the State Audit Office of the Kingdom of Thailand identifies during the State Audit Office of the Kingdom of Thailand's audit.

The State Audit Office of the Kingdom of Thailand also provides those charged with governance with a statement that the State Audit Office of the Kingdom of Thailand has complied with the State Audit Standards and relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on the State Audit Office of the Kingdom of Thailand's independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, the State Audit Office of the Kingdom of Thailand determines those matters that were of most significance in the audit of the consolidated and separate financial statements of the current period and are therefore the key audit matters. The State Audit Office of the Kingdom of Thailand describes these matters in the auditor's report of the State Audit Office of the Kingdom of Thailand unless

(TRANSLATION)

- 11 -



law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, the State Audit Office of the Kingdom of Thailand determines that a matter should not be communicated in the State Audit Office of the Kingdom of Thailand's report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

(Signed) *Pasutnicha Jumpathes*
(Pasutnicha Jumpathes)
Deputy Auditor General

(Signed) *Mayuree Juntamat*
(Mayuree Juntamat)
Director of Financial and Procurement Audit Office No. 14

State Audit Office of the Kingdom of Thailand
February 21, 2019

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2018

Unit: Baht

Notes	Consolidated financial statements		Separate financial statements		
	December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017	
Assets					
Current assets					
Cash and cash equivalents	4	292,184,322,373	166,189,023,655	86,204,049,166	38,691,660,939
Current investments	5	142,420,735,568	229,651,255,278	21,971,964,949	68,056,258,825
Trade accounts receivable	6	174,604,696,553	174,916,243,685	138,675,854,879	144,265,155,266
Other accounts receivable	7	78,827,069,774	50,602,704,855	17,314,183,668	16,923,203,980
Short-term lending loans	8.1	1,782,916,135	1,231,329,558	7,334,315,325	4,648,737,018
Inventories	10	125,279,815,840	121,871,798,713	10,247,494,259	27,103,531,169
Materials and supplies	11	28,871,647,153	28,942,454,106	5,540,731,086	5,749,466,246
Current derivative assets		5,097,686,415	1,997,546,512	-	-
Other current assets		7,894,466,941	6,768,006,749	4,648,056,425	3,956,768,710
Total current assets		856,963,356,752	782,170,363,111	291,936,649,757	309,394,782,153
Non-current assets					
Available-for-sale investments	13.2	10,875,929,781	17,602,408,397	2,579,555,315	4,533,102,500
Investments in subsidiaries	14.6	-	-	315,654,139,538	218,929,325,063
Investments in joint ventures	14.4, 14.6	41,317,061,064	37,937,145,910	5,927,614,973	5,927,614,973
Investments in associates	14.5, 14.6	24,368,261,034	21,979,621,626	-	3,173,227,030
Other long-term investments	15.2	26,970,809,757	27,668,655,084	13,986,905,648	15,164,124,801
Long-term lending loans	8.2	13,862,709,357	19,078,604,450	32,895,679,795	22,754,737,237
Investment properties	16	5,605,699,619	6,233,426,284	2,032,718,766	3,851,133,751
Property, plant and equipment	17	1,114,174,738,576	1,076,905,903,235	273,321,633,368	287,729,934,813
Goodwill	18	48,924,920,577	46,688,256,108	-	-
Intangible assets	19	34,200,400,854	32,107,682,512	13,813,942,896	14,403,623,166
Exploration and evaluation assets	20	108,162,569,167	108,759,721,484	-	-
Deferred tax assets	21.3	28,498,932,833	15,101,219,955	-	-
Non-current derivative assets		2,079,494,926	3,734,359,338	708,186,115	754,506,988
Other non-current assets	22	39,478,987,823	36,346,789,502	5,756,487,773	6,695,815,983
Total non-current assets		1,498,520,515,368	1,450,143,793,885	666,676,864,187	583,917,146,305
Total assets		2,355,483,872,120	2,232,314,156,996	958,613,513,944	893,311,928,458

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2018

Unit: Baht

Notes	Consolidated financial statements		Separate financial statements		
	December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017	
<u>Liabilities and Equity</u>					
Current liabilities					
Bank overdrafts and short-term loans from financial institutions	23	25,561,803,923	18,126,630,943	-	-
Trade accounts payable		160,323,070,746	160,301,286,194	120,085,364,132	139,418,539,503
Other accounts payable		96,961,604,060	71,526,778,845	26,247,876,235	23,624,425,464
Current portion of long-term loans	25	63,108,598,300	66,433,929,171	26,511,158,464	29,439,944,692
Short-term loans-related parties	9.5	-	-	3,332,695,376	2,803,042,683
Income tax payable		46,487,811,196	24,094,727,080	22,063,437,824	3,592,947,307
Short-term provision for decommissioning costs	28	1,090,300,309	-	-	-
Current derivative liabilities		2,545,871,892	4,954,839,016	94,600,356	86,699,923
Other current liabilities	24	10,801,967,333	8,958,513,286	4,503,619,289	4,565,821,904
Total current liabilities		406,881,027,759	354,396,704,535	202,838,751,676	203,531,421,476
Non-current liabilities					
Long-term loans	25	454,964,315,364	444,919,659,683	123,638,958,453	150,115,471,277
Deferred tax liabilities	21.3	32,868,290,152	35,795,720,701	210,202,677	473,743,077
Provisions for employee benefit	27	23,921,033,707	23,313,066,000	6,906,650,387	8,877,981,146
Long-term provision for decommissioning costs	28	73,632,219,096	74,865,436,241	-	-
Deposits on LPG cylinders		11,082,662,040	10,519,247,338	-	10,519,247,338
Non-current derivative liabilities		668,918,447	2,104,348,790	160,953,165	45,185,175
Other non-current liabilities	29	32,971,055,231	37,844,233,080	19,857,469,279	21,868,611,384
Total non-current liabilities		630,108,494,037	629,361,711,833	150,774,233,961	191,900,239,397
Total liabilities		1,036,989,521,796	983,758,416,368	353,612,985,637	395,431,660,873

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2018

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		December 31, 2018	December 31, 2017	December 31, 2018	December 31, 2017
Liabilities and Equity (Continued)					
Equity					
Share capital					
Authorized share capital					
28,562,996,250 ordinary shares of Baht 1 each					
(31 December 2017: 2,857,245,725 ordinary shares of Baht 10 each)	30.1	28,562,996,250	28,572,457,250	28,562,996,250	28,572,457,250
Issued and paid-up share capital					
28,562,996,250 ordinary shares of Baht 1 each					
(31 December 2017: 2,856,299,625 ordinary shares of Baht 10 each)	30.2	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Premium on ordinary shares	30.2	29,211,131,966	29,211,131,966	29,211,131,966	29,211,131,966
Deficit from the change in the ownership interests in subsidiaries		(28,483,967,693)	(24,311,625,093)	-	-
Retained earnings					
Appropriated					
Legal reserve	31.1	2,857,245,725	2,857,245,725	2,857,245,725	2,857,245,725
Reserve for self-insurance fund	31.2	1,222,675,618	1,199,991,563	1,222,675,618	1,199,991,563
Unappropriated		838,208,853,447	775,959,276,682	541,852,837,981	433,069,636,210
Other components of equity		3,504,891,116	5,192,734,029	1,293,640,767	2,979,265,871
Total equity attributable to owners of the parent		875,083,826,429	818,671,751,122	605,000,528,307	497,880,267,585
Non-controlling interests		443,410,523,895	429,883,989,506	-	-
Total equity		1,318,494,350,324	1,248,555,740,628	605,000,528,307	497,880,267,585
Total liabilities and equity		2,355,483,872,120	2,232,314,156,996	958,613,513,944	893,311,928,458
		-	-	-	-

The accompanying notes are an integral part of these financial statements.

(Signed) *Chansin Treenuchagron*
(Chansin Treenuchagron)
President & Chief Executive Officer

(Signed) *Phannalin Mahawongtikul*
(Phannalin Mahawongtikul)
Executive Vice President
Acting Chief Financial Officer

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF INCOME
FOR THE YEAR ENDED DECEMBER 31, 2018

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		2018	2017	2018	2017 (Restated)
Sales and service income	33	2,336,154,915,594	1,995,722,067,627	1,411,021,051,033	1,097,904,931,224
Cost of sales and services	35	2,023,001,853,100	1,688,461,455,356	1,327,637,216,709	1,023,993,615,965
Gross profit		313,153,062,494	307,260,612,271	83,383,834,324	73,911,315,259
Other income	34	16,935,097,726	28,268,513,870	54,224,423,007	51,194,602,334
Gain on foreign exchange rates		6,353,510,623	13,650,641,022	6,304,992,162	7,704,189,659
Profit before expenses		336,441,670,843	349,179,767,163	143,913,249,493	132,810,107,252
Selling and distribution expenses	35	26,653,497,122	24,624,948,200	8,185,037,318	7,713,358,618
Administrative expenses	35	55,183,564,436	75,974,028,735	20,618,164,425	15,889,696,593
Petroleum royalties and remuneration	36	16,435,234,907	13,877,333,274	-	-
Operating profit		238,169,374,378	234,703,456,954	115,110,047,750	109,207,052,041
Share of profit from investments in joint ventures	14.7.1	6,461,651,677	5,461,842,429	-	-
Share of profit from investments in associates	14.7.2	2,053,368,348	1,848,573,880	-	-
Profit before finance costs and income taxes		246,684,394,403	242,013,873,263	115,110,047,750	109,207,052,041
Finance costs	37	27,627,592,591	29,085,932,422	8,009,448,341	9,674,389,522
Profit before income taxes		219,056,801,812	212,927,940,841	107,100,599,409	99,532,662,519
Income taxes	21.1	53,646,552,942	28,306,575,417	12,588,484,038	6,915,220,225
Profit for the years from continuing operations		165,410,248,870	184,621,365,424	94,512,115,371	92,617,442,294
Profit (loss) for the years from discontinued operations, net of tax	12	-	(11,349,343)	70,761,721,267	11,856,355,680
Profit for the years		165,410,248,870	184,610,016,081	165,273,836,638	104,473,797,974
Profit attributable to					
Owners of the parent					
Continuing operations		119,683,943,324	135,187,012,229	94,512,115,371	92,617,442,294
Discontinued operations, net of tax		-	(7,409,577)	70,761,721,267	11,856,355,680
		119,683,943,324	135,179,602,652	165,273,836,638	104,473,797,974
Non-controlling interests					
Continuing operations		45,726,305,546	49,434,353,195	-	-
Discontinued operations, net of tax		-	(3,939,766)	-	-
		45,726,305,546	49,430,413,429	-	-
Basic earnings per share					
Continuing operations	32	4.15	4.67	3.31	3.24
Discontinued operations	32	-	-	2.48	0.42
		4.15	4.67	5.79	3.66

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF COMPREHENSIVE INCOME
FOR THE YEAR ENDED DECEMBER 31, 2018

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017 (Restated)
Profit for the years from continuing operations	165,410,248,870	184,621,365,424	94,512,115,371	92,617,442,294
Other comprehensive income (loss)				
Items that will be reclassified subsequently to profit or loss				
Currency translation differences	(2,591,706,356)	(34,470,386,455)	-	-
Loss on measurements of available-for-sale investments	(881,069,476)	(5,031,955,629)	(27,281,381)	(6,145,675,229)
Income taxes related to available-for-sale investments	410,455,036	1,135,357,457	5,456,277	1,229,135,046
Gain (loss) on cash flow hedges	684,960,036	(367,552,252)	-	-
Income taxes related to cash flow hedges	(3,027,287)	(88,022,406)	-	-
Share of other comprehensive income (loss) of joint ventures and associates	(380,456,659)	287,735,036	-	-
Items that will not be reclassified subsequently to profit or loss				
Gain (loss) on remeasurements of defined benefits plans	946,683,776	(1,020,616,075)	799,889,519	(45,211,462)
Income taxes related to remeasurements of defined benefits plans	(183,163,864)	177,673,980	(159,977,904)	9,042,292
Share of other comprehensive income (loss) from joint ventures and associates	27,573,904	(54,629,410)	-	-
Other comprehensive income (loss) for the years, net of tax	(1,969,750,890)	(39,432,395,754)	618,086,511	(4,952,709,353)
Comprehensive income for the years from continuing operations	163,440,497,980	145,188,969,670	95,130,201,882	87,664,732,941
Comprehensive income (loss) for the years from discontinued operations, net of tax	-	(11,349,343)	69,097,921,267	12,218,311,172
Total comprehensive income for the years	163,440,497,980	145,177,620,327	164,228,123,149	99,883,044,113
Total comprehensive income attributable to				
Owners of the parent				
Continuing operations	118,816,465,217	108,734,635,094	95,130,201,882	87,664,732,941
Discontinued operations, net of tax	-	(7,409,577)	69,097,921,267	12,218,311,172
	118,816,465,217	108,727,225,517	164,228,123,149	99,883,044,113
Non-controlling interests				
Continuing operations	44,624,032,763	36,454,334,576	-	-
Discontinued operations, net of tax	-	(3,939,766)	-	-
	44,624,032,763	36,450,394,810	-	-

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED DECEMBER 31, 2018

Unit: Baht

	Consolidated financial statements													
	Equity attributable to owners of the parent					Other components of equity								
	Issued and paid-up share capital	Premium on ordinary shares	Surplus (Deficit) from the change in the ownership interests in subsidiaries	Retained earnings		Other components of equity					Total equity attributable to owners of the parent	Non-controlling interests	Total equity	
Legal reserve				Reserve for self-insurance fund	Unappropriated	Currency translation differences	Available-for-sale investments	Cash flow hedges	Share of other comprehensive income (loss) of joint ventures and associates	Total other components of equity				
Balance as at January 1, 2017	28,562,996,250	29,211,131,966	(24,327,311,399)	2,857,245,725	1,174,389,774	694,362,564,563	23,709,734,816	7,310,780,172	342,305,681	(156,178,338)	311,066,632,311	762,947,649,190	408,649,360,167	1,171,597,009,357
Changes in equity for the year														
Reserve for self-insurance fund	-	-	-	-	25,601,789	(25,601,789)	-	-	-	-	-	-	-	-
Interests for subordinated capital debentures	-	-	-	-	(1,160,277,512)	(1,160,277,512)	-	-	-	-	(1,160,277,512)	(1,160,277,512)	(616,934,146)	(1,777,211,658)
Redemption of subordinated capital debentures	-	-	-	-	-	(512,004,570)	-	-	-	-	(512,004,570)	(512,004,570)	(27,798,972,512)	(28,310,977,082)
Issuance of subordinated capital debentures	-	-	-	-	-	1,850,284	-	-	-	-	1,850,284	1,850,284	28,572,883,481	28,572,883,481
Income taxes related to subordinated capital debentures	-	-	-	-	-	(51,412,994,498)	-	-	-	-	(51,412,994,498)	(51,412,994,498)	983,819	2,834,103
Dividends paid	-	-	-	-	-	-	-	-	-	-	-	-	-	(51,412,994,498)
Dividends paid of subsidiaries	-	-	-	-	-	-	-	-	-	-	-	-	-	(22,740,362,317)
Change in the ownership interests subsidiaries	-	-	15,686,306	-	-	-	-	-	-	-	15,686,306	15,686,306	4,326,888,600	4,326,888,600
Increase in share capital of subsidiary	-	-	-	-	-	-	-	-	-	-	-	-	3,055,733,910	3,055,733,910
Profit for the year	-	-	-	-	-	135,179,602,652	-	-	-	-	135,179,602,652	135,179,602,652	49,430,413,429	184,610,016,081
Other comprehensive income (loss) for the year	-	-	-	-	-	(473,862,448)	(21,738,066,778)	(4,051,543,415)	(168,231,187)	-	(4,963,109,822)	(26,387,760,730)	(12,980,018,619)	(9,263,779,349)
Balance as at December 31, 2017	28,562,996,250	29,211,131,966	(24,311,625,093)	2,857,245,725	1,199,991,563	775,959,276,682	1,971,688,638	3,259,236,757	74,024,494	(112,215,260)	5,192,734,029	818,671,751,122	429,883,889,506	1,248,555,740,628
Balance as at January 1, 2018	28,562,996,250	29,211,131,966	(24,311,625,093)	2,857,245,725	1,199,991,563	775,959,276,682	1,971,688,638	3,259,236,757	74,024,494	(112,215,260)	5,192,734,029	818,671,751,122	429,883,889,506	1,248,555,740,628
Changes in equity for the year														
Reserve for self-insurance fund	-	-	-	-	22,684,055	(22,684,055)	-	-	-	-	-	-	-	-
Interests for subordinated capital debentures	-	-	-	-	-	(1,225,235,598)	-	-	-	-	(1,225,235,598)	(1,225,235,598)	(651,473,178)	(1,876,708,776)
Income taxes related to subordinated capital debentures	-	-	-	-	-	101,050,715	-	-	-	-	101,050,715	101,050,715	53,729,937	154,780,652
Finance cost from issuance of subordinated capital debentures	-	-	-	-	-	(57,107,862,427)	-	-	-	-	(57,107,862,427)	(57,107,862,427)	(2,600,765)	(2,600,765)
Dividends paid	-	-	-	-	-	-	-	-	-	-	-	-	-	(57,107,862,427)
Dividends paid of subsidiaries	-	-	-	-	-	-	-	-	-	-	-	-	-	(27,845,037,703)
Business acquisition of subsidiaries	-	-	-	-	-	-	-	-	-	-	-	-	2,603,403,595	2,603,403,595
Change in the ownership interests in subsidiaries	-	-	(4,172,342,600)	-	-	-	-	-	-	-	(4,172,342,600)	(4,172,342,600)	(5,015,520,260)	(9,187,862,860)
Profit for the year	-	-	-	-	-	119,683,943,324	(1,437,317,629)	(409,801,919)	333,274,017	(173,997,382)	119,683,943,324	119,683,943,324	48,726,305,546	165,410,248,870
Other comprehensive income (loss) for the year	-	-	-	-	-	820,364,806	(1,437,317,629)	(409,801,919)	333,274,017	(173,997,382)	(867,473,071)	(867,473,071)	443,410,523,895	(1,909,750,890)
Balance as at December 31, 2018	28,562,996,250	29,211,131,966	(28,483,967,693)	2,857,245,725	1,222,675,618	838,208,853,447	534,370,409	2,849,434,838	407,298,511	(286,212,642)	3,504,891,116	875,083,826,429	443,410,523,895	1,318,494,350,324

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED DECEMBER 31, 2018

Unit: Baht

		Separate financial statements						
		Retained earnings				Other components of equity		
		Issued and paid-up share capital	Premium on ordinary shares	Legal reserve	Reserve for self-insurance fund	Unappropriated	Other comprehensive income (loss)	Total equity
Notes							Available-for-sale investments	
	Balance as at January 1, 2017	28,562,996,250	29,211,131,966	2,887,245,725	1,174,389,774	380,086,648,201	7,517,806,054	449,410,217,970
	Changes in equity for the year							
	Reserve for self-insurance fund	-	-	-	25,601,789	(25,601,789)	-	-
31.2	Dividend paid	-	-	-	-	(51,412,994,498)	-	(51,412,994,498)
	Other comprehensive income from discontinued operations	-	-	-	-	(16,044,508)	378,000,000	361,955,492
12	Profit for the year	-	-	-	-	104,473,797,974	-	104,473,797,974
	Other comprehensive loss for the year	-	-	-	-	(36,169,170)	(4,916,540,183)	(4,952,709,353)
	Balance as at December 31, 2017	28,562,996,250	29,211,131,966	2,887,245,725	1,199,991,563	433,069,636,210	2,979,265,871	497,880,267,585
	Balance as at January 1, 2018	28,562,996,250	29,211,131,966	2,887,245,725	1,199,991,563	433,069,636,210	2,979,265,871	497,880,267,585
	Changes in equity for the year							
	Reserve for self-insurance fund	-	-	-	22,684,055	(22,684,055)	-	-
31.2	Dividend paid	-	-	-	-	(57,107,862,427)	-	(57,107,862,427)
42	Other comprehensive loss from discontinued operations	-	-	-	-	-	(1,663,800,000)	(1,663,800,000)
12	Profit for the year	-	-	-	-	165,273,836,638	-	165,273,836,638
	Other comprehensive income (loss) for the year	-	-	-	-	639,911,615	(21,825,104)	618,086,511
	Balance as at December 31, 2018	28,562,996,250	29,211,131,966	2,887,245,725	1,222,675,618	541,852,837,981	1,293,640,767	605,000,528,307

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2018

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Cash flows from operating activities				
Profit attributable to owners of the parent	119,683,943,324	135,179,602,652	165,273,836,638	104,473,797,974
Adjustment of profit to net cash provided by (used in) operating activities				
Depreciation and amortization	123,556,269,973	116,289,183,802	20,188,849,961	19,507,028,650
(Gain) loss on disposal of assets	2,154,902,333	60,210,289	(4,721,245,342)	(84,005,246)
Gain on disposal of investments	(299,334)	(2,673,805,653)	(3,673,261,900)	(1,950,951,314)
Gain on disposal of discontinued operations	-	-	(80,659,172,274)	-
Gain on bargain purchase	(1,354,901,971)	-	-	-
(Reversal of) loss on impairment of assets	16,833,146	25,409,644,604	(33,926,202)	65,705,908
(Reverse of) loss on impairment of investments	-	(562,000,000)	22,706,862,123	33,715,652,779
Share of profit from investments in joint ventures	(6,461,651,677)	(5,461,842,429)	-	-
Share of profit from investments in associates	(2,053,368,348)	(1,848,573,880)	-	-
Profit attributable to non-controlling interests	45,726,305,546	49,430,413,429	-	-
Provision for employee benefit	2,487,981,308	2,375,517,480	866,200,264	963,112,541
(Gain) loss on exchange rates	(809,179,160)	(6,421,920,357)	50,548,585	18,749,596
Unrealized (gain) loss on derivatives	(4,032,097,039)	(3,536,548,267)	169,989,298	(1,818,905,638)
(Reversal of) allowance for doubtful accounts	2,320,284,952	(149,729,204)	(22,636,081,165)	(34,459,121,339)
Write-off exploration assets	21,470,147	858,038,433	-	-
(Reversal of) allowance for loss on decline in value of inventories	4,217,015,603	(394,454,518)	252,179,770	21,182,704
Allowance for obsolete materials and supplies	157,216,972	489,576,605	32,955,250	426,162
Dividends income	(347,322,347)	(5,008,551,267)	(35,265,935,239)	(34,730,340,521)
Income taxes	53,646,552,942	28,306,575,417	30,796,871,638	9,693,556,947
Interest income	(9,435,815,591)	(8,630,246,371)	(3,024,402,378)	(4,072,990,349)
Finance costs	27,627,592,591	29,085,932,422	8,013,269,693	9,683,710,591
Others	93,326,065	495,493,801	317,895,230	296,244,436
Profit from operating activities before changes in operating assets and liabilities	357,215,059,435	353,292,516,988	98,655,433,950	101,322,853,881

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2018

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
(Increase) decrease in operating assets				
Trade accounts receivable	2,430,378,448	(31,208,993,246)	(15,930,100,711)	(19,485,670,907)
Other accounts receivable	(16,941,081,482)	(63,792,200)	(13,611,836,950)	(3,712,173,083)
Inventories	(5,503,049,394)	(5,059,561,391)	(9,382,918,320)	(4,144,835,963)
Materials and supplies	(339,304,377)	1,596,600,015	(141,923,476)	(128,999,649)
Other current assets	(1,193,783,986)	(645,975,404)	669,686,381	(1,408,657,790)
Other non-current assets	(5,765,733,296)	9,774,474,125	(2,553,304,770)	2,276,476,836
Increase (decrease) in operating liabilities				
Trade accounts payable	(2,080,698,278)	10,340,436,623	9,250,098,045	6,265,180,357
Other accounts payable	(1,682,277,929)	13,313,464,270	8,181,472,744	3,342,499,053
Other current liabilities	2,860,720,649	1,236,666,252	(505,988,331)	1,208,547,472
Deposits on LPG cylinders	563,414,702	620,713,290	177,938,200	620,713,290
Other non-current liabilities	(16,391,850,009)	(13,138,672,313)	393,556,331	(538,478,794)
	(44,043,264,952)	(13,234,639,979)	(23,453,320,857)	(15,705,399,178)
Cash received from operating activities	313,171,794,483	340,057,877,009	75,202,113,093	85,617,454,703
Income tax paid	(45,370,805,621)	(33,957,533,365)	(12,330,372,203)	(9,518,222,914)
Net cash provided by operating activities	267,800,988,862	306,100,343,644	62,871,740,890	76,099,231,789

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2018

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Cash flows from investing activities				
Payment of property, plant and equipment and investment properties	(107,143,100,161)	(110,592,672,742)	(22,631,738,393)	(24,530,299,968)
Payment of intangible assets	(2,398,008,012)	(2,467,624,937)	(360,209,801)	(270,320,163)
Payment of exploration and evaluation assets	(1,962,665,601)	(1,783,750,778)	-	-
Payment of long-term rental contracts on land and building	(105,000,000)	(1,205,179,165)	(105,000,000)	(367,053,246)
Payment for available-for-sale investments	(540,509,638)	(7,460,167,117)	(203,209,504)	(208,994,773)
Payment for business acquisition	(36,464,068,838)	-	-	-
Payment of investments in subsidiaries	-	-	(120,635,433,946)	(42,970,876,600)
Payment of investments in joint ventures	(155,360,767)	(26,120,000)	-	-
Payment of investments in associates	(1,368,071,960)	(1,720,396,715)	-	-
Payment of short-term lending loans	(1,984,409,281)	(96,421,701)	(2,500,000,000)	-
Payment of long-term lending loans	(118,546,111)	(9,222,035,230)	(26,310,000,000)	(9,391,228,875)
Payment of other long-term investments	(5,226,943,008)	(25,389,774,440)	(4,597,024,955)	(15,490,544,584)
Proceeds from disposals of property, plant and equipment and intangible assets	4,646,909,629	234,613,975	7,235,425,913	1,906,793,546
Proceeds from disposals of available-for-sale investments	2,944,665,157	11,302,907,361	24,501,220	11,152,331,670
Proceeds from disposal of discontinued operations	-	-	117,203,264,773	-
Proceeds from disposals of investments in subsidiaries	-	-	4,618,593,100	1,187,720,000
Proceeds from disposals of investments in joint ventures	33,871,046	13,338,760	-	15,372,927,810
Proceeds from disposals of investments in associates	-	50,625,000	-	-
Proceeds from short-term lending loans	1,659,754,291	-	409,068,377	-
Proceeds from long-term lending loans	4,294,182,245	3,158,627,337	36,683,534,122	41,706,801,739
Proceeds from disposal of other long-term investments	2,740,995,830	-	2,494,600,000	-
Proceeds from cancellation of leasehold in gas stations	4,712,511	-	1,400,000	-
Decrease (increase) in current investments	93,820,520,816	(52,837,629,381)	49,529,998,963	(8,890,075,323)
Interest received	8,358,990,106	7,502,500,762	3,500,206,798	7,907,796,264
Dividends received	4,814,106,863	10,014,084,956	35,646,436,864	34,349,838,896
Net cash provide by (used in) investing activities	(34,147,974,883)	(180,525,074,055)	80,004,413,531	11,464,816,393

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2018

	Unit: Baht				
	Notes	Consolidated financial statements		Separate financial statements	
		2018	2017	2018	2017
Cash flows from financing activities					
Proceeds from issuance of ordinary shares of subsidiaries		92,811,501	3,055,733,910	-	-
Proceeds from treasury shares of subsidiary		-	3,788,793,634	-	-
Proceeds from short-term loans		-	6,745,004,885	1,564,470,776	1,157,500,451
Proceeds from long-term loans		143,626,648,847	43,920,200,318	-	-
Proceeds from change in ownership in subsidiaries		4,670,961,898	1,469,533,150	-	-
Proceed from issuance of subordinated capital debentures		-	28,984,700,697	-	-
Repayment of short-term loans		-	(6,745,004,885)	(1,034,818,082)	-
Repayment of long-term loans		(136,795,441,261)	(94,935,791,610)	(28,305,510,732)	(48,286,610,305)
Repayment of finance lease instalments		(974,563,334)	(833,248,584)	(658,200,961)	(544,203,718)
Payment for change in ownership in subsidiaries		(13,872,690,000)	(1,168,629,054)	-	-
Payment for redemption of subordinated capital debentures		-	(29,652,226,277)	-	-
Increase (decrease) in bank overdrafts and short-term loans					
from financial institutions		4,967,935,595	(12,400,368,717)	-	-
Finance costs paid		(28,147,863,087)	(30,892,735,018)	(10,187,617,565)	(12,463,569,976)
Dividend paid		(85,035,352,791)	(73,833,852,043)	(57,107,862,427)	(51,412,994,498)
Net cash used in financing activities		<u>(111,467,552,632)</u>	<u>(162,497,889,594)</u>	<u>(95,729,538,991)</u>	<u>(111,549,878,046)</u>
Effects of exchange rates on cash and cash equivalents		636,628,646	(750,262,208)	365,772,797	29,204,743
Currency translation differences		<u>3,173,208,725</u>	<u>(11,704,505,264)</u>	<u>-</u>	<u>-</u>
Net increase (decrease) in cash and cash equivalents		125,995,298,718	(49,377,387,477)	47,512,388,227	(23,956,625,121)
Cash and cash equivalents at the beginning of periods		<u>166,189,023,655</u>	<u>215,566,411,132</u>	<u>38,691,660,939</u>	<u>62,648,286,060</u>
Cash and cash equivalents at the end of periods	4	<u>292,184,322,373</u>	<u>166,189,023,655</u>	<u>86,204,049,166</u>	<u>38,691,660,939</u>
Non cash items					
Accounts payable from purchases of property, plant and equipment and investment properties		39,104,581,381	40,793,369,071	3,403,535,367	9,722,454,080
Accounts payable from purchases of intangible assets		268,340,332	281,470,899	39,762,075	177,893,662
Accounts payable from purchase securities		-	49,839,374	-	-

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2018

NOTES	CONTENTS
1	General Information
2	Basis of Financial Statements Preparation
3	Accounting Policies
4	Cash and Cash Equivalents
5	Current Investments
6	Trade Accounts Receivable
7	Other Accounts Receivable
8	Lending Loans
9	Related Party Transactions
10	Inventories
11	Materials and Supplies
12	The Restructuring of the Oil Business Unit
13	Available-for-sale Investments
14	Investments in Subsidiaries, Joint Ventures and Associates
15	Other Long-term Investments
16	Investment Properties
17	Property, Plant and Equipment
18	Goodwill
19	Intangible Assets
20	Exploration and Evaluation Assets
21	Income Taxes and Deferred Taxes
22	Other Non-current Assets
23	Bank Overdrafts and Short-term Loans from Financial Institutions
24	Other Current Liabilities
25	Long-term Loans
26	Changes in liabilities arising from financing activities
27	Provisions for Employee Benefit
28	Provision for Decommissioning Costs
29	Other Non-current Liabilities
30	Share Capital
31	Reserves
32	Basic Earnings per Share
33	Sales and Service Income
34	Other Income
35	Expenses by Nature
36	Petroleum Royalties and Remuneration

(TRANSLATION)

**PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2018**

NOTES	CONTENTS
37	Finance Costs
38	Operating Segments
39	Disclosure of Financial Instruments
40	Fair Value Measurement
41	Subordinated Capital Debentures
42	Dividend Payment
43	Business Acquisition
44	Montara Divestment
45	Promotional Privileges
46	Proceeding regarding the Central Administrative Court's Ordering the Temporary Suspension of Projects in the Map Ta Phut Area
47	Commitments and Contingent Liabilities
48	Other Events
49	Events after the Reporting Period

(TRANSLATION)

**PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2018**

1. General Information

PTT Public Company Limited (the Company) is incorporated as a public limited company in Thailand, and is listed on the Stock Exchange of Thailand. The address of its incorporated and registered office is as follows:

The Head Office of the Company is located at 555 Vibhavadi-Rangsit Road, Chatuchak, Bangkok, Thailand.

The Group has a status of a state enterprise while the Ministry of Finance is the largest shareholder and is under the supervision of Ministry of Energy.

The Company's principal activity is the operation of its petroleum business. The Company has invested in subsidiaries, joint arrangements and associates (the Group), which are engaged in upstream petroleum and natural gas, downstream petroleum, and other related businesses as described in Note 38 Operating Segments.

2. Basis of Financial Statements Preparation

The consolidated and the separate financial statements have been prepared in accordance with Thai Financial Reporting Standards under the Accounting Act, B.E. 2543. These are Thai Financial Reporting Standards under the Accounting Profession Act, B.E. 2547, including guidelines promulgated by the Federation of Accounting Professions (FAP), and the financial reporting requirements of the Securities and Exchange Commission under the Securities and Exchange Act, B.E. 2535.

The Company has presented the financial statements in compliance with the notification of the Department of Business Development "Definition of the abbreviated components required in the financial statements (No.2), B.E. 2559", dated October 11, 2016, under the third paragraph of section 11 of the Accounting Act, B.E. 2543.

The consolidated and the separate financial statements have been prepared based on the assumption that users of the financial statements have an understanding of Thai generally accepted accounting principles and practices, which may differ from generally accepted accounting principles adopted in other countries.

The consolidated and the separate financial statements have been prepared under the historical cost convention with the exception of certain amounts, which are accounted for using the fair value method as disclosed in Note 3.2 Significant Accounting Policies.

The significant transactions arising between the Company and subsidiaries have been eliminated from the consolidated financial statements.

The consolidated and the separate financial statements are prepared and presented in Thai Baht and are rounded in the notes to financial statements to the nearest million unless otherwise stated.

This English translation of the financial statements has been prepared from the statutory financial statements that were issued in Thai language. In the event of a conflict or a difference in interpretation between the two languages, the Thai language statutory financial statements shall prevail.

(TRANSLATION)

3. Accounting Policies

- 3.1 Thai Accounting Standards (TASs), Thai Financial Reporting Standards (TFRSs) and Interpretations (TSICs, TFRICs), effective for accounting periods on or after the current periods and will become effective in the future are as follows:

Effective for accounting periods on or after January 1, 2018

◆TAS 1 (revised 2017)	Presentation of Financial Statements
◆TAS 2 (revised 2017)	Inventories
◆TAS 7 (revised 2017)	Statement of Cash Flows
◆TAS 8 (revised 2017)	Accounting Policies, Changes in Accounting Estimates and Errors
◆TAS 10 (revised 2017)	Events after the Reporting Period
◆TAS 11 (revised 2017)	Construction Contracts
◆TAS 12 (revised 2017)	Income Taxes
◆TAS 16 (revised 2017)	Property, Plant and Equipment
◆TAS 17 (revised 2017)	Leases
◆TAS 18 (revised 2017)	Revenue
◆TAS 19 (revised 2017)	Employee Benefits
◆TAS 20 (revised 2017)	Accounting for Government Grants and Disclosure of Government Assistance
◆TAS 21 (revised 2017)	The Effects of Changes in Foreign Exchange Rates
◆TAS 23 (revised 2017)	Borrowing Costs
◆TAS 24 (revised 2017)	Related Party Disclosures
◆TAS 26 (revised 2017)	Accounting and Reporting by Retirement Benefit Plans
◆TAS 27 (revised 2017)	Separate Financial Statements
◆TAS 28 (revised 2017)	Investments in Associates and Joint Ventures
◆TAS 29 (revised 2017)	Financial Reporting in Hyperinflationary Economies
◆TAS 33 (revised 2017)	Earnings per Share
◆TAS 34 (revised 2017)	Interim Financial Reporting
◆TAS 36 (revised 2017)	Impairment of Assets
◆TAS 37 (revised 2017)	Provisions, Contingent Liabilities and Contingent Assets
◆TAS 38 (revised 2017)	Intangible Assets
◆TAS 40 (revised 2017)	Investment Property
◆TAS 41 (revised 2017)	Agriculture
◆TFRS 2 (revised 2017)	Share-based Payment
◆TFRS 3 (revised 2017)	Business Combinations
◆TFRS 4 (revised 2017)	Insurance Contracts
◆TFRS 5 (revised 2017)	Non-current Assets Held for Sale and Discontinued Operations
◆TFRS 6 (revised 2017)	Exploration for and Evaluation of Mineral Resources
◆TFRS 8 (revised 2017)	Operating Segments

(TRANSLATION)

3. Accounting Policies (Continued)

3.1 Thai Accounting Standards (TASs), Thai Financial Reporting Standards (TFRSs) and Interpretations (TSICs, TFRICs), effective for accounting periods on or after the current periods and will become effective in the future are as follows: (Continued)

Effective for accounting periods on or after January 1, 2018 (Continued)

◆TFRS 10 (revised 2017)	Consolidated Financial Statements
◆TFRS 11 (revised 2017)	Joint Arrangements
◆TFRS 12 (revised 2017)	Disclosure of Interests in Other Entities
◆TFRS 13 (revised 2017)	Fair Value Measurement
◆TSIC 10 (revised 2017)	Government Assistance - No Specific Relation to Operating Activities
◆TSIC 15 (revised 2017)	Operating Leases - Incentives
◆TSIC 25 (revised 2017)	Income Taxes - Changes in the Tax Status of an Entity or its Shareholders
◆TSIC 27 (revised 2017)	Evaluating the Substance of Transactions Involving the Legal Form of a Lease
◆TSIC 29 (revised 2017)	Service Concession Arrangements: Disclosure
◆TSIC 31 (revised 2017)	Revenue - Barter Transactions Involving Advertising Services
◆TSIC 32 (revised 2017)	Intangible Assets - Web Site Costs
◆TFRIC 1 (revised 2017)	Changes in Existing Decommissioning, Restoration and Similar Liabilities
◆TFRIC 4 (revised 2017)	Determining Whether an Arrangement Contains a Lease
◆TFRIC 5 (revised 2017)	Rights to Interests arising from Decommissioning, Restoration and Environmental Rehabilitation Funds
◆TFRIC 7 (revised 2017)	Applying the Restatement Approach under TAS 29 (revised 2017) Financial Reporting in Hyperinflationary Economies
◆TFRIC 10 (revised 2017)	Interim Financial Reporting and Impairment
◆TFRIC 12 (revised 2017)	Service Concession Arrangements
◆TFRIC 13 (revised 2017)	Customer Loyalty Programmes
◆TFRIC 14 (revised 2017)	TAS 19 (revised 2017) - The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction
◆TFRIC 15 (revised 2017)	Agreements for the Construction of Real Estate
◆TFRIC 17 (revised 2017)	Distributions of Non-cash Assets to Owners
◆TFRIC 18 (revised 2017)	Transfers of Assets from Customers
◆TFRIC 20 (revised 2017)	Stripping Costs in the Production Phase of a Surface Mine
◆TFRIC 21 (revised 2017)	Levies

(TRANSLATION)

3. Accounting Policies (Continued)

- 3.1 Thai Accounting Standards (TASs), Thai Financial Reporting Standards (TFRSs) and Interpretations (TSICs, TFRICs), effective for accounting periods on or after the current periods and will become effective in the future are as follows: (Continued)

Effective for accounting periods on or after January 1, 2019

◆TAS 1 (revised 2018)	Presentation of Financial Statements
◆TAS 2 (revised 2018)	Inventories
◆TAS 7 (revised 2018)	Statement of Cash Flows
◆TAS 8 (revised 2018)	Accounting Policies, Changes in Accounting Estimates and Errors
◆TAS 10 (revised 2018)	Events after the Reporting Period
◆TAS 12 (revised 2018)	Income Taxes
◆TAS 16 (revised 2018)	Property, Plant and Equipment
◆TAS 17 (revised 2018)	Leases
◆TAS 19 (revised 2018)	Employee Benefits
◆TAS 20 (revised 2018)	Accounting for Government Grants and Disclosure of Government Assistance
◆TAS 21 (revised 2018)	The Effects of Changes in Foreign Exchange Rates
◆TAS 23 (revised 2018)	Borrowing Costs
◆TAS 24 (revised 2018)	Related Party Disclosures
◆TAS 26 (revised 2018)	Accounting and Reporting by Retirement Benefit Plans
◆TAS 27 (revised 2018)	Separate Financial Statements
◆TAS 28 (revised 2018)	Investments in Associates and Joint Ventures
◆TAS 29 (revised 2018)	Financial Reporting in Hyperinflationary Economies
◆TAS 33 (revised 2018)	Earnings per Share
◆TAS 34 (revised 2018)	Interim Financial Reporting
◆TAS 36 (revised 2018)	Impairment of Assets
◆TAS 37 (revised 2018)	Provisions, Contingent Liabilities and Contingent Assets
◆TAS 38 (revised 2018)	Intangible Assets
◆TAS 40 (revised 2018)	Investment Property
◆TAS 41 (revised 2018)	Agriculture
◆TFRS 1	First-time Adoption of International Financial Reporting Standards
◆TFRS 2 (revised 2018)	Share-based Payment
◆TFRS 3 (revised 2018)	Business Combinations
◆TFRS 4 (revised 2018)	Insurance Contracts
◆TFRS 5 (revised 2018)	Non-current Assets Held for Sale and Discontinued Operations
◆TFRS 6 (revised 2018)	Exploration for and Evaluation of Mineral Resources
◆TFRS 8 (revised 2018)	Operating Segments
◆TFRS 10 (revised 2018)	Consolidated Financial Statements
◆TFRS 11 (revised 2018)	Joint Arrangements
◆TFRS 12 (revised 2018)	Disclosure of Interests in Other Entities
◆TFRS 13 (revised 2018)	Fair Value Measurement
◆TFRS 15	Revenue from Contracts with Customers

(TRANSLATION)

3. Accounting Policies (Continued)

3.1 Thai Accounting Standards (TASs), Thai Financial Reporting Standards (TFRSs) and Interpretations (TSICs, TFRICs), effective for accounting periods on or after the current periods and will become effective in the future are as follows: (Continued)

Effective for accounting periods on or after January 1, 2019 (Continued)

◆TSIC 10 (revised 2018)	Government Assistance - No Specific Relation to Operating Activities
◆TSIC 15 (revised 2018)	Operating Leases - Incentives
◆TSIC 25 (revised 2018)	Income Taxes - Changes in the Tax Status of an Entity or its Shareholders
◆TSIC 27 (revised 2018)	Evaluating the Substance of Transactions Involving the Legal Form of a Lease
◆TSIC 29 (revised 2018)	Service Concession Arrangements: Disclosure
◆TSIC 32 (revised 2018)	Intangible Assets - Web Site Costs
◆TFRIC 1 (revised 2018)	Changes in Existing Decommissioning, Restoration and Similar Liabilities
◆TFRIC 4 (revised 2018)	Determining Whether an Arrangement Contains a Lease
◆TFRIC 5 (revised 2018)	Rights to Interests arising from Decommissioning, Restoration and Environmental Rehabilitation Funds
◆TFRIC 7 (revised 2018)	Applying the Restatement Approach under TAS 29 (revised 2018) Financial Reporting in Hyperinflationary Economies
◆TFRIC 10 (revised 2018)	Interim Financial Reporting and Impairment
◆TFRIC 12 (revised 2018)	Service Concession Arrangements
◆TFRIC 14 (revised 2018)	TAS 19 (revised 2018) - The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction
◆TFRIC 17 (revised 2018)	Distributions of Non-cash Assets to Owners
◆TFRIC 20 (revised 2018)	Stripping Costs in the Production Phase of a Surface Mine
◆TFRIC 21 (revised 2018)	Levies
◆TFRIC 22	Foreign Currency Transactions and Advance Consideration

Effective for accounting periods on or after January 1, 2020

◆TAS 32	Financial Instruments: Presentation
◆TFRS 7	Financial Instruments: Disclosures
◆TFRS 9	Financial Instruments
◆TFRIC 16	Hedges of a Net Investment in a Foreign Operation
◆TFRIC 19	Extinguishing Financial Liabilities with Equity Instruments

The management of the Group has assessed impacts of the application of the amended Thai Accounting Standards, Thai Financial Reporting Standards, Thai Standard Interpretations, and Thai Financial Reporting Interpretations; which are applicable to annual reporting periods beginning on or after 1 January 2019. It is believed that employing amended standards have no significant impact on both Consolidated Financial Statement and Separate Financial Statement. The standards, which will be applied for annual reporting periods beginning on or after 1 January 2020, are still under impact evaluation of the first-time application of the standards and interpretations. In addition, the Group has no plan for the early application of such standards.

(TRANSLATION)

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies

3.2.1 Cash and Cash Equivalents

Cash and cash equivalents comprise cash on hand, deposits held at call with banks and other short-term highly liquid investments which have original maturities within three months. Bank overdrafts and short-term loans from financial institutions are included in current liabilities in the statements of financial position.

3.2.2 Trade Accounts and Other Accounts Receivable

Trade accounts and other accounts receivable are carried at net realizable value. Allowance for doubtful accounts are estimated based on uncollectible amounts estimating from outstanding receivables at the statement of financial position date based on collection experience of their current financial status, also with percentage of debt aging. Doubtful account is recorded as administrative expenses in profit or loss.

3.2.3 Inventories

Inventories are stated at the lower of cost and net realizable value. The cost is calculated by using the weighted average cost method. The cost of inventory comprises total purchasing costs, payments related to purchasing, discounts, quantity discounts, as well as contributions to or compensation from taxes and several funds. Net realizable value is calculated from estimated selling price in the ordinary course of business, less the costs of completion and related selling expenses. When net realizable value of inventories is lower than cost of acquisition, it is presented under cost of goods sold in the statement of income. An allowance for obsolescence of inventories will be recognized when inventories are obsoleted or defected.

3.2.4 Materials and Supplies

Materials and supplies are stated at cost calculated by using the weighted average cost method, less allowance for obsolescence of material and supplies when there are obsolete, defective or unserviceable items.

3.2.5 Non-current Assets and Liabilities Held-for-sale

Disposed assets or asset groups, including non-current assets and liabilities held-for-sale, are classified as asset held-for-sale if their carrying amounts will be recovered through a sale transaction rather than through continuing use. This condition is met only when the sale is highly probable and the asset is available for immediate sale in its present condition, subject only to terms that are usual and customary for sales of such assets. Management must commit to the sale of the assets and they must be actively marketed at a price that is reasonable compared to their current fair value, with the expectation that sale should be recorded as completed within one year from the date of classification. These disposed assets or asset groups are measured at the lower of carrying amount and fair value less costs to sell.

The Group ceases to depreciate and amortize property, plant and equipment and intangible assets from the date the assets meet the criteria for classification as assets held-for-sale. The Group continues to recognize liabilities, including interests and other expenses attributable to liabilities classified as held-for-sale.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.6 Investments in Subsidiaries

Subsidiaries are those companies which directly or indirectly controlled by the parent company. Control exists when the parent company has the power over the subsidiaries so as to obtain variable returns from the involvement with the subsidiaries and has the ability to affect those returns through the power over the subsidiaries. In case of the parent company has voting rights less than half of total voting rights in subsidiaries, the parent company will reconsider the related facts and circumstances in order to determine whether the parent company has the power to control over such subsidiaries or not.

The financial statements of subsidiaries are included in the consolidated financial statements from the date that the control commences until the date that the control ceases.

The parent company allocates profit or loss and each component of other comprehensive income or loss to the equity attributable to owners of the parent and the non-controlling interests even if this results in a deficit non-controlling interest balance.

The purchase method of accounting is used to account for business combinations, except the business combination under common control. The cost of a business combination is measured as the sum of fair value of any consideration transferred, the recognized amount of any non-controlling interest in the acquiree, and the fair value of the existing equity interest as of the purchasing date (if the business combination is achieved in stages).

- For each business combination, the Group measures the recognized amount of any non-controlling interest in the acquiree at either the fair value or the non-controlling interest's proportionate share of the net of identifiable assets of the acquiree.
- In the case of a business combination achieved in stages, the Group measures the acquisition-date fair value of the acquirer's previously-held equity interest in the acquiree and recognized gains or losses in statement of income.
- Costs related to the acquisition, including professional fees, advisory fees and other consulting fees, are recognized as expenses in statement of income.

The Group measures the identifiable assets and liabilities acquired at fair value as of the acquisition date.

Any changes in the equity interest in subsidiaries of the Group while control is retained are recorded as surplus (deficit) from the changes in the ownership interests in subsidiaries in equity.

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount of the investments is recorded in profit or loss.

Investments in subsidiaries have been presented in the separate financial statements under the cost method.

The list of investments in subsidiaries of the Group and proportion of ownership interests have been set out in Note 14.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.7 Investments in Joint Ventures and Associates

Joint ventures are joint arrangement whereby the Group has joint control of the arrangement and has rights to the net assets of the arrangement. The joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

Associates are those companies in which the Group has significant influence, but not control or joint control, over the financial and operating policies.

The Group uses the purchase method to record the acquisition of joint ventures and associates, except the business combination under common control. Acquisition costs which are higher than fair value of identifiable assets and liabilities of the Group's equity interest in joint ventures and associates are recorded as goodwill and included in the investment in joint ventures and associates.

The consolidated financial statements of the Group include the share of profit and loss from joint ventures and associates under equity method, from the date that significant influence commences until the date that significant influence ceases. Unrealized gains or losses on transactions between the Group and its joint ventures and associates are eliminated to the extent of the Group's interest in the joint ventures and associates unless the transactions provide evidence of impairment of the transferred assets.

The Group records share of profit or loss from joint ventures and associates in proportion to the Group's equity interest in those gains and losses. Any dividends received from joint ventures and associates are deducted from the book value of the investments.

When the Group's share of loss in joint ventures and associates equals or exceeds its interest in the joint ventures and associates, the Group does not recognize further losses, unless the Group has incurred collateral or constructive obligations or made payments on behalf of the joint ventures and associates.

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount of the investments is recorded in profit or loss.

Investments in joint ventures and associates have been presented under the cost method in the separate financial statements and under the equity method in the consolidated financial statements.

The list of investments in joint ventures and associates of the Group and proportion of ownership interests have been set out in Note 14.

3.2.8 Joint Operations

Joint operations are joint arrangement whereby the Group has rights to assets and obligations relating to the joint arrangement. The Group has recognized assets, liabilities, revenues and expenses by the portion of joint operations in the separate and the consolidated financial statements from the date that joint control commences until the date that joint control ceases.

The list of joint operations of the Group and transactions relating to its involvements have been set out in Note 14.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.9 Other Investments

Investments other than investments in subsidiaries, joint ventures, and associates are classified as available-for-sale investments and other long-term investments.

Investments in equity securities and mutual funds that are marketable securities are classified as available-for-sale investments and carried at fair value in the statements of financial position. Any changes in value are recognized as gain (loss) from fair value measurement of available-for-sale investments in other comprehensive income or loss and accumulated amounts are accumulated differences are presented in other components of equity under equity.

Investments in non-marketable equity securities, which are classified as other long-term investments, are carried at cost net of allowance for impairment in the statement of financial position. Impairment testing is performed when there is a factor indicating that the investment might be impaired. If the carrying amount of the investment is higher than its recoverable amount, impairment losses are recognized in profit or loss immediately.

Investment in held-to-maturity debt securities which an entity intends and has an ability to hold until the maturity date are classified as other long-term investments and carried at amortised cost in the statement of financial position. The Group will record loss on impairment in the statement of income immediately when it is highly probable that the Group cannot collect entire/some principals or interests as state in contracts.

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount is recognized in profit or loss. When the available-for-sale investments are disposed, the Group will record the cumulative amount of fair value in other components of equity under equity as gain (loss) on disposal of investments. When disposing of some parts of the Group's particular investment in debt or equity securities, the carrying amount of the part disposed is calculated by using the weighted average carrying amount of the total holding of the investment.

3.2.10 Related Parties

Related parties of the Company are those enterprises or individuals that control or are controlled by the Company, or are under common control with the Company, including holding companies of subsidiaries and fellow Group subsidiaries, as well as those that have equity interests in the Company that result in significant influence or joint control over the Company. In addition, related parties include associates, joint ventures, the management and directors of the Company, and entities which the management or directors of the Company, directly or indirectly, control, jointly controlled, or have significant influence.

In considering each possible related party relationship, attention is directed more to the substance of the relationship than to the legal form.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.11 Foreign Currency Translation

The consolidated financial statements and the separate financial statements have been presented in Thai Baht, which is the Company's functional currency. Transactions of each company included in the consolidated financial statements are recorded in their own functional currencies.

Foreign currency transactions are translated into functional currency at the exchange rates prevailing at the transaction date. Monetary assets and liabilities at the statements of financial position date denominated in foreign currencies are translated into functional currency at the exchange rate prevailing at that date. Gains and losses resulting from the settlement of such transactions and from the translation of monetary assets and liabilities denominated in foreign currencies are recognized in profit or loss.

Assets and liabilities of foreign operations, that presentation currencies are foreign currencies, are translated into Thai Baht using the closing rate at the statements of financial position date. Revenues and expenses are translated into Thai Baht using the average rate during the period. Differences arising from currency translation are included in other comprehensive income and accumulated differences are presented in other components of equity under equity.

Upon the disposal of self-sustaining foreign entities, accumulated currency translation differences under shareholders' equity are recognized as gains or losses on disposal.

3.2.12 Borrowing Costs

Borrowing costs comprise interest and other costs associated with the borrowings. Borrowing costs incurred on qualifying assets are capitalized as a cost of the qualifying property until all the activities necessary to prepare the property for its intended use are substantially completed. When funds are specifically borrowed for the construction or the production of asset, the amount of borrowing costs capitalized is determined from the actual borrowing costs during the year less any income on the temporary investment of those borrowings. When funds are borrowed for general purpose, the Group multiplies the capitalization rate by the capital expenditure in allocating borrowing costs to costs of assets.

All other borrowing costs are expensed in the period they incurred.

3.2.13 Investment Properties

Investment properties are initially recognized at cost, including expenses directly associated with the asset acquisition, less accumulated depreciation and allowance for impairment.

The Group has selected the cost model for accounting for its investment properties. This model is in accordance with that described in the accounting policy for property, plant and equipment.

Depreciation is recorded as expenses in profit or loss and is calculated using the straight-line method over the estimated useful lives of the assets, which range from 5 to 30 years. Land and construction in progress are not depreciated.

(TRANSLATION)

3. **Accounting Policies** (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.14 Property, Plant and Equipment

Property, plant and equipment are initially recognized at cost less accumulated depreciation and allowance for impairment. The costs comprise any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating. These include decommissioning costs, delivery and restoration costs, and any obligation associated with either its acquisition or a consequence of having used the items.

Repair and maintenance costs are recognized in profit or loss during the financial period in which they are incurred. The costs of significant asset improvements, major turnarounds and inspections are included in the carrying amount of the asset. In case of replacement, the Group writes off carrying value of replaced items.

The Group depreciates each significant component of property, plant and equipment separately.

The Group estimates the residual value of the property, plant and equipment based on current assessment of the amount that would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

The Group reviews the residual value, the useful lives and depreciation methods of assets at least once a year.

Depreciation is recorded as expenses in profit or loss and is calculated using the straight-line method or unit of production method over the estimated useful lives of the assets, which are as follows:

Buildings and building improvements	2 - 40 years
Machinery and equipment	2 - 40 years
Petroleum exploration and production properties	5 - 30 years or unit of production
Mining properties	Unit of production
Other assets	3 - 30 years

Land and construction in progress are not depreciated.

Gains or losses on disposal of property, plant and equipment are determined by comparing the proceeds from sales with the carrying amounts on the disposal dates, and are recorded in statement of income when incurred.

(TRANSLATION)

- 3. **Accounting Policies** (Continued)
- 3.2 Significant Accounting Policies (Continued)
- 3.2.14 Property, Plant and Equipment (Continued)

Petroleum Exploration and Production Properties

The petroleum exploration and production business accounts for its petroleum exploration and production properties in accordance with the successful efforts method for which the accounting policies are as follows:

Cost of Properties

The cost of properties comprises the total acquisition costs of petroleum rights or the acquisition costs of the portion of properties, decommissioning costs, as well as support equipment and facilities.

Exploratory drilling costs are capitalized as petroleum exploration and evaluation assets, and will be classified as petroleum exploration and production properties of the projects if their exploratory wells have identified proved reserves that have been found to be commercially producible. However, if the exploratory wells have not identified proved reserves or have identified proved reserves but have not been found to be commercially producible, such drilling costs will be expensed in the statement of income when incurred.

Exploratory costs, comprising geological and geophysical costs as well as area reservation fees during the exploration stage, are charged as expenses in the statement of income when incurred.

Development costs, whether relating to successful or unsuccessful development wells, are capitalized and classified as assets.

Depreciation

The capitalized acquisition costs of petroleum rights are depreciated using the unit of production method based on proved reserves. Depreciation of exploratory wells, development costs as well as decommissioning costs, except unsuccessful projects, are calculated using the unit of production method based on proved reserves or proved developed reserves. The Group recognizes changes in reserve estimates prospectively.

Depreciation of support equipment, facilities and pipelines are determined using the straight-line method over the useful lives of assets.

Proved reserves and proved developed reserves are calculated by the Group's own engineers and are based on the information received from the joint operators.

(TRANSLATION)

- 3. **Accounting Policies** (Continued)
- 3.2 Significant Accounting Policies (Continued)
- 3.2.14 Property, Plant and Equipment (Continued)

Carried Cost under Petroleum Sharing Contracts

The petroleum exploration and production business records the carried costs under Petroleum Sharing Contracts using the following accounting policies:

Under Petroleum Sharing Contracts in which the government has a participating interest, some contracts require the contracting parties, excluding the government, to fund the costs of all exploration operations until the first development area is determined. During the exploration period, the contracting parties will carry an agreed upon proportion of the government's exploration costs (Carried Costs). When the project commences production, such carried costs will be fully recouped or recovered without interest by the contracting parties from the production of petroleum under the agreed procedures. The Group classifies the carried costs based on petroleum activities under the successful efforts method. The majority of them are recognized in petroleum exploration and production properties, exploration and petroleum exploration and evaluation assets in the statement of financial position and exploration expenses in the statement of income.

Mining Properties

The coal business accounts for its coal exploration and production properties, including coal mining property rights and deferred mining exploration and development expenditures, by the accounting policies as follows:

Coal Mining Property Rights

Coal mining property rights comprise the total acquisition costs of concession rights in coal mining including both coal mining exploration and development expenditures.

Deferred Mining Exploration and Development Expenditures

Development expenditures and costs of area development are capitalized as mining properties under exploration and evaluation assets and will be classified as mining properties under property, plant and equipment if they meet the criteria and it is highly probable that they can create future economic benefit. However, if it is proved that they cannot create future economic benefit, development expenditures and costs of area development will be fully expensed in the statement of income when incurred.

Depreciation

The capitalized acquisition costs of mining properties are depreciated using the unit of production method based on proved reserves.

The volume of proportional production and the useful lives of coal mining concessions are estimated and reviewed by the Group.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.15 Goodwill

The Group initially records goodwill at cost, which equals to the excess of the acquisition costs over the fair value of the net assets acquired, and carries out a test for impairment of goodwill at least once a year or when there are circumstances indicate that an investment might be impaired. Where the fair value of the net assets exceeds the cost of acquisition at the acquisition date, the excess is recognized as a gain in the statement of income.

To test for impairment, the Group allocates goodwill from business combinations to each cash-generating unit (or group of cash-generating units) that is expected to receive benefit from the synergies of the combination. The Group evaluates the recoverable amount of each cash-generating unit (or group of cash-generating units) and if it is lower than the carrying amount of the unit, the Group recognizes impairment losses in profit or loss. Impairment losses of goodwill will not be reversed.

3.2.16 Intangible assets

Intangible assets are initially recognized at cost less accumulated amortization and allowance for impairment. Amortization is recorded as expenses in profit or loss.

The Group records the initial costs of intangible assets from business combination at the acquisition-date fair value of the assets. Intangible assets from other sources are initially recognized at their costs.

Intangible assets include computer software licenses, asset rights such as gas transmission pipelines, and other intangible assets, such as other operating rights, patents, and customer contracts.

Intangible assets are amortized and recorded as expenses in profit or loss using the straight-line method over the useful lives of the assets which range from 3 to 40 years, except customer contracts which are amortized based on estimated sales volume.

The Group reviews the residual value, useful lives and amortization methods of intangible assets at least once a year.

3.2.17 Exploration and Evaluation Assets

Petroleum Exploration and Evaluation Assets

Petroleum exploration and evaluation expenditures are capitalized at cost as exploration and evaluation assets. If the projects have identified the proved reserves that have been found to be commercially producible, the capitalized exploration and evaluation expenditures under these projects will be transferred to petroleum exploration and production properties under property, plant and equipment, which are subsequently measured as stated in Note 3.2.14.

The capitalized exploration and evaluation expenditure is charged to statement of income in the period in which the projects have not identified proved reserves or have identified proved reserves, but have not been found to be commercially producible.

(TRANSLATION)

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.17 Exploration and Evaluation Assets (Continued)

Mining Properties

Exploration and evaluation expenditures are capitalized as assets at cost, where:

- a) Such costs are expected to be recovered when the areas are successfully developed and mining operations commence, or from the sales of the areas of interest.
- b) Exploration activities in the areas of interest have not reached the stage which permits a reasonable assessment of the existence of commercial recoverable reserves, and exploration activities in the areas of interest are continuing.

Exploration and evaluation expenditures which do not meet the above criteria will be fully expensed in profit or loss. If the areas are developed and mining operations commence, exploration and evaluation expenditures that capitalized as assets will reclassify to mining properties under property, plant and equipment, which are subsequently measured as stated in Note 3.2.14.

3.2.18 Impairment of Assets

The Group performs the following tests for impairment of assets:

- Goodwill is performed annually or whenever there is an indication that the asset may be impaired.
- Investment properties, property, plant and equipment, intangible assets and exploration and evaluation assets are performed whenever there is an indication that the assets may be impaired.

The Group recognizes an impairment loss when the recoverable amount of an asset is lower than its carrying amount, which is the higher of the asset's fair value less cost to sell and its value in use. The Group determines value in use by estimating the present value of future cash flows generated by the asset, discounted using a pre-tax discount rate which reflects current market assessments of the time value of money and the risk specific to the asset. In determining fair value less costs to sell, an appropriate valuation model is used. The calculation reflects the amount that the Group could obtain from the disposal of the asset after deducting the costs of disposal. Fair value means the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The Group recognizes an impairment loss in profit or loss.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.19 Leases

Finance Leases - Where the Group is the Lessee

Leases of property, plant and equipment, where the Group assumes substantially all the risks and rewards of ownership are classified as finance leases. The leased assets are capitalized at the lower of the estimated net present value of the underlying minimum lease payments or fair value of assets. Each minimum lease payment is allocated between liabilities and finance costs in order to achieve a constant interest rate on the remaining balance of the liabilities. The finance leases' liabilities less finance costs are presented as long-term loans. Finance costs are charged to profit or loss over the lease period. Depreciation is charged over the shorter of the useful life of the asset or the lease period.

Finance Leases - Where the Group is the Lessor

Leases of property, plant and equipment under which the Group transfers substantially all the risks and rewards of ownership to lessees are classified as finance leases. The Group realizes the leased assets under asset in the statement of financial position as loans at an amount equal to the net investment in the lease, and allocates finance income based on a pattern reflecting a constant periodic rate of return on the lessor's net investment outstanding in respect of the finance lease.

Operating Leases - Where the Group is the Lessee

Leases of assets where the lessor assumes a significant portion of the risks and rewards of ownership are classified as operating leases. Payments made under operating leases are charged to profit or loss using the straight-line method over the period of the lease.

The costs incurred upon termination of the operating lease agreements prior their maturity, such as penalty paid to the lessor, are recognized as expenses in the period in which the termination takes place.

Operating Leases - Where the Group is the Lessor

Leases of assets where the lessor assumes a significant portion of the risks and rewards of ownership are classified as operating leases. The assets held for operating leases are stated at cost and presented in the statement of financial position according to the nature of the assets. The group recognizes costs, including depreciation, relating to rental income as expenses and recognizes lease income over the lease term on a straight-line basis.

Accounting for an Arrangement Contains a Lease

The Group determined whether an arrangement contains a lease based on the substance of the arrangement. The arrangement contains a lease which depends on the use of a specific asset and the arrangement conveying to the purchaser (lessee) the right to control the use of the underlying asset.

The Group separates payments for the lease and other elements on the basis of their relative fair values. If the Group concludes that it is a finance lease but it is impracticable to separate the payments reliably, the Group will recognize an asset and a liability at an amount equal to the fair value of the underlying asset. Subsequently, the liability is reduced as payments are made and an imputed finance cost on the liability recognized using the Group's incremental borrowing rate of interest.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.20 Income Taxes

Current Tax

The Group is taxed on its non-promoted businesses pursuant to the Revenue Code of Thailand, the Petroleum Income Tax Act, B.E. 2514 and Amendment, B.E. 2532 and other laws and regulations related to corporate income tax of other countries in which the Group has invested.

Current tax is the expected tax payable on the taxable profit for the year, using tax rates enacted at the statements of financial position date in the taxable period, and any adjustment to tax payable in respect of previous years.

Deferred Tax

Deferred tax is recognized in the statements of financial position using the liability method for temporary differences between tax base of assets and liabilities and the carrying amounts in the financial statements. The principal temporary differences in consolidated financial statements arise from property, plant and equipment, provisions for employee benefit, provision for decommissioning costs, and cumulative loss carried forward.

Deferred tax is measured using the tax rates enacted at the statements of financial position date.

Deferred tax assets are recognized to the extent that it is highly probable that the future taxable profits of the Group will be available against which the temporary differences can be utilized. Deferred tax assets are reduced to the extent that it is no longer probable that the related tax benefits will be realized.

The Group recognized deferred tax as income or an expense and included in profit or loss for the period, except to the extent that the tax arises from a transaction or event which is recognized outside profit or loss, either in other comprehensive income or directly in equity, or a business combination.

Deferred tax assets and liabilities can only be offset if the entity has the legal right to settle on a net basis and the deferred tax balances relate to the same taxation authority.

The Group offsets deferred tax assets and deferred tax liabilities for presentation in the statement of financial position.

3.2.21 Advance Payments for Gas Purchased under Take-or-Pay Agreements

The Company has entered into gas purchase agreements with natural gas producers, under which the Company is required to take delivery of natural gas at annual minimum quantities. During each contract year, if the Company cannot accept natural gas according to the minimum quantities under the agreements, it is required to pay for the volume of natural gas which it cannot actually take (Take-or-Pay). After the end of each contract year, the Company and the natural gas producers have to agree on and accept the volume of gas that should be taken into the calculation of Take-or-Pay for that contract year, which is subject to the basis and conditions in the agreements. Under the agreements, the Company can take certain volumes of prepaid gas (Make-up) in subsequent years after taking delivery of natural gas at the minimum quantities for that given contract year. The Company recognizes its obligations under the agreements as advance payments for gas purchased.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.22 Provision for Decommissioning Costs

The Group records a provision for decommissioning costs whenever it is highly probable that an obligation will arise as a result of a past event and the amount of the obligation can be reliably estimated.

The Group recognizes a provision for decommissioning costs based on an estimate of the eventual costs relate to the removal of petroleum exploration and production properties and plant and equipment. These costs are included as part of the cost of the assets and are amortized based on proved reserves using the unit of production method and the straight-line method over the estimated useful lives of the assets, respectively. The estimates of decommissioning costs are determined based on reviews and estimates by the Group's engineers and management's judgment.

3.2.23 Provisions for Employee Benefit

Provisions for employee benefit of the Group are measured and recognized as follows:

1. Short-term employee benefits are recognized in profit or loss as expenses when incurred.
2. Post-employment benefits - defined contribution plans
The Company and its employees have jointly established a provident fund. The fund is monthly contributed by employees and by the Group. The fund's assets are held in a separate trust fund and the Group's contributions are recognized as expenses in profit or loss when incurred.
3. Post-employment benefits - defined benefit plans
The provisions under the defined benefit plan is determined based on actuarial techniques, using the projected unit credit method, in order to determine present value of the provisions and be recognized as a liability in the statements of financial position. Current service cost, past service cost, net interest on the net defined benefit liability are recognized as expenses in profit or loss. Remeasurements of the net defined benefit liability or asset, including actuarial gains and losses are recognized in other comprehensive income and accumulated amounts are recognized as retained earnings in equity.
4. Other long-term employment benefits
The provisions under the defined benefit plan is determined based on actuarial techniques, using the projected unit credit method, in order to determine present value of the provisions and be recognized as a liability in the statements of financial position. Current service cost, past service cost, net interest on the net defined benefit liability are recognized as expenses in profit or loss. Remeasurements of the net other long-term benefit liability or asset, including actuarial gains and losses are recognized in profit or loss immediately.
5. Termination benefits are recognized as a liability and an expense when, and only when, the Company is demonstrably committed to either:
 - Terminate the employment of an employee or a group of employees before the normal retirement date; or
 - Provide termination benefits as a result of an offer made in order to encourage voluntary redundancy.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.24 Revenue Recognition

The Group recognizes revenue from sales upon the delivery of products or when the significant risks and rewards of ownership are transferred to the customers. Revenue from services is recognized over the period in which the services are rendered, taking into account the stage of completion. These revenues are net of trade discounts.

Other revenue is recognized on the following basis:

Interest income - Time proportion basis using the effective yields of interest bearing assets
Royalty income - Accrual basis in accordance with the substance of the relevant agreements
Dividend income - When the right to receive the dividend is established.

Loyalty programmes

The Group has a customer loyalty programme whereby customers are awarded credits (Points) entitling them to the right to purchase products from the Group at a discount or qualify for a free gift. The fair value of the consideration received or receivable in respect of the initial sale is allocated between the Points and the other components of the sale. The amount allocated to the Points is estimated by reference to the fair value of the right to purchase products at a discount or fair value of the free gift. The fair value is estimated based on the amount of the discount adjusted to take into account the expected forfeiture rate. Such amount is deferred and recognised as revenue only when the Points are redeemed and the Group has fulfilled its obligations to supply the products. The amount of revenue recognised in those circumstances is based on the number of Points that have been redeemed in exchange for discounted products, relative to the total number of Points that is expected to be redeemed. In addition, deferred revenue is also released to profit or loss when it is no longer considered probable that the Points will be redeemed.

Revenue from sources other than those mentioned above is recognized using the accrual basis.

3.2.25 Government Grants

Government grants, including non-monetary grants, are recognized where there is reasonable assurance that the recipient will comply with all attached conditions and that the grant will be received. The Group recognizes the grants as income on a systematic basis over the periods for which the costs that the government grants are compensating. The Group recognizes the grants as a part of income in profit or loss.

3.2.26 Earnings per Share

Basic earnings per share is calculated by adjusting the profit attributable to owners of the parent with interests and other items related to subordinated capital debentures net of taxes related to such debentures and dividing the adjusted profit by the weighted average number of ordinary shares held by third parties during the year.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.27 Financial Instruments

Financial assets in the statements of financial position include cash and cash equivalents, current investments, trade accounts receivable, other accounts receivable, available-for-sale investments, other long-term investments, lending loans, and derivative assets. Financial liabilities in the statements of financial position include bank overdrafts and short-term loans from financial institutions, trade accounts payable, other accounts payable, loans, and derivative liabilities. The particular recognition methods adopted are disclosed in the individual policy statements associated with each item.

The Group uses financial instruments to reduce its risk exposure associated with fluctuations in foreign currency exchange rates, interest rates as well as oil and product market prices. These instruments primarily comprise:

Forward Foreign Exchange Contracts

Forward foreign exchange contracts protect the Group from fluctuations in exchange rates by establishing the rates at which foreign currency assets will be realized or foreign currency liabilities will be settled. Forward foreign exchange contracts are recognized in the financial statements at inception. The premium or discount on the establishment of each agreement is amortized over the contract period.

Cross-currency and Interest Rate Swap Contracts

Cross-currency and interest rate swap contracts protect the Group from fluctuations in exchange rates and interest rates. Foreign currency financial assets and liabilities as at the statements of financial position date are protected by cross-currency contracts. The Group recognizes the total amount of interest received from/paid to the counterparties, according to derivatives under cross-currency and interest rate swap contracts in finance costs using the accrual basis and recognizes derivative assets/liabilities of cross-currency and interest rate swap contracts at fair value at the end of reporting period, in the statements of financial position. The Group recognizes movements in the fair value of derivatives in profit or loss.

Oil and Products Hedging Contract

The hedging contracts of oil and product prices aim to reduce the risk exposure associated with fluctuations in the global oil and product market prices in accordance with its purchase and sale agreements by determining its future prices. Gains or losses arising from these contracts are recorded in profit or loss at the maturity date of the contracts.

The risk management policy is described in Note 39.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.27 Financial Instruments (Continued)

Hedge Accounting

The Group considers hedge accounting criteria as follows:

For fair value hedges, a change in fair value of the hedging instruments and a change in fair value of the hedged items attributable to the risk being hedged are both recognized in profit or loss.

For cash flow hedges, a change in fair value of the effective portion of the hedging instrument is recognized in other comprehensive income, while a change in fair value of the ineffective portion of the hedging instruments is recognized in profit or loss.

3.2.28 Fair Value Measurement

The Group has measured fair value and disclosed the information relating to fair value measurement in accordance with TFRS 13 (revised 2017) “Fair Value Measurement”. The guidance under this standard will be applied when the Group requires to measure any assets and liabilities at fair value under relevant standards.

The Group uses the market approach to measure their assets and liabilities that are required to be measured at fair value by relevant financial reporting standards, except that the cost approach or income approach is used when there is no active market or a quoted market price is not available.

Fair Value Hierarchy

In applying the above-mentioned valuation techniques, the Group endeavors to use relevant observable inputs as much as possible by determining a fair value hierarchy that categorizes inputs into three levels as follows:

- Level 1 Use of quoted market prices in an observable active market for such assets or liabilities
- Level 2 Use of other observable inputs for such assets or liabilities, whether directly or indirectly
- Level 3 Used of unobservable inputs for such assets or liabilities such as the Group’s estimates of future cash flows

3.2.29 Use of Estimates and Significant Assumptions

The preparation of financial statements in conformity with Thai Financial Reporting Standards requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, income and expenses.

Estimates and underlying assumptions used in the preparation of financial statements are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.29 Use of Estimates and Significant Assumptions (Continued)

Information about significant assumptions and the sources of contingent estimates that might impact on the carrying amounts of assets and liabilities presented in the financial statements are as follows:

Provisions

The Group recognizes a provision in the statements of financial position if, as a result of a past event, the Group has a present obligation that can be estimated reliably and it is probable that an outflow of economic benefits will be required to settle the obligation.

The Group records provisions for decommissioning costs when it is highly probable that a commitment will arise as a result of past circumstances and the amount can be estimated reliably. The Group recognizes the provisions for decommissioning costs based on estimated amount of decommissioning of completed construction that is ready for its intended use. These costs are included as part of assets and are amortized using the units of production method based on estimated proved reserves and the straight-line method over the estimated useful lives of the assets. The provision for decommissioning costs is determined based on reviews and estimates by the Group's engineers together with the management's judgment.

Provisions depend on various current circumstances such as laws and regulations, technologies and market prices. Therefore, the actual result is likely to be different from estimates and assumptions.

Income Tax

The Group is responsible for the payment of tax in various countries. When income tax payable is estimated, the Group uses significant judgment due to the numerous transactions and calculations arising from its operations.

The Group recognizes income tax payable based on estimated incremental tax payments. The difference between the actual tax paid and the estimate will affect income tax and deferred tax in the period the difference occurs.

A deferred tax asset will be recognized when it is highly probable that the Group will have sufficient net income against which to utilize the temporary difference. Assumptions related to future taxable income are uncertain and may change affecting the recognition of deferred tax assets.

Estimates of Petroleum Reserves

Petroleum reserves are of fundamental importance when assessing investments in various exploration projects and petroleum production businesses, including impairment testing. Changes in proved reserves will affect the present value of net cash flows and depreciation expenses which are calculated using the unit of production method.

The proved reserves are the volume of commercial petroleum production as of a certain date with a high probability of achievement under current economic conditions and production methods, as well as government's rules and regulations. The proved reserves will be checked and assessed annually by the Group's geologists and reservoir engineers.

3. **Accounting Policies** (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.29 Use of Estimates and Significant Assumptions (Continued)

Exploration Costs

The petroleum exploration and production businesses capitalize drilling costs as assets. When they are over 12 months old, they are amortized as expenses in profit or loss except where there is (1) a discovery of proved reserves, or (2) a discovery of commercially adequate reserves whilst having future exploration and assessment plans. The decision to amortize drilling petroleum costs recorded as assets over 12 months should be made using the assumptions under current circumstances. In case those assumptions change in subsequent accounting periods, the petroleum drilling costs that are capitalized as assets will be written off as expenses in that accounting period.

Impairment of Assets

The Group considers recording an allowance for impairment of assets when an event or a circumstance indicates that the carrying amount of an asset is higher than its recoverable amount, which is the higher of the anticipated discounted cash flows from the continuing use of the asset or the fair value of the asset less any costs of disposal. As a result, the carrying amount of an asset is written down immediately to its recoverable amount. The decrease is recorded in profit or loss. Thus, the loss on impairment of assets excluding goodwill recognized in the prior period will be reversed if the estimates for indicated recoverable amount changes.

The Group's estimate of the selling price based on global oil market prices, the expected amount of future petroleum production and margin rate in petroleum exploration and production businesses are the key factors in impairment tests. The Group believes that these are the most reasonable indicators for estimating future cash flows which is recoverable amount of value in use. The future petroleum production comprises proved reserves and unproved reserves.

The estimation of discounted future cash flows depends on various factors such as the expected amount of future production, future selling prices, demand and supply in the market, risks and gross margins. The discounted rates used in the calculation of present value of future cash flows depend on the cost of capital of the asset unit.

3.2.30 Capital Risk Management

The capital management objective of the Group is to create returns for shareholders and other stakeholders whilst maintaining a reasonable capital structure to decrease the cost of capital.

3.2.31 Operating Segment

The operating segment information is reported by business segments and based on the internal management reports that are received and regularly reviewed by the Chief Operating Decision Maker (CODM) for allocating resources to the segments and assessing its performance.

(TRANSLATION)

4. Cash and Cash Equivalents

Cash and cash equivalents as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Cash on hand	1,885.77	1,260.21	9.77	169.52
Call deposits held at banks	119,956.06	90,410.62	40,015.70	30,846.73
Fixed deposits within 3 months	126,019.92	47,480.65	21,237.82	1,509.76
Treasury bills	16,736.58	14,566.49	-	-
Promissory notes	50.07	354.01	-	-
Bonds	24,940.76	-	24,940.76	-
Restricted bank cash	1,087.99	286.42	-	-
Other investments	1,507.17	11,830.62	-	6,165.65
Total	<u>292,184.32</u>	<u>166,189.02</u>	<u>86,204.05</u>	<u>38,691.66</u>

Call deposits held at banks, fixed deposits within 3 months, treasury bills, promissory notes, bonds, restricted bank cash and other investments, as at December 31, 2018 bear the interest at rates ranging from 0.00% - 6.08% per annum (December 31, 2017: interest rates ranging from 0.00% - 12.09% per annum).

5. Current Investments

Current investments as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Fixed deposits	103,566.72	175,001.14	7,412.36	41,262.33
Treasury bills	398.38	-	398.38	-
Promissory notes	349.10	6.00	-	-
Bonds	2,293.92	3,507.19	1,297.84	2,859.96
Other investments	35,812.62	51,136.93	12,863.38	23,933.97
Total	<u>142,420.74</u>	<u>229,651.26</u>	<u>21,971.96</u>	<u>68,056.26</u>

Current investments as at December 31, 2018 bear the interest at rates ranging from 0.00% to 3.28% per annum (December 31, 2017: interest rates ranging from 0.90% to 2.79% per annum).

(TRANSLATION)

6. Trade Accounts Receivable

Trade accounts receivable as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Trade accounts receivable - others	169,681.36	170,901.53	69,440.91	82,123.38
<u>Less</u> Allowance for doubtful accounts	<u>(3,083.52)</u>	<u>(3,188.82)</u>	<u>(1,889.06)</u>	<u>(2,040.57)</u>
Trade accounts receivable - others - net	166,597.84	167,712.71	67,551.85	80,082.81
Trade accounts receivable - related parties - net (Note 9.1)	8,006.86	7,203.53	71,124.00	64,182.35
Total	<u>174,604.70</u>	<u>174,916.24</u>	<u>138,675.85</u>	<u>144,265.16</u>

Aging analysis is as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Within credit terms	171,248.71	169,972.04	137,068.82	139,396.74
Overdue				
- Within 3 months	2,730.43	4,700.53	993.14	4,761.12
- Over 3 - 6 months	506.99	133.98	517.70	110.76
- Over 6 - 12 months	198.70	74.80	147.44	-
- Over 12 months	3,046.51	3,300.02	1,837.81	2,113.42
	177,731.34	178,181.37	140,564.91	146,382.04
<u>Less</u> Allowance for doubtful accounts	<u>(3,126.64)</u>	<u>(3,265.13)</u>	<u>(1,889.06)</u>	<u>(2,116.88)</u>
Total	<u>174,604.70</u>	<u>174,916.24</u>	<u>138,675.85</u>	<u>144,265.16</u>

Trade accounts receivable - others as at December 31, 2018 include receivables from government agencies and state enterprises in the consolidated financial statements amounting to Baht 20,834.35 million (December 31, 2017: Baht 15,471.99 million), and in the separate financial statements amounting to Baht 17,945.50 million (December 31, 2017: Baht 13,560.72 million).

(TRANSLATION)

7. Other Accounts Receivable

Other accounts receivable as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Other accounts receivable	37,906.98	13,919.21	1,473.57	2,751.44
<u>Less Allowance for doubtful accounts</u>	<u>(628.18)</u>	<u>(412.11)</u>	<u>(427.97)</u>	<u>(255.28)</u>
Other accounts receivable	37,278.80	13,507.10	1,045.60	2,496.16
Advance payments	16,199.20	16,168.09	270.44	281.60
Refund receivable from the Oil Stabilization Fund	19,691.94	13,578.39	13,204.37	11,797.59
Current tax assets	<u>3,491.54</u>	<u>5,483.09</u>	-	-
Other accounts receivable - others - net	76,661.48	48,736.67	14,520.41	14,575.35
Other accounts receivable - related parties - net (Note 9.2)	1,709.97	1,412.97	2,440.04	1,974.49
Advance payments - related parties (Note 9.2)	<u>455.62</u>	<u>453.06</u>	<u>353.73</u>	<u>373.36</u>
Total	<u>78,827.07</u>	<u>50,602.70</u>	<u>17,314.18</u>	<u>16,923.20</u>

The refund receivable from the Oil Stabilization Fund mostly comprises compensation for locally manufactured oil and liquefied petroleum gas (LPG), or imported LPG for local uses, as well as compensation for Natural Gas for Vehicles (NGV) prices. The compensation rates are determined by the Committee of Energy Policy Administration.

(TRANSLATION)

8. Lending Loans

8.1 Short-term lending loans as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Current portion of financial lease receivable - others	700.86	605.19	-	-
Current portion of financial lease receivable - related parties (Note 9.2)	3.95	3.80	-	-
Short-term lending loans - others	835.97	622.34	-	-
Short-term lending loans - related parties	843.83	469.64	7,334.32	5,077.58
<u>Less</u> Allowance for doubtful accounts	<u>(601.69)</u>	<u>(469.64)</u>	<u>-</u>	<u>(428.84)</u>
Short-term lending loans - related parties - net (Note 9.2)	<u>242.14</u>	<u>-</u>	<u>7,334.32</u>	<u>4,648.74</u>
Total	<u>1,782.92</u>	<u>1,231.33</u>	<u>7,334.32</u>	<u>4,648.74</u>

8.2 Long-term lending loans as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Long-term financial lease receivable - others	4,653.33	5,354.19	-	-
Long-term financial lease receivable - related parties (Note 9.3)	52.71	56.66	-	-
Long-term lending loans - others	2,979.62	4,385.44	-	-
Long-term lending loans - related parties	6,177.05	9,282.31	32,895.68	44,875.26
<u>Less</u> Allowance for doubtful accounts	<u>-</u>	<u>-</u>	<u>-</u>	<u>(22,120.52)</u>
Long-term lending loans - related parties - net (Note 9.3)	<u>6,177.05</u>	<u>9,282.31</u>	<u>32,895.68</u>	<u>22,754.74</u>
Total	<u>13,862.71</u>	<u>19,078.60</u>	<u>32,895.68</u>	<u>22,754.74</u>

(TRANSLATION)

9. Related Party Transactions

In the separate financial statements, significant transactions carried out with related parties include discontinued operations

Significant transactions carried out with related parties are as follows:

9.1 Trade accounts receivable - related parties as at December 31, 2018 and 2017

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Subsidiaries	-	-	65,585.72	59,744.47
Joint ventures	3,747.90	3,077.27	2,213.24	1,505.27
Associates	1,318.08	1,764.15	341.80	574.17
Other related parties	2,984.00	2,438.42	2,983.24	2,434.75
	8,049.98	7,279.84	71,124.00	64,258.66
<u>Less</u> Allowance for doubtful accounts	(43.12)	(76.31)	-	(76.31)
Total (Note 6)	8,006.86	7,203.53	71,124.00	64,182.35

Aging analysis is as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Within credit terms	7,982.56	7,119.37	71,040.94	62,809.97
Overdue				
- Within 3 months	23.87	45.86	10.06	1,344.48
- Over 3 - 6 months	-	-	73.00	-
- Over 6 - 12 months	-	10.39	-	-
- Over 12 months	43.55	104.22	-	104.21
	8,049.98	7,279.84	71,124.00	64,258.66
<u>Less</u> Allowance for doubtful accounts	(43.12)	(76.31)	-	(76.31)
Total (Note 6)	8,006.86	7,203.53	71,124.00	64,182.35

(TRANSLATION)

9. Related Party Transactions (Continued)

9.2 Other accounts receivable, advance payments, current portion of financial lease receivable, and short-term lending loans - related parties as at December 31, 2018 and 2017

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
<u>Other accounts receivable</u>				
Subsidiaries	-	-	2,420.38	1,765.63
Joint ventures	416.42	604.99	16.18	403.97
Associates	358.17	263.92	2.91	2.74
Other related parties	1,018.76	596.47	0.57	0.69
	1,793.35	1,465.38	2,440.04	2,173.03
<u>Less Allowance for doubtful accounts</u>	<u>(83.38)</u>	<u>(52.41)</u>	<u>-</u>	<u>(198.54)</u>
Total (Note 7)	<u>1,709.97</u>	<u>1,412.97</u>	<u>2,440.04</u>	<u>1,974.49</u>
<u>Advance payments</u>				
Subsidiaries	-	-	73.77	62.24
Joint ventures	-	5.32	-	-
Other related parties	455.62	447.74	279.96	311.12
Total (Note 7)	<u>455.62</u>	<u>453.06</u>	<u>353.73</u>	<u>373.36</u>

(TRANSLATION)

9. Related Party Transactions (Continued)

9.2 Other accounts receivable, advance payments, current portion of financial lease receivable, and short-term lending loans - related parties as at December 31, 2018 and 2017 (Continued)

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
<u>Current portion of financial lease receivable</u>				
Joint ventures (Note 8.1)	3.95	3.80	-	-
<u>Short-term lending loans</u>				
Subsidiaries	-	-	7,334.32	5,077.58
Joint ventures	843.83	469.64	-	-
	843.83	469.64	7,334.32	5,077.58
<u>Less Allowance for doubtful accounts</u>	(601.69)	(469.64)	-	(428.84)
Total (Note 8.1)	242.14	-	7,334.32	4,648.74

Movements in short-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Balance as at January 1	-	90.00	-	941.84
- Payment for loans granted	369.65	96.42	2,990.02	327.28
- Receipt from loans granted	-	-	(899.08)	(798.81)
- Gain (loss) on exchange rate	7.33	-	(19.78)	(41.47)
- Reclassification	-	(90.00)	-	-
- Reversal (recognition) of allowance for doubtful accounts	(134.84)	(96.42)	428.84	(428.84)
Balance as at December 31	242.14	-	2,500.00	-
<u>Add Current portion (Note 9.3)</u>	-	-	4,834.32	4,648.74
Balance as at December 31 - net	242.14	-	7,334.32	4,648.74

Short-term lending loans - related parties as at December 31, 2018 in the consolidated financial statements bear the interest at rates ranging from 3.21% - 3.71% per annum, and in the separate financial statements bear the interest at rates 2.81% per annum (December 31, 2017: interest at rates ranging from 2.53% - 3.40% per annum). During the year, the Company received a short-term lending loan from a subsidiary. The Company, therefore, reversed allowance for doubtful accounts amounting to Baht 428.84 million, as mentioned in Note 14.11

(TRANSLATION)

9. Related Party Transactions (Continued)

9.3 Long-term financial lease receivable and long-term lending loans - related parties as at December 31, 2018 and 2017

	Consolidated		Unit: Million Baht	
	financial statements		Separate	financial statements
	2018	2017	2018	2017
<u>Long-term financial lease receivable</u>				
Joint ventures (Note 8.2)	52.71	56.66	-	-
<u>Long-term lending loans</u>				
Subsidiaries	-	-	32,895.68	44,875.26
Joint ventures	3,651.76	6,766.64	-	-
Associates	2,525.29	2,515.67	-	-
	6,177.05	9,282.31	32,895.68	44,875.26
<u>Less Allowance for doubtful accounts*</u>	-	-	-	(22,120.52)
Total (Note 8.2)	<u>6,177.05</u>	<u>9,282.31</u>	<u>32,895.68</u>	<u>22,754.74</u>

(TRANSLATION)

9. Related Party Transactions (Continued)

9.3 Long-term financial lease receivable and long-term lending loans - related parties as at December 31, 2018 and 2017 (Continued)

Details of financial lease receivable - related parties as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2018	2017	2018	2017
Financial lease receivable				
- Within 1 year	6.00	6.00	-	-
- Over 1 year but not over 5 years	24.00	24.00	-	-
- Over 5 years	40.00	46.00	-	-
Future finance income	(13.34)	(15.54)	-	-
Total	<u>56.66</u>	<u>60.46</u>	<u>-</u>	<u>-</u>

Movements in long-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2018	2017	2018	2017
Balance as at January 1	9,282.31	8,263.29	27,403.48	34,801.10
- Payment for loans granted	9.95	2,890.40	26,310.00	9,391.23
- Receipt from loans granted	(3,212.38)	(1,127.93)	(36,949.24)	(41,419.18)
- Gain (loss) on exchange rate	98.22	(738.98)	(1,154.76)	(6,661.58)
- Currency translation differences	(1.05)	246.24	-	-
- Reversal (recognition) of allowance for doubtful accounts	-	(250.71)	22,120.52	31,291.91
Balance as at December 31	<u>6,177.05</u>	<u>9,282.31</u>	<u>37,730.00</u>	<u>27,403.48</u>
<u>Less</u> Current portion (Note 9.2)	<u>-</u>	<u>-</u>	<u>(4,834.32)</u>	<u>(4,648.74)</u>
Balance as at December 31 - net	<u>6,177.05</u>	<u>9,282.31</u>	<u>32,895.68</u>	<u>22,754.74</u>

Long-term lending loans - related parties as at December 31, 2018 in the consolidated financial statements bear the interest at rates ranging from 3.66% - 6.94% per annum (December 31, 2017: interest at rates ranging from 3.66% - 6.56% per annum), and in the separate financial statements bear the interest at rates ranging from 2.88% - 4.68% per annum (December 31, 2017: interest at rates ranging from 2.63% - 4.68% per annum). During the year, the Company received a long-term lending loan from a subsidiary. The Company, therefore, reversed allowance for doubtful accounts, recorded amounting to Baht 22,120.52 million, as mentioned in Note 14.11

(TRANSLATION)

9. Related Party Transactions (Continued)

9.4 Trade accounts payable - related parties as at December 31, 2018 and 2017

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Subsidiaries	-	-	38,012.70	51,583.58
Joint ventures	1,078.38	863.80	260.85	269.00
Associates	320.34	317.81	-	254.07
Other related parties	8.51	2.59	-	-
Total	1,407.23	1,184.20	38,273.55	52,106.65

9.5 Other accounts payable, current portion of financial lease liability, and short-term loans - related parties as at December 31, 2018 and 2017

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
<u>Other accounts payable</u>				
Subsidiaries	-	-	11,927.90	3,440.80
Joint ventures	46.58	22.84	7.25	4.03
Associates	24.23	12.16	16.31	3.74
Other related parties	88.86	135.21	57.51	105.96
Total	159.67	170.21	12,008.97	3,554.53

Current portion of financial lease liability

Joint venture	400.42	398.68	400.42	398.68
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Short-term loans*

Subsidiaries	-	-	3,332.70	2,803.04
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* The Company has liquidity management policies within the Group include the use of the cash pooling method. Inter-company loans were used for short-term financial management of cash surpluses or deficits of each affiliate. Interests on these were calculated by using market interest rates.

(TRANSLATION)

9. Related Party Transactions (Continued)

9.6 Long-term finance lease liability - related parties as at December 31, 2018 and 2017

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Joint venture	3,841.51	4,274.28	3,841.51	4,274.28

Details of finance lease liability - related parties as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Finance lease liability				
- Within 1 year	453.54	456.77	453.54	456.77
- Over 1 year but not over 5 years	1,815.42	1,828.35	1,815.42	1,828.35
- Over 5 years	2,270.20	2,743.15	2,270.20	2,743.15
Future finance charges	(297.23)	(355.31)	(297.23)	(355.31)
Total	<u>4,241.93</u>	<u>4,672.96</u>	<u>4,241.93</u>	<u>4,672.96</u>

(TRANSLATION)

9. Related Party Transactions (Continued)

9.7 Revenue and expense transactions carried out with related parties

For the years ended December 31, 2018 and 2017

	Consolidated		Unit: Million Baht	
	financial statements	financial statements	Separate	financial statements
	2018	2017	2018	2017
Revenues				
<u>Sales and service income</u>				
Subsidiaries	-	-	779,669.46	567,842.77
Joint ventures	26,668.00	25,711.82	14,684.61	13,426.17
Associates	15,619.60	14,129.30	3,508.30	2,561.39
Other related parties	14,117.04	14,477.24	14,104.03	14,467.74
<u>Interest income</u>				
Subsidiaries	-	-	1,183.95	2,063.58
Joint ventures	280.09	255.13	-	66.32
Associates	160.11	160.74	-	-
<u>Dividend income</u>				
Subsidiaries	-	-	33,810.30	28,263.50
Joint ventures	-	-	610.12	1,033.30
Associates	-	-	684.21	699.28
Other related parties	253.43	380.00	112.00	110.00
<u>Other income</u>				
Subsidiaries	-	-	90,701.41	4,047.92
Joint ventures	311.71	159.62	84.00	88.47
Associates	75.00	32.53	45.94	19.61
Other related parties	47.51	295.25	46.67	22.05
Expenses				
<u>Cost of goods purchased and services</u>				
Subsidiaries	-	-	475,921.74	516,960.35
Joint ventures	9,571.74	9,237.90	1,530.35	1,619.31
Associates	3,487.43	3,522.99	1,126.98	2,677.67
Other related parties	1,294.43	1,450.74	304.35	271.31
<u>Interest expenses</u>				
Subsidiaries	-	-	35.18	62.48
Joint ventures	58.10	63.02	58.10	63.02
<u>Other expenses</u>				
Subsidiaries	-	-	3,739.28	3,223.41
Joint ventures	166.20	190.80	0.14	58.50
Associates	54.40	111.36	4.52	4.90
Other related parties	408.66	359.34	226.10	227.23

(TRANSLATION)

9. Related Party Transactions (Continued)

9.7 Revenue and expense transactions carried out with related parties (Continued)

The aforementioned related party transactions exclude transactions carried out with government agencies and state enterprises.

Stipulation prices between the Company and its related parties are based on normal prices for the same types of business transactions carried out with non-related parties. Goods purchased from subsidiaries are charged at the normal prices determined by the subsidiaries with reference to global market prices.

9.8 Details of commitments to subsidiaries and joint ventures are stated in Note 47.1.

9.9 Crude oil and refined product purchase and sale transactions carried out with related parties without physical delivery, with the objective of maintaining crude oil and refined product reserves and inventory management, were reversed in the financial statements.

Detail of these transactions for the years ended December 31, 2018 and 2017 are as follow:

	Consolidated		Unit: Million Baht	
	financial statements		Separate	financial statements
	2018	2017	2018	2017
<u>Sales</u>				
Subsidiaries	-	-	3,135.86	7,981.66
<u>Purchases</u>				
Subsidiaries	-	-	3,249.95	8,167.99

9.10 Executive remunerations

Detail of executive remunerations for the years ended December 31, 2018 and 2017 are as follows:

	Consolidated		Unit: Million Baht	
	financial statements		Separate	financial statements
	2018	2017	2018	2017
<u>Directors remuneration</u>				
Meeting remuneration and bonuses	386.42	349.12	62.35	72.98
<u>Managements remuneration</u>				
Salaries, bonuses, and other employee benefits	1,100.95	983.26	97.57	75.12
Post-employment benefits	14.52	22.98	2.35	2.79
Total (Note 35)	1,501.89	1,355.36	162.27	150.89

Managements are those persons who have authority and responsibility for planning, directing and controlling the activities of an entity, directly or indirectly.

(TRANSLATION)

10. Inventories

Inventories as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Oil products	88,625.35	87,473.14	5,653.44	24,128.66
Gas products	4,648.77	2,560.71	4,150.09	2,557.43
Petrochemicals products	32,596.48	28,610.81	502.44	-
Others	4,022.72	3,629.45	512.93	746.72
	129,893.32	122,274.11	10,818.90	27,432.81
<u>Less</u> Allowance for decline in value of inventories and obsolescence	<u>(4,613.50)</u>	<u>(402.31)</u>	<u>(571.41)</u>	<u>(329.28)</u>
Total	<u>125,279.82</u>	<u>121,871.80</u>	<u>10,247.49</u>	<u>27,103.53</u>

The Fuel Oil Trading Act B.E. 2543 was amended by The Fuel Oil Trading Act (No.2) B.E. 2550 in accordance with Notification of the Department of Energy Business “Determination of Types, Rates, Criteria, Methods, and Conditions for Calculation of Oil Reserves B.E. 2558”. This Act prescribes that oil traders under section 7 must reserve crude oil and petroleum products at rates ranging from 1% - 20% of the total production output or imported volume. Inventories - legal reserves as at December 31, 2018 in the consolidated financial statements amounting to Baht 26,382.19 million (December 31, 2017: Baht 27,304.10 million), and in the separate financial statements amounting to Baht 853.07 million (December 31, 2017: Baht 6,682.59 million). These amounts were net of allowance for net realizable value.

In 2018, the Group wrote down inventories to their net realizable values and recognized the additional allowance for obsolescence of inventories as an expense of Baht 4,211.19 million in the consolidated financial statements (2017: Baht (392.09) million) and Baht 242.13 million in the separate financial statements (2017: Baht 21.19 million).

11. Materials and Supplies

Materials and supplies as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Spare parts, equipment and others	30,390.29	30,298.05	5,594.67	5,770.45
<u>Less</u> Allowance for obsolescence	<u>(1,518.64)</u>	<u>(1,355.60)</u>	<u>(53.94)</u>	<u>(20.98)</u>
Total	<u>28,871.65</u>	<u>28,942.45</u>	<u>5,540.73</u>	<u>5,749.47</u>

12. The Restructuring of the Oil Business Unit

On November 18, 2016, at the Board of Directors Meeting No. 11/2016 of the Company, the Board passed a resolution to approved the restructuring of PTT by means of the transfer of the oil business unit, including its assets and liabilities of the business unit, and the shares of related companies from the Company to PTT Retail Business Company Limited (PTTRB), the change of PTTRB's name to PTT Oil and Retail Business Company Limited (PTTOR), the appointment of PTTOR as the flagship company for the oil and retail business of the Group, and the preliminary plan for an initial public offering of the ordinary shares of PTTOR and the listing of PTTOR in the Stock Exchange of Thailand (the SET). The Company and government agencies will hold less than 50%, and the Company will not hold less than 45%, of total paid-up capital (the Restructuring of PTT). In addition, the Board passed a resolution to proceed with the request of the Restructuring of PTT to the relevant agencies such as the Ministry of Energy, The Board of Directors of State Enterprise Policy Office (Superboard), the Cabinet, and the shareholders' meeting of the Company, to consider granting approvals in accordance with the relevant rules and regulations.

On February 17, 2017, at the Meeting No. 1/2017 (the 11st Meeting) of the National Energy Policy Council (NEPC) passed resolutions to (1) acknowledge the proposed Restructuring of PTT and to instruct the Company to proceed in compliance with relevant laws, regulations, and related cabinet resolutions while taking into consideration the maximum benefit of the public and the nation and (2) agree with the opinion of the Cabinet Secretariat that the proposed business restructuring of PTT would not have an impact on the nation's energy security. Subsequently, the Ministry of Energy notified the cabinet of the NEPC's meeting resolutions.

On April 28, 2017, the 2017 Annual General Meeting of the Company's shareholders approved the Restructuring of PTT by means of the transfer of the oil business unit, including the assets and liabilities of the business unit and the shares of companies related to the oil business unit, from the Company to PTTOR (the Restructuring of PTT). The business transfer will occur only after the Company obtains any approvals and/or consent from relevant governmental authorities and/or agencies necessary for the Restructuring of PTT in accordance with relevant regulations, and the Board or persons assigned by the Board are authorized to enter into negotiations and determine the criteria, conditions, and other details related to the Restructuring of PTT; execute the business transfer agreements, other agreements and supporting documents; and undertake any act necessary for and relevant to the aforementioned businesses for the purposes of the Restructuring of PTT. The Annual General Meeting also acknowledged the feasibility of the plan to launch an initial public offering (IPO) of PTTOR's ordinary shares, and to offer ordinary shares of PTTOR to PTT's existing shareholders with rights to subscribe to allocated shares, but not to offer the shares to shareholders in cases where such offering would cause PTTOR to be subject to the rules and regulations of foreign countries (Preferential Share Offering) and to list PTTOR on the SET. The Company and government agencies will hold less than 50% of the total paid-up capital after launching an IPO and listing on the SET. On the contrary, the Company will hold no less than 45% the total paid-up capital. The Company will adhere to the opinions of the Office of the Securities and Exchange Commission (the SEC) in relation to the listing of PTTOR on the SET and will obtain approval from the SEC prior to proceed further.

On June 18, 2018, the Company and PTTOR successfully executed the Business Transfer Agreement to transfer various assets and liabilities, and shares of related companies (BAFS, PTTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT) to PTTOR. The Company has commenced the process of transferring various assets and liabilities, and shares of related companies to PTTOR since July 1, 2018. The business transfer price is Baht 117,203.26 million. On June 28, 2018, PTTOR made the initial payment of Baht 85,366.92 million to the Company. Then, PTTOR made the remaining payment of Baht 31,836.34 million on September 28, 2018.

(TRANSLATION)

12. The Restructuring of the Oil Business Unit (Continued)

The valuation of the business transferred had been evaluated by financial advisors following relevant international standards in order to provide the most reasonable prices.

In cases where the registration process for the transfer of various assets and liabilities is not completed within 6 months after the date of the business transfer, the Company must comply with the conditions under the Business Transfer Agreement, whereby the Company has to transfer the right of ownership and use in assets to PTTOR, which is entitled to benefits, interests or profits from the assets under the agreement from the date of the business transfer until the registration process is completed.

As at December 31, 2018, some assets and contracts have not yet been transferred. The Company and PTTOR are in the process of executing the memorandum for the revision of the Business Transfer Agreement by extending the period for the process of registering the transfer of ownership in assets, rights, duties and responsibilities under agreements, in accordance with the Business Transfer Agreement, whereby it is to be completed within December 31, 2019.

As a result of the Business Transfer Agreement, the Company presented the operating results of the related oil business unit as discontinued segment. The Company presented the operating results of the discontinued segment separately from those of the normal operation in the separate financial statements. The Company reclassified the transactions of this segment that were undertaken in 2017 for the purpose of comparison with the current period financial information in the statement of income and the statement of comprehensive income for the year ended December 31, 2018. However, the Company presented the statement of cash flows before the deduction of discontinued operations' portion.

(TRANSLATION)

12. The Restructuring of the Oil Business Unit (Continued)

The operating results of the discontinued operations in the financial information for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht	
	Separate financial statements	
	2018	2017
Statement of income		
Sales and service income	288,790.50	522,615.57
Cost of sales and services	(271,949.15)	(491,941.55)
Gross profit	16,841.35	30,674.02
Other income	2,432.59	4,242.66
Gain (loss) on foreign exchange rates	285.71	(248.13)
Profit before expenses	19,559.65	34,668.55
Selling and distribution expenses	(7,424.75)	(12,816.78)
Administrative expenses	(3,820.15)	(7,207.76)
Profit before finance costs and income taxes	8,314.75	14,644.01
Finance costs	(3.82)	(9.32)
Profit before income taxes	8,310.93	14,634.69
Income taxes	(1,967.25)	(2,778.33)
Profit for the periods from discontinued operations, net of tax	6,343.68	11,856.36
Gain on disposal of discontinued operations	80,659.17*	-
Income taxes on gain on disposal of discontinued operations	(16,241.13)*	-
Total profit for the periods from discontinued operations, net of tax	70,761.72	11,856.36

* Include gain and income taxes relating to the reclassification adjustment resulting from sale of available-for-sale investment.

(TRANSLATION)

12. The Restructuring of the Oil Business Unit (Continued)

The operating results of the discontinued operations in the financial information for the years ended December 31, 2018 and 2017 are as follows: (Continued)

	Unit: Million Baht	
	Separate financial statements	
	2018	2017
Statement of comprehensive income		
Items that will be reclassified subsequently to profit or loss		
Gain (loss) on measurements of available-for-sale investments	(2,079.75)	472.50
Income taxes related to available-for-sale investments	415.95	(94.50)
Items that will not be reclassified subsequently to profit or loss		
Loss on remeasurement of defined benefits plans	-	(20.06)
Income tax related to remeasurement of defined benefits plans	-	4.01
Other comprehensive income (loss) for the years from discontinued operations, net of tax	<u>(1,663.80)*</u>	<u>361.95</u>

* Include losses relating to the reclassification adjustment of Baht 1,114.80 million due to sale of available-for-sale investment.

Overall, there is no impact on the consolidated financial statements from the disposal of discontinued operations since this transaction is the business combination under common control, except for the impact of income taxes related to the disposal of discontinued operations of Baht 6,032.97 million to the consolidated financial statements. Income taxes stand for current tax net of deferred tax.

Net cash flows of the discontinued operations for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht	
	Separate financial statements	
	2018	2017
Net cash provided by operating activities	1,273.75	4,765.25
Net cash used in investing activities	(3,563.77)	(6,429.15)
Net cash provided by (used in) financing activities	-	-
Net cash used in the discontinued operations	<u>(2,290.02)</u>	<u>(1,663.90)</u>

(TRANSLATION)

13. Available-for-sale Investments

13.1 Details of available-for-sale investments

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Available-for-sale Investments of the Company</u>				
<u>Investments in Equity Securities</u>				
Dhipaya Insurance Public Co., Ltd. (TIP)	Thailand	Insurance	13.33	13.33
Bangkok Aviation Fuel Services Public Co., Ltd. (BAFS)*	Thailand	Aircraft refuelling services	-	7.06
<u>Investments in Mutual Funds</u>				
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
Corporate Venture Capital Fund (CVC)	United States of America/ England	Mutual fund		
<u>Available-for-sale Investments of Subsidiaries</u>				
<u>Investments in Equity Securities</u>				
<i>PTTEP Group</i>				
Wentworth Resources Limited (WRL)	Canada	Oil and natural gas exploration	1.18	1.18
<i>PTTOR Group</i>				
Bangkok Aviation Fuel Services Public Co., Ltd. (BAFS)*	Thailand	Aircraft refuelling services	7.06	-
<i>IRPC Group</i>				
Bangkok Union Insurance Public Co., Ltd. (BUI)	Thailand	Insurance	0.35	0.35
TPI Polene Public Co., Ltd. (TPIPL)	Thailand	Property, construction and petrochemicals	0.14	0.14
<i>PTTGM Group</i>				
Xanadu Mines Ltd. (XML)	Mongolia	Mineral exploration	3.80	4.19
<u>Investment in Debt Securities</u>				
<i>PTTGC Group</i>				
Debt Securities Available for Sale (in Private Fund) (DSAFS)	Thailand	Private Fund		

* Since July 1, 2018, the Company has commenced the process of transferring various assets and liabilities, and shares of related companies which consist of BAFS, PTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT to PTTOR.

(TRANSLATION)

13. Available-for-sale Investments (Continued)

13.1 Details of available-for-sale investments (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Available-for-sale Investments of Subsidiaries</u> (Continued)				
<u>Investment in Debt Securities</u> (Continued)				
<i>TOP Group</i>				
Debt Securities Available for Sale (in Private Fund) (DSAFS)	Thailand	Private Fund		
<u>Investments in Mutual Funds</u>				
<i>PTTLNG</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTNGD Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>EnCo</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTOR Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTT TANK</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTT Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTGC Group</i>				
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
<i>TOP Group</i>				
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
<i>PTTER Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTRTC</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		

(TRANSLATION)

13. Available-for-sale Investments (Continued)

13.2 Details of available-for-sale investments as at December 31, 2018 and 2017 are as follows:

Unit: Million Baht

Company	Ownership interest (%)		Consolidated financial statements		Separate financial statements		Dividend incomes	
	2018	2017	2018	2017	2018	2017	2018	2017
<u>Available-for-sale investments in Equity Securities</u>								
1. TIP	13.33	13.33	312.00	312.00	312.00	312.00	112.00	110.00
2. SPRC	-	-	-	-	-	-	-	259.59
3. WRL	1.18	1.18	34.91	37.39	-	-	-	-
4. BAFS	7.06	7.06	24.00	24.00	-	24.00	56.70	54.90
5. BUI	0.35	0.35	2.35	2.35	-	-	-	-
6. TPIPL	0.14	0.14	64.86	64.86	-	-	0.62	-
7. XML	3.80	4.19	238.13	239.83	-	-	-	-
Total			676.25	680.43	312.00	336.00		
<u>Available-for-sale investments in Debt Securities</u>								
8. DSAFS			5,967.16	11,988.88	-	-	-	-
Total			5,967.16	11,988.88	-	-		
<u>Available-for-sale investments in Mutual Funds</u>								
9. CIMB - PRINCIPAL EPIF			854.03	854.03	254.03	254.03	8.68	4,309.71
10. VAYU1			15.00	15.10	10.00	10.00	0.09	0.09
11. CVC			386.48	208.99	386.48	208.99	-	-
Total			1,255.51	1,078.12	650.51	473.02		
Total available-for-sale investments before changes in value of investments			7,898.92	13,747.43	962.51	809.02		
Allowance for changes in value			3,015.36	3,893.60	1,617.05	3,724.08		
<u>Less Allowance for impairment</u>			(38.35)	(38.62)	-	-		
Total			10,875.93	17,602.41	2,579.56	4,533.10	178.09	4,734.29

(TRANSLATION)

13. Available-for-sale Investments (Continued)

13.3 Movements in available-for-sale investments are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
As at January 1	17,602.41	23,839.54	4,533.10	18,116.25
- Additional investments	177.49	7,448.50	177.49	208.99
- Reclassifications	(3,284.29)	-	-	-
- Disposal of investments	(2,737.43)	(8,265.40)	(24.00)	(8,118.97)
- Unrealized loss on available-for-sale investments	(880.56)	(5,403.21)	(2,107.03)	(5,673.17)
- Currency translation differences	(1.69)	(17.02)	-	-
As at December 31	<u>10,875.93</u>	<u>17,602.41</u>	<u>2,579.56</u>	<u>4,533.10</u>

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates

14.1 Details of subsidiaries, joint ventures and associates of the Company

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries</u>				
PTT Exploration and Production Public Co., Ltd. (PTTEP)	Thailand	Petroleum exploration and production	65.29	65.29
PTT LNG Co., Ltd. (PTTLNG)	Thailand	Natural gas	100.00	100.00
PTT Natural Gas Distribution Co., Ltd. (PTTNGD)	Thailand	Natural gas	58.00	58.00
PTT Global LNG Co., Ltd. (PTTGL) (The Group holds 100% shareholding)	Thailand	Investing in LNG business	50.00	50.00
Energy Complex Co., Ltd. (EnCo) (The Group holds 100% shareholding)	Thailand	Real estate development for rent	50.00	50.00
PTT Energy Solutions Co., Ltd. (PTTES) (The Group holds 100% shareholding)	Thailand	Technical and operational services	40.00	40.00
Global Power Synergy Public Co., Ltd. (GPSC) (The Group holds 75% shareholding)	Thailand	Generation and supply of electricity, steam and water for industries	22.58	22.58
PTT (Cambodia) Limited (PTTCL)*	Cambodia	Oil marketing	-	100.00
PTT Oil Myanmar Co., Ltd. (PTTOM)*	Myanmar	Business services	-	100.00
PTT Oil and Retail Business Public Co., Ltd. (PTTOR)	Thailand	Management services and oil marketing	100.00	100.00
PTT Tank Terminal Co., Ltd. (PTT TANK)	Thailand	Terminal and warehouse	100.00	100.00
Thai Lube Blending Co., Ltd. (TLBC)* (The Group holds 100% shareholding)	Thailand	Blending and bottling of lube oil	-	48.95
PTT International Trading Pte. Ltd. (PTTT)	Singapore	International trading	100.00	100.00
PTT International Trading London Limited (PTTT LDN)	England	International trading	100.00	100.00
PTT Global Chemical Public Co., Ltd. (PTTGC)	Thailand	Petrochemicals and refining	48.18	48.89
Thai Oil Public Co., Ltd. (TOP)	Thailand	Oil refining	48.03	49.10
IRPC Public Co., Ltd. (IRPC)	Thailand	Petrochemicals and refining	48.05	38.51
Thai Oil Power Co., Ltd. (TP) (The Group holds 100% shareholding)	Thailand	Generation and supply of electricity and steam	26.00	26.00
PTT Energy Resources Co., Ltd. (PTTER)	Thailand	Investment consulting in energy and mining business	100.00	100.00
PTT Global Management Co., Ltd. (PTTGM)	Thailand	Domestic and international investment	100.00	100.00
PTT Green Energy Pte. Ltd. (PTTGE)	Singapore	Investing in palm oil business	100.00	100.00
PTT Regional Treasury Center Pte. Ltd. (PTTRTC)	Singapore	Treasury services	100.00	100.00
PTT Treasury Center Co., Ltd. (PTT TCC)	Thailand	Treasury services	100.00	-
Business Services Alliance Co., Ltd. (BSA)	Thailand	Management services	100.00	100.00
PTT Digital Solutions Co., Ltd. (PTT DIGITAL) (The Group holds 100% shareholding)	Thailand	Information technology and communication services	20.00	20.00

* Since July 1, 2018, the Company has commenced the process of transferring various assets and liabilities, and shares of related companies which consist of BAFS, PTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT to PTTOR.

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.1 Details of subsidiaries, joint ventures and associates of the Company (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Joint Ventures</u>				
Trans Thai-Malaysia (Thailand) Co., Ltd. (TTM(T))	Thailand	Natural gas	50.00	50.00
Trans Thai-Malaysia (Malaysia) Sdn. Bhd. (TTM(M))	Malaysia	Natural gas	50.00	50.00
District Cooling System and Power Plant Co., Ltd. (DCAP)	Thailand	Generation and supply of electricity and chilled water	35.00	35.00
<u>Associates</u>				
Thai Petroleum Pipeline Co., Ltd. (THAPPLINE)* (The Group holds 49.21% shareholding)	Thailand	Oil transmission pipelines	-	40.53
Petro Asia (Thailand) Co., Ltd. (PAT)*	Thailand	Oil marketing	-	35.00

* Since July 1, 2018, the Company has commenced the process of transferring various assets and liabilities, and shares of related companies which consist of BAFS, PTTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT to PTTOR.

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of PTTEP Group:</u>				
PTTEP International Limited (PTTEPI)	Thailand	Petroleum	100.00	100.00
PTTEP Offshore Investment Company Limited (PTTEPO)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Southwest Vietnam Company Limited (PTTEP SV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Kim Long Vietnam Company Limited (PTTEP KV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Hoang-Long Company Limited (PTTEP HL)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Hoan-Vu Company Limited (PTTEP HV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Algeria Company Limited (PTTEP AG)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Services Limited (PTTEP Services)	Thailand	Human resource support	100.00	100.00
PTTEP Siam Limited (PTTEPS)	Thailand	Petroleum	100.00	100.00
PTTEP Holding Company Limited (PTTEPH)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Indonesia Company Limited (PTTEP ID)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Africa Investment Limited (PTTEP AI)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Rommana Company Limited (PTTEPR)*	Cayman Islands	Petroleum	-	100.00
PTTEP Australia Pty Limited (PTTEP AU)	Australia	Petroleum	100.00	100.00
PTTEP South Asia Limited (PTTEP SA)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Semai II Limited (PTTEP SM)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Australia Perth Pty Limited (PTTEP AP)	Australia	Petroleum	100.00	100.00
PTTEP International Holding Co., Ltd. (PTTEP IH)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Southwest Vietnam Pipeline Co., Ltd. (PTTEP SVPC)	Cayman Islands	Gas transmission pipelines	100.00	100.00
PTTEP FLNG Holding Co., Ltd. (PTTEP FH)**	Hong Kong	Petroleum	100.00	100.00
PTTEP Netherland Holding Limited (PTTEP NL)	Cayman Islands	Petroleum	100.00	100.00
JV Marine Limited (JV Marine)	Cayman Islands	Petroleum	100.00	100.00
PTTEP South Mandar Limited (PTTEP SMD)	Cayman Islands	Petroleum	100.00	100.00
PTTEP South Sageri Limited (PTTEP SS)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Sadang Limited (PTTEP SD)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Malunda Limited (PTTEP ML)	Cayman Islands	Petroleum	100.00	100.00

* On June 29, 2018, PTTEPR received the approval of dissolution of the Company from the registrar.

** On August 24, 2017, PTTEP approved for the registration for the dissolution of PTTEP FH.

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of PTTEP Group: (Continued)</u>				
PTTEP Netherlands Coöperatie U.A. (PTTEP NC)	Netherlands	Petroleum	100.00	100.00
PTTEP Canada Limited (PTTEP CA)	Canada	Petroleum	100.00	100.00
PTTEP Canada International Finance Limited (PTTEP CIF)	Canada	Funding services for the Group's business	100.00	100.00
PTTEP HK Holding Limited (PTTEP HK)	Hong Kong	Petroleum	100.00	100.00
PTTEP Netherlands Holding Coöperatie U.A. (PTTEP NH)	Netherlands	Petroleum	100.00	100.00
PTTEP Brazil Investment B.V. (PTTEP BI)	Netherlands	Petroleum	100.00	100.00
PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL)	Brazil	Petroleum	100.00	100.00
PTTEP Australia Offshore Pty Ltd (PTTEP AO)	Australia	Petroleum	100.00	100.00
PTTEP Australia Browse Basin Pty Ltd (PTTEP AB)	Australia	Petroleum	100.00	100.00
PTTEP Australia Timor Sea Pty Ltd (PTTEP AT)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Operations) Pty Ltd (PTTEP AAO)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AAA)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Staff) Pty Ltd (PTTEP AAS)	Australia	Petroleum	100.00	100.00
Cove Energy Limited (Cove)	England	Petroleum	100.00	100.00
Cove Energy Mozambique Rovuma Onshore Limited (CEMROL)*	Cyprus	Petroleum	100.00	100.00
Cove Energy East Africa Limited (CEEAL)	Cyprus	Petroleum	100.00	100.00
PTTEP Mozambique Area 1 Limited (PTTEP MZA1)	Cyprus	Petroleum	100.00	100.00
Cove Energy Kenya Limited (CEKL)*	Kenya	Petroleum	100.00	100.00
Sinphuhorm Holdings Limited (SHL)	Cayman Islands	Petroleum	100.00	100.00
PTTEP SP Limited (PTTEP SP)	England	Petroleum	100.00	100.00
PTTEP G7 Limited (PTTEP G7)	Thailand	Petroleum	100.00	100.00
PTTEP HK Offshore Limited (PTTEP HKO)	Hong Kong	Petroleum	100.00	100.00
PTTEP Treasury Center Company Limited (PTTEP TC)	Thailand	Treasury center for the Group's business	100.00	100.00
PTTEP Business Center Company Limited (PTTEP BC)	Thailand	Petroleum	100.00	100.00
PTTEP Mexico E&P Limited, S. de R.L. de C.V. (PTTEP MEP)	Mexico	Petroleum	100.00	100.00

* On May 22, 2017, PTTEP approved for the registration for the dissolution of CEMROL and CEKL.

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of PTTEP Group: (Continued)</u>				
PTTEP Energy Holding (Thailand) Company Limited (PTTEP EH)	Thailand	Petroleum	100.00	-
PTTEP Energy Development Company Limited (PTTEP ED)	Thailand	Petroleum	100.00	-
EP-Tech Ventures Holding Company Limited (EP-Tech)	Thailand	Petroleum related Technology	100.00	-
AI and Robotics Ventures Company Limited (ARV)	Thailand	Technology	100.00	-
PTTEP MENA Limited (PTTEP MENA)	Hong Kong	Petroleum	100.00	-
<u>Subsidiary of PTTNGD Group:</u>				
Amata Natural Gas Distribution Co., Ltd. (AMATA NGD)	Thailand	Natural gas	80.00	80.00
<u>Subsidiary of PTTGL Group:</u>				
PTTGL Investment Limited (PTTGLI)	Hong Kong	Investing in LNG business	100.00	100.00
<u>Subsidiaries of GPSC Group:</u>				
Combined Heat and Power Producing Co., Ltd. (CHPP)	Thailand	Production and distribution of electricity and chilled water/construction and installation of electricity generating system	100.00	100.00
Natee Synergy Co., Ltd. (NSC)	Thailand	Holding company	100.00	100.00
IRPC Clean power Co.,Ltd. (IRPCCP) (The Group holds 100% shareholding)	Thailand	Production and distribution of electricity, steam and water for industrial purpose	51.00	51.00
Ichinoseki Solar Power 1 GK (ICHINOSEKI)	Japan	Production and distribution of electricity	99.00	99.00
GPSC International Holdings Limited (GPSCIH)	Hong Kong	Holding company	100.00	100.00
Global Renewable Power Co., Ltd. (GRP)	Thailand	Holding company	100.00	-
<u>Subsidiary of PTCL Group:</u>				
PTT (Lao) Co., Ltd. (PTT Lao)*	Lao	Oil marketing	-	100.00
<u>Subsidiaries of PTTOR Group:</u>				
PTT Retail Management Co., Ltd. (PTTRM)	Thailand	Petrol station and convenience store management	100.00	100.00
PTT Retail Service Co., Ltd. (PTTRS)	Thailand	Human resource management	100.00	100.00
Thai Lube Blending Co., Ltd. (TLBC)* (The Group holds 100% shareholding)	Thailand	Blending and bottling of lube oil	100.00	51.05
PTT Philippines Trading Corporation (PTTTC)	Philippines	Oil marketing	100.00	100.00

* Since July 1, 2018, the Company has commenced the process of transferring various assets and liabilities, and shares of related companies which consist of BAFS, PTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT to PTTOR.

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of PTTOR Group: (Continued)</u>				
PTT Philippines Corporation (PTTPC)	Philippines	Oil marketing	100.00	100.00
PTT (Cambodia) Limited (PTTCL)*	Cambodia	Oil marketing	100.00	-
PTT Oil Myanmar Co., Ltd. (PTTOM)*	Myanmar	Business services	100.00	-
PTT (Lao) Co., Ltd. (PTT Lao)*	Lao	Oil marketing	100.00	-
PTTOR China (Shanghai) Co., Ltd. (PTTOR China)	China	Lube products	100.00	-
PTTOR Singapore Pte. Ltd. (PTTORSG)	Singapore	Retail business	100.00	-
<u>Subsidiary of PTTT Group:</u>				
PTT International Trading DMCC (PTTT DMCC)	United Arab Emirates	International oil trading	100.00	100.00
<u>Subsidiaries of PTTGC Group:</u>				
PTT Phenol Co., Ltd. (PPCL)	Thailand	Manufacturing and distributing petrochemical products	100.00	100.00
GC Maintenance and Engineering Co., Ltd. (GCME) (Former : PTT Maintenance and Engineering Co., Ltd. (PTTME))	Thailand	Factory maintenance and engineering services	100.00	100.00
Thai Tank Terminal Limited (TTT)	Thailand	Service for the storage and handling of liquid chemicals, oil and gas	51.00	51.00
NPC Safety and Environmental Service Co., Ltd. (NPCSE)	Thailand	Safety and environmental services	100.00	100.00
GC Styrenics Co., Ltd. (GCS) (Former : Thai Styrenics Co., Ltd. (TSCL))	Thailand	Manufacturing and distributing petrochemical products	100.00	100.00
PTTGC International (Netherlands) B.V. (GCINTERNL)	Netherlands	Holding and operating international business	100.00	100.00
GC Glycol Co., Ltd. (Glycol) (Former : TOC Glycol Co., Ltd. (TOCGC))	Thailand	Manufacturing and distributing petrochemical products	100.00	100.00
Global Green Chemicals Plc. (GGC)	Thailand	Manufacturing and distributing biochemical products	72.29	72.29
Solution Creation Co., Ltd. (SOLUTIONCRE)	Thailand	Manufacturing and distributing petrochemical products and health and nutrition products	100.00	100.00
Bio Spectrum Co., Ltd. (BIOSPEC)**	Thailand	Manufacturing and distributing biochemical products	100.00	100.00
Auria BioChemicals Co., Ltd. (AURIA)**	Thailand	Research and development of bio-based chemicals	100.00	100.00

* Since July 1, 2018, the Company has commenced the process of transferring various assets and liabilities, and shares of related companies which consist of BAFS, PTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT to PTTOR.

** Under liquidation process

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of PTTGC Group: (Continued)</u>				
PTTGC International Private Limited (GC Inter) (Former : PTT Chemical International Pte. Ltd. (CHINTER))	Singapore	Holding and operating international business	100.00	100.00
GC Oxirane Co., Ltd. (GCO)	Thailand	Manufacturing and distributing petrochemicals products	100.00	100.00
GC Polyols Co., Ltd. (GCP)	Thailand	Manufacturing and distributing petrochemicals products	82.10	82.10
GC Treasury Co., Ltd. (GCTC)	Thailand	Treasury center for the Group's business	100.00	100.00
GC Logistics Solutions Co., Ltd. (GCL) (Former : PTT Polymer Logistics Co., Ltd. (PTTPL))	Thailand	Transportation, warehouse and bagging packing management of polyethylene	100.00	100.00
GC Marketing Solutions Co., Ltd. (GCM) (Former : PTT Polymer Marketing Co., Ltd. (PTTPM))	Thailand	Development, marketing and distributing polymers products, byproducts and other polymers-related products	100.00	100.00
PTTGC International (USA) Inc. (GCINTERUSA)	United States of America	Holding and operating international business	100.00	100.00
Thai Fatty Alcohols Co., Ltd. (TFA)	Thailand	Manufacturing and distributing biochemical products	72.29	72.29
PTTGC Innovation America Corporation (GCIA) (Former : Myriant Corporation (MYRIANT))	United States of America	Research and development of bio-based chemicals	100.00	100.00
PTTGC America Corporation (AMERICACORP)	United States of America	Holding and operating international business	100.00	100.00
PTTGC America LLC (AMERICALLC)	United States of America	Operating in petrochemical business	100.00	100.00
NPC S&E Security Guard Co., Ltd. (NPCSG)	Thailand	Safety services	100.00	100.00
Vencorex (Thailand) Co., Ltd. (VENCOREXTH)	Thailand	Manufacturing and distributing chemical specialties	100.00	100.00
Vencorex France S.A.S. (VCF)	France	Manufacturing and distributing chemical specialties	100.00	100.00
Vencorex Holding (VCR)	France	Manufacturing and distributing chemical specialties	90.82	90.82
PL Global Transport Co., Ltd. (PLGT)	Thailand	Transportation of polyethylene	100.00	100.00
Polymer Marketing DMCC Company Limited (PM DMCC)	United Arab Emirates	Distributing polymer products and other polymers-related products	100.00	100.00
Polymer Marketing Vietnam Company Ltd. (PM Vietnam)	Vietnam	Distributing polymer products and other polymers-related products	100.00	100.00

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of PTTGC Group: (Continued)</u>				
GC Estate Co., Ltd. (GCEC)	Thailand	Real estate development for rent and to invest in petrochemical and related industries	100.00	-
GC Ventures Co., Ltd. (GCV)	Thailand	Invest in form of Corporate Venture Capital (CVC)	100.00	-
GC Ventures America Corporation (GCVA)	United States of America	Invest in form of Corporate Venture Capital (CVC) outside Thailand	100.00	-
Polymer Marketing Myanmar Company Ltd. (PM Myanmar)	Myanmar	Distributing polymer products and other polymers-related products	100.00	-
Siam Mitsui PTA Co., Ltd. (SMPC)	Thailand	Manufacturing and distributing petrochemical products	74.00	-
Thai PET Resin Co., Ltd. (TPRC)	Thailand	Manufacturing and distributing petrochemical products	74.00	-
GGC Biochemicals Co., Ltd. (GGC Biochemicals)	Thailand	Holding and operating in Thailand	100.00	-
<u>Subsidiaries of TOP Group:</u>				
Thaioil Power Co., Ltd. (TP) (The Group holds 100% shareholding)	Thailand	Power and steam generation and distribution	73.99	73.99
Thai Paraxylene Co., Ltd. (TPX)	Thailand	Paraxylene manufacturing and distribution	99.99	99.99
Thai Lube Base Public Company Limited (TLB)	Thailand	Lube base oil refining and distribution	99.99	99.99
Thaioil Marine Co., Ltd. (TM)	Thailand	Providing marine transportation services for petroleum and liquid chemical products	99.99	99.99
Thaioil Ethanol Co., Ltd. (TET)	Thailand	Investment in ethanol business and alternative energy products	99.99	99.99
Thaioil Energy Services Co., Ltd. (TES)	Thailand	Providing human resource management	99.99	99.99
Thaioil Solvent Co., Ltd. (TOS)	Thailand	Investment in solvent and chemical businesses	99.99	99.99
TOP SPP Co., Ltd. (TOPSPP)	Thailand	Power and steam generation and distribution	99.99	99.99
Thaioil Treasury Center Co., Ltd. (TTC)	Thailand	Treasury center for the Group's business	99.99	99.99

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of TOP Group: (Continued)</u>				
Sapthip Co., Ltd. (SAPTHIP)	Thailand	Ethanol products manufacturing and distribution	50.00	50.00
TOP Solvent Co., Ltd. (TS)	Thailand	Distribution of solvent and chemical products	99.99	99.99
Sak Chaisidhi Co., Ltd. (SAKC)	Thailand	Solvent and chemical products manufacturing and distribution	80.52	80.52
TOP Solvent (Vietnam) LLC. (TSV)	Vietnam	Distribution of solvent and chemical products	100.00	100.00
Thaioil Marine International Pte. Ltd. (TOMI)	Singapore	Investment in marine transportation for crude oil and petroleum product business	100.00	100.00
TOP Maritime Service Co., Ltd. (TMS)	Thailand	Providing marine transportation services for crew and utilities in Gulf of Thailand	99.99	55.00
LABIX Co., Ltd. (LABIX)	Thailand	Linear Alkyl Benzene manufacturing and distribution	75.00	75.00
Sapthip Green Energy Co., Ltd. (SGE)	Thailand	Biogas power generation and distribution	50.00	-
<u>Subsidiaries of IRPC Group:</u>				
Thai ABS Co., Ltd. (TABS)*	Thailand	Manufacturing and sales of plastic resin	99.99	99.99
IRPC A&L Company Limited (IRPCAL)	Thailand	Distributing petrochemical products	59.98	59.98
IRPC Oil Company Limited (OIRPC)	Thailand	Sales of oil products and gas	99.99	99.99
Rak Phasak Company Limited (RAKPHASAK)	Thailand	Oil vessel renting	99.99	99.99
IRPC Polyol Company Limited (IRPCP)**	Thailand	Manufacturing and sales of chemical products for polyurethanes	-	74.99
IRPC Technology Company Limited (TECHIRPC)	Thailand	Vocational school	99.99	99.99
R. Solution Co., Ltd. (IRPCS)***	Thailand	Service for security	99.50	99.50
TPI Internet Portal Co., Ltd. (TPIINTERNETPORTAL)****	Thailand	Sales of oil products	-	99.99
I-polymer Company Limited (IPOL)	Thailand	Distributing plastic resin and chemical products via E-Commerce system	99.99	-

* On August 1, 2016, TABS transferred its entire business to IRPC and TABS also registered its dissolution with Ministry of Commerce on the same day.

** The status of IRPCP changed from a subsidiary of IRPC Group to a joint venture.

*** Under bankruptcy process

**** Under liquidation process

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of PTTGM Group:</u>				
PTT Mining Limited (PTTML)	Hong Kong	Investing in other companies	100.00	100.00
Straits (Brunei) Pte. Ltd. (Straits (Brunei))	Singapore	Investing in other companies	100.00	100.00
Sakari Resources Ltd. (SAR)	Singapore	Investing in coal mine business	95.82	95.49
Yoxford Holdings (YOXFORD)	Mauritius	Investing in other companies	100.00	100.00
Madagascar Consolidated Mining SA (MCM)	Madagascar	Coal mines	80.00	80.00
Tiger Energy Trading Pte. Ltd. (TET)	Singapore	Coal mine marketing	100.00	100.00
Sakari Energy Pte. Ltd. (SAEnergy)	Singapore	Investing in other companies	100.00	100.00
Reyka Wahana Digidjaya Pte. Ltd. (RWD)	Singapore	Investing in other companies	100.00	100.00
Sakari Energy Trading Pte. Ltd. (SET)	Singapore	Investing in other companies	100.00	100.00
Sakari Marine & Infrastructure Pte. Ltd. (SMI)	Singapore	Marine engineering	100.00	100.00
PT Straits Consultancy Services (SCS)	Indonesia	Management services	100.00	100.00
PT Bahari Perdana Persada (BPPD)	Indonesia	Investing in other companies	100.00	100.00
PT Bahari Putra Perdana (BPPN)	Indonesia	Investing in other companies	100.00	100.00
PT Reyka Wahana Digidjaya (RWD)	Indonesia	Investing in other companies	100.00	100.00
PT Bahari Cakrawala Sebuku (BCS)	Indonesia	Coal mines	100.00	100.00
PT Bumi Borneo Metalindo (BBM)	Indonesia	Investing in other companies	100.00	100.00
PT Citra Pertiwi Nusantara (CPN)	Indonesia	Coal transport equipment and delivery service	100.00	100.00
PT Bumiborneo Pertiwi Nusantara (BPN)	Indonesia	Investing in other companies	100.00	100.00
PT Karbon Mahakam (KM)	Indonesia	Coal mines	100.00	100.00
PT Metalindo Bumi Raya (MBR)	Indonesia	Coal mines	100.00	100.00
PT Borneo Citrapertiwi Nusantara (BCN)	Indonesia	Investing in other companies	100.00	100.00
PT Separi Energy (SE)	Indonesia	Investing in other companies	100.00	100.00
PT Jembayan Muarabara (JMB)	Indonesia	Coal mines	100.00	100.00
PT Kemilau Rindang Abadi (KRA)	Indonesia	Coal mines	100.00	100.00
PT Arzara Baraindo Energitama (ABE)	Indonesia	Coal mines	100.00	100.00
PT Cakrawala Abadi Jaya (CAJ)	Indonesia	Investing in other companies	100.00	100.00
PT Sakti Utama Luas (SUL)	Indonesia	Investing in other companies	100.00	100.00
Tri Tunggal Lestari Bersama (TTLB)	Indonesia	Infrastructure business	100.00	100.00

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Subsidiaries of PTTGM Group: (Continued)</u>				
PT Makassar Prima Coal (MPC)	Indonesia	Coal mines	70.00	70.00
PTT International Holding Limited (PTTIH)	Hong Kong	Investing in other companies	100.00	100.00
PTT International Investment Limited (PTTII)	Hong Kong	Investing in other companies	100.00	100.00
PTT International (Singapore) Company Pte. Limited (PTT Inter (Sing))	Singapore	Investing in other companies	100.00	100.00
Sakari Royal Limited (SRL)*	Cambodia	Coal mines	70.00	70.00
<u>Subsidiaries of PTTGE Group:</u>				
Sabran Brothers Pte. Ltd. (Sabran)	Singapore	Investing in other companies	100.00	100.00
Kalimantan Thailand Palm Pte. Ltd. (KTP)**	Singapore	Investing in other companies	-	100.00
PTT Green Energy (Hong Kong) Limited (PTTGE HK)***	Hong Kong	Financing	-	100.00
PTT Green Energy (Thailand) Co., Ltd. (PTTGE TH)	Thailand	Management services for PTTGE Group	100.00	100.00
<u>Subsidiaries of BSA Group:</u>				
Sport Services Alliance Co., Ltd. (SSA)	Thailand	Football club management	100.00	100.00
Business Professional Solutions Co., Ltd. (BPS)	Thailand	Business management	100.00	100.00
<u>Joint operations of PTTEP Group:</u>				
Carigali - PTTEPI Operating Company Sdn. Bhd. (CPOC)	Malaysia	Petroleum	50.00	50.00
Moattama Gas Transportation Company (MGTC)	Bermuda	Gas pipeline transportation	25.50	25.50
Taninthayi Pipeline Company LLC (TPC)	Cayman Islands	Gas pipeline transportation	19.32	19.32
Orange Energy Limited (Orange)	Thailand	Petroleum	53.95	53.95
B8/32 Partners Limited (B8/32 Partners)	Thailand	Petroleum	25.00	25.00
Andaman Transportation Limited (ATL)	Cayman Islands	Gas pipeline transportation	80.00	80.00
Leismer Aerodrome Limited (LAL)****	Canada	Air transportation	-	32.00
Groupement Bir Seba (GBRS)	Algeria	Petroleum	35.00	35.00
Natuna 2 B.V. (Natuna 2)	Netherlands	Petroleum	50.00	50.00
Mozambique LNG1 Company Pte. Ltd. (MZ LNG1)*****	Singapore	Petroleum	-	8.50
Hoang-Long Joint Operating Company (HL JOC)	Vietnam	Petroleum	28.50	28.50
Hoan-Vu Joint Operating Company (HV JOC)	Vietnam	Petroleum	25.00	25.00

* Under liquidation process

** Completely registered its dissolution on July 3, 2018.

*** Completely registered its dissolution on April 6, 2018.

**** During 2018, PTTEP Group revisited the classification of the investment according to current situations. As a result, the investment is classified as investment in associate, accounted for using the equity method.

***** During 2018, PTTEP Group revisited the classification of the investment according to current situations. As a result, the investment is classified as other long-term investment, accounted for using the cost method.

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.3 Details of joint ventures and associates of subsidiaries

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Joint Ventures</u>				
<i>PTTEP Group</i>				
Erawan 2 FSO Bahamas Limited (Erawan 2)	Bahamas	FSO rental services	13.11	13.11
<i>GPSC Group</i>				
Thai Solar Renewable Co., Ltd. (TSR)	Thailand	Holding company	40.00	40.00
Nam Lik 1 Power Co., Ltd. (NL1PC)	Laos	Production and distribution of electricity	40.00	40.00
Nava Nakorn Electricity Generating Co., Ltd. (NNEG)	Thailand	Production and distribution of electricity	30.00	30.00
<i>PTTGC Group</i>				
Thai Ethoxylate Co., Ltd. (TEX)	Thailand	Manufacturing and distributing of petrochemical products	50.00	50.00
Emery Oleochemicals (M) Sdn. Bhd. (EOM)	Malaysia	Manufacturing and distributing of biochemical products	50.00	50.00
Emery Specialty Chemicals Sdn. Bhd. (ESC)	Malaysia	Manufacturing and distributing of chemical specialties	50.00	50.00
NatureWorks LLC (NTR)	United States of America	Manufacturing and distributing of bioplastic products	50.00	50.00
PTT MCC Biochem Co., Ltd. (PTTMCC)	Thailand	Petrochemicals	50.00	50.00
PTT Asahi Chemicals Co., Ltd. (PTTAC)	Thailand	Petrochemicals	50.00	50.00
HMC Polymers Co., Ltd. (HMC)	Thailand	Petrochemicals	41.44	41.44
<i>TOP Group</i>				
TOP-NTL Pte. Ltd. (TOP-NTL)	Singapore	Fund management services	50.00	50.00
TOP-NTL Shipping Trust (TOP-NTL(BT))	Singapore	Investing in other companies	50.00	50.00
TOP-NYK MarineOne Pte. Ltd. (TOP-NYK)	Singapore	Marine transportation services	50.00	50.00
TOP Nautical Star Co., Ltd. (TOP-NS)	Thailand	Storage and marine transportation services	35.00	35.00
<i>IRPC Group</i>				
IRPC Polyol Co., Ltd. (IRPCP)*	Thailand	Manufacturing and sales of chemical products for polyurethanes	50.00	-
IRPC PCC Co., Ltd. (IRPC-PCC)**	Thailand	Sales of petrochemical	-	49.99

* The status of IRPCP changed from a subsidiary of IRPC Group to a joint venture.

** Previously, IRPC-PCC was a joint venture under IRPCP. When the status of IRPCP changed from a subsidiary of IRPC Group to a joint venture, causing IRPC-PCC ceased to be a joint venture of the Group.

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.3 Details of joint ventures and associates of subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Joint Ventures</u> (Continued)				
<i>IRPC Group</i> (Continued)				
WHA Industrial Estate Rayong Co., Ltd. (WHA IER)	Thailand	Industrial estate development	40.00	-
<i>PTTGM Group</i>				
OGP Energy Solutions Company Limited (OGPS)	Thailand	Energy management and energy-related services	40.00	40.00
FEE (Bru) Pte. Ltd. (FEEBRU)	Singapore	Coal mines	35.00	35.00
<i>PTTGE Group</i>				
Chancellor Oil Pte. Ltd. (Chancellor)	Singapore	Investing in other companies	77.56	77.56
<u>Associates</u>				
<i>PTTEP Group</i>				
PTTEP AP Group's associates*	Australia	Airbase services	50.00	50.00
Leismer Aerodrome Limited (LAL)**	Canada	Air transportation	32.00	-
<i>GPSC Group</i>				
Bangpa-in Cogeneration Co., Ltd. (BIC)	Thailand	Generation and supply of electricity and steam	25.00	25.00
Xayaburi Power Co., Ltd. (XPCL)	Laos	Hydroelectric power plant	25.00	25.00
<i>PTTOR Group</i>				
FST Aviation Services Limited (FST)	Hong Kong	Aircraft refuelling services	25.00	25.00
Thai Petroleum Pipeline Co., Ltd. (THAPPLINE)*** (The Group holds 49.21% shareholding)	Thailand	Oil transmission pipelines	40.53	-
Petro Asia (Thailand) Co., Ltd. (PAT)***	Thailand	Oil marketing	35.00	-
<i>PTTGC Group</i>				
PT Indo Thai Trading (ITT)	Indonesia	Petrochemicals	49.00	49.00
Vinythai Plc. (VNT)	Thailand	Petrochemicals	24.98	24.98
Eastern Fluid Transport Co., Ltd. (EFT)	Thailand	Infrastructure	22.65	22.65
Thai Eastern Topseeds Oil Co., Ltd. (TETSO)	Thailand	Petrochemicals	30.00	30.00
S.P. Petpack Inter Group Co., Ltd. (SPPETPACK)	Thailand	Petrochemicals	25.00	25.00
Kuraray GC Advanced Materials Co., Ltd. (KGC)	Thailand	Manufacturing of chemical specialties	33.40	-

* Associates of PTTEP AP Group consist of Mungalalu Truscott Airbase Pty Ltd. and Troughton Island Pty Ltd.

** During 2018, PTTEP Group revisited the classification of the investment according to current situations. As a result, the investment is classified as investment in associate, accounted for using the equity method.

*** Since July 1, 2018, the Company has commenced the process of transferring various assets and liabilities, and shares of related companies which consist of BAFS, PTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT to PTTOR.

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.3 Details of joint ventures and associates of subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Associates (Continued)</u>				
<i>TOP Group</i>				
T.I.M Ship Management Co., Ltd. (TIM)	Thailand	Marine transportation services	33.33	33.33
Ubon Bio Ethanol Co., Ltd. (UBE)	Thailand	Manufacturing and distributing of ethanol	21.28	21.28
<i>IRPC Group</i>				
UBE Chemicals (Asia) Public Co., Ltd. (UCHA)	Thailand	Manufacturing and sales of petrochemical products	25.00	25.00
<i>PTTER Group</i>				
East Mediterranean Gas Company S.A.E. (EMG)	Egypt	Natural gas transmission pipelines	25.00	25.00

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.4 Investments in joint ventures in the consolidated financial statements as at December 31, 2018 and 2017

Unit: Million Baht

Company	Ownership interest (%)		2018		2017		Dividends income	
	2018	2017	Cost method	Equity method	Cost method	Equity method	2018	2017
1. TTM(T)	50.00	50.00	4,341.80	4,360.08	4,341.80	4,360.08	408.13	521.02
2. TTM(M)	50.00	50.00	1,001.31	1,287.38	1,001.31	1,299.72	182.33	76.58
3. DCAP	35.00	35.00	584.50	936.03	584.50	882.15	19.67	21.35
4. Erawan 2	13.11	13.11	506.26	565.02	544.13	611.83	95.26	121.38
5. TSR	40.00	40.00	1,697.00	1,638.80	1,697.00	1,711.83	382.43	301.00
6. NLIPC	40.00	40.00	427.63	463.49	344.77	324.03	-	-
7. NNEG	30.00	30.00	488.40	536.28	480.90	588.63	108.00	-
8. TEX	50.00	50.00	210.00	735.69	210.00	708.82	91.35	71.40
9. EOM	50.00	50.00	4,965.77	4,519.32	4,965.77	4,526.47	-	-
10. ESC	50.00	50.00	407.04	-	407.04	-	-	-
11. NTR	50.00	50.00	4,793.33	2,842.40	4,793.33	2,486.60	321.00	1,018.00
12. PTTMCC	50.00	50.00	930.12	214.68	930.12	459.98	-	-
13. PTTAC	50.00	50.00	6,909.41	9,569.39	6,909.41	6,555.07	-	-
14. HMC	41.44	41.44	9,117.12	12,885.23	9,117.12	12,849.21	1,242.21	2,194.99
15. TOP-NTL	50.00	50.00	0.25	15.80	0.25	11.32	-	-
16. TOP-NTL(BT)	50.00	50.00	24.05	67.29	24.05	43.00	-	-
17. TOP-NYK	50.00	50.00	273.88	432.28	273.88	420.36	34.00	34.00
18. TOP-NS	35.00	35.00	52.50	110.19	52.50	65.47	-	-
19. IRPCP	50.00	-	150.00	45.92	-	-	-	-
20. IRPC-PCC	-	49.99	-	-	5.00	5.68	-	5.50
21. WHA IER	40.00	-	65.00	64.50	-	-	-	-
22. OGPS	40.00	40.00	38.23	27.29	38.49	26.90	-	-
23. FEEBRU	35.00	35.00	213.32	134.23	214.84	135.18	-	-
24. Chancellor	77.56	77.56	2,949.98	1,288.56	2,971.00	1,297.74	-	-
Less Allowance for impairment			40,146.90	42,739.85	39,907.21	39,370.07		
			(3,163.31)	(1,422.79)	(3,185.83)	(1,432.92)		
Total			36,983.59	41,317.06	36,721.38	37,937.15	2,884.38	4,365.22

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.5 Investments in associates in the consolidated financial statements as at December 31, 2018 and 2017

Unit: Million Baht

Company	Ownership interest (%)		2018		2017		Dividends income	
	2018	2017	Cost method	Equity method	Cost method	Equity method	2018	2017
1. PTTEP AP Group's associates	50.00	50.00	48.59	231.54	48.94	229.97	-	-
2. LAL	32.00	-	131.78	125.65	-	-	-	-
3. BIC	25.00	25.00	923.75	879.02	923.75	812.20	81.15	20.29
4. XPCL	25.00	25.00	6,672.53	6,168.79	5,794.47	5,249.30	-	-
5. FST	25.00	25.00	0.72	1.30	0.76	1.39	-	-
6. THAPLINE	49.21	49.21	3,952.72	5,086.82	3,952.72	5,012.28	831.28	849.59
7. PAT	35.00	35.00	131.25	-	131.25	-	-	-
8. ITT	49.00	49.00	125.28	220.27	125.28	200.67	-	-
9. VNT	24.98	24.98	3,297.39	5,130.10	3,297.39	4,632.40	266.43	133.22
10. EFT	22.65	22.65	2.27	20.15	2.27	19.53	7.48	7.25
11. TETSO	30.00	30.00	66.60	57.06	46.69	45.45	-	-
12. SPETPACK	25.00	25.00	50.00	45.84	50.00	44.99	-	-
13. KGC	33.40	-	470.10	469.52	-	-	-	-
14. TIM	33.33	33.33	1.00	-	1.00	-	-	-
15. UBE	21.28	21.28	769.55	818.57	769.55	804.26	-	63.83
16. UCHA	25.00	25.00	5,299.82	5,113.63	5,299.82	4,927.18	34.91	-
17. EMG	25.00	25.00	15,864.11	12,767.76	15,977.09	12,858.69	-	-
			37,807.46	37,136.02	36,420.98	34,838.31		
Less Allowance for impairment			(15,995.36)	(12,767.76)	(16,108.34)	(12,858.69)		
Total			21,812.10	24,368.26	20,312.64	21,979.62	1,221.25	1,074.18

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.6 Investments in subsidiaries, joint ventures and associates in the separate financial statements as at December 31, 2018 and 2017

Unit: Million Baht

Company	Ownership interest (%)		Cost method		Dividends income	
	2018	2017	2018	2017	2018	2017
<u>Subsidiaries</u>						
1. PTTEP	65.29	65.29	71,390.42	71,390.42	11,663.37	10,367.45
2. PTTLNG	100.00	100.00	18,913.89	15,599.01	1,728.87	1,823.18
3. PTTNGD	58.00	58.00	418.14	418.14	1,160.00	870.00
4. PTTGL	50.00	50.00	5,210.72	5,210.72	-	-
5. EnCo	50.00	50.00	900.00	900.00	64.00	41.77
6. PTTES	40.00	40.00	62.50	62.50	-	-
7. GPSC	22.58	22.58	4,949.93	4,949.93	422.83	389.01
8. PTTCL	-	100.00	-	103.49	-	-
9. PTTOM	-	100.00	-	16.15	-	-
10. PTTOR	100.00	100.00	90,000.00	8,621.67	-	-
11. PTT TANK	100.00	100.00	2,500.37	2,500.37	121.00	133.00
12. TLBC	-	48.95	-	140.00	1.12	3.50
13. PTTT	100.00	100.00	2.50	2.50	38.21	41.90
14. PTTT LDN	100.00	100.00	347.75	347.75	-	-
15. PTTPM	-	-	-	-	-	125.00
16. PTTGC	48.18	48.89	47,426.03	48,121.52	9,301.33	7,825.33
17. TOP	48.03	49.10	11,132.20	11,380.83	5,225.83	4,507.41
18. IRPC	48.05	38.51	42,339.93	28,467.24	3,829.68	1,810.03
19. TP	26.00	26.00	2,304.76	2,304.76	182.65	270.32
20. PTTTER	100.00	100.00	33,702.67	33,702.67	-	-
21. PTTGM	100.00	100.00	54,404.22	33,007.14	-	-
22. PTTGE	100.00	100.00	12,403.10	11,750.64	-	-
23. PTTRTC	100.00	100.00	31.40	31.40	-	-
24. PTT TCC	100.00	-	20.00	-	-	-
25. BSA	100.00	100.00	0.50	0.50	55.00	40.00
26. PTT DIGITAL	20.00	20.00	30.00	30.00	16.40	15.60
Investments in subsidiaries			398,491.03	279,059.35		
Less Allowance for impairment			(82,836.89)	(60,130.02)		
Total			315,654.14	218,929.33	33,810.29	28,263.50

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.6 Investments in subsidiaries, joint ventures and associates in the separate financial statements as at December 31, 2018 and 2017 (Continued)

Unit: Million Baht

Company	Ownership interest (%)		Cost method		Dividends income	
	2018	2017	2018	2017	2018	2017
<u>Joint Ventures</u>						
27. TTM(T)	50.00	50.00	4,341.80	4,341.80	408.13	521.02
28. TTM(M)	50.00	50.00	1,001.31	1,001.31	182.33	76.58
29. DCAP	35.00	35.00	584.50	584.50	19.67	21.35
30. HMC	-	-	-	-	-	414.35
Total			5,927.61	5,927.61	610.13	1,033.30
<u>Associates</u>						
31. THAPPLINE	-	40.53	-	3,173.23	684.21	699.28
32. PAT	-	35.00	-	131.25	-	-
Investments in associates			-	3,304.48		
Less Allowance for impairment			-	(131.25)		
Total			-	3,173.23	684.21	699.28
Total			321,581.75	228,030.17	35,104.63	29,996.08

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.7 Movements in investments in the consolidated and the separate financial statements

14.7.1 Movements in investments in joint ventures under the equity method in the consolidated financial statements are as follows:

	Unit: Million Baht	
	2018	2017
As at January 1	37,937.15	36,843.81
- Share of profit from investments in joint ventures	6,461.65	5,461.84
- Dividend income	(2,884.38)	(4,365.22)
- Additional investments	155.36	26.12
- Reclassifications	104.79	-
- Disposal of investments	(5.68)	-
- Share capital reduction	(33.87)	(13.34)
- Share of other comprehensive income (loss) of joint ventures	(412.37)	115.23
- Currency translation differences	(5.59)	(131.29)
As at December 31	<u>41,317.06</u>	<u>37,937.15</u>

14.7.2 Movements in investments in associates under the equity method in the consolidated financial statements are as follows:

	Unit: Million Baht	
	2018	2017
As at January 1	21,979.62	19,429.58
- Share of profit from investments in associates	2,053.37	1,848.57
- Dividend income	(1,221.25)	(1,074.18)
- Additional investments	1,368.07	1,720.40
- Reclassifications	131.15	-
- Disposal of investments	-	(12.00)
- Share of other comprehensive income of associates	58.36	89.47
- Currency translation differences	(1.06)	(22.22)
As at December 31	<u>24,368.26</u>	<u>21,979.62</u>

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.7 Movements in investments in the consolidated and the separate financial statements (Continued)

14.7.3 Movements in investments in subsidiaries, joint ventures and associates under the cost method in the separate financial statements are as follows:

	Unit: Million Baht	
	2018	2017
As at January 1	228,030.17	236,418.00
- Additional investments	120,635.44	42,970.88
- Disposal of investments	(4,508.24)	(17,643.06)
- Loss on impairment	(22,706.87)	(33,715.65)
- Reversal of loss on impairment	131.25	-
As at December 31	<u>321,581.75</u>	<u>228,030.17</u>

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.8 Summary financial information of the material joint ventures of the Group are as follows:

Statements of financial position as at December 31, 2018 and 2017

	2018						2017						Unit: Million Baht		
	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	TTM(T)	TTM(M)		DCAP	PTTAC
Current assets	5,101.82	2,322.60	1,045.57	6,063.62	9,017.95	5,278.15	2,526.93	1,284.51	5,482.23	7,740.55					
Non-current assets	13,367.07	4,599.63	2,419.54	21,710.38	26,441.47	15,091.41	5,335.01	2,309.95	22,602.45	28,480.74					
Current liabilities	(1,583.90)	(856.05)	(716.28)	(1,415.41)	(4,826.40)	(2,250.66)	(1,189.42)	(626.44)	(1,469.28)	(4,322.01)					
Non-current liabilities	(8,164.82)	(3,491.44)	(74.45)	(7,219.80)	(6,876.61)	(9,398.74)	(4,073.09)	(447.58)	(13,505.26)	(8,254.63)					
Net assets (100%)	8,720.17	2,574.74	2,674.38	19,138.79	23,756.41	8,720.16	2,599.43	2,520.44	13,110.14	23,644.65					
Group's share of net assets	4,360.08	1,287.38	936.03	9,569.39	9,844.66	4,360.08	1,299.72	882.15	6,555.07	9,798.34					
Adjustment	-	-	-	-	3,040.57	-	-	-	-	3,050.87					
Carrying amount of interest in joint ventures	4,360.08	1,287.38	936.03	9,569.39	12,885.23	4,360.08	1,299.72	882.15	6,555.07	12,849.21					

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.8 Summary financial information of the material joint ventures of the Group are as follows: (Continued)

Statements of income for the years ended December 31, 2018 and 2017

	2018						2017				Unit: Million Baht
	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	
Revenue*	3,038.23	740.81	2,686.63	18,753.80	32,416.09	3,200.76	163.94	2,584.42	17,021.92	32,456.21	
Expenses	(2,022.33)	(351.00)	(2,423.65)	(12,726.66)	(27,855.97)	(2,029.16)	(157.86)	(2,241.95)	(12,534.27)	(26,600.00)	
Profit before taxes	1,015.90	389.81	262.98	6,027.14	4,560.12	1,171.60	6.08	342.47	4,487.65	5,856.21	
Income taxes	(143.23)	(143.78)	(52.83)	1.33	(557.89)	26.94	(11.87)	(61.83)	1.25	(767.15)	
Net profit (loss)	872.67	246.03	210.15	6,028.47	4,002.23	1,198.54	(5.79)	280.64	4,488.90	5,089.06	

* Including gain (loss) on foreign exchange rate

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.9 Summary financial information of the material associates of the Group are as follows:

Statements of financial position as at December 31, 2018 and 2017

	2018				2017				Unit: Million Baht
	THAPLINE	XPCL	UCHA	THAPLINE	XPCL	UCHA			
Current assets	4,547.65	841.16	6,917.07	4,980.30	948.25	5,238.10			
Non-current assets	6,861.20	124,116.66	8,393.98	6,248.42	106,802.92	9,310.40			
Current liabilities	(603.69)	(1,946.53)	(1,264.01)	(579.07)	(1,098.38)	(1,366.34)			
Non-current liabilities	(117.48)	(98,414.20)	(85.63)	(113.41)	(85,468.93)	(124.96)			
Net assets (100%)	10,687.68	24,597.09	13,961.41	10,536.24	21,183.86	13,057.20			
Group's share of net assets	5,259.90	6,149.27	3,490.35	5,185.36	5,295.97	3,264.30			
Adjustment	(173.08)	19.52	1,623.28	(173.08)	(46.67)	1,662.88			
Carrying amount of interest in associates	5,086.82	6,168.79	5,113.63	5,012.28	5,249.30	4,927.18			

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.9 Summary financial information of the material associates of the Group are as follows: (Continued)

Statements of income for the years ended December 31, 2018 and 2017

	2018				2017				Unit: Million Baht
	THAPPLINE	XPCL	UCHA	THAPPLINE	XPCL	UCHA			
Revenue*	3,584.99	-	16,074.77	3,504.35	-	12,679.36			
Expenses	(1,279.49)	(100.14)	(14,850.97)	(1,269.93)	(86.43)	(11,491.38)			
Profit (loss) before taxes	2,305.50	(100.14)	1,223.80	2,234.42	(86.43)	1,187.98			
Income taxes	(461.26)	-	(179.99)	(452.52)	-	(128.77)			
Net profit (loss)	1,844.24	(100.14)	1,043.81	1,781.90	(86.43)	1,059.21			

* Including gain (loss) on foreign exchange rate

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.10 Significant events during the year ended December 31, 2018

PTTGM

On January 23, 2018, at the Extraordinary General Meeting of the shareholders of PTT Global Management Co., Ltd. (PTTGM) No. 1/2018, the shareholders passed an extraordinary resolution to increase 213.97 million authorized share capital at Baht 100.00 per share amounting to Baht 21,397.08 million, in order to increase the share capital of company under the Group for loan repayment of the former shareholder, in accordance with the resolution of the shareholding and finance restructuring on December 16, 2016. The Company made the additional payment on February 1, 2018.

PTTOR

On February 7, 2018, at the Board of Directors Meeting of PTT Oil and Retail Business Co., Ltd. (PTTOR) No. 2/2018, the Board passed a resolution to approve the call up of additional share capital of Baht 158.33 million, consisting of share capital Baht 3.287 per share in respect of 36 million ordinary shares, amounting to Baht 118.33 million, and Baht 50.00 per share in respect of 800,000 ordinary shares, amounting to Baht 40.00 million. The Company made the payment on February 23, 2018.

On March 9, 2018, PTTOR registered to change status from PTT Oil and Retail Business Co., Ltd. to PTT Oil and Retail Business Public Co., Ltd, under the Public Limited Companies Act.

On June 5, 2018, at the Extraordinary General Meeting of the shareholders of PTTOR No. 1/2018, the shareholders passed a resolution to increase 8,122 million authorized share capital of PTTOR at Baht 10.00 per share amounting to Baht 81,220.00 million. The Company made the additional payment on June 28, 2018.

IRPC

On February 20, 2018, at the Board of Directors Meeting of the Company No. 2/2018, the Board passed a resolution to approve the acquisition of ordinary shares in IRPC Public Co., Ltd. (IRPC) in the number of 1,950 million shares, which is equal to approximately 9.54%, amounting to Baht 13,845.00 million, causing its equity interest in IRPC increase to 48.05%. The Company made the payment on February 26, 2018 and the Group recognized deficit from the change in the ownership interests in subsidiary amounting to Baht 5,454.63 million under shareholders' equity in the consolidated financial statements.

PTTGC

On January 19, 2018, at the Board of Directors Meeting of the Company No. 1/2018, the Board passed a resolution to approve the revision of the policy regarding shareholding in the Group's affiliates. The Company sold 31.86 million ordinary shares in PTT Global Chemical Public Co., Ltd. (PTTGC) in the year, amounting to Baht 2,784.55 million, causing its equity interest in PTTGC decrease to 48.18%. The Group recognized surplus from the change in the ownership interests in subsidiary amounting to Baht 750.92 million under shareholders' equity in the consolidated financial statements and the Company recognized gain on disposal of investments amounting to Baht 2,089.08 million in the separate financial statements.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.10 Significant events during the year ended December 31, 2018 (Continued)

TOP

On January 19, 2018, at the Board of Directors Meeting of the Company No. 1/2018, the Board passed a resolution to approve the revision of the policy regarding shareholding in the Group's affiliates. The Company sold 21.88 million ordinary shares in Thai Oil Public Co., Ltd. (TOP) in the year, amounting to Baht 1,834.04 million, causing its equity interest in TOP decrease to 48.03%. The Group recognized surplus from the change in the ownership interests in subsidiary amounting to Baht 482.04 million under shareholders' equity in the consolidated financial statements and the Company recognized gain on disposal of investments amounting to Baht 1,585.41 million in the separate financial statements.

PTTLNG

On March 26, 2018, at the Board of Directors Meeting of PTT LNG Co., Ltd. (PTTLNG) No. 3/2018, the Board passed a resolution to approve the call up of additional share capital of Baht 487.92 million and Baht 1,016.07 million. The Company made the additional payments on April 27, 2018 and June 14, 2018, respectively.

On April 24, 2018, at the 2018 Annual General Meeting of PTTLNG, the shareholders passed an extraordinary resolution to increase 534.50 million authorized share capital at Baht 10.00 per share amounting to Baht 5,345.00 million. The Company made the additional payment amounting to Baht 1,336.25 million on June 15, 2018.

On November 29, 2018, at the Board of Directors Meeting of PTTLNG No. 10/2018, the Board passed a resolution to approve the call up of additional share capital of Baht 474.64 million. The Company made the additional payment on December 21, 2018.

PTTGE

On October 20, 2017, at the Board of Directors Meeting of the Company No. 10/2017, the Board passed a resolution to approve the increase of the share capital of PTT Green Energy Pte. Ltd. (PTTGE) to support the dissolution of companies under the Sabran Brothers Group. On March 15, 2018, PTTGE called up payment of 1 million additional shares at USD 1.00 per share amounting to USD 1.00 million or equivalent to Baht 31.12 million. The Company made the additional payment on April 10, 2018.

On July 20, 2018, at the Board of Directors Meeting of the Company No. 7/2018, the Board passed a resolution to approve the increase of the share capital of PTTGE to support loan repayment and operating expenses of the Group. On August 20, 2018 and August 29, 2018, PTTGE called up payment of 18.83 million additional shares at USD 1.00 per share amounting to USD 18.83 million or equivalent to Baht 621.34 million. The Company made the additional payment on September 6, 2018.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.10 Significant events during the year ended December 31, 2018 (Continued)

PTT TCC

On February 20, 2018, at the Board of Directors Meeting of the Company No. 2/2018, the Board passed a resolution to approve the establishment of PTT Treasury Center Co., Ltd. (PTT TCC), to conduct the business in the area of international headquarters and treasury center for the purpose of financial and treasury management of PTT Group. The Company holds a 100% shareholding of PTT TCC.

PTT TCC has an initial registered share capital of Baht 20.00 million comprising 200,000 shares with a par value of Baht 100.00 each. The Company made the payment amounting to Baht 5.00 million on May 8, 2018.

On November 12, 2018, at the Board of Directors Meeting of the PTT TCC No. 5/2018, the Board passed a resolution to approve the called up payment of Baht 15.00 million additional shares. The Company made the additional payment on December 4, 2018.

14.11 Impairment of investments

The Company performs an impairment test on investments whenever events or circumstances suggest that the carrying amount of the investments may exceed its recoverable amount. A loss on impairment is recognized when the recoverable amount of an investment is lower than its carrying amount. The recoverable amount is the higher of the investment's fair value less cost to sell or its value in use.

The Company estimated the recoverable amount of the investments in subsidiaries as at December 31, 2018, using the discounted future cash flow method. The significant assumptions used to determine the recoverable amount included operating revenue and expenses, foreign exchange rates, and discount rates referred to weighted average cost of capital (WACC). The details are as follows:

PTTGM used the proceeds from the share capital increase to repay its loan to the former shareholder. Subsequently, the former shareholder, a subsidiary of the Company, used the loan repayment received to repay a loan to the Company. The Company reversed the allowance for doubtful accounts amounting to Baht 22,120.52 million mentioned in Note 9.3. According to the evaluation of the recoverable amount of the investment in PTTGM, the Company recorded allowance for impairment of the investment amounting to Baht 21,624.66 million in the separate financial statements.

PTTGE used the proceeds from the share capital increase to repay its loan to the Company. The Company reversed the allowance for doubtful account amounting to Baht 428.84 million mentioned in Note 9.2. According to the evaluation of the recoverable amount of the investment in PTTGE, the Company recorded allowance for impairment of the investment amounting to Baht 749.74 million in the separate financial statements.

In addition, the Company recorded allowance for impairment of the investment in PTTER amounting to Baht 332.47 million in the separate financial statements.

14.12 Additional information in respect of associates

The Group has not recognized its share of profit from an associate for the year ended December 31, 2018 amounting to Baht 11.90 million (2017: Baht 11.60 million) because, as at December 31, 2018, the Group had an unrealized allowance for its share of loss from these associates amounting to Baht 4.47 million (December 31, 2017: Baht 16.37 million).

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.13 Investments in subsidiaries, joint ventures and associates where voting rights and ownership interests differ are as follows:

<u>Company</u>	<u>Voting rights</u>	<u>Unit: Percentage</u>	
		<u>Ownership</u>	
Associate			
THAPPLINE	49.22		49.21

14.14 Material non-controlling interests

Financial information of subsidiaries that have material non-controlling interests are as follow:

<u>Company</u>	<u>Country of Incorporation</u>	<u>Non-controlling interests Shareholding (%)</u>	
		<u>2018</u>	<u>2017</u>
PTT Exploration and Production Public Co., Ltd. (PTTEP)	Thailand	34.71	34.71
Thai Oil Public Co., Ltd. (TOP)	Thailand	51.97	50.90
IRPC Public Co., Ltd. (IRPC)	Thailand	51.95	61.49
PTT Global Chemical Public Co., Ltd. (PTTGC)	Thailand	51.82	51.11
Global Power Synergy Public Co., Ltd. (GPSC)	Thailand	25.00	25.00

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.14 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations:

Summary of financial position as at December 31, 2018 and 2017

	2018						2017						Unit: Million Baht
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTGC	GPSC	
Current assets	186,783.42	164,743.46	46,917.65	144,310.01	12,163.88	188,400.09	126,211.39	47,904.09	140,737.59	9,917.98			
Non-current assets	448,303.91	103,870.15	136,348.55	324,945.33	52,196.15	439,721.21	102,095.86	139,100.85	294,226.34	49,964.37			
Current liabilities	(80,663.14)	(38,020.05)	(48,895.93)	(73,858.25)	(4,727.37)	(52,330.50)	(33,379.41)	(49,747.69)	(60,312.88)	(4,087.58)			
Non-current liabilities	(164,360.80)	(104,232.20)	(46,398.81)	(91,914.88)	(17,383.76)	(199,416.07)	(67,766.12)	(49,344.61)	(94,386.95)	(15,506.92)			
Net assets	390,063.39	126,361.36	87,971.46	303,482.21	42,248.90	376,374.73	127,161.72	87,912.64	280,264.10	40,287.85			
Owners of the parent	229,698.21	58,397.70	42,229.46	142,641.24	29,919.00	220,759.68	60,016.47	33,804.00	134,383.81	28,845.59			
Non-controlling interests	160,365.18	67,963.66	45,742.00	160,840.97	12,329.90	155,615.05	67,145.25	54,108.64	145,880.29	11,442.26			

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.14 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations: (Continued)

Summary of comprehensive income or loss for the years ended December 31, 2018 and 2017

	2018										2017									
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC					
Revenue*	174,432.71	392,200.76	282,815.92	529,734.02	25,880.89	152,581.15	342,932.86	215,899.17	448,789.57	21,286.62										
Expenses	(114,462.13)	(379,848.83)	(273,572.84)	(486,477.09)	(21,748.89)	(126,014.73)	(312,078.03)	(201,085.09)	(402,699.27)	(17,689.69)										
Profit before taxes	59,970.58	12,351.93	9,243.08	43,256.93	4,132.00	26,566.42	30,854.83	14,814.08	46,090.30	3,596.93										
Income taxes	(23,764.29)	(1,982.79)	(1,146.59)	(2,985.96)	(242.79)	(5,986.95)	(5,529.49)	(2,181.34)	(3,863.24)	(256.76)										
Net profit	36,206.29	10,369.14	8,096.49	40,270.97	3,889.21	20,579.47	25,325.34	12,632.74	42,227.06	3,340.17										
Other comprehensive income (loss)	(2,929.13)	(161.55)	(1.30)	268.34	(55.09)	(34,796.06)	(310.29)	(67.23)	(1,041.90)	(25.77)										
Total comprehensive income (loss)	33,277.16	10,207.59	8,095.19	40,539.31	3,834.12	(14,216.59)	25,015.05	12,565.51	41,185.16	3,314.40										
Owners of the parent	21,725.46	4,788.58	3,873.95	19,454.10	2,478.21	(9,281.50)	12,041.86	4,837.31	18,633.84	2,362.24										
Non-controlling interests	11,551.70	5,419.01	4,221.24	21,085.21	1,355.91	(4,935.09)	12,973.19	7,728.20	22,551.32	952.16										
Total dividend paid to non-controlling interests	6,200.60	5,597.24	4,152.43	10,437.75	468.22	5,512.39	4,607.79	2,912.16	8,550.66	430.76										

* Including gain (loss) on foreign exchange rate

(TRANSLATION)

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.14 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations: (Continued)

Summary of cash flows for the years ended December 31, 2018 and 2017

	2018					2017					Unit: Million Baht
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	
Net cash provided by operating activities	104,710.90	18,544.52	17,848.87	52,024.71	5,849.84	89,704.08	33,985.38	20,385.01	58,395.96	3,152.97	
Net cash provided by (used in) investing activities	5,102.58	(25,913.14)	(6,133.88)	(31,237.25)	(3,358.35)	(85,783.66)	(30,073.51)	(11,240.33)	(36,821.84)	(2,362.97)	
Net cash provided by (used in) financing activities	(55,685.33)	25,380.10	(11,522.20)	(27,397.36)	(718.26)	(22,539.55)	(18,794.24)	(9,042.03)	(10,674.82)	(2,305.36)	
Others	(354.06)	406.56	-	(75.45)	(25.03)	(5,037.92)	(614.97)	-	1,386.71	(14.34)	
Net increase (decrease) in cash and cash equivalents	53,774.09	18,418.04	192.79	(6,685.35)	1,748.20	(23,657.05)	(15,497.34)	102.65	12,286.01	(1,529.70)	

(TRANSLATION)

15. Other Long-term Investments

15.1 Details of other long-term investments

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Other Long-term Investments of the Company</u>				
<u>Long-term Investments in Equity Securities</u>				
Petro Asia (Sanshui) Co., Ltd. (PA (Sanshui))	China	Oil marketing	25.00	25.00
Petro Asia (Maoming) Co., Ltd. (PA (Maoming))	China	Oil marketing	20.00	20.00
Sarn Palung Social Enterprise Co., Ltd. (SPSE) (The Group holds 100% shareholding)	Thailand	Social enterprise	20.00	20.00
Intoplane Services Co., Ltd. (IPS)*	Thailand	Aircraft refuelling services	-	16.67
Baania (Thailand) Co.,Ltd. (Baania)	Thailand	Integrated online real estate platform	3.57	-
Colour Vision International Co., Ltd. (Corpus)	Thailand	Finished yarn production	0.48	0.48
Fuel Pipeline Transportation Co., Ltd. (FPT)* **	Thailand	Oil transmission pipelines	-	-
HG Robotics Co., Ltd. (HG Robotics)	Thailand	Autonomous and robotics solutions	9.49	-
<u>Long-term Investments in Debt Securities</u>				
Berli Jucker Public Co., Ltd. (BJC)	Thailand	Consumer products manufacturing and service		
Bangkok Dusit Medical Services Public Co., Ltd. (BDMS)	Thailand	Health care services		
Bangkok Mass Transit System Public Co., Ltd. (BTS)	Thailand	Transportation and logistics		
Indorama Ventures Public Co., Ltd. (IVL)	Thailand	Petrochemicals and chemicals		
The Commercial Bank (P.S.Q.C.) (CBQ)	Qatar	Banking		
Bank of Ayudhya Public Co., Ltd. (BAY)	Thailand	Banking		
Emirates NBD (ENBD)	United Arab Emirates	Banking		
The Siam Cement Public Co., Ltd. (SCC)	Thailand	Property and Construction		
Thai Beverage Public Co., Ltd. (TBEV)	Thailand	Manufacturing and distributing of food and beverage		

* Since July 1, 2018, the Company has commenced the process of transferring various assets and liabilities, and shares of related companies which consist of BAFS, PTTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT to PTTOR.

** As at December 31, 2017, the Company holds 0.0000090% of ownership interest.

(TRANSLATION)

15. Other Long-term Investments (Continued)

15.1 Details of other long-term investments (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
<u>Other Long-term Investments of the Company</u> (Continued)				
<u>Long-term Investments in Debt Securities</u> (Continued)				
Bangchak Corporation Public Co., Ltd. (BCP)	Thailand	Energy & Utilities		
Charoen Pokphand Foods Public Co., Ltd. (CPF)	Thailand	Food & Beverage		
<u>Other Long-term Investments of Subsidiaries</u>				
<u>Long-term Investments in Equity Securities</u>				
<i>PTTEP Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (SPSE) (The Group holds 100% shareholding)	Thailand	Social enterprise	15.00	15.00
Mozambique LNG1 Company Pte. Ltd. (MZ LNG1)*	Singapore	Petroleum	8.50	-
<i>PTTGL Group</i>				
Petronas LNG 9 Sdn. Bhd. (PL9SB)	Malaysia	LNG liquefaction	10.00	10.00
<i>GPSC Group</i>				
24M Technologies, Inc. (24M)	United States of America	Research and development of battery	29.50	18.00
Ratchaburi Power Co., Ltd. (RPCL)	Thailand	Electricity generation	15.00	15.00
Sarn Palung Social Enterprise Co., Ltd. (SPSE) (The Group holds 100% shareholding)	Thailand	Social enterprise	10.00	10.00
<i>PTTOR Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (SPSE) (The Group holds 100% shareholding)	Thailand	Social enterprise	10.00	10.00
Intoplane Services Co., Ltd. (IPS)**	Thailand	Aircraft refuelling services	16.67	-
Fuel Pipeline Transportation Co., Ltd. (FPT)** ***	Thailand	Oil transmission pipelines	-	-

* During 2018, PTTEP Group revisited the classification of the investment according to current situations. As a result, the investment is classified as other long-term investment, accounted for using the cost method.

** Since July 1, 2018, the Company has commenced the process of transferring various assets and liabilities, and shares of related companies which consist of BAFS, PTCL, PTTOM, TLBC, THAPPLINE, PAT, IPS and FPT to PTTOR.

*** As at December 31, 2018, the Company holds 0.0000090% of ownership interest.

(TRANSLATION)

15. Other Long-term Investments (Continued)

15.1 Details of other long-term investments (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2018	2017
Other Long-term Investments of Subsidiaries (Continued)				
<u>Long-term Investments in Equity Securities (Continued)</u>				
<i>PTTT Group</i>				
KIC Oil Terminal Sdn. Bhd. (KOT)	Malaysia	Logistics services	10.00	10.00
Kadriah Integrated Facilities Sdn. Bhd. (KIF)	Malaysia	Logistics services	10.00	10.00
Kadriah I Ltd. (K I)	Malaysia	Logistics services	10.00	10.00
Kadriah II Ltd. (K II)	Malaysia	Logistics services	10.00	10.00
<i>PTTGC Group</i>				
Alliance Petrochemical Investment (Singapore) Pte. Ltd. (API)*	Singapore	Investment in other companies	-	15.34
Exeltium SAS (EXS)	France	Electricity business	4.00	4.00
Sarn Palung Social Enterprise Co., Ltd. (SPSE) (The Group holds 100% shareholding)	Thailand	Social enterprise	15.00	15.00
TPBI & Myanmar Star Co., Ltd. (TPBIMS)	Myanmar	Manufacturing and distributing of polymer products	10.00	-
<i>TOP Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (SPSE) (The Group holds 100% shareholding)	Thailand	Social enterprise	15.00	15.00
<i>IRPC Group</i>				
TPI EOEG Co., Ltd. (TPIE)	Thailand	Finance service	36.31	36.31
TPI Holding Co., Ltd. (TPIH)	Thailand	Investment in other companies	35.01	35.01
Pornchai Enterprises Co., Ltd. (PEC)	Thailand	Real estate for rent	23.65	23.65
Thai Special Steel Industries Public Co.,Ltd. (TSSI)	Thailand	Steel wire manufacturing	16.24	16.24
Rayong Acetylene Co., Ltd. (RAC)	Thailand	Industrial gas manufacturing	13.04	13.04
DIA Polyacrylate Co., Ltd. (DIA)	Thailand	Plastic resin manufacturing	3.65	3.65
Sarn Palung Social Enterprise Co., Ltd. (SPSE) (The Group holds 100% shareholding)	Thailand	Social enterprise	15.00	15.00

* During the third quarter of 2018, PTTGC sold all shares in API.

(TRANSLATION)

15. Other Long-term Investments (Continued)

15.2 Details of other long-term investments as at December 31, 2018 and 2017 are as follows:

Unit: Million Baht

Company	Ownership interest (%)		Cost/ Cost amortized				Dividends income	
			Consolidated financial statements		Separate financial statements			
	2018	2017	2018	2017	2018	2017	2018	2017
<u>Long-term investments in Equity Securities</u>								
1. PA (Sanshui)	25.00	25.00	6.06	6.06	6.06	6.06	-	-
2. PA (Maoming)	20.00	20.00	14.83	14.83	14.83	14.83	-	-
3. SPSE	100.00	100.00	2.49	2.49	0.50	0.50	-	-
4. Baania	3.57	-	10.00	-	10.00	-	-	-
5. Corpus	0.48	0.48	0.60	0.60	0.60	0.60	-	-
6. HG Robotics	9.49	-	18.50	-	18.50	-	-	-
7. PL9SB	10.00	10.00	9,671.67	9,740.55	-	-	-	-
8. MZ LNG1	8.50	-	6.90	-	-	-	-	-
9. 24M	29.50	18.00	1,005.80	715.62	-	-	-	-
10. RPCL	15.00	15.00	888.75	888.75	-	-	135.00	270.00
11. IPS	16.67	16.67	0.02	0.02	-	0.02	-	-
12. FPT*	-	-	0.02	0.02	-	0.02	-	-
13. KOT	10.00	10.00	114.02	114.83	-	-	-	-
14. KIF	10.00	10.00	47.25	47.59	-	-	-	-
15. K I	10.00	10.00	237.49	239.19	-	-	-	-
16. K II	10.00	10.00	63.48	63.93	-	-	-	-
17. API	-	15.34	-	290.24	-	-	6.43	-
18. EXS	4.00	4.00	282.88	282.88	-	-	-	-
19. TPBIMS	10.00	-	15.88	-	-	-	-	-
20. TPIE	36.31	36.31	828.94	828.94	-	-	-	-
21. TPIH	35.01	35.01	1,415.90	1,415.90	-	-	-	-
22. PEC	23.65	23.65	1,118.95	1,118.95	-	-	-	-
23. TSSI	16.24	16.24	673.35	673.35	-	-	-	-
24. RAC	13.04	13.04	15.00	15.00	-	-	-	-
25. DIA	3.65	3.65	8.50	8.50	-	-	-	1.91
26. Other	-	-	43.22	2.00	-	-	-	-
Long-term investments in Equity Securities			16,490.50	16,470.24	50.49	22.03		
Less Allowance for impairment			(3,954.52)	(3,957.81)	(14.14)	(14.14)		
Total			12,535.98	12,512.43	36.35	7.89	141.43	271.91

* As at December 31, 2018 and 2017, the Group holds 0.0000090% of ownership interest, totaling 66 shares, amounting to Baht 22,220.00.

(TRANSLATION)

15. Other Long-term Investments (Continued)

15.2 Details of other long-term investments as at December 31, 2018 and 2017 are as follows:

(Continued)

Unit: Million Baht

Company	Ownership interest (%)		Cost/ Cost amortized				Dividends income	
			Consolidated financial statements		Separate financial statements			
	2018	2017	2018	2017	2018	2017	2018	2017
<u>Long-term investments in Debt Securities</u>								
27. BJC			-	2,500.00	-	2,500.00	-	-
28. BDMS			420.37	420.70	420.37	420.70	-	-
29. BTS			-	451.10	-	451.10	-	-
30. IVL			500.00	500.00	500.00	500.00	-	-
31. CBQ			6,456.96	6,502.92	6,456.96	6,502.92	-	-
32. BAY			-	2,505.49	-	2,505.49	-	-
33. ENBD			4,519.87	2,276.02	4,519.87	2,276.02	-	-
34. SCC			103.36	-	103.36	-	-	-
35. TBEV			300.00	-	300.00	-	-	-
36. BCP			500.00	-	500.00	-	-	-
37. CPF			1,150.00	-	1,150.00	-	-	-
38. Other			484.27	-	-	-	-	-
Total			14,434.83	15,156.23	13,950.56	15,156.23	-	-
Total			26,970.81	27,668.66	13,986.91	15,164.12	141.43	271.91

(TRANSLATION)

15. Other Long-term Investments (Continued)

15.3 Movements in other long-term investments are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Long-term investments in Equity Securities				
As at January 1	12,512.43	2,205.88	7.89	7.39
- Additional investments	203.03	9,883.54	28.50	0.50
- Reclassifications	179.64	-	-	-
- Disposal of investments	(290.24)	-	(0.04)	-
- Reversal of loss on impairment	-	562.00	-	-
- Currency translation differences	(68.88)	(138.99)	-	-
Long-term investments in Equity Securities as at December 31	12,535.98	12,512.43	36.35	7.89
Long-term investments in Debt Securities as at December 31	14,434.83	15,156.23	13,950.56	15,156.23
Total other long-term investments as at December 31	26,970.81	27,668.66	13,986.91	15,164.12

15.4 Significant events during the year ended December 31, 2018

Baania

On May 9, 2018, at the Management Committee Meeting of the Company No. 14/2018, the Committee passed a resolution to approve the invest in Baania (Thailand) Co., Ltd. (Baania) amounting to Baht 10.00 million by acquiring 3.57% of convertible preference share. On May 14, 2018, the Company entered into a share subscription agreement and made the payment on June 20, 2018.

HG Robotics

On September 19, 2018, at the Management Committee Meeting of the Company No. 28/2018, the Committee passed a resolution to approve the invest in HG Robotics Co., Ltd. (HG Robotics) amounting to Baht 18.50 million by acquiring 9.49% of preferred share. On October 17, 2018, the Company entered into a share subscription agreement and made the payment on October 30, 2018.

(TRANSLATION)

16. Investment Properties

Details of investment properties are as follows:

Unit: Million Baht

	Consolidated financial statements				Total
	Land	Buildings and building improvements	Other assets	Construction in progress	
As at January 1, 2017					
Cost	5,212.02	2,343.68	-	-	7,555.70
<u>Less</u> Accumulated depreciation	-	(973.80)	-	-	(973.80)
Allowance for impairment	(354.35)	-	-	-	(354.35)
Net book value	4,857.67	1,369.88	-	-	6,227.55
For the year ended December 31, 2017					
Beginning net book value	4,857.67	1,369.88	-	-	6,227.55
- Additions	1.29	13.24	-	6.16	20.69
- Reclassifications	4.82	27.02	-	(1.39)	30.45
- Disposals - net	(15.80)	(1.98)	-	-	(17.78)
- Depreciation for the year	-	(114.88)	-	-	(114.88)
- Reversal of loss on impairment	87.40	-	-	-	87.40
Ending net book value	4,935.38	1,293.28	-	4.77	6,233.43
As at December 31, 2017					
Cost	5,202.33	2,374.80	-	4.77	7,581.90
<u>Less</u> Accumulated depreciation	-	(1,081.52)	-	-	(1,081.52)
Allowance for impairment	(266.95)	-	-	-	(266.95)
Net book value	4,935.38	1,293.28	-	4.77	6,233.43
For the year ended December 31, 2018					
Beginning net book value	4,935.38	1,293.28	-	4.77	6,233.43
- Additions	12.42	123.54	3.69	27.44	167.09
- Reclassifications	(595.95)	57.98	-	(32.21)	(570.18)
- Disposals - net	(25.42)	(133.47)	-	-	(158.89)
- Depreciation for the year	-	(116.39)	(0.11)	-	(116.50)
- Reversal of loss on impairment	50.75	-	-	-	50.75
Ending net book value	4,377.18	1,224.94	3.58	-	5,605.70
As at December 31, 2018					
Cost	4,593.38	2,342.43	3.69	-	6,939.50
<u>Less</u> Accumulated depreciation	-	(1,117.49)	(0.11)	-	(1,117.60)
Allowance for impairment	(216.20)	-	-	-	(216.20)
Net book value	4,377.18	1,224.94	3.58	-	5,605.70

(TRANSLATION)

16. Investment Properties (Continued)

Details of investment properties are as follows: (Continued)

Unit: Million Baht

	Separate financial statements			Total
	Land	Buildings and building improvements	Construction in progress	
As at January 1, 2017				
Cost	3,574.41	480.29	-	4,054.70
<u>Less</u> Accumulated depreciation	-	(215.14)	-	(215.14)
Net book value	<u>3,574.41</u>	<u>265.15</u>	<u>-</u>	<u>3,839.56</u>
For the year ended December 31, 2017				
Beginning net book value	3,574.41	265.15	-	3,839.56
- Additions	-	4.11	6.16	10.27
- Reclassifications	(3.35)	27.03	(1.39)	22.29
- Disposals - net	-	(1.98)	-	(1.98)
- Depreciation for the year	-	(19.01)	-	(19.01)
Ending net book value	<u>3,571.06</u>	<u>275.30</u>	<u>4.77</u>	<u>3,851.13</u>
As at December 31, 2017				
Cost	3,571.06	503.64	4.77	4,079.47
<u>Less</u> Accumulated depreciation	-	(228.34)	-	(228.34)
Net book value	<u>3,571.06</u>	<u>275.30</u>	<u>4.77</u>	<u>3,851.13</u>
For the year ended December 31, 2018				
Beginning net book value	3,571.06	275.30	4.77	3,851.13
- Additions	-	1.36	27.44	28.80
- Reclassifications	(0.05)	410.81	(32.21)	378.55
- Disposals - net	(1,926.37)	(133.47)	-	(2,059.84)
- Disposal of discontinued operations - net	-	(134.30)	-	(134.30)
- Depreciation for the year	-	(31.62)	-	(31.62)
Ending net book value	<u>1,644.64</u>	<u>388.08</u>	<u>-</u>	<u>2,032.72</u>
As at December 31, 2018				
Cost	1,644.64	1,229.13	-	2,873.77
<u>Less</u> Accumulated depreciation	-	(841.05)	-	(841.05)
Net book value	<u>1,644.64</u>	<u>388.08</u>	<u>-</u>	<u>2,032.72</u>

(TRANSLATION)

17. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements							Unit: Million Baht
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets	Construction in progress	
For the year ended December 31, 2017								
Beginning net book value	35,581.14	135,973.07	513,819.03	291,891.99	17,939.60	8,876.77	102,621.06	1,106,702.66
- Additions	4,183.63	3,109.69	13,977.09	48,607.48	988.64	983.82	46,142.24	117,992.59
- Borrowing costs	-	-	-	-	-	-	1,907.56	1,907.56
- Reclassifications	(40.64)	10,808.22	69,985.93	748.98	7.55	712.10	(82,934.42)	(712.28)
- Disposals - net	(1,512.38)	(130.94)	(585.82)	(2,857.05)	(615.21)	(61.88)	(284.52)	(6,047.80)
- Depreciation for the year	-	(11,400.46)	(40,701.22)	(54,131.68)	(1,521.34)	(2,191.35)	-	(109,946.05)
- Loss on impairment	-	(409.35)	(1,212.94)	-	(2,807.31)	(546.36)	(313.31)	(5,289.27)
- Reversal of loss on impairment	110.03	42.91	46.99	-	-	-	-	199.93
- Currency translation differences	(52.25)	(304.72)	(144.52)	(25,350.13)	(1,431.33)	(19.25)	(599.24)	(27,901.44)
Ending net book value	38,269.53	137,688.42	555,184.54	258,909.59	12,560.60	7,753.85	66,539.37	1,076,905.90
As at December 31, 2017								
Cost	38,369.18	288,813.65	966,165.37	879,673.52	53,209.26	23,852.24	68,250.88	2,318,334.10
Less Accumulated depreciation	-	(150,417.72)	(407,753.27)	(580,556.01)	(26,775.94)	(15,552.03)	-	(1,181,054.97)
Allowance for impairment	(99.65)	(707.51)	(3,227.56)	(40,207.92)	(13,872.72)	(546.36)	(1,711.51)	(60,373.23)
Net book value	38,269.53	137,688.42	555,184.54	258,909.59	12,560.60	7,753.85	66,539.37	1,076,905.90

(TRANSLATION)

17. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements						Total	
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets		Construction in progress
For the year ended December 31, 2018								
Beginning net book value	38,269.53	137,688.42	555,184.54	258,909.59	12,560.60	7,753.85	66,539.37	1,076,905.90
- Business acquisition (Note 43)	1,922.60	337.47	7,353.87	43,209.77	-	-	70.18	52,893.89
- Additions	4,527.66	2,120.71	3,638.68	33,350.65	1,496.71	1,201.51	72,132.13	118,468.05
- Borrowing costs	-	-	-	-	-	-	1,314.84	1,314.84
- Reclassifications	2,564.16	6,944.18	35,303.37	1,675.88	101.48	4,349.88	(51,113.05)	(174.10)
- Disposals - net	-	(477.45)	(1,070.90)	(13,098.15)	(56.51)	(344.40)	(213.97)	(15,261.38)
- Depreciation for the year	-	(11,496.03)	(43,079.64)	(59,490.77)	(1,537.65)	(2,099.31)	-	(117,703.40)
- Loss on impairment	-	-	-	-	-	-	(41.62)	(41.62)
- Reversal of loss on impairment	-	40.30	818.69	-	-	-	-	858.99
- Currency translation differences	(16.30)	(95.85)	(340.99)	(2,477.49)	(88.81)	(2.42)	(64.57)	(3,086.43)
Ending net book value	47,267.65	135,061.75	557,807.62	262,079.48	12,475.82	10,859.11	88,623.31	1,114,174.74
As at December 31, 2018								
Cost	47,367.30	295,838.40	1,023,831.31	859,932.18	54,380.77	27,210.84	90,219.80	2,398,780.60
Less Accumulated depreciation	-	(160,113.91)	(462,814.33)	(586,991.28)	(28,130.33)	(16,334.64)	-	(1,254,384.49)
Allowance for impairment	(99.65)	(662.74)	(3,209.36)	(10,861.42)	(13,774.62)	(17.09)	(1,596.49)	(30,221.37)
Net book value	47,267.65	135,061.75	557,807.62	262,079.48	12,475.82	10,859.11	88,623.31	1,114,174.74

As at December 31, 2018, the Group had pledged assets amounting to Baht 50,740.55 million (December 31, 2017: Baht 33,169.75 million.)

(TRANSLATION)

17. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Other assets	Construction in progress	
As at January 1, 2017						
Cost	11,473.01	41,570.53	348,960.01	14,496.95	41,010.64	457,511.14
<u>Less</u> Accumulated depreciation	-	(17,504.68)	(144,926.69)	(10,053.07)	-	(172,484.44)
Allowance for impairment	(17.37)	(0.16)	(7.59)	-	-	(25.12)
Net book value	11,455.64	24,065.69	204,025.73	4,443.88	41,010.64	285,001.58
For the year ended December 31, 2017						
Beginning net book value	11,455.64	24,065.69	204,025.73	4,443.88	41,010.64	285,001.58
- Additions	933.85	512.10	1,266.91	482.85	19,454.27	22,649.98
- Borrowing costs	-	-	-	-	843.85	843.85
- Reclassifications	369.24	5,298.92	34,058.18	334.21	(41,071.59)	(1,011.04)
- Disposals - net	(1,745.72)	(51.98)	(23.49)	(45.74)	-	(1,866.93)
- Depreciation for the year	-	(1,848.00)	(14,546.11)	(1,429.20)	-	(17,823.31)
- Loss on impairment	-	(53.00)	(36.32)	-	-	(89.32)
- Reversal of loss on impairment	17.37	0.16	7.59	-	-	25.12
Ending net book value	11,030.38	27,923.89	224,752.49	3,786.00	20,237.17	287,729.93
As at December 31, 2017						
Cost	11,030.38	47,075.51	383,419.77	15,128.11	20,237.17	476,890.94
<u>Less</u> Accumulated depreciation	-	(19,098.62)	(158,630.96)	(11,342.11)	-	(189,071.69)
Allowance for impairment	-	(53.00)	(36.32)	-	-	(89.32)
Net book value	11,030.38	27,923.89	224,752.49	3,786.00	20,237.17	287,729.93

(TRANSLATION)

17. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Other assets	Construction in progress	
For the year ended December 31, 2018						
Beginning net book value	11,030.38	27,923.89	224,752.49	3,786.00	20,237.17	287,729.93
- Additions	316.71	229.16	839.99	604.18	23,186.86	25,176.90
- Borrowing costs	-	-	-	-	697.49	697.49
- Reclassifications	1,206.22	1,951.04	13,220.00	4,214.04	(21,903.18)	(1,311.88)
- Disposals - net	-	(400.94)	(81.37)	(144.06)	(0.62)	(626.99)
- Disposal of discontinued operations - net	(5,182.14)	(4,565.43)	(8,336.34)	(473.12)	(1,465.38)	(20,022.41)
- Depreciation for the year	-	(1,839.30)	(15,075.65)	(1,432.90)	-	(18,347.85)
- Reversal of loss on impairment	-	26.44	-	-	-	26.44
Ending net book value	7,371.17	23,324.86	215,319.12	6,554.14	20,752.34	273,321.63
As at December 31, 2018						
Cost	7,371.17	38,360.19	369,986.08	17,819.69	20,752.34	454,289.47
<u>Less</u> Accumulated depreciation	-	(15,008.77)	(154,630.64)	(11,265.55)	-	(180,904.96)
Allowance for impairment	-	(26.56)	(36.32)	-	-	(62.88)
Net book value	7,371.17	23,324.86	215,319.12	6,554.14	20,752.34	273,321.63

Borrowing costs were capitalized as a part of costs of property, plant and equipment. For the year of 2018, the Group used capitalization rates ranging from 1.10% - 5.67% (2017: 1.10% - 5.25%)

(TRANSLATION)

17. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

As at December 31, 2018 and 2017, details of other assets include vehicles and natural gas pipeline acquired under finance leases which were recorded as machinery and equipment are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Cost	10,664.03	10,782.04	9,516.59	10,038.70
<u>Less Accumulated depreciation</u>	<u>(4,849.07)</u>	<u>(4,655.80)</u>	<u>(4,406.14)</u>	<u>(4,273.61)</u>
Net book value	<u>5,814.96</u>	<u>6,126.24</u>	<u>5,110.45</u>	<u>5,765.09</u>

18. Goodwill

Movements of goodwill are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2018	2017
Net book value as at January 1	46,688.26	50,778.17
- Business acquisition (Note 43)	2,521.18	-
- Loss on impairment of assets	-	(795.61)
- Currency translation differences	<u>(284.52)</u>	<u>(3,294.30)</u>
Net book value as at December 31	<u>48,924.92</u>	<u>46,688.26</u>

(TRANSLATION)

19. Intangible Assets

Details of intangible assets are as follows:

Unit: Million Baht

	Consolidated financial statements			
	Computer software	Right of use	Other Intangible assets	Total
As at January 1, 2017				
Cost	18,423.81	32,387.97	9,345.33	60,157.11
<u>Less</u> Accumulated amortization	(9,310.66)	(12,535.85)	(4,400.44)	(26,246.95)
Allowance for impairment	-	(409.83)	-	(409.83)
Net book value	9,113.15	19,442.29	4,944.89	33,500.33
For the year ended December 31, 2017				
Beginning net book value	9,113.15	19,442.29	4,944.89	33,500.33
- Additions	889.65	270.51	731.62	1,891.78
- Reclassifications	1,293.48	71.97	(199.67)	1,165.78
- Disposals - net	(0.15)	(3.21)	(7.52)	(10.88)
- Amortization for the year	(1,853.24)	(1,088.12)	(430.46)	(3,371.82)
- Loss on impairment	-	(470.42)	(21.85)	(492.27)
- Currency translation differences	(307.51)	(18.27)	(249.46)	(575.24)
Ending net book value	9,135.38	18,204.75	4,767.55	32,107.68
As at December 31, 2017				
Cost	19,996.09	32,687.28	9,228.14	61,911.51
<u>Less</u> Accumulated amortization	(10,860.71)	(13,645.30)	(4,438.74)	(28,944.75)
Allowance for impairment	-	(837.23)	(21.85)	(859.08)
Net book value	9,135.38	18,204.75	4,767.55	32,107.68

(TRANSLATION)

19. Intangible Assets (Continued)

Details of intangible assets are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements			
	Computer software	Right of use	Other Intangible assets	Total
For the year ended December 31, 2018				
Beginning net book value	9,135.38	18,204.75	4,767.55	32,107.68
- Business acquisition (Note 43)	10.54	3.37	-	13.91
- Addition	1,235.35	103.43	1,185.34	2,524.12
- Reclassifications	2,116.54	1,261.50	(19.97)	3,358.07
- Disposals - net	(0.13)	(85.82)	(2.49)	(88.44)
- Amortization for the year	(2,148.00)	(1,069.06)	(522.14)	(3,739.20)
- Reversal of loss on impairment	-	85.82	-	85.82
- Currency translation differences	(15.94)	(26.76)	(18.86)	(61.56)
Ending net book value	10,333.74	18,477.23	5,389.43	34,200.40
As at December 31, 2018				
Cost	23,188.24	33,816.97	10,348.07	67,353.28
<u>Less</u> Accumulated amortization	(12,854.50)	(14,595.60)	(4,936.79)	(32,386.89)
Allowance for impairment	-	(744.14)	(21.85)	(765.99)
Net book value	10,333.74	18,477.23	5,389.43	34,200.40

(TRANSLATION)

19. Intangible Assets (Continued)

Details of intangible assets are as follows: (Continued)

	Unit: Million Baht			
	Separate financial statements			
	Computer software	Right of use	Other Intangible assets	Total
As at January 1, 2017				
Cost	5,324.86	19,952.02	67.50	25,344.38
<u>Less</u> Accumulated amortization	<u>(3,187.58)</u>	<u>(7,803.22)</u>	<u>(5.51)</u>	<u>(10,996.31)</u>
Net book value	<u>2,137.28</u>	<u>12,148.80</u>	<u>61.99</u>	<u>14,348.07</u>
For the year ended December 31, 2017				
Beginning net book value	2,137.28	12,148.80	61.99	14,348.07
- Additions	304.03	5.55	-	309.58
- Reclassifications	1,063.82	5.76	-	1,069.58
- Disposals - net	(0.16)	-	-	(0.16)
- Amortization for the year	<u>(796.06)</u>	<u>(523.27)</u>	<u>(4.12)</u>	<u>(1,323.45)</u>
Ending net book value	<u>2,708.91</u>	<u>11,636.84</u>	<u>57.87</u>	<u>14,403.62</u>
As at December 31, 2017				
Cost	6,691.53	19,963.08	67.50	26,722.11
<u>Less</u> Accumulated amortization	<u>(3,982.62)</u>	<u>(8,326.24)</u>	<u>(9.63)</u>	<u>(12,318.49)</u>
Net book value	<u>2,708.91</u>	<u>11,636.84</u>	<u>57.87</u>	<u>14,403.62</u>
For the year ended December 31, 2018				
Beginning net book value	2,708.91	11,636.84	57.87	14,403.62
- Additions	226.78	-	-	226.78
- Reclassifications	1,061.40	166.10	-	1,227.50
- Disposals - net	(3.92)	-	-	(3.92)
- Disposal of discontinued operations - net	<u>(395.65)</u>	<u>-</u>	<u>(55.82)</u>	<u>(451.47)</u>
- Amortization for the year	<u>(1,060.29)</u>	<u>(526.23)</u>	<u>(2.05)</u>	<u>(1,588.57)</u>
Ending net book value	<u>2,537.23</u>	<u>11,276.71</u>	<u>-</u>	<u>13,813.94</u>
As at December 31, 2018				
Cost	7,178.44	20,129.18	-	27,307.62
<u>Less</u> Accumulated amortization	<u>(4,641.21)</u>	<u>(8,852.47)</u>	<u>-</u>	<u>(13,493.68)</u>
Net book value	<u>2,537.23</u>	<u>11,276.71</u>	<u>-</u>	<u>13,813.94</u>

(TRANSLATION)

20. Exploration and evaluation assets

Details of exploration and evaluation assets are as follows:

Unit: Million Baht

	Consolidated financial statements		
	Petroleum exploration and evaluation assets	Mining properties	Total
As at January 1, 2017			
Cost	178,484.00	918.13	179,402.13
<u>Less</u> Allowance for impairment	<u>(41,773.34)</u>	<u>(178.82)</u>	<u>(41,952.16)</u>
Net book value	<u>136,710.66</u>	<u>739.31</u>	<u>137,449.97</u>
For the year ended December 31, 2017			
Beginning net book value	136,710.66	739.31	137,449.97
- Additions	774.80	6.65	781.45
- Reclassifications	(749.00)	-	(749.00)
- Disposals - net	(46.31)	-	(46.31)
- Loss on impairment	(18,504.89)	-	(18,504.89)
- Currency translation differences	(10,110.27)	(61.23)	(10,171.50)
Ending net book value	<u>108,074.99</u>	<u>684.73</u>	<u>108,759.72</u>
As at December 31, 2017			
Cost	166,614.27	847.84	167,462.11
<u>Less</u> Allowance for impairment	<u>(58,539.28)</u>	<u>(163.11)</u>	<u>(58,702.39)</u>
Net book value	<u>108,074.99</u>	<u>684.73</u>	<u>108,759.72</u>
For the year ended December 31, 2018			
Beginning net book value	108,074.99	684.73	108,759.72
- Additions	1,968.02	6.38	1,974.40
- Reclassifications	(1,675.87)	-	(1,675.87)
- Disposals - net	(2.36)	-	(2.36)
- Currency translation differences	(879.59)	(13.73)	(893.32)
Ending net book value	<u>107,485.19</u>	<u>677.38</u>	<u>108,162.57</u>
As at December 31, 2018			
Cost	160,814.99	839.34	161,654.33
<u>Less</u> Allowance for impairment	<u>(53,329.80)</u>	<u>(161.96)</u>	<u>(53,491.76)</u>
Net book value	<u>107,485.19</u>	<u>677.38</u>	<u>108,162.57</u>

(TRANSLATION)

21. Income Taxes and Deferred Taxes

Applicable tax rates for the Group are as follows:

	<u>Rates (%)</u>
Petroleum income tax on petroleum business in Thailand pursuant to the Petroleum Income Tax Act, B.E. 2514 and B.E. 2532	50
Income tax under the Revenue Code of the Company and subsidiaries	20
Corporate income tax in foreign countries	5 - 50
Corporate Income tax from the Petroleum business in the Thai-Malaysia co-development area under the Petroleum Income Tax Act (No.5) B.E. 2541	0 - 20
Petroleum resource rent tax in Australia	40

21.1 Income taxes recognized in the statements of income for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Current tax:				
Current tax	67,814.56	37,827.43	12,806.19	5,539.45
Adjustments in respect of current tax of previous year	1,495.93	(500.79)	(215.60)	(33.27)
	<u>69,310.49</u>	<u>37,326.64</u>	<u>12,590.59</u>	<u>5,506.18</u>
Deferred tax:				
Change in temporary differences	(15,204.04)	(3,495.81)	(2.11)	1,409.04
Tax effect of currency translation on tax base	(459.90)	(5,524.25)	-	-
	<u>(15,663.94)</u>	<u>(9,020.06)</u>	<u>(2.11)</u>	<u>1,409.04</u>
Total	<u>53,646.55</u>	<u>28,306.58</u>	<u>12,588.48</u>	<u>6,915.22</u>

(TRANSLATION)

21. Income Taxes and Deferred Taxes (Continued)

21.2 Reconciliations between income taxes and the product of profit before income taxes multiplied by the applicable tax rate are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Profit before income taxes from continuing operations	219,056.80	212,927.94	107,100.60	99,532.66
Profit (loss) before income taxes from discontinued operations	-	(11.35)	88,970.10	14,634.69
Profit before income taxes	<u>219,056.80</u>	<u>212,916.59</u>	<u>196,070.70</u>	<u>114,167.35</u>
Tax calculated at a tax rate of 20%	43,811.36	42,583.32	39,214.14	22,833.47
Tax effect of :				
Income not subject to tax	(8,745.47)	(14,882.31)	(8,563.77)	(13,084.51)
Nondeductible expenses	15,674.47	15,334.74	464.21	259.39
Expenses deductible at a greater amount	(471.64)	(444.49)	(92.88)	(129.64)
Adjustment in respect of prior year	1,495.93	(500.79)	(215.60)	(33.27)
Share of profit from investment in joint ventures and associates	(1,731.67)	(1,471.94)	-	-
Tax credit on petroleum royalty	(14,561.41)	(11,877.17)	-	-
Tax credit on foreign corporate income tax	(375.26)	(431.40)	-	-
Differences in tax rate	11,904.42	4,649.34	-	-
Deferred tax on functional currency	(459.90)	(5,524.25)	-	-
Effect from the restructuring of the Oil Business Unit (Note 12)	6,032.97	-	-	-
Others	<u>1,072.75</u>	<u>871.53</u>	<u>(9.24)</u>	<u>(151.89)</u>
Total income taxes	53,646.55	28,306.58	30,796.86	9,693.55
<u>Less</u> Income taxes of discontinued operations	-	-	<u>(18,208.38)</u>	<u>(2,778.33)</u>
Income taxes	<u>53,646.55</u>	<u>28,306.58</u>	<u>12,588.48</u>	<u>6,915.22</u>

(TRANSLATION)

21. Income Taxes and Deferred Taxes (Continued)

21.3 Movements in deferred taxes are as follows:

	Consolidated financial statements							Unit: Million Baht	
	As at December 31, 2018								
	Net balance as at January 1, 2018	Profit (Loss)	Other comprehensive income (loss)	Business acquisition	Currency translation differences	Others	Net balance	Deferred tax assets	Deferred tax liabilities
Property, plant and equipment	(57,969.58)	4,448.29	-	(3,870.02)	(676.80)	-	(58,068.11)	8,920.09	(66,988.20)
Intangible assets	18.17	7,136.72	-	-	(1.26)	-	7,153.63	7,299.68	(146.05)
Investments	55.75	14.61	-	-	-	-	70.36	70.36	-
Available-for-sale investments	(743.83)	-	410.46	-	-	-	(333.37)	14.79	(348.16)
Trade and other accounts receivable	(3,137.13)	(945.90)	-	-	0.30	(0.15)	(4,082.88)	481.37	(4,564.25)
Inventories	177.41	(217.73)	-	1.54	-	(0.43)	(39.21)	216.19	(255.40)
Loans	(140.50)	12.00	-	-	-	-	(128.50)	-	(128.50)
Provision for employee benefit	6,001.54	31.50	(183.16)	18.67	(16.37)	2.52	5,854.70	5,854.70	-
Provision for decommissioning costs	19,992.74	3,093.89	-	4,003.69	(178.44)	-	26,911.88	26,911.88	-
Cumulative loss carried forward	7,029.89	1,877.27	100.57	157.81	1,240.16	(11.56)	10,394.14	10,394.14	-
Petroleum resource rent tax in Australia	2,265.76	(29.39)	-	-	(1.89)	(2,234.48)	-	-	-
Tax effect of currency translation on tax base	2,041.88	459.91	-	-	(18.83)	-	2,482.96	2,511.42	(28.46)
Others	3,713.40	(217.23)	(16.62)	2,098.89	(180.76)	17.36	5,415.04	6,328.98	(913.94)
Total before set-off of taxes	(20,694.50)	15,663.94	311.25	2,410.58	166.11	(2,226.74)	(4,369.36)	69,003.60	(73,372.96)
Set-off of taxes							-	(40,504.67)	40,504.67
Net deferred tax assets (liabilities)							(4,369.36)	28,498.93	(32,868.29)

110

(TRANSLATION)

21. Income Taxes and Deferred Taxes (Continued)

21.3 Movements in deferred taxes are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements							
	As at December 31, 2017							
	Net balance as at January 1, 2017	Profit (Loss)	Other comprehensive income (loss)	Currency translation differences	Others	Net balance	Deferred tax assets	Deferred tax liabilities
Property, plant and equipment	(61,688.36)	(1,219.95)	-	4,938.73	-	(57,969.58)	7,530.41	(65,499.99)
Intangible assets	(137.23)	145.54	-	9.86	-	18.17	183.26	(165.09)
Investments	116.32	(60.57)	-	-	-	55.75	55.75	-
Available-for-sale investments	(1,879.21)	-	1,135.50	(0.12)	-	(743.83)	1.31	(745.14)
Trade and other accounts receivable	(2,176.04)	(971.71)	-	10.62	-	(3,137.13)	451.07	(3,588.20)
Inventories	150.01	27.35	-	0.05	-	177.41	183.10	(5.69)
Loans	224.60	(365.10)	-	-	-	(140.50)	-	(140.50)
Provision for employee benefit	5,566.50	492.69	177.69	(235.34)	-	6,001.54	6,002.23	(0.69)
Provision for decommissioning costs	19,587.23	2,160.44	-	(1,754.93)	-	19,992.74	19,992.74	-
Cumulative loss carried forward	3,434.21	3,929.02	33.31	(366.65)	-	7,029.89	7,029.89	-
Petroleum resource rent tax in Australia	2,484.13	-	-	(218.37)	-	2,265.76	2,265.76	-
Tax effect of currency translation on tax base	(3,528.80)	5,524.25	-	46.43	-	2,041.88	2,069.52	(27.64)
Others	4,407.45	(641.90)	(582.74)	505.24	25.35	3,713.40	4,505.71	(792.31)
Total before set-off of taxes	(33,439.19)	9,020.06	763.76	2,935.52	25.35	(20,694.50)	50,270.75	(70,965.25)
Set-off of taxes						-	(35,169.53)	35,169.53
Net deferred tax assets (liabilities)						(20,694.50)	15,101.22	(35,795.72)

(TRANSLATION)

21. Income Taxes and Deferred Taxes (Continued)

21.3 Movements in deferred taxes are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					
	As at December 31, 2018					
	Net balance as at January 1, 2018	Profit (Loss)	Other comprehensive income (loss)	Net balance	Deferred tax assets	Deferred tax liabilities
Property, plant and equipment	(533.59)	(54.10)	-	(587.69)	-	(587.69)
Intangible assets	132.59	3.15	-	135.74	135.74	-
Investments	54.89	-	-	54.89	54.89	-
Available-for-sale investments	(744.81)	-	421.41	(323.40)	-	(323.40)
Trade and other accounts receivable	(1,914.08)	(93.94)	-	(2,008.02)	460.00	(2,468.02)
Inventories	61.71	8.97	-	70.68	70.68	-
Loans	(124.52)	33.99	-	(90.53)	-	(90.53)
Provision for employee benefit	1,775.60	(234.29)	(159.98)	1,381.33	1,381.33	-
Others	818.47	338.33	-	1,156.80	1,156.80	-
Total before set-off of taxes	(473.74)	2.11	261.43	(210.20)	3,259.44	(3,469.64)
Set-off of taxes				-	(3,259.44)	3,259.44
Net deferred tax assets (liabilities)				(210.20)	-	(210.20)

(TRANSLATION)

21. Income Taxes and Deferred Taxes (Continued)

21.3 Movements in deferred taxes are as follows: (Continued)

	Separate financial statements						Unit: Million Baht
	As at December 31, 2017						
	Net balance as at January 1, 2017	Profit (Loss)	Other comprehensive income	Net balance	Deferred tax assets	Deferred tax liabilities	
Property, plant and equipment	(560.33)	26.74	-	(533.59)	-	(533.59)	
Intangible assets	136.51	(3.92)	-	132.59	132.59	-	
Investments	115.35	(60.46)	-	54.89	54.89	-	
Available-for-sale investments	(1,879.45)	-	1,134.64	(744.81)	-	(744.81)	
Trade and other accounts receivable	(772.41)	(1,141.67)	-	(1,914.08)	443.89	(2,357.97)	
Inventories	61.74	(0.03)	-	61.71	61.71	-	
Loans	239.25	(363.77)	-	(124.52)	-	(124.52)	
Provision for employee benefit	1,627.74	134.81	13.05	1,775.60	1,775.60	-	
Others	819.21	(0.74)	-	818.47	1,031.79	(213.32)	
Total before set-off of taxes	(212.39)	(1,409.04)	1,147.69	(473.74)	3,500.47	(3,974.21)	
Set-off of taxes				-	(3,500.47)	3,500.47	
Net deferred tax assets (liabilities)				(473.74)	-	(473.74)	

(TRANSLATION)

22. Other Non-current Assets

Details of other non-current assets as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2018	2017	2018	2017
Long-term other accounts receivable	1,375.95	2,007.67	8.39	1,217.04
Advance payments and deferred charge	17,334.19	23,112.41	1,176.88	4,690.90
Advance payments for gas purchases	-	559.86	61.83	620.62
Decommissioning fund	5,247.82	4,292.84	-	-
Others*	15,521.03	6,374.01	4,509.39	167.26
Total	<u>39,478.99</u>	<u>36,346.79</u>	<u>5,756.49</u>	<u>6,695.82</u>

The Company made advance payments for some gas that cannot take-up as the minimum volumes committed in the Gas Sales Agreements (Take-or-Pay). The Company has the right to take those volumes of prepaid gas (Make-up Right) in subsequent years, with no maturity period.

As at December 31, 2018, advance payments for gas purchases comprised the balance of advance payments made for gas purchases, from the Sirikit gas fields in Thailand, for the untaken-up gas volumes in 2017 (As at December 31, 2017, advance payments for gas purchases comprised the balance of advance payments made for gas purchases, from the Yadana gas fields in Myanmar, for the untaken-up gas volumes in 2000).

* As at December 31, 2018, the Company has a restricted bank cash amounting to Baht 4,372.75 million placed as a security to stay the enforcement of the judgment as stated in Note 47.7.

23. Bank Overdrafts and Short-term Loans from Financial Institutions

As at December 31, 2018, the bank overdrafts and short-term loans from financial institutions bear interest at rates ranging from 1.00 % to 4.75% per annum (December 31, 2017: interest at rates range from 1.61% to 5.25% per annum).

24. Other Current Liabilities

Details of other current liabilities as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2018	2017	2018	2017
Undue output VAT	4,945.93	3,692.83	4,364.83	3,290.94
Provision for remuneration for the renewal of petroleum production	2,890.32	2,072.75	-	-
Others	<u>2,965.72</u>	<u>3,192.93</u>	<u>138.79</u>	<u>1,274.88</u>
Total	<u>10,801.97</u>	<u>8,958.51</u>	<u>4,503.62</u>	<u>4,565.82</u>

(TRANSLATION)

25. Long-term Loans

Details of long-term loans as at December 31, 2018 and 2017 are as follows:

Current portion of long-term loans

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Loans - Baht currency	12,344.94	13,742.71	-	14.51
Loans - foreign currencies	2,439.19	15,141.42	-	10,182.63
Debentures - Baht currency	47,504.98	26,049.47	26,000.00	18,549.47
Debentures - foreign currencies	-	10,562.90	-	-
Liabilities under finance leases	819.49	937.43	511.16	693.33
Total	<u>63,108.60</u>	<u>66,433.93</u>	<u>26,511.16</u>	<u>29,439.94</u>

Long-term loans

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Loans - Baht currency	118,096.85	76,554.42	1,000.00	1,000.00
Loans - foreign currencies	21,304.70	36,598.69	6,830.15	6,753.49
Debentures - Baht currency	147,477.25	194,970.13	83,715.20	109,715.20
Debentures - foreign currencies	163,462.61	131,981.09	27,969.16	28,152.20
Liabilities under finance leases	4,622.90	4,815.33	4,124.45	4,494.58
Total	<u>454,964.31</u>	<u>444,919.66</u>	<u>123,638.96</u>	<u>150,115.47</u>

(TRANSLATION)

25. Long-term Loans (Continued)

Original currency of loans and debentures in foreign currencies as at December 31, 2018 and 2017 as follows:

Current portion of long-term loans and debentures

	Unit: Million			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Loans - foreign currencies				
- USD	47.74	444.67	-	310.00
- EURO	10.92	10.69	-	-
- JPY	408.57	419.99	-	-
- LAK	12,855.64	-	-	-
- VND	228,506.04	-	-	-
Debentures - foreign currencies				
- USD	-	323.21	-	-

Long-term loans and debentures

	Unit: Million			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Loans - foreign currencies				
- USD	219.80	666.13	-	-
- EURO	141.01	156.60	-	-
- JPY	29,749.62	29,788.42	23,000.00	23,000.00
- LAK	38,566.93	-	-	-
Debentures - foreign currencies				
- USD	5,020.33	4,023.80	857.56	857.07

(TRANSLATION)

25. Long-term Loans (Continued)

Long-term loans, including the current portion, outstanding as at December 31, 2018 and 2017 can be classified by types of interest rate as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Floating interest rate	143,045.16	129,584.07	-	10,182.63
Fixed interest rate	375,027.75	381,769.52	150,150.12	169,372.78
Total	518,072.91	511,353.59	150,150.12	179,555.41

Interest rates charged on long-term loans as at December 31, 2018 and 2017 are as follows:

	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Loans - Baht currency	1.22% - 7.83%	0.50% - 7.83%	7.83%	0.50% - 7.83%
Loans - foreign currencies				
- USD	1.00% - 6.00%	2.07% - 17.00%	-	2.15%
- EURO	2.50%	2.50%	-	-
- JPY	1.50% - 4.45%	1.50% - 4.45%	4.45%	4.45%
- LAK	4.75%	-	-	-
- VND	6.40%	-	-	-
Debentures - Baht currency	2.21% - 6.80%	2.21% - 6.80%	3.50% - 6.80%	3.50% - 6.80%
Debentures - foreign currencies				
- USD	3.63% - 6.51%	3.63% - 6.51%	4.50% - 5.88%	4.50% - 5.88%
Liabilities under finance leases	1.15% - 12.00%	1.15% - 12.00%	1.15% - 8.28%	1.15% - 4.65%

(TRANSLATION)

25. Long-term Loans (Continued)

25.1 Loans

Loans - Baht currency

As at December 31, 2018, detail of long-term loan of the Company which is secured by the Ministry of Finance in Baht currency is as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	1,000	Fixed rate	Principal is repayable at the end of contract, in July 2020.

As at December 31, 2018, details of long-term loans from financial institutions of the subsidiaries in Baht currency are as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	5,000	Fixed rate	Principal is repayable every 3 months, totalling 39 instalments, commencing in March 2011.
THB	10,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 31 instalments, commencing in December 2017.
THB	169	Fixed rate	Principal is repayable every 6 months, totalling 30 instalments, commencing in June 2017.
THB	3,500	6M THBFIX plus margin	Principal is repayable every 6 months, totalling 22 instalments, commencing in November 2020.
THB	1,000	3M BIBOR plus margin	Principal is repayable every 6 months, totalling 18 instalments, commencing in May 2020.
THB	500	3M BIBOR plus margin	Principal is repayable every 6 months, totalling 13 instalments, commencing in June 2020.
THB	1,110	3M THBFIX plus margin	Principal is repayable every 3 months, totalling 10 instalments, commencing in July 2015.
THB	2,100	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in September 2017.
THB	5,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in May 2020.
THB	3,800	6M FDR plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in December 2018.

(TRANSLATION)

25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2018, details of long-term loans from financial institutions of the subsidiaries in Baht currency are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	7,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in June 2016.
THB	15,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in November 2020.
THB	7,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 15 instalments, commencing in September 2013.
THB	3,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in March 2014.
THB	3,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in July 2015.
THB	6,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in March 2016.
THB	5,000	6M THBFIX plus margin	Principal is repayable 2 times, in December 2020 and June 2023.
THB	1,000	Fixed rate	Principal is repayable every 3 months, totalling 16 instalments, commencing in September 2016.
THB	700	3M BIBOR plus margin	Principal is repayable every 3 months, totalling 20 instalments, commencing in March 2016.
THB	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in April 2016.
THB	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in May 2016.
THB	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in May 2017.

(TRANSLATION)

25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2018, details of long-term loans from financial institutions of the subsidiaries in Baht currency are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	750	Fixed rate	Principal is repayable every 6 months, totalling 20 instalments, commencing in May 2018.
THB	750	Fixed rate	Principal is repayable every 6 months, totalling 20 instalments, commencing in May 2018.
THB	8,654	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 17 instalments, commencing in September 2018.
THB	500	Fixed rate	Principal is repayable every 3 months, totalling 33 instalments, commencing in June 2019.
THB	575	3M BIBOR plus margin	Principal is repayable every 3 months, totalling 13 instalments, commencing in September 2019.
THB	14,357	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 24 instalments, commencing in February 2021.
THB	6,004	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 20 instalments, commencing in February 2021.
THB	500	6M THBFIX plus margin	Principal is repayable at the end of contract, in November 2020.
THB	5,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 17 instalments, commencing in September 2020.
THB	10,000	MLR minus discount	Principal is repayable every 6 months, totalling 16 instalments, commencing in March 2021.
THB	10,000	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in June 2021.

(TRANSLATION)

25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2018, details of long-term loans from financial institutions of the subsidiaries in Baht currency are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
THB	9,500	3M BIBOR plus margin	Principal is repayable every 6 months, totalling 9 instalments, commencing in September 2020.
THB	3,000	3M BIBOR plus margin	Principal is repayable every 6 months, totalling 15 instalments, commencing in September 2020.
THB	5,400	THBFIX plus margin	Principal is repayable every 6 months, totalling 20 instalments, commencing in June 2019.
THB	1,500	MLR minus discount	Principal is repayable every 6 months, totalling 24 instalments, commencing in September 2012.
THB	300	MLR minus discount	Principal is repayable every 6 months, totalling 12 instalments, commencing in September 2015.
THB	800	FDR plus margin	Principal is repayable every 3 months, totalling 36 instalments, commencing in March 2020.
THB	141	6M FDR plus margin	Principal is repayable every 6 months, totalling 8 instalments, commencing in June 2017.
THB	8,500	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 38 instalments, commencing in June 2018.
THB	1,800	6M FDR plus margin	Principal is repayable every 6 months, totalling 16 instalments, commencing in June 2015.
THB	217	THBFIX plus margin	Principal is repayable as the conditions specified in the contract.

(TRANSLATION)

25. Long-term Loans (Continued)

25.1 Loans (Continued)

Loans - foreign currency

As at December 31, 2018, detail of long-term loans from financial institutions of the Company in foreign currency is as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
JPY	23,000	Fixed rate	Principal is repayable in full at the end of contract, in April 2036.

As at December 31, 2018, details of long-term loans from financial institutions of the subsidiaries in foreign currency are as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
JPY	7,900	JPY-LIBOR plus margin	Principal is repayable every 6 months, totalling 37 instalments, commencing in May 2018.
USD	200	LIBOR plus margin	Principal is repayable every 6 months, totalling 11 instalments, commencing in June 2025.
USD	100	6M LIBOR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in March 2016.
EURO	190	3M EURIBOR plus margin	Principal is repayable every 12 months, totalling 6 instalments, commencing in 2017
LAK	81,500	Fixed rate	Principal is repayable every 3 months, totalling 20 instalments, commencing in January 2017.
VND	310,791	Fixed rate	Principal is repayable every 6 months, totalling 18 instalments, commencing in July 2019.

The Group has entered into derivative contracts on long-term loans to cover foreign currency exchange rates risks and interest rates risks as mentioned in Note 39.2 to Note 39.4.

(TRANSLATION)

25. Long-term Loans (Continued)

25.2 Debentures

Debentures - Baht currency

As at December 31, 2018, the details of unsecured, unsubordinated debentures in Baht currency of the Company are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
THB	1,000	1,000	15	5.90	Interest is repayable every 6 months and mature in May 2019.
THB	15,000	1,000	6 years 11 months 24 days	Year 1 - 4 : 4.10 Year 5 - 6 : 5.10	Interest is repayable every 6 months and mature in May 2019.
THB	10,000	1,000	6 years 9 months 15 days	Year 1 - 4 : 4.10 Year 5 - 6 : 5.10	Interest is repayable every 6 months and mature in May 2019.
THB	22,000	1,000	6 years 11 months 19 days	4.75	Interest is repayable every 6 months and mature in November 2020.
THB	4,118	1,000	15	5.95	Interest is repayable every 6 months and mature in August 2020.
THB	1,030	1,000	15	6.53	Interest is repayable every 6 months and mature in May 2021.
THB	10,000	1,000	6 years 11 months	4.00	Interest is repayable every 6 months and mature in November 2021.
THB	4,200	1,000	6 years 27 days	3.50	Interest is repayable every 6 months and mature in November 2021.
THB	4,000	1,000	12	4.50	Interest is repayable every 6 months and mature in February 2022.
THB	10,000	1,000	10	6.58	Interest is repayable at the maturity date and mature in September 2023.

(TRANSLATION)

25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2018, the details of unsecured, unsubordinated debentures with the debenture holders' early redemption right of the Company in Baht currency are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
THB	14,967	1,000	15	Year 1 - 5 : 5.00 Year 6 - 8 : 6.20 Year 9 - 15 : 6.80	Interest is repayable every 6 months and mature in March 2024. (The debenture holders can early redeem at the end of 8 th year.)
THB	9,400	1,000	15	Year 1 - 5 : 4.25 Year 6 - 10 : 5.50 Year 11 - 15 : 5.75	Interest is repayable every 6 months and mature in July 2024. (The debenture holders can early redeem at the end of 10 th year.)
THB	4,000	1,000	100	5.90	Interest is repayable every 6 months and mature in December 2110. (The debenture holders can early redeem at the end of 50 th and 75 th year and other cases specified in the regulations regarding the rights and obligations of the issuer and the debenture holders.)

(TRANSLATION)

25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2018, the details of unsecured, unsubordinated debentures in Baht currency of the subsidiaries are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
THB	3,500	1,000	4	2.21	Interest is repayable at the maturity date and mature in September 2021.
THB	1,500	1,000	7	2.82	Interest is repayable at the maturity date and mature in September 2024.
THB	3,364	1,000	5	4.50	Interest is repayable every 6 months and mature in May 2019.
THB	6,890	1,000	7	4.96	Interest is repayable every 6 months and mature in May 2021.
THB	5,000	1,000	10	4.80	Interest is repayable every 3 months and mature in May 2019.
THB	8,200	1,000	5	3.91	Interest is repayable every 6 months and mature in June 2019.
THB	11,400	1,000	15	4.82	Interest is repayable every 6 months and mature in June 2029.
THB	1,942	1,000	10	5.50	Interest is repayable every 6 months and mature in June 2019.
THB	10,000	1,000	7	4.50	Interest is repayable every 6 months and mature in August 2021.
THB	3,000	1,000	12	4.80	Interest is repayable every 6 months and mature in April 2022.
THB	7,500	1,000	15	5.05	Interest is repayable every 6 months and mature in March 2027.
THB	3,000	1,000	5	4.13	Interest is repayable every 6 months and mature in March 2019.
THB	3,000	1,000	7	4.61	Interest is repayable every 6 months and mature in March 2021.
THB	7,000	1,000	10	4.84	Interest is repayable every 6 months and mature in March 2024.

(TRANSLATION)

25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2018, the detail of unsecured, unsubordinated debentures with the debenture holders' early redemption right of the subsidiaries in Baht currency is as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
THB	10,000	1,000	4	3.05	Interest is repayable every 6 months and mature in August 2021.

Debentures - foreign currency

As at December 31, 2018, the details of unsecured, unsubordinated debentures in foreign currency of the Company are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
USD	298	1,000	30	5.875	Interest is repayable every 6 months and mature in August 2035.
USD	571	1,000	30	4.50	Interest is repayable every 6 months and mature in October 2042.

(TRANSLATION)

25. Long-term Loans (Continued)

25.2 Debentures (Continued)

Debentures - foreign currency (Continued)

As at December 31, 2018, the details of unsecured, unsubordinated debentures in foreign currency of the subsidiaries are as follows:

<u>Currency</u>	<u>Principal (unit: million)</u>	<u>Par value (per share)</u>	<u>Period (years)</u>	<u>Interest rate percent (per annum)</u>	<u>Repayment terms</u>
USD	700	1,000	10	5.692	Interest is repayable every 6 months and mature in April 2021.
USD	490	1,000	30	6.35	Interest is repayable every 6 months and mature in June 2042.
USD	504	1,000	10	4.25	Interest is repayable every 6 months and mature in September 2022.
USD	496	1,000	4	4.25	Interest is repayable every 6 months and mature in September 2022.
USD	216	1,000	10	3.625	Interest is repayable every 6 months and mature in January 2023.
USD	172	1,000	30	4.875	Interest is repayable every 6 months and mature in January 2023.
USD	284	1,000	10	3.625	Interest is repayable every 6 months and mature in January 2023.
USD	328	1,000	30	4.875	Interest is repayable every 6 months and mature in January 2043.
USD	400	1,000	10	4.625	Interest is repayable every 6 months and mature in November 2028.
USD	600	1,000	30	5.375	Interest is repayable every 6 months and mature in November 2048.

The Group has entered into derivative contracts on debentures to cover foreign currency exchange rates risks and interest rates risks as mentioned in Note 39.2 to Note 39.4.

(TRANSLATION)

25. Long-term Loans (Continued)

25.3 Liabilities under finance leases

Details of liabilities under finance leases as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Liabilities under finance leases				
- Within 1 year	928.78	1,028.09	588.63	766.97
- Over 1 year but not over 5 years	2,679.59	2,396.64	2,138.29	2,058.62
- Over 5 years	2,270.20	2,743.15	2,270.20	2,743.15
Future finance charges	(436.18)	(415.12)	(361.51)	(380.83)
Present value of liabilities under finance leases	<u>5,442.39</u>	<u>5,752.76</u>	<u>4,635.61</u>	<u>5,187.91</u>
Present value of liabilities under finance leases				
- Current liabilities	819.49	937.43	511.16	693.33
- Non-current liabilities	<u>4,622.90</u>	<u>4,815.33</u>	<u>4,124.45</u>	<u>4,494.58</u>
Total	<u>5,442.39</u>	<u>5,752.76</u>	<u>4,635.61</u>	<u>5,187.91</u>

(TRANSLATION)

25. Long-term Loans (Continued)

25.4 Maturities of long-term loans as at December 31, 2018 and 2017 are as follows:

Unit: Million Baht

	Consolidated financial statements					
	2018					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Liabilities Under Finance Leases	Total
Within 1 year	12,344.94	2,439.19	47,504.98	-	819.49	63,108.60
Over 1 year but not over 5 years	68,877.54	10,895.33	91,720.17	71,376.58	2,435.33	245,304.95
Over 5 years	49,219.31	10,409.37	55,757.08	92,086.03	2,187.57	209,659.36
Total	130,441.79	23,743.89	194,982.23	163,462.61	5,442.39	518,072.91

Unit: Million Baht

	Consolidated financial statements					
	2017					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Liabilities Under Finance Leases	Total
Within 1 year	13,742.71	15,141.42	26,049.47	10,562.90	937.43	66,433.93
Over 1 year but not over 5 years	51,316.90	27,351.64	129,215.78	55,570.48	2,187.41	265,642.21
Over 5 years	25,237.52	9,247.05	65,754.35	76,410.61	2,627.92	179,277.45
Total	90,297.13	51,740.11	221,019.60	142,543.99	5,752.76	511,353.59

(TRANSLATION)

25. Long-term Loans (Continued)

25.4 Maturities of long-term loans as at December 31, 2018 and 2017 are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	2018					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Liabilities Under Finance Leases	
Within 1 year	-	-	26,000.00	-	511.16	26,511.16
Over 1 year but not over 5 years	1,000.00	-	55,348.00	-	1,936.88	58,284.88
Over 5 years	-	6,830.15	28,367.20	27,969.16	2,187.57	65,354.08
Total	1,000.00	6,830.15	109,715.20	27,969.16	4,635.61	150,150.12

Unit: Million Baht

	Separate financial statements					Total
	2017					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Liabilities Under Finance Leases	
Within 1 year	14.51	10,182.63	18,549.47	-	693.33	29,439.94
Over 1 year but not over 5 years	1,000.00	-	71,348.00	-	1,866.66	74,214.66
Over 5 years	-	6,753.49	38,367.20	28,152.20	2,627.92	75,900.81
Total	1,014.51	16,936.12	128,264.67	28,152.20	5,187.91	179,555.41

(TRANSLATION)

26. Changes in liabilities arising from financing activities

Changes in liabilities arising from financing activities are as follows:

	Consolidated financial statements						Unit: Million Baht	
	As at January 1, 2018	Cash flows from financing			Non-cash items			As at December 31, 2018
		Additions	Repayments	Finance leases - Addition	(Gain) loss on exchange rates	Currency translation differences		
Short-term loans from financial institutions	18,126.63	43,112.57	(38,144.63)	-	-	(117.99)	2,585.22	25,561.80
Loans - Baht currency	90,297.13	68,202.51	(28,862.73)	-	-	-	804.88	130,441.79
Loans - foreign currencies	51,740.11	7,418.40	(34,815.10)	-	(458.46)	(508.97)	367.91	23,743.89
Debentures - Baht currency	221,019.60	-	(26,142.50)	-	295.47	(202.61)	12.27	194,982.23
Debentures - foreign currencies	142,543.99	68,005.74	(46,975.11)	-	192.20	(679.63)	375.42	163,462.61
Liabilities under finance leases	5,752.76	-	(974.56)	743.92	(0.10)	(0.60)	(79.03)	5,442.39
Total	529,480.22	186,739.22	(175,914.63)	743.92	29.11	(1,509.80)	4,066.67	543,634.71

(TRANSLATION)

26. Changes in liabilities arising from financing activities (Continued)

Changes in liabilities arising from financing activities are as follows: (Continued)

	Separate financial statements						As at December 31, 2018
	As at January 1, 2018	Cash flows from financing		Non-cash items		As at December 31, 2018	
		Additions	Repayments	Finance leases - Additions	Gain on exchange rates		
Short-term loans from financial institutions	2,803.04	1,564.48	(1,034.82)	-	-	3,332.70	
Loans - Baht currency	1,014.51	-	(14.51)	-	-	1,000.00	
Loans - foreign currencies	16,936.12	-	(9,741.53)	-	(364.44)	6,830.15	
Debentures - Baht currency	128,264.67	-	(18,549.47)	-	-	109,715.20	
Debentures - foreign currencies	28,152.20	-	-	-	(201.92)	27,969.16	
Liabilities under finance leases	5,187.91	-	(658.20)	270.75	(1.60)	4,635.61	
Total	182,358.45	1,564.48	(29,998.53)	270.75	(567.96)	153,482.82	

132

(TRANSLATION)

27. Provisions for Employee Benefit

Movements in the present value of provisions for employee benefit are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
As at January 1	23,313.07	21,072.33	8,877.98	8,140.10
Service cost	1,912.94	1,676.40	643.16	681.99
Interest cost	600.11	596.11	236.74	274.96
Actuarial (gain) loss from provisions for post-employment benefit	(946.68)	1,023.08	(799.89)	65.27
Actuarial (gain) loss from provisions for other long-term employee benefit	(25.07)	103.01	(13.70)	6.16
Actual payment	(969.83)	(1,152.90)	(236.52)	(290.50)
Business acquisition (Note 43)	89.61	-	-	-
Disposal of assets and discontinued operations	(10.04)	-	(1,801.12)	-
Currency translation differences	(43.08)	(4.96)	-	-
As at December 31	<u>23,921.03</u>	<u>23,313.07</u>	<u>6,906.65</u>	<u>8,877.98</u>

Details of actuarial (gain) loss from provisions for post-employment benefit are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Loss from experience adjustments	335.61	170.81	493.17	-
(Gain) loss from changes in financial assumptions	(1,371.90)	290.24	(1,293.06)	(33.43)
Loss from changes in demographic assumptions	89.61	562.03	-	98.70
Total	<u>(946.68)</u>	<u>1,023.08</u>	<u>(799.89)</u>	<u>65.27</u>

(TRANSLATION)

27. Provisions for Employee Benefit (Continued)

Expenses recognized in the statements of income and comprehensive income for the years ended December 31, 2018 and 2017 are as follows:

Unit: Million Baht

	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Service cost	1,912.94	1,676.40	643.16	681.99
Interest cost	600.11	596.11	236.74	274.96
Actuarial (gain) loss	(971.75)	1,126.09	(813.59)	71.43
Total	<u>1,541.30</u>	<u>3,398.60</u>	<u>66.31</u>	<u>1,028.38</u>

Unit: Million Baht

	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Cost of sales and services	809.99	656.33	141.63	144.80
Selling and distribution expenses	168.28	209.48	115.44	202.99
Administrative expenses	1,494.87	1,484.57	606.78	612.53
Management remuneration	14.84	25.14	2.35	2.79
Other comprehensive (gain) loss	(946.68)	1,023.08	(799.89)	65.27
Total	<u>1,541.30</u>	<u>3,398.60</u>	<u>66.31</u>	<u>1,028.38</u>

Principal actuarial assumptions used in determining the present value of provisions for post-employment benefit of the Group are as follows:

	Annual percentage (%)	
	2018	2017
Discount rate	1.73 - 8.15	1.40 - 6.24
Inflation rate	0.00 - 6.50	0.00 - 6.50
Employee turnover rate	0.00 - 70.00	0.00 - 80.00
Mortality rate	based on the published statistics of each country	based on the published statistics of each country

(TRANSLATION)

27. Provisions for Employee Benefit (Continued)

Sensitivity analysis of principal actuarial assumption used in determining the present value of provisions for post-employment benefits of the Group as at December 31, 2018 and 2017 are as follows:

Unit: Million Baht

	Increase (decrease) in present value of the provisions	
	2018	2017
Discount rate		
Increase 1%	(3,086.77)	(3,237.50)
Decrease 1%	4,115.71	4,448.39

Weighted average duration of the provisions for post-employment benefit of the Group for the year 2018 is 18.75 years (for the year 2017: 18.90 years).

On December 13, 2018, the National Legislative Assembly passed a resolution approving the draft of a new Labor Protection Act, which is in the process being published in the Royal Thai Government Gazette. The new Labor Protection Act stipulates additional legal severance pay rates in the event of termination of an employee who has worked for an uninterrupted period of 20 years or more, whereby the employee is entitled to receive compensation of not less than 400 days at the employee's last wage rate. This change is considered a post-employment benefits plan amendment, and results in an increase of Baht 2,982.49 million in employee benefits liabilities in the consolidated financial statements. However, there is no impact on the separate financial statements because the Company is covered by the State Enterprise Labor Relations Act B.E. 2543. The Group will reflect the effect of this change by recognizing the past service costs as expenses in the income statement of the period in which the law is effective.

28. Provision for Decommissioning Costs

Movements in the provision for decommissioning costs which will occur in the future are as follows:

Unit: Million Baht

	Consolidated financial statements	
	2018	2017
As at January 1	74,865.44	72,751.56
- Business acquisition (Note 43)	8,007.39	-
- Additional provision	4,223.32	11,621.49
- Use during the year	(729.43)	(824.35)
- Reversal of non-occurred provision	(5,336.16)	(1,982.25)
- Disposals	(5,631.24)	-
- Currency translation differences	(676.80)	(6,701.01)
As at December 31	74,722.52	74,865.44
- Current portion	(1,090.30)	-
- Long-term portion	73,632.22	74,865.44

(TRANSLATION)

29. Other Non-current Liabilities

Other non-current liabilities as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Long-term other accounts payable	3,603.00	4,155.12	3,490.10	4,045.35
Provision for remuneration for the renewal of petroleum production	7,744.52	6,373.27	-	-
Long-term liability: Make-up	10,782.35	10,495.80	10,782.35	10,495.80
Deferred revenue	6,609.13	14,002.78	5,244.77	6,342.08
Others	4,232.06	2,817.26	340.25	985.38
Total	<u>32,971.06</u>	<u>37,844.23</u>	<u>19,857.47</u>	<u>21,868.61</u>

Long-term liability (Make-up) arises from the amount of the difference between the natural gas price for the committed gas volumes that the Company paid in advance and the natural gas price as at the date of taking the gas that exceeds the interest paid for the advance payment for untaken-up gas volume (Take-or-Pay). The Company has to distribute the difference to the parties who paid for the Take-or-Pay interest for the Yadana and Yetagun gas fields.

(TRANSLATION)

30. Share Capital

On April 12, 2018, at the 2018 Annual General Shareholders' Meeting of the Company, the shareholders passed resolutions as follows:

1. To approve the reduction of the Company's authorized share capital by Baht 9,461,000 from Baht 28,572,457,250 to Baht 28,562,996,250 by cancelling 946,100 unissued shares with a par value of Baht 10.00 per share. The Company completed the registration of the capital reduction with the Ministry of Commerce on April 17, 2018.
2. To approve a change in the par value of the Company's shares, from Baht 10.00 per share to Baht 1.00 per share. As a result, the number of authorized shares, and issued and paid-up shares increased by 25,706,696,625 shares, from 2,856,299,625 shares to 28,562,996,250 shares. The authorized share capital, and issued and paid-up share capital of the Company remain unchanged. The Company completed the registration of the change with the Ministry of Commerce on April 18, 2018 and the effective date of the change on the Stock Exchange of Thailand is April 24, 2018.

30.1 Share Capital - Authorized Shares

	Par Value (Baht per share)	The number of authorized shares (Shares)	The value of authorized shares (Baht)
As at December 31, 2017	10	2,857,245,725	28,572,457,250
As at December 31, 2018	1	28,562,996,250	28,562,996,250

30.2 Share Capital - Issued and Paid-up Shares

	Number of issued and fully paid-up shares (Shares)	Value of issued and fully paid-up shares (Baht)	Premium on Ordinary shares (Baht)	Total (Baht)
As at December 31, 2017	2,856,299,625	28,562,996,250	29,211,131,966	57,774,128,216
As at December 31, 2018	28,562,996,250	28,562,996,250	29,211,131,966	57,774,128,216

(TRANSLATION)

31. Reserves

31.1 Legal Reserve

Under the Public Limited Companies Act B.E. 2535, the Company is required to appropriate not less than 5% of its annual net profit as legal reserve until the reserve fund reaches 10% of the authorized share capital. The reserve is non-distributable. The Company's reserve has already reached the 10% of its authorized share capital, stipulated in the Act.

31.2 Reserve for Self-insurance Fund

Movements of reserves for self-insurance fund are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Balance as at January 1	1,199.99	1,174.39	1,199.99	1,174.39
Appropriated during the years	22.69	25.60	22.69	25.60
Balance as at December 31	<u>1,222.68</u>	<u>1,199.99</u>	<u>1,222.68</u>	<u>1,199.99</u>

The self-insurance fund was set up to provide insurance coverage for the Company's business. The Company appropriates net profit from operations and the interest income of the self-insurance fund each year to the fund.

(TRANSLATION)

32. Basic Earnings per Share

Basic earnings per share for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Profit attributable to owners of the parent from continuing operations	119,683,943,324	135,187,012,229	94,512,115,371	92,617,442,294
Adjustment of profit	(1,124,184,883)	(1,670,431,798)	-	-
Profit for calculation of earnings per share from continuing operations	118,559,758,441	133,516,580,431	94,512,115,371	92,617,442,294
Profit (loss) for calculation of earnings per share from discontinued operations	-	(7,409,577)	70,761,721,267	11,856,355,680
Total profit	118,559,758,441	133,509,170,854	165,273,836,638	104,473,797,974
Number of weighted average of ordinary shares (shares)	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Earnings per share from continuing operations (Baht/share)	4.15	4.67	3.31	3.24
Earnings per share from discontinued operations (Baht/share)	-	-	2.48	0.42
Earnings per share (Baht/share)	4.15	4.67	5.79	3.66

(TRANSLATION)

33. Sales and Service Income

Details of sales and service income for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2018	2017	2018	2017
Oil products	1,440,216.43	1,176,823.54	862,501.80	623,422.25
Gas products	405,644.09	376,321.57	495,125.46	445,873.15
Petrochemicals products	423,744.74	384,770.99	49,693.12	28,244.56
Mining products	20,527.20	19,250.09	-	-
Non-oil businesses	15,914.60	13,639.54	300.76	-
Services	7,732.32	6,898.56	1,696.63	49.50
Others	22,375.54	18,017.78	1,703.28	315.47
Total	<u>2,336,154.92</u>	<u>1,995,722.07</u>	<u>1,411,021.05</u>	<u>1,097,904.93</u>

Sales and services income for the years ended December 31, 2018 and 2017 include sales to government agencies and state enterprises amounting to Baht 111,936.72 million and Baht 105,423.32 million in the consolidated financial statements, and Baht 79,998.69 million and Baht 64,988.54 million in the separate financial statements, respectively.

34. Other Income

Details of other income for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2018	2017*	2018	2017*
Transportation income	3,667.94	3,525.21	5,074.53	4,895.56
Dividend income	347.32	5,008.55	34,534.25	33,972.66
Interest income	9,435.82	8,630.25	3,013.86	4,038.69
Compensation for loan interest on advance payments for gas purchases	(2.20)	(2.09)	(2.20)	(2.09)
Gain (loss) on disposal of investments	(2,154.60)	2,613.60	8,398.04	2,016.69
Gain (loss) on derivatives	(2,369.19)	692.73	(575.85)	2,438.12
Others	8,010.01	7,800.26	3,781.79	3,834.97
Total	<u>16,935.10</u>	<u>28,268.51</u>	<u>54,224.42</u>	<u>51,194.60</u>

Compensation for loan interests on advance payments for gas purchases (Take-or-Pay) represents the compensation, which the Company received from the Electricity Generating Authority of Thailand (EGAT) and the Independent Power Plants (IPP) in order to absorb the interests on loans that the Company obtains to make advance payments for gas purchases.

*The Company has reclassified the financial information to be comparable with the financial statement presentation for the year ended December 31, 2018.

(TRANSLATION)

35. Expenses by Nature

Details of expenses by nature for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Changes in finished goods and work in process	(6,446.60)	(3,554.65)	(5,569.11)	(635.40)
Goods purchased and raw materials used	1,829,951.29	1,503,068.32	1,302,747.62	996,359.49
Executive remunerations (Note 9.10)	1,501.89	1,355.36	162.27	150.89
Staff costs	51,285.46	49,151.50	8,387.47	7,589.62
Outsourcing	11,132.93	8,943.99	3,744.17	1,303.56
Transportation	17,511.16	16,953.80	5,058.57	4,884.12
Depreciation and amortization	123,556.27	116,289.18	18,616.25	16,630.28
Repairment	15,394.38	14,238.46	2,634.09	2,309.97
Utilities	12,451.88	12,607.66	11,109.06	10,685.45
Rental fees and property insurance premium	9,240.47	9,276.83	2,301.46	2,012.93
Petroleum exploration expenses	1,481.06	1,744.62	-	-
(Reversal of) doubtful accounts	2,320.28	(149.73)	(22,646.38)	(34,226.28)
Loss on impairment of assets	16.83	24,847.64	22,706.87	33,786.64
Others	35,441.61	34,287.45	7,188.08	6,745.40
Total	<u>2,104,838.91</u>	<u>1,789,060.43</u>	<u>1,356,440.42</u>	<u>1,047,596.67</u>

(TRANSLATION)

36. Petroleum Royalties and Remuneration

Details of petroleum royalties and remuneration for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2018	2017
Petroleum royalties	16,435.23	13,877.33
Special remuneration benefits	-	-
Total	<u>16,435.23</u>	<u>13,877.33</u>

37. Finance Costs

Details of finance costs for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Interest expenses:				
Loans from financial institutions	6,659.17	10,897.35	415.45	856.10
Debentures	15,883.08	13,625.10	7,211.49	8,006.47
Liabilities under finance leases	92.92	109.52	70.93	77.15
Others	3,881.90	3,076.56	0.02	1.60
Other finance costs	<u>1,110.52</u>	<u>1,377.40</u>	<u>311.56</u>	<u>733.07</u>
Total	<u>27,627.59</u>	<u>29,085.93</u>	<u>8,009.45</u>	<u>9,674.39</u>

38. Operating Segments

These operating segments are consistent with the internal management reports provided to the Chief Operating Decision Maker (CODM), who makes decisions related to the allocation of resources to the segments and assesses their performance.

For management purposes, the Group is organized into business units based on types of products and services. The major segments of the Group are as follows:

Upstream Petroleum and Natural Gas Business Group

1. Petroleum exploration and production business:
The Group conducts petroleum exploration and production business both domestically and overseas. The Group is the operator and jointly invests with leading petroleum exploration and production companies. Most domestic projects are located in the Gulf of Thailand, while overseas projects are located in Southeast Asia, Australia, America and Africa.
2. Natural gas business:
The Group conducts natural gas business including procurement, natural gas pipeline transmission, distribution, and natural gas separation. Products from the natural gas separation plants are used as feedstock for the petrochemical industry and as fuel in the household, transportation and industry sectors.
3. Coal business:
The Group conducts coal mining business, involving overseas exploration, production and distribution of coals.

Downstream Petroleum Business Group

1. Oil business:
The Group conducts marketing of petroleum products and lube oil in both domestic and overseas markets under an efficient operating system of procurement, storage, and distribution of products as well as the retail business at service stations.
2. International trading business:
The Group conducts international trading business including the import and export of petroleum and petrochemical products as well as other related products. This includes the price risk management and international chartering.
3. Petrochemical and Refining business:
The Group conducts refining business including the production and distribution of petroleum and petrochemicals products in both domestic and overseas markets.

Other operations of the Group are included in other segments, none of which constitutes a separately reportable segment.

The Group operates major segment in Thailand only. As a result, all the revenues and assets as reflected in these financial statements pertain exclusively to this geographical reportable segment. For the years 2018 and 2017, the Group has no major customer with revenue of 10 percent or more of an entity's revenues.

The Group changed the operating segment of GPSC EnCo PTES and DCAP from the Gas business segment to the Other business segment in order to reflect the business operations and internal Group reporting. The Group therefore reorganised the operating segment information of 2017 to enable comparison with the current period's information.

Pricing among business groups is based on normal market prices except for pricing among business groups within the Company, for which net market prices, after deducting management fees for petroleum terminals and operating fees, are applied

(TRANSLATION)

38. Operating Segments (Continued)Consolidated financial statements

For the year ended December 31, 2018

	Upstream petroleum and natural gas				Downstream petroleum			Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining				
Sales - others	24,848.91	346,496.13	20,527.20	594,808.16	661,512.22	673,931.56	14,030.74	-	2,336,154.92	
- related parties	146,960.25	143,052.68	-	6,255.59	577,608.87	458,148.48	18,213.15	(1,350,239.02)	-	
Net sales	171,809.16	489,548.81	20,527.20	601,063.75	1,239,121.09	1,132,080.04	32,243.89	(1,350,239.02)	2,336,154.92	
Gross profit *	149,826.56	106,024.30	9,182.22	33,672.26	5,322.09	118,323.25	6,435.77	(2,124.12)	426,662.33	
EBITDA	126,842.63	94,083.75	7,444.80	15,270.93	2,701.46	97,820.92	5,653.09	1,578.32	351,395.90	
Depreciation and amortization expenses	(60,141.43)	(17,996.29)	(1,928.95)	(4,316.17)	(110.21)	(34,898.87)	(4,164.35)	-	(123,556.27)	
Segment operating profit	66,701.20	76,087.46	5,515.85	10,954.76	2,591.25	62,922.05	1,488.74	1,578.32	227,839.63	
Share of profit from investments in joint ventures and associates	83.97	558.71	-	905.82	-	6,298.16	668.36	-	8,515.02	
Others	(1,886.17)	(3.38)	(109.24)	(29.56)	(434.52)	(707.06)	79.53	-	(3,090.40)	
Unallocated revenue and expenses:										
Interest income									9,435.82	
Loss on derivatives									(2,369.19)	
Gain on foreign exchange rate									6,353.51	
EBIT									246,684.39	
Profit for the year									165,410.25	

* Gross profit excludes depreciation and amortization expenses in cost of sales.

(TRANSLATION)

38. Operating Segments (Continued)Consolidated financial statementsAs at December 31, 2018

	Upstream petroleum and natural gas				Downstream petroleum			Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining				
Segment assets	588,195.26	413,776.38	27,195.61	126,978.19	77,049.54	815,640.67	212,463.97	-	2,261,299.62	
Inter-company assets	24,184.24	21,277.41	329.60	8,513.94	42,484.39	29,233.93	45,731.43	(171,754.94)	-	
Investments in joint ventures and associates	922.20	5,674.75	-	5,088.13	-	43,377.82	10,622.42	-	65,685.32	
Total segment assets	613,301.70	440,728.54	27,525.21	140,580.26	119,533.93	888,252.42	268,817.82	(171,754.94)	2,326,984.94	
Non-allocated assets									28,498.93	
Total assets									2,355,483.87	
Segment liabilities	216,808.23	89,709.36	4,192.10	71,704.14	91,809.07	341,388.31	188,510.02	-	1,004,121.23	
Inter-company liabilities	502.99	39,427.53	91.59	45,538.49	13,963.28	55,406.04	17,424.15	(172,354.07)	-	
Total segment liabilities	217,311.22	129,136.89	4,283.69	117,242.63	105,772.35	396,794.35	205,934.17	(172,354.07)	1,004,121.23	
Non-allocated liabilities									32,868.29	
Total liabilities									1,036,989.52	
Capital expenditure	36,778.18	21,656.80	1,876.49	8,170.56	82.55	54,294.83	8,561.24	(6,972.15)	124,448.50	

(TRANSLATION)

38. Operating Segments (Continued)Consolidated financial statements

For the year ended December 31, 2017

	Upstream petroleum and natural gas				Downstream petroleum			Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining				
Sales - others	20,882.31	316,729.39	19,250.09	539,951.90	500,248.27	588,597.24	10,062.87	-	1,995,722.07	
- related parties	126,842.35	127,010.57	325.05	7,343.88	435,367.41	362,130.15	16,070.87	(1,075,090.28)	-	
Net sales	147,724.66	443,739.96	19,575.14	547,295.78	935,615.68	950,727.39	26,133.74	(1,075,090.28)	1,995,722.07	
Gross profit *	125,450.52	94,775.74	7,998.46	34,723.87	3,079.59	143,907.60	4,714.40	(1,045.16)	413,605.02	
EBITDA	105,468.39	83,792.20	6,113.97	19,597.99	527.24	123,835.15	4,537.74	1,522.53	345,395.21	
Depreciation and amortization expenses	(55,769.82)	(16,341.38)	(1,890.34)	(4,143.70)	(33.31)	(34,519.22)	(3,591.41)	-	(116,289.18)	
Segment operating profit	49,698.57	67,450.82	4,223.63	15,454.29	493.93	89,315.93	946.33	1,522.53	229,106.03	
Share of profit from investments in joint ventures and associates	92.71	590.05	-	875.08	-	5,137.22	615.36	-	7,310.42	
Others	(18,504.89)	(102.43)	(4,228.02)	72.57	(0.23)	(2,298.18)	7,684.98	-	(17,376.20)	
Unallocated revenue and expenses:										
Interest income									8,630.25	
Gain on derivatives									692.73	
Gain on foreign exchange rate									13,650.64	
EBIT									242,013.87	
Profit for the year									184,610.02	

* Gross profit excludes depreciation and amortization expenses in cost of sales.

(TRANSLATION)

38. Operating Segments (Continued)Consolidated financial statements

As at December 31, 2017

	Upstream petroleum and natural gas				Downstream petroleum			Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining				
Segment assets	584,407.86	389,996.83	26,218.20	114,904.93	93,781.17	748,140.88	199,846.30	-	2,157,296.17	
Inter-company assets	22,552.28	12,338.99	1,326.90	1,142.99	44,918.56	29,407.75	55,136.38	(166,823.85)	-	
Investments in joint ventures and associates	841.80	5,686.70	-	5,013.67	-	38,806.45	9,568.15	-	59,916.77	
Total segment assets	607,801.94	408,022.52	27,545.10	121,061.59	138,699.73	816,355.08	264,550.83	(166,823.85)	2,217,212.94	
Non-allocated assets									15,101.22	
Total assets									2,232,314.16	
Segment liabilities	219,605.72	67,860.18	5,004.35	34,488.14	110,722.15	298,036.47	212,245.69	-	947,962.70	
Inter-company liabilities	668.46	37,878.34	23,625.27	28,481.76	16,075.61	51,347.53	7,981.82	(166,058.79)	-	
Total segment liabilities	220,274.18	105,738.52	28,629.62	62,969.90	126,797.76	349,384.00	220,227.51	(166,058.79)	947,962.70	
Non-allocated liabilities									35,795.72	
Total liabilities									983,758.42	
Capital expenditure	49,911.49	21,829.96	1,467.86	9,895.29	193.90	35,161.01	4,234.52	(99.97)	122,594.06	

39. Disclosure of Financial Instruments

The Group faces the principal financial risks associated with fluctuations in exchange rates, interest rates, and global oil market prices. The Group also has certain portions of sales, purchases and loans for operations nominated in foreign currencies which are paid in both fixed and floating interest rates. Accordingly, the management has entered into derivative contracts to cover these risks. The financial instruments used for hedging risks are forward foreign exchange contracts, interest rate swap contracts, cross-currency swap contracts, participating swap contracts etc. Risk exposure relating to global oil market prices is managed by forward oil contracts.

The department responsible for managing exposure to exchange rate risks and fluctuations in oil market prices has to report details of the costs and market prices of all financial instruments to management, including outstanding forward foreign exchange contracts and forward oil contracts. The reported information principally covers risk exposure from:

- foreign exchange rate risk
- currency risk
- currency and interest rate risk
- interest rate risk
- fluctuation in oil market price risk
- credit risk

39.1 Foreign Exchange Rate Risk

The Group has entered into forward foreign exchange contracts. The contract prices and exchange rates under the forward foreign exchange contracts as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2018	2017
Forward foreign exchange purchase contracts		
Baht 0.2940 - 0.3234 = 1 JPY	461.96	-
Baht 0.3088 - 0.3224 = 1 JPY	-	513.92
Baht 30.4210 - 34.1175 = 1 USD	86,864.07	-
Baht 32.3700 - 36.1775 = 1 USD	-	70,122.18
Baht 37.1600 - 37.6300 = 1 EUR	31.67	-
Baht 38.5400 - 40.3900 = 1 EUR	-	27.72
Baht 41.4270 = 1 GBP	265.13	-
Forward foreign exchange sale contracts		
Baht 30.7540 - 32.8300 = 1 USD	20,697.05	-
Baht 32.2340 - 38.3101 = 1 USD	-	51,918.08
Baht 0.2894 - 0.2952 = 1 JPY	17,506.89	-
Baht 38.4370 - 38.6057 = 1 EUR	-	20.81

(TRANSLATION)

39. Disclosure of Financial Instruments (Continued)

39.1 Foreign Exchange Rate Risk (Continued)

The Group has entered into forward foreign exchange contracts. The contract prices and exchange rates under the forward foreign exchange contracts as at December 31, 2018 and 2017 are as follows: (Continued)

	Unit: Million Baht	
	Separate financial statements	
	2018	2017
Forward foreign exchange purchase contracts		
Baht 32.3760 - 33.0504 = 1 USD	24,429.29	-
Baht 32.4747 - 33.1884 = 1 USD	-	21,116.03
Forward foreign exchange sale contracts		
Baht 32.1780 - 32.8300 = 1 USD	14,753.80	-
Baht 32.2340 - 38.3101 = 1 USD	-	41,036.11
Baht 0.2894 - 0.2952 = 1 JPY	17,506.89	-

39.2 Currency Risk

The Group has entered into a cross-currency swap contract of a long-term loan in the form of a participating swap contracts. The term of such contract as at December 31, 2018 and 2017 is as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
JPY 23,000 million/USD 196.94 million	6,830.15	6,753.49	6,830.15	6,753.49

This contract has a maturity later than five years.

(TRANSLATION)

39. Disclosure of Financial Instruments (Continued)

39.3 Currency and Interest Rate Risk

The Group has entered into cross-currency swap contracts of other long-term investments, long-term loans and debentures. The terms of the outstanding cross-currency swap contracts as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Baht 4,000 million/USD 120.55 million	4,000.00	4,000.00	4,000.00	4,000.00
Baht 9,000 million/USD 285.42 million	-	9,000.00	-	9,000.00
Baht 6,811.50 million/USD 200.00 million	6,811.50	-	-	-
Baht 8,285.45 million/USD 250.00 million	8,285.45	-	-	-
Baht 745.00 million/USD 250.00 million	745.00	-	-	-
Baht 5,000 million/USD 162.60 million	-	5,000.00	-	-
Baht 3,372.70 million/USD 100.00 million	-	3,372.70	-	-
Baht 6,777.40 million/USD 200.00 million	-	6,777.40	-	-
Baht 27,100 million/USD 844.85 million	27,100.00	27,100.00	-	-
USD 70 million/THB 2,184 million	2,259.94	-	2,259.94	-
USD 70 million/THB 2,331 million	2,259.94	2,276.02	2,259.94	2,276.02
USD 200 million/THB 6,880 million	6,456.95	6,502.92	6,456.95	6,502.92
Total	<u>57,918.78</u>	<u>64,029.04</u>	<u>14,976.83</u>	<u>21,778.94</u>

(TRANSLATION)

39. Disclosure of Financial Instruments (Continued)

39.3 Currency and Interest Rate Risk (Continued)

The maturity periods of contracts are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Due within 1 year	3,245.00	16,500.00	-	9,000.00
Over 1 year but not over 5 years	43,273.78	36,129.04	14,976.83	12,778.94
Over 5 years	11,400.00	11,400.00	-	-
Total	<u>57,918.78</u>	<u>64,029.04</u>	<u>14,976.83</u>	<u>21,778.94</u>

39.4 Interest Rate Risk

The Group has entered into interest rate swap contracts of long-term loans and debentures. The terms of the outstanding interest rate swap contracts as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Interest rate swap contracts to swap floating for fixed rate in USD currency	324.50	-	-	-
Interest rate swap contracts to swap fixed for floating rate in USD currency	16,148.53	16,592.98	16,148.53	16,266.17
Interest rate swap contracts to swap floating for fixed rate in Baht currency	6,241.13	2,500.00	-	-
Interest rate swap contracts to swap fixed for floating rate in Baht currency	18,000.00	8,000.00	18,000.00	8,000.00
Interest rate swap contracts to swap floating for fixed rate in JPY currency	7,473.61	7,372.62	-	-
Interest rate swap contracts to swap floating for fixed rate in EUR currency	-	500.00	-	-
Total	<u>48,187.77</u>	<u>34,965.60</u>	<u>34,148.53</u>	<u>24,266.17</u>

(TRANSLATION)

39. Disclosure of Financial Instruments (Continued)

39.4 Interest Rate Risk (Continued)

The maturity periods of contracts are as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2018	2017	2018	2017
Due within 1 year	16,575.15	3,426.61	16,148.53	-
Over 1 year but not over 5 years	8,030.95	24,299.42	6,000.00	22,266.17
Over 5 years	23,581.67	7,239.57	12,000.00	2,000.00
Total	<u>48,187.77</u>	<u>34,965.60</u>	<u>34,148.53</u>	<u>24,266.17</u>

39.5 Fluctuations in Oil Market Price Risk

The Group has entered into oil price derivatives. As at December 31, 2018, the volume of oil under those contracts that mature during January to December 2019 is 20.01 million barrels in the consolidated financial statements and 0.01 million barrels in the separate financial statements (as at December 31, 2017: 16.41 million barrels in the consolidated financial statements and 0.91 million barrels in the separate financial statements).

39.6 Credit Risk

Credit risk arises when customers do not comply with the terms and conditions of credit agreements, causing financial losses to the Company. However, the Company has managed risk by adjusting its credit policies according to the current economic situation, focusing on developing financial instruments by cooperating with financial institutions to support credit facilities provided to customers in order to buy the Company's products, such as the Dealer Financing and Supply Chain Credit project, the trade credit insurance, and the Payment card and Fleet card, aims to reduce credit risks of the Company. The Company also reduces credit risk by determining procedures for risk prevention and mitigation, including credit rating for all trading partners of the Company.

(TRANSLATION)

40. Fair Value Measurement

The fair value of the current portions of financial assets and liabilities approximates the carrying value due to the relatively short-term maturity of these financial instruments.

The fair value of long-term lending loans and borrowings carrying interest at market rates approximates the carrying values.

As at December 31, 2018 and 2017, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows:

As at December 31, 2018

Unit: Million Baht

	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	3,425.91	-	-	3,425.91
Mutual funds	1,104.59	-	388.27	1,492.86
Debt instruments	-	5,957.16	-	5,957.16
Derivatives				
Foreign currency forward contracts	-	985.65	-	985.65
Cross-currency swap contracts	-	1,672.28	-	1,672.28
Interest rate swap contracts	-	257.46	-	257.46
Commodity swap contracts	1,731.90	1,373.50	-	3,105.40
Other derivative contracts	-	1,156.39	-	1,156.39
Financial liabilities measured at fair value				
Other accounts payable				
Deferred considerations acquired through business acquisition	-	-	15,120.70	15,120.70
Derivatives				
Foreign currency forward contracts	-	556.87	-	556.87
Cross-currency swap contracts	-	471.79	-	471.79
Interest rate swap contracts	-	366.14	-	366.14
Commodity swap contracts	-	1,738.15	-	1,738.15
Other derivative contracts	-	81.84	-	81.84

(TRANSLATION)

40. Fair Value Measurement (Continued)

As at December 31, 2018 and 2017, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2017

Unit: Million Baht

	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	4,243.93	-	-	4,243.93
Mutual funds	1,113.97	-	170.86	1,284.83
Debt instruments	-	12,073.65	-	12,073.65
Derivatives				
Foreign currency forward contracts	-	2,445.39	-	2,445.39
Cross-currency swap contracts	-	1,749.74	-	1,749.74
Interest rate swap contracts	-	28.06	-	28.06
Commodity swap contracts	645.98	35.77	-	681.75
Other derivative contracts	-	826.97	-	826.97
Financial liabilities measured at fair value				
Derivatives				
Foreign currency forward contracts	0.64	3,043.35	-	3,043.99
Cross-currency swap contracts	-	801.56	-	801.56
Interest rate swap contracts	-	70.38	-	70.38
Commodity swap contracts	2,293.09	836.80	-	3,129.89
Other derivative contracts	-	13.37	-	13.37

(TRANSLATION)

40. Fair Value Measurement (Continued)

As at December 31, 2018 and 2017, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2018

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	1,816.00	-	-	1,816.00
Mutual funds	375.29	-	388.27	763.56
Derivatives				
Cross-currency swap contracts	-	703.07	-	703.07
Interest rate swap contracts	-	5.12	-	5.12
Financial liabilities measured at fair value				
Derivatives				
Cross-currency swap contracts	-	103.22	-	103.22
Interest rate swap contracts	-	152.34	-	152.34

As at December 31, 2017

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	3,983.75	-	-	3,983.75
Mutual funds	378.49	-	170.86	549.35
Derivatives				
Cross-currency swap contracts	-	751.08	-	751.08
Interest rate swap contracts	-	3.43	-	3.43
Financial liabilities measured at fair value				
Derivatives				
Cross-currency swap contracts	-	86.70	-	86.70
Interest rate swap contracts	-	45.19	-	45.19

(TRANSLATION)

40. Fair Value Measurement (Continued)

As at December 31, 2018 and 2017, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows:

As at December 31, 2018

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	17,262.15	-	17,262.15
Investment properties	-	11,442.89	11,322.16	22,765.05
Derivatives				
Foreign currency forward contracts	-	254.90	-	254.90
Foreign exchange option contracts	-	1,139.83	-	1,139.83
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	180,413.98	-	180,413.98
Debentures - foreign currencies	-	103,881.63	-	103,881.63
Derivatives				
Foreign currency forward contracts	-	166.14	-	166.14
Commodity swap contracts	-	2.13	-	2.13

(TRANSLATION)

40. Fair Value Measurement (Continued)

As at December 31, 2018 and 2017, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2017

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	15,195.46	-	15,195.46
Investment properties	-	12,951.15	9,829.62	22,420.77
Derivatives				
Foreign currency forward contracts	-	826.40	-	826.40
Foreign exchange option contracts	-	803.06	-	803.06
Commodity swap contracts	-	38.01	-	38.01
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	212,309.87	-	212,309.87
Debentures - foreign currencies	-	131,466.36	-	131,466.36
Derivatives				
Foreign currency forward contracts	-	428.58	-	428.58
Commodity swap contracts	-	43.25	-	43.25

(TRANSLATION)

40. Fair Value Measurement (Continued)

As at December 31, 2018 and 2017, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2018

	Unit: Million Baht			
	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	17,262.15	-	17,262.15
Investment properties	-	4,111.04	436.71	4,547.75
Derivatives				
Foreign currency forward contracts	-	254.59	-	254.59
Foreign exchange option contracts	-	1,139.83	-	1,139.83
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	121,082.31	-	121,082.31
Debentures - foreign currencies	-	28,248.78	-	28,248.78
Derivatives				
Foreign currency forward contracts	-	166.05	-	166.05
Commodity swap contracts	-	2.13	-	2.13

As at December 31, 2017

	Unit: Million Baht			
	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	15,195.46	-	15,195.46
Investment properties	-	10,964.62	619.10	11,583.72
Derivatives				
Foreign currency forward contracts	-	817.24	-	817.24
Foreign exchange option contracts	-	803.06	-	803.06
Commodity swap contracts	-	38.01	-	38.01
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	144,110.09	-	144,110.09
Debentures - foreign currencies	-	34,228.14	-	34,228.14
Derivatives				
Foreign currency forward contracts	-	428.42	-	428.42
Commodity swap contracts	-	43.25	-	43.25

(TRANSLATION)

40. Fair Value Measurement (Continued)

Fair value valuation techniques and inputs for Level 2 valuation

The fair values of debt securities and derivatives were determined based on discounted future cash flow and valuation model techniques, using an appropriate risk-adjusted discount rate. Most of the inputs used for the valuation are observable in the relevant markets such as spot rates of foreign currencies, yield curves of the respective currencies, interest rate yield curves, bonds yield curves, and commodity price yield curves, etc.

The fair value of land categorized as investment property was determined by independent property appraisers under the market approach.

Fair value valuation techniques and inputs for Level 3 valuation

The fair values of available-for-sale investments in mutual funds were determined based on the net asset value as reported in the Capital Call Statement and translated by using the closing exchange rate.

The fair values of land and buildings for rent categorized as investment property were determined using the income approach. The inputs used for the valuation consisted of the rate of return and finance costs.

During the year, there was no transfer within the fair value hierarchy.

(TRANSLATION)

41. Subordinated Capital Debentures

In July 2017, the Group has carried out a capital structure management with respect to USD subordinated capital debentures as follows:

	Consolidated financial statements					
	Unit : Million USD			Unit : Million Baht		
	Before restructuring	(redeemed)/reissued	After restructuring	Before restructuring	(redeemed)/reissued	After restructuring
PTTEP						
Issuance and offering value	1,000.00	(854.69)	145.31	-	-	-
Net value from finance cost	995.53	(850.88)*	144.65	32,206.55	(27,526.73)*	4,679.82
PTTEP TC						
Issuance and offering value	-	854.69**	854.69	-	-	-
Net value from finance cost	-	853.47	853.47	-	28,570.16	28,570.16
Total						
Issuance and offering value	1,000.00	-	1,000.00	-	-	-
Net value from finance cost	995.53	2.59	998.12	32,206.55	1,043.43	33,249.98

* PTTEP redeemed the subordinated capital debentures with the payment of USD 874.31 million (Baht 28,310.98 million)

** PTTEP Treasury Center Co., Ltd. (PTTEP TC), a subsidiary of PTTEP, issued and offered the subordinated capital debentures, fully guaranteed by PTTEP, in the same amount as what was redeemed by PTTEP. The subordinated capital debentures will be settled upon the liquidation of the issuing company (perpetual), or as per the redemption rights stipulated in the offering memorandum. The subordinated capital debentures were issued in the two following series:

- Series 1: Issued and offered on July 17, 2017 in the amount of USD 500 million with an initial fixed interest rate of 4.6% until July 17, 2022. The right to early redeem in full amount shall be first exercisable on July 17, 2022. Subsequent interest rates and redeemable rights are stipulated in the offering memorandum.
- Series 2: Issued and offered on July 26, 2017 in the amount of USD 354.69 million with an initial fixed interest rate of 4.875% until June 18, 2019. The right to early redeem in full amount shall be first exercisable on June 18, 2019. Subsequent interest rates and redeemable rights are stipulated in the offering memorandum.

These subordinated capital debentures pay the distributions semi-annually. However, PTTEP TC may elect to defer the payment of a distribution at its sole discretion without any limit as to the number of times. The deferred distributions will not bear additional interest. In case that they are deferred from and including the date falling 12 months from the date on which it is first deferred, they will be constituted as the principal of the securities. However, if PTTEP TC elects to defer distributions of those 2 series, both PTTEP, as a guarantor, and PTTEP TC are restricted from declaring any dividends. Also, they will procure that no distribution or other payment is declared, paid or made on any of its Junior Securities or its Parity Securities. Additionally, both PTTEP and PTTEP TC will be restricted from redeeming, reducing, cancelling, or buying-back of its Junior Securities or its Parity Securities. These subordinated capital debentures are legally subordinated to all other capital debentures issued by PTTEP TC, except for equity. As a result, in case of PTTEP TC's liquidation, these subordinated capital debentures holders shall have rights to be repaid in the principle and accumulated return from PTTEP TC with the amount not over than PTTEP TC's net assets after the repayment of other debts and commitment made by PTTEP TC, except for equity.

In 2018, no subordinated capital debentures were issued.

(TRANSLATION)

42. Dividend Payment

On April 12, 2018, at the 2018 Annual General Shareholders' Meeting of the Company, the shareholders approved dividend payments for the year 2017 of Baht 20.00 per share, approximately amounting to Baht 57,107.88 million. On September 15, 2017, the Company paid an interim dividend for the operating results of the first half of 2017 at Baht 8.00 per share for 2,856,261,256 shares, amounting to Baht 22,850.09 million. The remaining dividends were paid as follows:

Dividends	For operating period	Dividend payment rate (Baht/share)	Number of shares (shares)	Total dividend (million Baht)	Payment date
For the year 2017	July 1, 2017 - December 31, 2017	12.00	2,854,815,755	34,257.79	April 27, 2018

On September 28, 2018, at the Board of Directors Meeting No. 9/2018 of the Company, the Board approved interim dividend payments for the first half of 2018 as follows:

Dividends	For operating period	Dividend payment rate (Baht/share)	Number of shares (shares)	Total dividend (million Baht)	Payment date
Interim	January 1, 2018 - June 30, 2018	0.80	28,562,591,709	22,850.07	October 26, 2018

43. Business Acquisition

On January 31, 2018, PTTEP and PTTEP International Limited (PTTEPI), a subsidiary of PTTEP, have signed an Agreement for the Assignment and Transfer of the 22.2222% stake in the Bongkot Project, consisting of Blocks B15, B16 and B17 from Shell Integrated Gas Thailand Pte. Limited and Block G12/48 from Thai Energy Company Limited respectively.

The transaction was completed on June 21, 2018. As a result, the PTTEP Group's participating interests of Block B15, B16 and B17 and Block G12/48 increased from 44.4445% to 66.6667%. The PTTEP Group is still the operator of the project and classifies the investment as joint operation.

Details of net assets acquired and goodwill at the acquisition date are as follows:

	Unit: Million Baht
Purchase consideration	36,349.65
Fair value of net assets acquired	<u>(33,828.47)</u>
Goodwill (Note 18)	<u>2,521.18</u>

(TRANSLATION)

43. Business Acquisition (Continued)

Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	16.33
Other accounts receivable	13.85
Inventories	14.36
Materials and supplies	479.38
Other current assets	15.73
Property, plant and equipment (Note 17)	43,343.98
Intangible assets (Note 19)	5.79
Deferred tax assets (Note 21)	2,994.12
Other non-current assets	0.71
Trade accounts payable	(209.72)
Other accounts payable	(522.19)
Other current liabilities	(79.03)
Provision for decommissioning costs (Note 28)	(8,007.39)
Other non-current liabilities	<u>(4,237.45)</u>
Fair value of net assets	33,828.47
<u>Add</u> Goodwill (Note 18)	<u>2,521.18</u>
Total purchase consideration transferred	36,349.65
<u>Less</u> Cash and cash equivalents of joint operation	(16.33)
Deferred consideration	(12,873.17)
Contingent consideration	<u>(4,469.05)</u>
Cash outflow on the business acquisition	<u>18,991.10</u>

Goodwill of Baht 2,521.18 million was a result of benefit which the PTTEP Group will receive from acquisition of additional participation interest in the project in according with the PTTEP Group's policy to increase its future production. Moreover, it can be used for tax benefit.

The fair value of total purchase considerations transferred on the acquisition date of Baht 36,349.65 million consist of cash payment on acquisition date of Baht 19,007.43 million, deferred consideration of Baht 12,873.17 million and contingent consideration of Baht 4,469.05 million. The fair value is estimated using income approach based on discount rate of 3.4% and probability assumption applied. It is classified as fair value level 3. Until December 31, 2018, PTTEP Group have already paid for purchase consideration transferred relating to the business acquisition amounting to Baht 33,930.20 million.

(TRANSLATION)

43. Business Acquisition (Continued)

On August 8, 2018, the PTTGC Group entered into the Shares Purchase Agreement to acquire 74% share of Siam Mitsui PTA Company Limited, Purified Terephthalic Acid producer, and 74% share of Thai PET Resin Company Limited, Polyethylene Terephthalate resin producer, directly and indirectly, from SCG Chemicals Co., Ltd. and Mitsui Chemicals, Inc. Subsequently on December 27, 2018, the PTTGC Group completed the share acquisition of subsidiaries.

Details of net assets acquired and gain on bargain purchase at the acquisition date are as follows:

	Unit: Million Baht
Fair value of net assets acquired	6,726.61
Purchase consideration	<u>(5,371.71)</u>
Gain on bargain purchase	<u>1,354.90</u>

Assets and liabilities arising from the business acquisition at the acquisition date are as follows:

	Unit: Million Baht
Cash and cash equivalents	1,588.95
Trade accounts receivable	2,480.47
Inventories	2,200.85
Property, plant and equipment (Note 17)	9,549.91
Intangible assets (Note 19)	8.12
Other non-current assets	600.53
Bank overdraft and short-term loans from financial institutions	(2,955.00)
Trade accounts payable	(2,777.93)
Other accounts payable	(182.74)
Long-term loans	(750.00)
Deferred tax liabilities (Note 21)	(583.54)
Provisions for employee benefit (Note 27)	<u>(89.61)</u>
Fair value of net assets	9,090.01
<u>Less</u> Non-controlling interests	<u>(2,363.40)</u>
Fair value of net assets acquired	6,726.61
<u>Less</u> Gain on bargain purchase	<u>(1,354.90)</u>
Total purchase consideration transferred	5,371.71
<u>Less</u> Cash and cash equivalents of subsidiaries	(1,588.95)
Deferred consideration	<u>(1,248.88)</u>
Cash outflow on the business acquisition	<u><u>2,533.88</u></u>

(TRANSLATION)

43. Business Acquisition (Continued)

Management of the PTTGC Group believes that the acquisition is harmonized with the business strategy of the PTTGC Group that intends to expand the downstream investment and increase market potential in polymer business to satisfy customer's need.

The fair value of total purchase consideration transferred on the acquisition date is Baht 5,371.71 million. The PTTGC Group paid a preliminary cash consideration of Baht 4,122.83 million. The final purchase price was settled with the seller for an additional payment of Baht 1,248.88 million, which will be paid in March 2019.

The PTTGC Group measured non-controlling interests by the ownership instruments' proportionate share in the recognised amounts of the acquiree's identifiable net assets.

As at December 31, 2018, the PTTGC Group is reviewing the fair value of net assets acquired. The aforementioned fair value of the net assets will be revised when the initial purchase price allocation is completed.

44. Montara Divestment

On July 15, 2018, PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AAA), a subsidiary of PTTEP, signed the Agreement for the Sale of Montara Assets to divest a 100% stake in the Montara field (block AC/L 7 and AC/L 8), to Jadestone Energy (Eagle) Pty Ltd (Jadestone) with the assets selling value of USD 195 million, the value will be adjusted for the change in working capital until the completion date of the sale.

On September 28, 2018, Jadestone had already fulfilled the Conditions Precedent specified in the agreement. As a result, PTTEP AAA transferred a 99% of legal right and all rights in risk and reward of Montara Assets including its related assets to Jadestone. PTTEP AAA still holds 1% of legal right and, according to the Operator and Transitional Services Agreement, the operatorship transfer to Jadestone is awaiting for approval from National Offshore Petroleum Titles Administrator (NOPTA) and National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), therefore PTTEP AAA is still the operator of Montara. However, if there is any claim regarding Montara oil spill in 2009, PTTEP AAA will be responsible for the claim.

The assets selling value after the change in working capital according to the agreement is USD 113.63 million. During the year, the PTTEP Group had received USD 133.10 million and the difference will be settled gradually in the future and recognized loss from assets divestment of USD 57.77 million (Baht 1,886.23 million) in the consolidated financial statements.

(TRANSLATION)

45. Promotional Privileges

The Company has been granted promotional privileges for the following activities from the Board of Investment (BOI) under the Investment Promotion Act, B.E. 2520

- ◆ the Ethane Separation Plant project
- ◆ the Fourth Rayong-Kangkoi gas pipeline project
- ◆ the Thai-Myanmar onshore gas pipeline project
- ◆ the Nakhon Sawan gas pipeline project
- ◆ the Nakhon Ratchasima gas pipeline project
- ◆ the Fifth onshore gas pipeline project
- ◆ the Ratchaburi - Wang Noi 6 gas metering station to Ratchaburi province gas pipeline project
- ◆ Expansion of the First onshore gas pipeline project covering Rayong Chonburi and Saraburi new laid pipelines.

The promotional privileges include:

- ◆ an exemption from import duties on machinery approved by the BOI
- ◆ an exemption from corporate income tax on net income from the promoted business for periods of eight years starting from the date on which the income is first derived from such operations.

During the year 2018, the Company has exercised the privileges for the Ethane Separation Plant project.

The sales and service income of the Company from the promoted and non-promoted businesses for the years ended December 31, 2018 and 2017 are as follows:

	Unit: Million Baht	
	Separate financial statements	
	2018	2017
Promoted businesses	27,545.26	126,171.57
Non-promoted businesses	1,383,475.79	971,733.36
Total	1,411,021.05	1,097,904.93

45. Promotional Privileges (Continued)

Some subsidiaries received the following promotional privileges from the BOI under the Investment Promotion Act, B.E. 2520

TOP has been granted privileges for its power and steam generation, petrochemical product production, chemical product production, ethanol product production, marine transportation, offshore crude oil unloading facilities and industrial zone. The promotional privileges include exemption from import duties and tax on the machinery and equipment approved by the BOI, exemption from corporate income tax on the net income from the promoted business for seven to eight years starting from the date on which income is first derived from such operations or eight years from the date on which the income is received subsequent to when the privileges were granted, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

PTTGC has been granted privileges for its production of upstream, intermediate and downstream petrochemical, utilities and production support facilities, jetty for loading and storage of liquid product and transportation by marine vessels, petroleum product production, research and development of polymer products and chemical formula, lab testing services and refinery. The promotional privileges include exemption from import duties and tax on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business up to 100% of its investment excluded the cost of land and working capital for eight years starting from the date on which income is first derived from such operations and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

GPSC has been granted privileges for its production of electricity, steam, water, chilled water, refuse derived fuel and Li-ion battery. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for four or eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption for some promotional privileges.

IRPC has been granted privileges for its manufacture of Compounded Plastic, the cogeneration and steam power plant project (CHP), Propylene project (PRP), Blown Film project, Recovery from Purge Gas at PP Plant project, EBSM Upgrading for ABS Specialties project (EBSM), Multi Product Pipeline project (MPPL), Polypropylene Resin (PPE) project, High Pressure HDPE Compound project, Investment project in Industrial zone and Upstream Project for Hygiene and Value Added Products (UHV). The promotional privileges include exemption from import duties and tax on materials and necessary parts including machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for five to eight years starting from the date on which income is first derived from such operations, a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption, and double deduction of logistics, electricity and water expenses for a period of ten years since income is first derived from such operations.

PTTLNG has been granted promotional privileges, Category 7.1: Public utilities and basic services, for its liquefied natural gas transportation business. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

(TRANSLATION)

45. Promotional Privileges (Continued)

Some subsidiaries received the following promotional privileges from the BOI under the Investment Promotion Act, B.E. 2520 (Continued)

PTT TANK has been granted promotional privileges, Category 7.1: Public utilities and basic services for its loading/unloading facilities for cargo ship business. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business up to 100% of its investment for eight years starting from the date on which income is first derived from such operations, and allow to deduct loss carry forward incurred during tax exemption period from net income incurred after tax exemption period for five year starting from expiry date of the corporate income tax exemption.

PTTGM has been granted promotional privileges Category 6.11: Manufacture of petrochemicals for its manufacture of Polymethyl Methacrylate (PMMA) production business. The promotional privileges include exemption from import duties and tax on the machinery approved by the BOI, exemption from corporate income tax of the net income from the promoted business up to 100% of its investment exclude the cost of land and working capital for eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five year starting from the expiry date of the corporate income tax exemption.

As promoted company, the Group must comply with certain terms and conditions prescribed in the promotional certificates.

46. Proceeding regarding the Central Administrative Court's Ordering Temporary Suspension of Projects in Map Ta Phut Area

On June 19, 2009, the Stop Global Warming Association and a group of individuals totaling 43 parties (the Petitioners) filed a complaint with the Central Administrative Court (the Court) as the black case No. 908/2552, against eight government agencies, together with a motion seeking the Court injunction to temporarily suspend all operations and activities of 76 industrial projects in the Map Ta Phut area in Rayong Province.

On September 29, 2009, the Court ordered the temporary injunction by requiring the eight accused government agencies to issue the order to temporarily suspend all 76 projects pending the Court's judgment or order otherwise, except for those projects or activities which received the permits before the effective date of the Constitution of Kingdom of Thailand B.E. 2550 or which were not required to prepare the Environmental Impact Assessment (EIA) reports pursuant to the Ministerial Announcement of Ministry of Natural Resources and Environment dated June 16, 2009. 25 projects of the Group were under the suspension order, and 3 of those 25 projects belonged to the Company.

On October 16, 2009, the Group, as an interested person, submitted a motion to appeal the Court's order to the Supreme Administrative Court.

On December 2, 2009, the Supreme Administrative Court issued an order No. 592/2552 amending the Court's injunction by requiring the eight accused government agencies to order the temporary suspension of all projects or activities listed in the complaint except for 11 projects, which clearly, according to the Supreme Administrative Court, did not severely affect the community but were projects intended to mitigate pollution or only additional installation to the existing projects. Among those 11 projects, 7 of them belonged to the Group, comprising 1 project of the Company and 6 projects of the other companies in the Group. 2 projects of the Company were still under the Court's order to suspend.

On December 18, 2009, the public prosecutor submitted the answer rejecting all allegations in the complaint.

On September 2, 2010, the Court rendered a judgment revoking the permit of the projects listed in the complaint which, according to the law, were categorized as project that might severely affect the community and did not comply with the procedures set forth in Section 67 paragraph 2 of the Constitution, B.E. 2550. The revocation was effective as of the date of the judgment. 1 project of the Group is within the scope of the judgment.

On October 1, 2010, the 43 prosecutors appealed the Court's judgment to the Supreme Administrative Court. On December 7, 2010, the eight accused government agencies by the public prosecutors submitted a reply to the appeal. The appeal is currently under the consideration of the Supreme Administrative Court.

(TRANSLATION)

47. Commitments and Contingent Liabilities

Details of significant changes in commitments and contingent liabilities are as follows:

47.1 Details of commitments to subsidiaries and joint ventures are as follows:

47.1.1 The Company has provided loans to its subsidiaries with credit limits totalling Baht 87,802.02 million. As at December 31, 2018, the Company made these loans payments to its subsidiaries totalling Baht 40,288.31 million. The remaining credit limits were Baht 47,513.71 million.

47.1.2 The Company entered into the Sponsor Support Agreements with subsidiaries and joint ventures with credit limits equal to the sum of the loan obligations to financial institutions of such subsidiaries and joint ventures. Under these agreements, as at December 31, 2018, the Company had commitments of USD 56.91 million or equivalent to Baht 1,856.11 million.

47.1.3 The Company had obligations under the Shareholder Agreements to pay for ordinary shares in proportion to its shareholding. As at December 31, 2018, the Company had remaining obligations amounting to Baht 6,114.07 million.

47.2 Commitments under operating leases - the Group as a lessee, the future minimum lease payments under uncancellable operating leases as at December 31, 2018 and 2017 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2018	2017	2018	2017
Within 1 year	2,190.36	2,210.19	24.86	84.07
Over 1 year but not over 5 years	4,912.73	5,831.53	155.23	398.81
Over 5 years	25,221.61	7,038.09	481.10	1,419.47
Total	<u>32,324.70</u>	<u>15,079.81</u>	<u>661.19</u>	<u>1,902.35</u>

47.3 As at December 31, 2018, the Group had capital commitments of Baht 41,457.06 million in the consolidated financial statements.

47.4 As at December 31, 2018, the Group had outstanding letters of credit of Baht 34,841.18 million in the consolidated financial statements and Baht 4,136.73 million in the separate financial statements.

47.5 As at December 31, 2018, the Group had contingent liabilities in the form of letter of guarantee amounting to Baht 20,356.74 million in the consolidated financial statements and Baht 73.72 million in the separate financial statements.

47. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 47.6 A subsidiary entered into a contract to sell a product to the Company and the Company entered into a contract to resell the same product to a listed company. The term of the two contracts was 15 years, expiring on January 31, 2012. Before the expiration of the contract, the subsidiary notified the Company that the contract would not be renewed. Consequently, without product to resell, the Company had to notify the listed company that the contract would also not be renewed. The Company's notice was served to the listed company in accordance with the terms and conditions set forth in the contract. On December 3, 2009, the listed company submitted claims with the Thai Arbitration Institute (the Institute) requesting the Company and the subsidiary, as the seller and the supplier, respectively, to comply with the contracts by continuing to sell the product to the listed company or be jointly liable to pay damages.

On February 10, 2010, the subsidiary submitted motion with the Institute asking to dismiss the claims against it from the case list. The Institute issued an order to dismiss the claims relating to the subsidiary.

The Company forwarded the case to the Office of the Attorney General to submit a defense to the Institute. On April 28, 2010, the public prosecutor submitted the defense with the Institute for the Company. The tribunal finished the witness examination. Consequently, on March 25, 2016, the tribunal ruled that the Company make a partial payment for compensations to the listed company. However, the Company was of the opinion that the arbitral award might be both factually and legally inconsistent. Therefore, the Company could exercise its legal right by filing a motion with the court requesting the arbitral award to be revoked. On June 30, 2016, the Company by the public prosecutor filed a motion to revoke the arbitral award with the Civil Court. Currently, this case is under the consideration of the Civil Court. Subsequently, on December 16, 2016, the listed company submitted a motion with the Civil Court asking for the enforcement of the arbitral award. The Company by the public prosecutor submitted the objection with the Civil Court. Currently, the case is under the consideration of the Civil Court.

47. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

47.7 On May 26, 2010, the contractor for an onshore natural gas pipeline construction project (the “Contractor”) submitted claims to the Thai Arbitration Institute (the Institute) seeking overdue payment and damages for the work performed in the aforementioned project from the Company. The Company, however, considered that the submission of the claims was non-compliant with the dispute resolution procedure agreed upon in the contract. Therefore, the Company filed an opposition to the Contractor’s claim submission with the Institute and reserved the right to protest such contractually non-compliant claim submission in the arbitration procedure. After the claim submission, the Central Bankruptcy Court ordered the Contractor to be under an absolute receivership which rendered the official receiver to have sole power in any litigation pertaining to the Contractor’s assets. Subsequently, the Contractor’s official receiver has petitioned the Institute to substitute the Contractor in the dispute against the Company. Regarding the Contractor’s bankruptcy case, the Company submitted a motion for receiving a debt payment in accordance with the law as a creditor. With respect to the arbitration process, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the arbitral tribunal rendered an award ordering the Company to partially pay for the Contractor’s claims. However, the Company considered that the arbitral award is materially both factually and legally inconsistent. The Company, therefore, filed a motion to revoke the arbitral award, while the contractor submitted a motion with the Civil Court to enforce the arbitral award. On October 17, 2017, the Civil Court delivered a judgment to enforce the arbitral award whereby some penalty amounts were reduced. However, The Company submitted with the Supreme Court an appeal of the Civil Court’s judgment and, together with the appeal, the Company also placed with the Civil Court a Company’s book bank as a security to stay the enforcement of the judgment as stated in Note 22. Subsequently, the Contractor also submitted with the Supreme Court an appeal of the Civil Court’s judgment. The case is under the consideration of the Supreme Court.

On September 8, 2010, the Contractor by the official receiver submitted another claim to the Institute seeking overdue payment and damages from the Company for the work performed in connection with another pipeline construction project. The Company, however, considered that the submission of the claims was non-compliant with the dispute resolution procedure agreed upon in the contract. Therefore, the Company filed an opposition to the Contractor’s claim submission with the Institute and reserved the right to protest such contractually non-compliant claim submission in the arbitration procedure. In contention against the alleged claims, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the arbitral tribunal was mutually appointed to consider the disputes. On November 30, 2018, the tribunal rendered an award that both claims and counterclaims were dismissed. According to the law, the parties have the right to file a motion with the competent court within 90 days from the date of the receipt of the arbitral award, seeking a revocation of the award.

47.8 On February 25, 2014, the contractor for an on-shore natural gas pipeline construction project (the “Contractor”) filed a lawsuit against the Company with the Civil Court on the grounds of wrongful termination and breach of contract and claimed for outstanding payment of the work and damages. On the contrary, the Company considered that all of the Company’s actions have been in accordance with the terms and conditions of the contract. Therefore, the Company forwarded the case to the Office of the Attorney General for consideration to arguing the case for the Company and the prosecutor has submitted the answer with the Court. Consequently, the Civil Court ordered the case be transferred to the Central Administrative Court for consideration and judgment because the Civil Court and the Central Administrative Court has the corresponding opinions that this case was an administrative case. The Civil Court transferred this case to the Central Administrative Court. Currently, the case is under the consideration of the Central Administrative Court.

47. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

47.8 After the Company terminated the contract with the Contractor, the Company completed an on-shore natural gas pipeline construction project. Subsequently, on June 20, 2018, the Company filed a lawsuit against the Contractor with the Central Administrative Court on the grounds of breach of contract and absent from service and claimed for damages. Currently, the case is under the consideration of the Central Administrative Court.

47.9 On August 26, 2010, PTTEP Australasia (PTTEP AA) received a letter from the Government of Indonesia (GoI) claiming compensation relating to an incident in 2009 when oil and natural gas leaked from a well in PTTEP AA's Montara project in Australian territory in the Timor Sea. PTTEP AA rejected the claim on the basis that the evidence provided by the GoI was considered unproven and unsubstantiated. No verifiable scientific evidence was ever provided to support the claim.

On March 11, 2016, PTTEP AA received a letter from a firm of Australia lawyers representing a group of West Timorese seaweed farmers, notifying PTTEP AA of their intention to commence a legal action for compensation relating to the incident. Subsequently, on August 9, 2016, PTTEP AA was notified of a claim made in the Sydney Registry of the Federal Court of Australia seeking damages on behalf of a group of seaweed farmers (Class Action). The Statement of Claim as filed does not quantify the claim, and no supporting evidence has yet been presented to the court. PTTEP AA has appointed lawyers and is defending the claim.

On July 14, 2017, the Company and PTTEP received the official statement of claim filed by the Ministry of Environment and Forestry on behalf of GoI to the Indonesian Court seeking approximately USD 2.1 billion for damages related to the incident, however, the Company has not been the operator of Montara Project. The Company and two companies of PTTEP Group will proceed to defend against this lawsuit based on the facts and matters of law.

On February 6, 2018, the Ministry of Environment and Forestry of the Republic of Indonesia has filed a request to the court for withdrawal of a lawsuit with the reason to amend the Claim. Therefore, the court has granted the request and ordered to strike the case out of the case-list.

PTTEP considers that the claims from representative of West Timorese seaweed farmers related to Montara oil spill incident remain unproven due to insufficient evidence to support the claim.

47.10 During the third quarter of 2014, the number of people in Rayong filed several lawsuits with the Civil Court and Rayong Provincial Court against PTTGC to claim the extra compensation from oil spill incident and to perform the rehabilitation of the sea and natural environmental recovery. Some cases have been dismissed and some cases have been passed a judgment by the Civil Court on August 25, 2016 ordered PTTGC to compensate for damages, including interest and rehabilitation, of approximately Baht 11.26 million. PTTGC has appealed on February 17, 2017. Subsequently, on May 11, 2018, PTTGC made a compromise agreement with most plaintiffs at the Civil Court. On December 20, 2018, the Appeal Court has passed their judgment according to the compromise contracts which PTTGC has already paid compensation in full amount. For the remaining plaintiffs, the Appeal Court orders PTTGC to pay compensation and interest according to the Civil Court's judgment and reduced the amount of interest.

On September 28, 2018, Rayong Provincial Court has made the judgment ordering PTTGC to pay damage cost with interest by deducting the remedy paid payment approximately Baht 37.74 million of which Baht 24.00 million has been paid and the remaining amount will be paid to Deposit of Property Office.

48. Other Event

48.1 On April 4, 2016, the Ombudsman of Thailand submitted a complaint to the Administrative Court against the Minister of Finance, the Minister of Energy, the Company and other defendants as a black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on December 18, 2007 and August 10, 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of September 30, 2001 amounting to Baht 68,569.69 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On May 26, 2016, the Administrative Court ordered the Company to submit a defense, responding to the particular issue that was whether the Company completely transferred the assets of the Petroleum Authority of Thailand (the tenth defendant), which were public assets, to the first defendant (the Minister of Finance) in accordance with the Cabinet Resolution on December 18, 2007. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. On May 11, 2018, the Administrative Court issued an order to end the fact finding process. Currently, the case is under the consideration of the Administrative Court.

Nevertheless, on December 14, 2007, the Supreme Administrative Court in a red case No. Fo. 35/2550, ordered the defendants to jointly segregate the public assets to the Minister of Finance, in accordance with the judgment. Therefore, on December 18, 2007, the Cabinet acknowledged the aforesaid judgment and assigned the Minister of Finance and the Minister of Energy to jointly segregate the public assets to comply with the judgment. Consequently, on December 26, 2008, the Supreme Administrative Court declared that the defendants had completely complied with the judgment of the Court. Furthermore, the plaintiff and the co-plaintiffs had submitted complaints regarding such segregation of public assets to the Court for four times but the Court ordered to dismiss such complaints and reaffirmed that the judgment of the Supreme Administrative Court in the red case No. Fo. 35/2550 was completed. Consequently, on August 10, 2010, the Cabinet acknowledged the conduct followed the Supreme Administrative Court's judgment in accordance with the proposals of the Minister of Energy and the Minister of Finance.

48. Other Event (Continued)

- 48.2 On June 19, 2018, the Board of Directors of GPSC approved and proposed that the GPSC's shareholders meeting consider and approve GPSC to acquire the shares and make a tender offer for the entire securities of Glow Energy Public Company Limited (GLOW). GPSC will acquire, directly and indirectly, 69.11% of the total issued shares of GLOW from the Engie Global Developments B.V. (the Seller) totaling approximately Baht 97,559 million (the said purchase price may be decreased in the amount equivalent to the amount of the dividend paid per share should GLOW pay the dividend prior to the fulfilment of the conditions precedent). GPSC has entered into the share purchase agreement with the Seller on June 20, 2018. GPSC's acquisition of the GLOW shares under the aforementioned will occur upon the satisfaction of all the following conditions precedent: (a) GPSC is granted approval by its shareholders meeting to acquire the shares of GLOW and (b) GPSC is granted relevant approval by the Energy Regulatory Commission (the ERC) with respect to the acquisition of the GLOW shares.

On October 10, 2018, the ERC passed a resolution to disapprove the application of GPSC with respect to the acquisition of shares of GLOW. According to the ERC's resolution, the conditions precedent (b) under the Share Purchase Agreement could not be fulfilled.

On December 18, 2018, GPSC has submitted a new application for a merger with GLOW to ERC. GPSC has restructured the proposed transaction to be explicit for problem-solving in terms of reducing competition in the Map Ta Phut area. Then, on December 26, 2018, ERC announced the approval in principle the merger of GPSC and GLOW, subject to a condition precedent that GLOW must divest its stake, Glow SPP 1 Company Limited (SPP1) before or during the merger process.

GPSC has entered into the agreement for amendment to the Share Purchase Agreement, by including the sale of SPP1 as an additional condition precedent of the Share Purchase Agreement to be in accordance with the resolution of the ERC to be officially granted to GPSC. The additional condition precedent specifies that GPSC shall purchase the Sale Shares and make a tender offer for all of the remaining GLOW shares upon the completion of the sale of SPP1. As such, the condition precedent under the Share Purchase Agreement has not yet been satisfied as at December 31, 2018.

- 48.3 On August 27, 2018, at the Extraordinary General Meeting of Shareholder of TOP, the shareholders passed an extraordinary resolution to approve the investment in the Clean Fuel Project (CFP) for the purposes of enhancing the competitiveness of TOP. The investment project value was USD 4,825 million or equivalent Baht 160,279 million. The project cost includes the investment of Energy Recover Unit (ERU). TOP is in process of engaging contractors for construction of the project.
- 48.4 On December 13, 2018, PTTEP Energy Development Company Limited (PTTEP ED), a subsidiary of PTTEP, obtained the exploration and production rights, and also the operatorship of Blocks G1/61 (the Erawan field) and G2/61 (the Bongkot field), in which PTTEP ED holds 60% and 100% participating interests, respectively. The signing in the Production Sharing Contract is expected to be completed within the first quarter of 2019.

(TRANSLATION)

49. Events after the Reporting Period

- 49.1 On November 16, 2018, at the Board of Directors Meeting No. 11/2018 of the Company, the Board passed a resolution to establish Map Ta Phut Air Products Company Limited (MAP), a joint venture company between the Company (49.00%), a company in the Group (2.00%) and Bangkok Industrial Gas Company Limited (BIG) (49.00%). MAP engages in the business of the production and distribution of industrial gas. The Company has a registered capital of Baht 1.00 million. The Company made the share payment amounting to Baht 0.49 million on January 14, 2019.
- 49.2 On February 21, 2019, at the Board of Directors Meeting No. 2/2019 of the Company, the Board passed a resolution to propose to the Annual General Meeting of the Company's shareholders for approval a dividend payment of Baht 2.00 per share for the year 2018. On October 26, 2018, the Company paid an interim dividend of Baht 0.80 per share as described in Note 42. Accordingly, the remaining dividend of Baht 1.20 per share or approximately Baht 34,276 million will be proposed for approval by the Annual General Meeting of the Company's shareholders for the year 2019.
- 49.3 The board of directors of the Company approved these financial statements for public issuance on February 21, 2019.
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AUDITOR'S REPORT AND FINANCIAL STATEMENTS
OF
PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
FOR THE YEAR ENDED DECEMBER 31, 2017



(TRANSLATION)

AUDITOR'S REPORT

TO: THE SHAREHOLDERS OF PTT PUBLIC COMPANY LIMITED

Opinion

The Office of the Auditor General of Thailand has audited the accompanying consolidated financial statements of PTT Public Company Limited and its subsidiaries (the Group) and the separate financial statements of PTT Public Company Limited (the Company), which comprise the consolidated and separate statements of financial position, as at December 31, 2017, the consolidated and separate statements of income, the consolidated and separate statements of comprehensive income, the consolidated and separate statements of changes in equity and the consolidated and separate statements of cash flows for the year then ended, and notes to the consolidated and separate financial statements, including a summary of significant accounting policies.

In the Office of the Auditor General of Thailand's opinion, the above mentioned consolidated and separate financial statements present fairly, in all material respects, the consolidated financial position of PTT Public Company Limited and its subsidiaries and separate financial position of PTT Public Company Limited, respectively, as at December 31, 2017, and their consolidated and separate financial performance and cash flows for the year then ended in accordance with Thai Financial Reporting Standards (TFRSs).

Basis for Opinion

The Office of the Auditor General of Thailand conducted the audit in accordance with Thai Standards on Auditing (TSAs). The Office of the Auditor General of Thailand's responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements section of the Office of the Auditor General of Thailand's report. The Office of the Auditor General of Thailand is independent of the Group and the Company in accordance with the ethical requirements set out in the State Audit Standards issued by the State Audit Commission and the Federation of Accounting Professions' Code of Ethics for Professional Accountants that are relevant to the Office of the Auditor General of Thailand's audit of the consolidated and separate financial statements, and has fulfilled other ethical responsibilities in accordance with these requirements. The Office of the Auditor General of Thailand believes that the audit evidence the Office of the Auditor General of Thailand has obtained is sufficient and appropriate to provide a basis for the Office of the Auditor General of Thailand's opinion.

Office of the Auditor General of Thailand



Emphasis of Matter

The Office of the Auditor General of Thailand draws attention to Note 46.1 to the financial statements, which describes the event that Ombudsman of Thailand submitted a complaint to the Administrative Court (the Court) against the Company as the black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on December 18, 2007 and August 10, 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of September 30, 2001 amounting to Baht 68,569.69 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On May 26, 2016, the Administrative Court ordered the Company to submit a defense. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. Currently, the case is under the consideration of the Administrative Court.

In conclusion, the Office of the Auditor General of Thailand's opinion is not qualified in respect of these matters.

Key Audit Matters

Key audit matters are those matters that, in the Office of the Auditor General of Thailand's professional judgment, were of most significance in the audit of the consolidated and separate financial statements of the current period. These matters were addressed in the context of the Office of the Auditor General of Thailand's audit of the consolidated and separate financial statements as a whole, and in forming the Office of the Auditor General of Thailand's opinion thereon, and the Office of the Auditor General of Thailand does not provide a separate opinion on these matters.

The Office of the Auditor General of Thailand identifies the followings as key audit matters to communicate:

1. Estimation of petroleum reserves

Estimation of petroleum proved reserves, especially proved reserves, has a significant impact the consolidated financial statements in impairment testing and in the calculation of depreciation, depletion, and amortization expenses of petroleum exploration and production assets. Estimated proved reserves may differ from the actual reserves to be recoverable in the



future because an estimate is based on available information at the time of the estimation. At the beginning of each project, the estimation may be subject to a high discrepancy, but the discrepancy will decrease when the project approaches the end of its production life. This may impact the management's investment decisions to sustain the Group's business. The management relies on the Group's internal teams of experts in estimating the proved reserves using the estimation methods consistent with those generally employed by the petroleum exploration and production industry. The experts have to exercise significant judgment as well as experience in determining the appropriate estimation methods for the information available at the time of the estimation. Therefore, the amount of proved reserves may vary with individual judgment and experience. In addition, changes in the estimated proved reserves will impact the recognition of depreciation, depletion, and amortization expenses in the financial statements. As a result, the Office of the Auditor General of Thailand considers this as a key audit matter.

The Group disclosed estimation of petroleum proved reserves information in Note 3.2.14 Accounting Policies - Property, Plant and Equipment, Note 3.2.29 Use of Estimates and Significant Assumptions - Estimates of Petroleum Reserves, and Note 17 Property, Plant and Equipment.

The Office of the Auditor General of Thailand performed significant audit procedures as follows;

1. Obtaining an understanding of the proved reserve estimation processes, assessing the adequacy of the designed key internal controls, and performing tests of key controls of such processes, especially the controls over the reliability of the data used in the preparation of reports related to the Group's proved reserves, and the uses of proved reserves data in the calculation of depreciation, depletion, and amortization expenses, as well as the assessment of impairment of assets.

2. Assessing the qualifications of the Group's internal experts who are responsible for estimating proved reserves and preparing the Group's proved reserves data.

3. Using the results of the reserve estimation audit performed by the energy regulatory agency in Thailand, which has its own processes and experts for verifying the estimation of domestic petroleum reserves for projects the operators of which have submitted the required reports. The Office of the Auditor General of Thailand compared the Group's proved reserves for the year 2016 with those verified by the regulatory agency and reconciled them with the estimated proved reserves presented in internal reports related to the proved reserves during the year to determine the estimated proved reserves of domestic projects of which the Group was the operator at the end of 2017.



4. Verifying that the Group recognized significant changes in the estimated proved reserves in the appropriate accounting period and in accordance with the Group's accounting policy, and those changes were applied to the calculation of depreciation, depletion, and amortization expenses appropriately.

2. Provision for decommissioning costs

Provision for decommissioning costs is the significant item which included in long-term provision for decommissioning costs in the consolidated financial statements. Decommissioning activities occur at the end of projects. Decommissioning methods vary with the locations of petroleum exploration and production, which are classified into onshore and offshore production areas, where the main infrastructure, including Central Processing Platforms, Well Head Platform, Development Well, Pipeline, and other producing properties, is installed. Also, regulations in each country have varying requirements for decommissioning activities, which can be either total or partial removal. In addition, only a small number of decommissioning activities in the past or with certain natures have taken place, resulting in limited decommissioning cost information that can be used as a reference in the Group's estimation of future expenses. Due to these factors, the calculation of the provision for decommissioning costs has to rely significantly on the exercise of judgment in determining assumptions around decommissioning costs, inflation rates, discount rates, and timing of the decommissioning based on the estimated field life of a project. These assumptions are subject to change over time. The management relies on the Group's teams of experts, comprising those from Decommissioning Taskforce Team, Engineering and Development Group, Production Asset Group, Operations Support Group, and Finance and Accounting Group in estimating the provision for decommissioning costs. As a result, the Office of the Auditor General of Thailand considers this as a key audit matter.

The Group disclosed information about provision for decommissioning costs in Note 3.2.22 Significant Accounting Policies - Provision for Decommissioning Costs, Note 3.2.29 Use of Estimates and Significant Assumptions - Provisions, and Note 28 Long-term Provision for Decommissioning Costs.

The Office of the Auditor General of Thailand performed significant audit procedures as follows;

1. Obtaining an understanding of the decommissioning cost estimation processes, assessing the adequacy of the designed internal controls and performing tests of controls over the estimation, review and adjustment of the provision for decommissioning costs, as well as related approval.

2. Assessing the qualifications of the Group's experts who are responsible for estimating the provision for decommissioning costs.



3. Evaluating the reasonableness of the assumptions used in the calculation of provision for decommissioning costs by

3.1 Evaluating the reasonableness of the decommissioning costs through inquiry of the experts about the assumptions used, relying on the Office of the Auditor General of Thailand's knowledge of the businesses and decommissioning information of other comparable projects;

3.2 Evaluating the appropriateness of the expected timing of decommissioning used in the calculation of the provision for decommissioning costs by considering its consistency with investment plans or any other related information; and

3.3 Evaluating the reasonableness of inflation rates and discount rates through inquiry of the experts and comparison with the information from external sources.

4. Agreeing of the decommissioning costs used in the calculation of the provision for decommissioning costs to the information obtained from the Group's engineers, both for projects of which the Group is operator and for projects of which the Group is non-operator.

5. Validating significant changes in the estimated decommissioning costs incurred during the year and changes that impact the statements of income against supporting evidence.

6. Testing the calculation of the provision for decommissioning costs.

7. In case of projects which the Group had submitted the initial decommissioning plan and the decommissioning cost estimate report, required to be audited and verified by the Group's external experts, to the energy regulatory agency in Thailand, the Office of the Auditor General of Thailand assessed the reliability of the external experts by ensuring that their qualifications, work experience and independence were in compliance with the requirements imposed by the regulatory agency for the appointment of third parties in auditing and verifying the accuracy of decommissioning cost estimates.

8. Comparing actual decommissioning costs incurred with those estimated by the Group to evaluate the appropriateness of the estimation. In case that there were any significant variances, the Office of the Auditor General of Thailand considered the reasonableness of the clarifications made by the Group regarding the causes of such variances, as well as considered whether the Group incorporated the experience gained from the actual decommissioning in the current year into the review of the provision appropriately.

3. Impairment of Assets

Impairment of Assets under Mariana Oil Sands project is the significant item in the consolidated financial statements. Due to uncertainties in the global economy which affected commodity prices and the current trend of the US Dollar depreciation against the Canadian Dollar, the Group decided to revise the development plan, including the postponement of the Final Investment Decision of the Mariana Oil Sands project, by considering the commerciality



of the project. The Group determined that this event was an indicator that the assets of the project may be impaired. The Group measured the recoverable amount of the Mariana Oil Sands project's assets by using the fair value less cost of disposal method because the fair value less cost of disposal of exploration and evaluation assets of projects during the exploration phase better reflects the recoverable amount of the assets and is higher than their value in use. The fair value less cost of disposal was calculated from discounted future cash flow estimates. Key assumptions included oil price forecasts and discount rates of the oil sands industry, as well as estimated production volume, capital expenditures, and operating expenditures. However, certain assumptions relied on the management's exercise of significant judgment, leading to the risk that the fair value less cost of disposal measured by the Group may be different from those measured using the entire market participant assumptions. As a result, the Office of the Auditor General of Thailand considers this as a key audit matter.

The Group disclosed information about impairment of assets in Note 3.2.18 Significant Accounting Policies - Impairment of Assets, Note 3.2.29 Use of Estimates and Significant Assumptions - Impairment of Assets, and Note 21 Impairment of Assets.

The Office of the Auditor General of Thailand performed significant audit procedures as follows;

1. Evaluating the process of identifying impairment indicators and obtaining an understanding of the impairment testing and recoverable amount measurement processes.

2. Considering the appropriateness of the method used in measuring the recoverable amount.

3. Communicating with the component auditor to obtain sufficient and appropriate audit evidence by reviewing the audit work performed for impairment of assets by the component auditor. The key audit procedures are as follows:

3.1 Independent assessment of the fair value less cost of disposal with a self-developed model by using the best estimates of future cash inflows from probable reserves according to the external expert's report, which reflected the market's perspective, as well as using comparable market metrics and performing a sensitivity analysis to obtain an acceptable range of fair value less cost of disposal and ensure that the fair value less cost of disposal measured by the component fell within the range;

3.2 Evaluation of the reasonableness of the assumptions used by the external expert in preparing the contingent resources and probable reserves report which contained the information used in the model; and

3.3 Evaluation of the knowledge, competence, and objectivity of the external expert involved with the preparation of such report.



4. Sale of investments

Sale of investments is the significant item in the separate financial statements. In 2017, the Company completed the shareholder restructuring of the Group by transferring all shares, which the Company held in a group of companies in petrochemical business and relevant service businesses of which business operation are connected, to a subsidiary. The restructuring also included a transfer of lending loan contracts and a sale of the rights to operate in projects and any other relevant assets as agreed to a subsidiary. This subsidiary is positioned as the petrochemical flagship company. To determine the transaction price, the Company engaged an independent financial advisors to perform a fair value assessment of the transaction by determining the fair value of the shares and the assets of each company. In the fair value valuation, the financial advisors used estimates, critical assumptions and significant management's judgement and also selected the appropriate valuation method for different companies. As a result, the Office of the Auditor General of Thailand considers this as a key audit matter.

The Company disclosed information about the sale of investments in Note 12 The Shareholder Restructuring of the Group.

The Office of the Auditor General of Thailand performed significant audit procedures as follows;

1. Understanding the shareholder restructuring process, sale of investments, estimates, and assumptions used to measure the fair value, and evaluating the adequacy and appropriateness of the designed internal controls relevant to the sale of investments.
2. Assessing the knowledge, ability, and independence of the independent financial advisors who measured the fair value of shares and the assets of each company in the transferred group of companies.
3. Reviewing the fair value valuation method and assessing the reasonableness of the estimates and assumptions used to calculate the fair values and the reasonableness of discount rates by comparing them with the information from external sources.
4. Inquiring with management as to the nature and objectives of the sale of investments.
5. Considering the adequacy of disclosures relating to the sale of investments.

Other Information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated and separate financial statements and auditor's report thereon. The annual report is expected to be made available to the Office of the Auditor General of Thailand after the date of this auditor's report.



The Office of the Auditor General of Thailand's opinion on the consolidated and separate financial statements does not cover the other information and the Office of the Auditor General of Thailand will not express any form of assurance conclusion thereon.

In connection with the audit of the consolidated and separate financial statements, the Office of the Auditor General of Thailand's responsibility is to read the other information identified above when it becomes available and, in doing so, consider whether the other information is materially inconsistent with the consolidated and separate financial statements or the Office of the Auditor General of Thailand's knowledge obtained in the audit, or otherwise appears to be materially misstated.

When the Office of the Auditor General of Thailand reads the annual report, if the Office of the Auditor General of Thailand concludes that there is a material misstatement therein, the Office of the Auditor General of Thailand is required to communicate the matter to those charged with governance.

Responsibilities of Management and Those Charged with Governance for the Consolidated and Separate Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated and separate financial statements in accordance with TFRSs, and for such internal control as management determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated and separate financial statements, management is responsible for assessing the Group's and the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group and the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's and the Company's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements

The Office of the Auditor General of Thailand's objectives are to obtain reasonable assurance about whether the consolidated and separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes the Office of the Auditor General of Thailand's opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with TSAs



will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated and separate financial statements.

As part of an audit in accordance with TSAs, the Office of the Auditor General of Thailand exercises professional judgment and maintains professional skepticism throughout the audit. The Office of the Auditor General of Thailand also:

- Identifies and assesses the risks of material misstatement of the consolidated and separate financial statements, whether due to fraud or error, designs and performs audit procedures responsive to those risks, and obtains audit evidence that is sufficient and appropriate to provide a basis for the Office of the Auditor General of Thailand's opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtains an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's and the Company's internal control.

- Evaluates the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the management.

- Concludes on the appropriateness of the management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's and the Company's ability to continue as a going concern. If the Office of the Auditor General of Thailand concludes that a material uncertainty exists, the Office of the Auditor General of Thailand is required to draw attention in the auditor's report of the Office of the Auditor General of Thailand to the related disclosures in the consolidated and separate financial statements or, if such disclosures are inadequate, to modify the Office of the Auditor General of Thailand's opinion. The Office of the Auditor General of Thailand's conclusions are based on the audit evidence obtained up to the date of the auditor's report of the Office of the Auditor General of Thailand. However, future events or conditions may cause the Group and the Company to cease to continue as a going concern.

- Evaluates the overall presentation, structure and content of the consolidated and separate financial statements, including the disclosures, and whether the consolidated and separate financial statements represent the underlying transactions and events in a manner that achieves fair presentation.



- Obtains sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. The Office of the Auditor General of Thailand is responsible for the direction, supervision and performance of the group audit. The Office of the Auditor General of Thailand remains solely responsible for the Office of the Auditor General of Thailand's audit opinion.

The Office of the Auditor General of Thailand communicates with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that the Office of the Auditor General of Thailand identifies during the Office of the Auditor General of Thailand's audit.

The Office of the Auditor General of Thailand also provides those charged with governance with a statement that the Office of the Auditor General of Thailand has complied with the State Audit Standards and relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on the Office of the Auditor General of Thailand's independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, the Office of the Auditor General of Thailand determines those matters that were of most significance in the audit of the consolidated and separate financial statements of the current period and are therefore the key audit matters. The Office of the Auditor General of Thailand describes these matters in the auditor's report of the Office of the Auditor General of Thailand unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, the Office of the Auditor General of Thailand determines that a matter should not be communicated in the Office of the Auditor General of Thailand's report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

(Signed) *Poungchomnad Jariyajinda*
(Poungchomnad Jariyajinda)
Deputy Auditor General

(Signed) *Mayuree Juntamat*
(Mayuree Juntamat),
Director of Financial Audit Office No.7

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2017

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		December 31, 2017	December 31, 2016	December 31, 2017	December 31, 2016
Assets					
Current assets					
Cash and cash equivalents	4	166,189,023,655	215,566,411,132	38,691,660,939	62,648,286,060
Current investments	5	229,651,255,278	176,813,625,899	68,056,258,825	59,192,546,702
Trade accounts receivable	6	174,916,243,685	143,191,055,315	144,265,155,266	124,562,469,670
Other accounts receivable	7	50,602,704,855	49,171,420,625	16,923,203,980	11,229,820,841
Short-term lending loans	8.1	1,231,329,558	530,365,629	4,648,737,018	8,160,734,985
Inventories	10	121,871,798,713	116,883,543,400	27,103,531,169	22,987,980,292
Materials and supplies	11	28,942,454,106	31,026,266,857	5,749,466,246	5,661,775,885
Current derivative assets		1,997,546,512	2,278,953,598	-	618,972,244
Other current assets		6,768,006,749	6,122,031,345	3,956,768,710	3,581,409,533
Total current assets		782,170,363,111	741,583,673,800	309,394,782,153	298,643,996,212
Non-current assets					
Available-for-sale investments	13.2	17,602,408,397	23,839,541,021	4,533,102,500	18,116,254,567
Investments in subsidiaries	14.6	-	-	218,929,325,063	210,360,505,443
Investments in joint ventures	14.4, 14.6	37,937,145,910	36,843,812,673	5,927,614,973	22,884,267,327
Investments in associates	14.5, 14.6	21,979,621,626	19,429,576,628	3,173,227,030	3,173,227,030
Other long-term investments	15.2	27,668,655,084	2,205,879,075	15,164,124,801	7,390,216
Long-term lending loans	8.2	19,078,604,450	15,017,824,346	22,754,737,237	27,582,205,637
Investment properties	16	6,233,426,284	6,227,549,199	3,851,133,751	3,839,563,972
Property, plant and equipment	17	1,076,905,903,235	1,106,702,662,362	287,729,934,813	285,001,575,032
Goodwill	18	46,688,256,108	50,778,166,385	-	-
Intangible assets	19	32,107,682,512	33,500,330,828	14,403,623,166	14,348,065,711
Exploration and evaluation assets	20	108,759,721,484	137,449,972,694	-	-
Deferred tax assets	22.2	15,101,219,955	10,581,203,858	-	-
Non-current derivative assets		3,734,359,338	246,849,916	754,506,988	99,668,317
Other non-current assets	23	36,346,789,502	47,924,040,570	6,695,815,983	10,678,922,685
Total non-current assets		1,450,143,793,885	1,490,747,409,555	583,917,146,305	596,091,645,937
Total assets		2,232,314,156,996	2,232,331,083,355	893,311,928,458	894,735,642,149

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2017

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		December 31, 2017	December 31, 2016	December 31, 2017	December 31, 2016
<u>Liabilities and Equity</u>					
Current liabilities					
Bank overdrafts and short-term loans from financial institutions	24	18,126,630,943	30,526,999,660	-	-
Trade accounts payable		160,301,286,194	150,238,138,892	139,418,539,503	133,387,903,741
Other accounts payable		71,526,778,845	57,792,824,277	23,624,425,464	23,478,969,389
Current portion of long-term loans	26	66,433,929,171	64,055,692,422	29,439,944,692	24,139,813,716
Short-term loans-related parties	9.5	-	-	2,803,042,683	2,117,071,996
Income tax payable		24,094,727,080	21,193,488,573	3,592,947,307	4,823,679,215
Current derivative liabilities		4,954,839,016	7,823,994,445	86,699,923	743,498,596
Other current liabilities	25	8,958,513,286	7,961,074,728	4,565,821,904	3,390,127,991
Total current liabilities		354,396,704,535	339,592,212,997	203,531,421,476	192,081,064,644
Non-current liabilities					
Long-term loans	26	444,919,659,683	519,266,904,102	150,115,471,277	210,903,682,857
Deferred tax liabilities	22.2	35,795,720,701	44,020,389,148	473,743,077	212,389,427
Provisions for employee benefit	27	23,313,066,000	21,072,327,428	8,877,981,146	8,140,102,985
Long-term provision for decommissioning costs	28	74,865,436,241	72,751,557,264	-	-
Deposits on LPG cylinders		10,519,247,338	9,898,534,048	10,519,247,338	9,898,534,048
Non-current derivative liabilities		2,104,348,790	4,856,896,977	45,185,175	1,171,425,711
Other non-current liabilities	29	37,844,233,080	49,275,252,034	21,868,611,384	22,918,224,507
Total non-current liabilities		629,361,711,833	721,141,861,001	191,900,239,397	253,244,359,535
Total liabilities		983,758,416,368	1,060,734,073,998	395,431,660,873	445,325,424,179

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2017

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		December 31, 2017	December 31, 2016	December 31, 2017	December 31, 2016
Liabilities and Equity (Continued)					
Equity					
Share capital					
Authorized share capital					
2,857,245,725 ordinary shares of Baht 10 each	30.1	28,572,457,250	28,572,457,250	28,572,457,250	28,572,457,250
Issued and paid-up share capital					
2,856,299,625 ordinary shares of Baht 10 each	30.2	28,562,996,250	28,562,996,250	28,562,996,250	28,562,996,250
Premium on ordinary shares	30.2	29,211,131,966	29,211,131,966	29,211,131,966	29,211,131,966
Deficit from the change in the ownership interests in subsidiaries		(24,311,625,093)	(24,327,311,399)	-	-
Retained earnings					
Appropriated					
Legal reserve	31.1	2,857,245,725	2,857,245,725	2,857,245,725	2,857,245,725
Reserve for self-insurance fund	31.2	1,199,991,563	1,174,389,774	1,199,991,563	1,174,389,774
Unappropriated		775,959,276,682	694,362,564,563	433,069,636,210	380,086,648,201
Other components of equity		5,192,734,029	31,106,632,311	2,979,265,871	7,517,806,054
Total equity attributable to owners of the parent		818,671,751,122	762,947,649,190	497,880,267,585	449,410,217,970
Non-controlling interests		429,883,989,506	408,649,360,167	-	-
Total equity		1,248,555,740,628	1,171,597,009,357	497,880,267,585	449,410,217,970
Total liabilities and equity		2,232,314,156,996	2,232,331,083,355	893,311,928,458	894,735,642,149
		-	-	-	-

The accompanying notes are an integral part of these financial statements.

(Signed) *Tevin Vongvanich*
(Tevin Vongvanich)
President & Chief Executive Officer

(Signed) *Nitima Thepvanangkul*
(Nitima Thepvanangkul)
Chief Financial Officer

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF INCOME
FOR THE YEAR ENDED DECEMBER 31, 2017

Unit: Baht

	Notes	Consolidated financial statements		Separate financial statements	
		2017	2016	2017	2016
Sales and service income	33	1,995,722,067,627	1,718,846,039,961	1,559,380,432,712	1,439,393,492,138
Cost of sales and services	35	1,688,461,455,356	1,464,614,449,950	1,454,795,096,944	1,347,178,876,606
Gross profit		307,260,612,271	254,231,590,011	104,585,335,768	92,214,615,532
Other income	34	28,268,513,870	9,682,645,328	54,999,955,892	40,762,874,116
Gain on foreign exchange rates		13,650,641,022	4,472,680,400	7,456,055,779	3,003,134,917
Profit before expenses		349,179,767,163	268,386,915,739	167,041,347,439	135,980,624,565
Selling and distribution expenses	35	24,624,948,200	21,652,964,933	20,123,443,690	18,349,199,349
Administrative expenses	35	75,974,028,735	53,123,378,680	23,066,838,237	26,844,154,620
Petroleum royalties and remuneration	36	13,877,333,274	13,570,434,139	-	-
Operating profit		234,703,456,954	180,040,137,987	123,851,065,512	90,787,270,596
Share of profit from investments in joint ventures	14.7.1	5,461,842,429	2,980,567,211	-	-
Share of profit from investments in associates	14.7.2	1,848,573,880	1,162,641,231	-	-
Profit before finance costs and income taxes		242,013,873,263	184,183,346,429	123,851,065,512	90,787,270,596
Finance costs	37	29,085,932,422	28,887,254,079	9,683,710,591	10,906,455,692
Profit before income taxes		212,927,940,841	155,296,092,350	114,167,354,921	79,880,814,904
Income taxes	22.1	28,306,575,417	26,593,074,497	9,693,556,947	9,072,769,378
Profit for the years from continuing operations		184,621,365,424	128,703,017,853	104,473,797,974	70,808,045,526
Profit (loss) for the years from discontinued operations, net of tax		(11,349,343)	872,073,877	-	-
Profit for the years		184,610,016,081	129,575,091,730	104,473,797,974	70,808,045,526
Profit attributable to					
Owners of the parent					
Continuing operations		135,187,012,229	94,039,732,600	104,473,797,974	70,808,045,526
Discontinued operations, net of tax		(7,409,577)	569,345,640	-	-
		135,179,602,652	94,609,078,240	104,473,797,974	70,808,045,526
Non-controlling interests					
Continuing operations		49,434,353,195	34,663,285,253	-	-
Discontinued operations, net of tax		(3,939,766)	302,728,237	-	-
		49,430,413,429	34,966,013,490	-	-
Basic earnings per share					
Continuing operations	32	46.74	32.48	36.58	24.79
Discontinued operations	32	-	0.20	-	-
		46.74	32.68	36.58	24.79

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF COMPREHENSIVE INCOME
FOR THE YEAR ENDED DECEMBER 31, 2017

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Profit for the years from continuing operations	184,621,365,424	128,703,017,853	104,473,797,974	70,808,045,526
Other comprehensive income (loss)				
Items that may be reclassified to profit or loss in subsequent periods				
Currency translation differences	(34,470,386,455)	(4,209,674,876)	-	-
Gain (loss) on measurements of available-for-sale investments	(5,031,955,629)	5,055,509,044	(5,673,175,229)	5,007,467,333
Income taxes related to available-for-sale investments	1,135,357,457	(1,001,670,252)	1,134,635,046	(1,001,493,467)
Gain (loss) on cash flow hedges	(367,552,252)	406,705,383	-	-
Income taxes related to cash flow hedges	(88,022,406)	1,807,287,647	-	-
Share of other comprehensive income of joint ventures and associates	287,735,036	104,918,204	-	-
Items that will not be reclassified to profit or loss in subsequent periods				
Losses on remeasurements of defined benefits plans	(1,020,616,075)	(1,136,390,447)	(65,267,097)	(863,033,354)
Income taxes related to remeasurements of defined benefits plans	177,673,980	230,897,889	13,053,419	172,606,671
Share of other comprehensive loss from joint ventures and associates	(54,629,410)	(73,491,182)	-	-
Other comprehensive income (loss), net of taxes	(39,432,395,754)	1,184,091,410	(4,590,753,861)	3,315,547,183
Comprehensive income for the years from continuing operations	145,188,969,670	129,887,109,263	99,883,044,113	74,123,592,709
Comprehensive income (loss) for the years from discontinued operations, net of tax	(11,349,343)	725,586,572	-	-
Total comprehensive income for the years	145,177,620,327	130,612,695,835	99,883,044,113	74,123,592,709
Total comprehensive income attributable to				
Owners of the parent				
Continuing operations	108,734,635,094	95,891,533,440	99,883,044,113	74,123,592,709
Discontinued operations, net of tax	(7,409,577)	473,709,352	-	-
	108,727,225,517	96,365,242,792	99,883,044,113	74,123,592,709
Non-controlling interests				
Continuing operations	36,454,334,576	33,995,575,823	-	-
Discontinued operations, net of tax	(3,939,766)	251,877,220	-	-
	36,450,394,810	34,247,453,043	-	-

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED DECEMBER 31, 2017

Unit: Baht

Notes	CONSOLIDATED FINANCIAL STATEMENTS											Total equity		
	Equity attributable to owners of the parent													
	Retained earnings			Other components of equity					Share of					
	Issued and paid-up share capital	Premium on ordinary shares	Surplus (Deficit) from the change in the ownership interests in subsidiaries	Legal reserve	Reserve for self-insurance fund	Unappropriated investments	Available-for-sale investments	Currency translation differences	Call flow hedges	other comprehensive income (loss) of joint ventures and associates	Total other components of equity	Total equity attributable to owners of the parent	Non-controlling interests	Total equity
	28,562,996,250	29,211,131,966	(23,574,448,395)	2,857,245,725	1,145,105,235	630,383,740,012	3,249,949,353	26,913,229,902	(1,208,540,494)	(393,384,329)	28,561,254,432	697,147,055,225	390,540,348,571	1,087,687,373,796
31.2	-	-	-	-	29,284,539	(29,284,539)	-	-	-	-	-	(1,522,821,631)	(809,703,414)	(2,332,525,045)
	-	-	-	-	-	(1,522,821,631)	-	-	-	-	-	271,121,768	144,158,854	415,280,622
42	-	-	-	-	-	(28,560,055,960)	-	-	-	-	-	(28,560,055,960)	-	(28,560,055,960)
	-	-	-	-	-	-	-	-	-	-	-	-	(16,029,854,696)	(16,029,854,696)
	-	-	-	-	-	-	-	-	-	-	-	-	(162,700)	(162,700)
	-	-	(752,863,004)	-	-	-	-	-	-	-	(752,863,004)	-	455,344,095	(297,518,909)
	-	-	-	-	-	-	-	-	-	-	-	-	101,776,414	101,776,414
	-	-	-	-	-	94,609,078,240	-	-	-	-	-	94,609,078,240	34,966,013,490	129,575,091,730
	-	-	-	-	-	(789,213,327)	4,060,830,819	(3,203,505,086)	1,450,846,175	237,205,971	2,545,377,879	1,756,164,532	(718,560,447)	1,037,604,105
	-	-	-	-	-	694,362,564,563	7,310,780,172	23,709,724,816	242,305,681	(156,178,358)	31,106,632,311	762,947,649,190	408,649,360,167	1,171,597,009,357
	28,562,996,250	29,211,131,966	(24,327,311,399)	2,857,245,725	1,174,389,774	694,362,564,563	7,310,780,172	23,709,724,816	242,305,681	(156,178,358)	31,106,632,311	762,947,649,190	408,649,360,167	1,171,597,009,357
	28,562,996,250	29,211,131,966	(24,327,311,399)	2,857,245,725	1,174,389,774	694,362,564,563	7,310,780,172	23,709,724,816	242,305,681	(156,178,358)	31,106,632,311	762,947,649,190	408,649,360,167	1,171,597,009,357
31.2	-	-	-	-	25,601,789	(25,601,789)	-	-	-	-	-	(1,160,277,512)	(616,934,146)	(1,777,211,658)
41	-	-	-	-	-	(1,160,277,512)	-	-	-	-	-	(512,004,570)	(27,798,972,512)	(28,310,977,082)
41	-	-	-	-	-	(473,862,448)	(4,051,543,415)	(21,738,036,778)	-	-	-	28,572,583,481	28,572,583,481	28,572,583,481
	-	-	-	-	-	-	-	-	-	-	-	1,850,284	983,319	2,834,103
	-	-	-	-	-	(51,412,994,498)	-	-	-	-	-	(51,412,994,498)	-	(51,412,994,498)
	-	-	-	-	-	-	-	-	-	-	-	-	(22,740,362,317)	(22,740,362,317)
	-	-	15,686,306	-	-	-	-	-	-	-	-	15,686,306	4,311,202,294	4,326,888,600
	-	-	-	-	-	-	-	-	-	-	-	-	3,055,733,910	3,055,733,910
	-	-	-	-	-	135,179,602,652	-	-	-	-	-	135,179,602,652	49,430,413,429	184,610,016,081
	-	-	-	-	-	(473,862,448)	(4,051,543,415)	(21,738,036,778)	(168,281,187)	43,963,098	(25,913,898,282)	(26,387,760,730)	(12,980,018,619)	(39,367,779,349)
	28,562,996,250	29,211,131,966	(24,311,625,093)	2,857,245,725	1,199,991,563	775,959,276,682	3,259,236,757	1,971,688,038	74,024,494	(112,215,240)	5,192,734,029	818,671,751,122	429,883,989,806	1,248,555,740,928

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED DECEMBER 31, 2017

Unit: Baht

	Notes	SEPARATE FINANCIAL STATEMENTS							Total equity
		Retained earnings			Other components of equity				
		Issued and paid-up share capital	Premium on ordinary shares	Legal reserve	Reserve for self-insurance fund	Unappropriated	Available-for-sale investments	Other comprehensive income (loss)	
Balance as at January 1, 2016		28,562,996,250	29,211,131,966	2,857,245,725	1,145,105,235	338,558,369,857	3,511,832,188	403,846,681,221	
Changes in equity for the year									
Reserve for self-insurance fund	31.2	-	-	-	29,284,539	(29,284,539)	-	-	
Dividend paid	42	-	-	-	-	(28,560,055,960)	-	(28,560,055,960)	
Profit for the year		-	-	-	-	70,808,045,526	-	70,808,045,526	
Other comprehensive income (loss) for the year		-	-	-	-	(690,426,683)	4,005,973,866	3,315,547,183	
Balance as at December 31, 2016		28,562,996,250	29,211,131,966	2,857,245,725	1,174,389,774	380,086,648,201	7,517,806,054	449,410,217,970	
Balance as at January 1, 2017		28,562,996,250	29,211,131,966	2,857,245,725	1,174,389,774	380,086,648,201	7,517,806,054	449,410,217,970	
Changes in equity for the year									
Reserve for self-insurance fund	31.2	-	-	-	25,601,789	(25,601,789)	-	-	
Dividend paid	42	-	-	-	-	(51,412,994,498)	-	(51,412,994,498)	
Profit for the year		-	-	-	-	104,473,797,974	-	104,473,797,974	
Other comprehensive loss for the year		-	-	-	-	(52,213,678)	(4,538,540,183)	(4,590,753,861)	
Balance as at December 31, 2017		28,562,996,250	29,211,131,966	2,857,245,725	1,199,991,563	433,069,636,210	2,979,265,871	497,880,267,585	

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2017

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Cash flows from operating activities				
Profit attributable to owners of the parent	135,179,602,652	94,609,078,240	104,473,797,974	70,808,045,526
Adjustment of profit to net cash provided by (used in) operating activities				
Depreciation and amortization expenses	116,289,183,802	128,733,799,545	19,507,028,650	18,674,804,701
(Gain) loss on disposal of assets	60,210,289	(33,538,901)	(84,005,246)	14,196,605
Gain on disposal of investments	(2,673,805,653)	(1,887,214,404)	(1,950,951,314)	-
(Reversal of) loss on impairment of assets	25,409,644,604	2,587,860,987	65,705,908	(44,610,013)
(Reversal of) loss on impairment of investments	(562,000,000)	4,615,142,246	33,715,652,779	838,062,044
Share of profit from investments in joint ventures	(5,461,842,429)	(2,980,567,211)	-	-
Share of profit from investments in associates	(1,848,573,880)	(1,162,641,231)	-	-
Profit attributable to non-controlling interests	49,430,413,429	34,966,013,490	-	-
Provision for employee benefit	2,375,517,480	2,121,893,119	963,112,541	772,524,145
Unrealized (gain) loss on exchange rates	(6,421,920,357)	588,651,939	18,749,596	669,025,390
Unrealized (gain) loss on derivatives	(3,536,548,267)	4,573,363,592	(1,818,905,638)	(181,345,533)
(Reversal of) doubtful accounts	(149,729,204)	276,281,098	(34,459,121,339)	5,153,796,614
Amortization of exploration costs	858,038,433	1,023,210,620	-	-
(Reversal of) allowance for loss on decline in value of inventories	(394,454,518)	(3,132,533,767)	21,182,704	(545,488,112)
Allowance for obsolete materials and supplies	489,576,605	51,611,651	426,162	7,557,229
Dividends income	(5,008,551,267)	(797,964,720)	(34,730,340,521)	(24,937,105,096)
Income taxes	28,306,575,417	26,593,074,497	9,693,556,947	9,072,769,378
Interest income	(8,630,246,371)	(5,625,346,196)	(4,072,990,349)	(4,521,724,748)
Finance costs	29,085,932,422	28,887,254,079	9,683,710,591	10,906,455,692
Others	495,493,801	183,661,456	296,244,436	75,590,275
Profit from operating activities before changes in operating assets and liabilities	<u>353,292,516,988</u>	<u>314,191,090,129</u>	<u>101,322,853,881</u>	<u>86,762,554,097</u>

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2017

	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
				Unit: Baht
(Increase) decrease in operating assets				
Trade accounts receivable	(31,208,993,246)	(1,634,008,318)	(19,485,670,907)	684,892,295
Other accounts receivable	(63,792,200)	10,733,769,228	(3,712,173,083)	5,357,415,728
Inventories	(5,059,561,391)	(30,842,111,464)	(4,144,835,963)	(5,276,259,246)
Materials and supplies	1,596,600,015	212,059,703	(128,999,649)	(377,090,199)
Other current assets	(645,975,404)	(710,888,167)	(1,408,657,790)	606,272,071
Other non-current assets	9,774,474,125	(19,088,345,139)	2,276,476,836	2,428,003,383
Increase (decrease) in operating liabilities				
Trade accounts payable	10,340,436,623	11,077,080,579	6,265,180,357	9,308,816,872
Other accounts payable	13,313,464,270	(88,715,153)	3,342,499,053	3,459,602,197
Other current liabilities	1,236,666,252	2,006,187,895	1,208,547,472	(476,162,167)
Deposits on LPG cylinders	620,713,290	587,454,050	620,713,290	587,454,050
Other non-current liabilities	(13,138,672,313)	14,600,287,812	(538,478,794)	(614,873,836)
	<u>(13,234,639,979)</u>	<u>(13,147,228,974)</u>	<u>(15,705,399,178)</u>	<u>15,688,071,148</u>
Cash received from operating activities	340,057,877,009	301,043,861,155	85,617,454,703	102,450,625,245
Income tax paid	<u>(33,957,533,365)</u>	<u>(30,608,627,146)</u>	<u>(9,518,222,914)</u>	<u>(5,388,119,380)</u>
Net cash provided by operating activities	<u>306,100,343,644</u>	<u>270,435,234,009</u>	<u>76,099,231,789</u>	<u>97,062,505,865</u>

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2017

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Cash flows from investing activities				
Payment of property, plant and equipment and investment properties	(110,592,672,742)	(105,625,743,322)	(24,530,299,968)	(23,332,183,687)
Payment of intangible assets	(2,467,624,937)	(2,896,181,830)	(270,320,163)	(113,746,520)
Payment of exploration and evaluation assets	(1,783,750,778)	(6,779,727)	-	-
Payment of long-term rental contracts on land and building	(1,205,179,165)	(879,396,276)	(367,053,246)	(483,789,112)
Payment for available for sale investments	(7,460,167,117)	(7,241,567,484)	(208,994,773)	-
Payment of investments in subsidiaries	-	-	(42,970,876,600)	(1,874,815,115)
Payment of investments in joint ventures	(26,120,000)	(238,279,000)	-	-
Payment of investments in associates	(1,720,396,715)	(1,099,191,075)	-	-
Payment of short-term lending loans	(96,421,701)	(53,054,545)	-	(83,491,726)
Payment of long-term lending loans	(9,222,035,230)	(4,926,055,615)	(9,391,228,875)	(6,840,217,600)
Payment of other long-term investments	(25,389,774,440)	(236,747,219)	(15,490,544,584)	-
Proceeds from disposals of property, plant and equipment intangible assets and investment properties	234,613,975	196,427,129	1,906,793,546	109,926,686
Proceeds from disposals of available for sale investments	11,302,907,361	-	11,152,331,670	-
Proceeds from disposals of investments in subsidiaries	-	307,185,973	1,187,720,000	-
Proceeds from a return on its investments in joint ventures	13,338,760	1,371,266,397	15,372,927,810	1,325,000,000
Proceeds from disposals of investments in associates	50,625,000	-	-	-
Proceeds from long-term lending loans	3,158,627,337	-	41,706,801,739	6,477,185,637
Proceeds from cancellation of leasehold in gas stations	-	12,839,082	-	12,839,082
Proceeds from finance lease instalments	-	6,000,000	-	-
Increase in current investments	(52,837,629,381)	(68,185,067,033)	(8,890,075,323)	(24,558,020,939)
Interest received	7,502,500,762	4,492,257,194	7,907,796,264	2,575,840,069
Dividends received	10,014,084,956	6,087,696,704	34,349,838,896	24,937,105,096
Net cash provided by (used in) investing activities	(180,525,074,055)	(178,914,390,647)	11,464,816,393	(21,848,368,129)

The accompanying notes are an integral part of these financial statements.

(TRANSLATION)

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES

STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED DECEMBER 31, 2017

Unit: Baht

Notes	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Cash flows from financing activities				
Proceeds from issuance of ordinary shares of subsidiaries	3,055,733,910	101,776,414	-	-
Proceeds from treasury shares of subsidiary	3,788,793,634	32,562,500	-	-
Proceeds from short-term loans	6,745,004,885	-	1,157,500,451	252,798,028
Proceeds from long-term loans	43,920,200,318	26,651,894,839	-	-
Proceeds from financial derivative contracts	-	5,491,166,489	-	-
Proceeds from change in ownership in subsidiaries	1,469,533,150	-	-	-
Proceed from issuance of subordinated capital debentures	28,984,700,697	-	-	-
Repayment of short-term loans	(6,745,004,885)	-	-	-
Repayment of long-term loans	(94,935,791,610)	(74,153,077,256)	(48,286,610,305)	(36,499,015,396)
Repayment of finance lease instalments	(833,248,584)	(841,573,563)	(544,203,718)	(546,392,992)
Increase (decrease) in bank overdrafts and short-term loans				
from financial institutions	(12,400,368,717)	4,051,850,033	-	-
Finance costs paid	(30,892,735,018)	(32,618,015,201)	(12,463,569,976)	(14,432,361,167)
Dividend paid	(73,833,852,043)	(44,589,910,656)	(51,412,994,498)	(28,560,055,960)
Payment for change in ownership in subsidiaries	(1,168,629,054)	-	-	-
Payment for purchasing of treasury shares in subsidiary	-	(330,081,400)	-	-
Payment for redemption of subordinated capital debentures	(29,652,226,277)	-	-	-
Net cash used in financing activities	<u>(162,497,889,594)</u>	<u>(116,203,407,801)</u>	<u>(111,549,878,046)</u>	<u>(79,785,027,487)</u>
Effects of exchange rates on cash and cash equivalents	(750,262,208)	(447,884,676)	29,204,743	(305,399,748)
Currency translation differences	(11,704,505,264)	718,913,453	-	-
Net decrease in cash and cash equivalents	(49,377,387,477)	(24,411,535,662)	(23,956,625,121)	(4,876,289,499)
Cash and cash equivalents at beginning of periods	215,566,411,132	239,977,946,794	62,648,286,060	67,524,575,559
Cash and cash equivalents at end of periods	4 <u><u>166,189,023,655</u></u>	<u><u>215,566,411,132</u></u>	<u><u>38,691,660,939</u></u>	<u><u>62,648,286,060</u></u>
Non cash items				
Accounts payable from purchases of property, plant and equipment and investment property	40,793,369,071	45,054,531,455	9,722,454,080	10,367,714,355
Accounts payable from purchases of intangible assets	281,470,899	919,870,825	177,893,662	140,858,200
Accounts payable from purchases of securities	49,839,374	304,017,736	-	-

The accompanying notes are an integral part of these financial statements.

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2017

NOTES	CONTENTS
1	General Information
2	Basis of Financial Statements Preparation
3	Accounting Policies
4	Cash and Cash Equivalents
5	Current Investments
6	Trade Accounts Receivable
7	Other Accounts Receivable
8	Lending Loans
9	Related Party Transactions
10	Inventories
11	Materials and Supplies
12	The Shareholder Restructuring of the Group
13	Available-for-sale Investments
14	Investments in Subsidiaries, Joint Ventures and Associates
15	Other Long-term Investments
16	Investment Properties
17	Property, Plant and Equipment
18	Goodwill
19	Intangible Assets
20	Exploration and Evaluation Assets
21	Impairment of Assets
22	Income Taxes and Deferred Taxes
23	Other Non-current Assets
24	Bank Overdrafts and Short-term Loans from Financial Institutions
25	Other Current Liabilities
26	Long-term Loans
27	Provisions for Employee Benefit
28	Long-term Provision for Decommissioning Costs
29	Other Non-current Liabilities
30	Share Capital
31	Reserves
32	Basic Earnings per Share
33	Sales and Service Income
34	Other Income
35	Expenses by Nature
36	Petroleum Royalties and Remuneration

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2017

NOTES	CONTENTS
37	Finance Costs
38	Operating Segments
39	Disclosure of Financial Instruments
40	Fair Value Measurement
41	Subordinated Capital Debentures
42	Dividend Payment
43	Promotional Privileges
44	Proceeding regarding the Central Administrative Court's Ordering the Temporary Suspension of Projects in the Map Ta Phut Area
45	Commitments and Contingent Liabilities
46	Other Events
47	Events after the Reporting Period

PTT PUBLIC COMPANY LIMITED AND ITS SUBSIDIARIES
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED DECEMBER 31, 2017

1. General Information

PTT Public Company Limited (the Company) is incorporated as a public limited company in Thailand, and is listed on the Stock Exchange of Thailand. The address of its incorporated and registered office is as follows:

The Head Office of the Company is located at 555 Vibhavadi-Rangsit Road, Chatuchak, Bangkok, Thailand.

The Company's principal activity is the operation of its petroleum business. The Company has invested in subsidiaries, joint arrangements and associates (the Group), which are engaged in upstream petroleum and natural gas, downstream petroleum, and other related businesses as described in Note 38 Operating Segments.

2. Basis of Financial Statements Preparation

The consolidated and the separate financial statements have been prepared in accordance with Thai Financial Reporting Standards under the Accounting Act, B.E. 2543. These are Thai Financial Reporting Standards under the Accounting Profession Act, B.E. 2547, including guidelines promulgated by the Federation of Accounting Professions (FAP), and the financial reporting requirements of the Securities and Exchange Commission under the Securities and Exchange Act, B.E. 2535.

The Company has presented the financial statements in compliance with the notification of the Department of Business Development "Definition of the abbreviated components required in the financial statements (No.2), B.E. 2559", dated October 11, 2016, under the third paragraph of section 11 of the Accounting Act, B.E. 2543.

The consolidated and the separate financial statements have been prepared based on the assumption that users of the financial statements have an understanding of Thai generally accepted accounting principles and practices, which may differ from generally accepted accounting principles adopted in other countries.

The consolidated and the separate financial statements have been prepared under the historical cost convention with the exception of certain amounts, which are accounted for using the fair value method as disclosed in Note 3.2 Significant Accounting Policies.

The significant transactions arising between the Company and subsidiaries have been eliminated from the consolidated financial statements.

The consolidated and the separate financial statements are prepared and presented in Thai Baht and are rounded in the notes to financial statements to the nearest million unless otherwise stated.

This English translation of the financial statements has been prepared from the statutory financial statements that were issued in Thai language. In the event of a conflict or a difference in interpretation between the two languages, the Thai language statutory financial statements shall prevail.

3. Accounting Policies

- 3.1 Thai Accounting Standards (TASs), Thai Financial Reporting Standards (TFRSs) and Interpretations (TSICs, TFRICs), effective for accounting periods on or after the current periods and will become effective in the future are as follows:

Effective for accounting periods on or after January 1, 2017

◆TAS 1 (revised 2016)	Presentation of Financial Statements
◆TAS 2 (revised 2016)	Inventories
◆TAS 7 (revised 2016)	Statement of Cash Flows
◆TAS 8 (revised 2016)	Accounting Policies, Changes in Accounting Estimates and Errors
◆TAS 10 (revised 2016)	Events after the Reporting Period
◆TAS 11 (revised 2016)	Construction Contracts
◆TAS 12 (revised 2016)	Income Taxes
◆TAS 16 (revised 2016)	Property, Plant and Equipment
◆TAS 17 (revised 2016)	Leases
◆TAS 18 (revised 2016)	Revenue
◆TAS 19 (revised 2016)	Employee Benefits
◆TAS 20 (revised 2016)	Accounting for Government Grants and Disclosure of Government Assistance
◆TAS 21 (revised 2016)	The Effects of Changes in Foreign Exchange Rates
◆TAS 23 (revised 2016)	Borrowing Costs
◆TAS 24 (revised 2016)	Related Party Disclosures
◆TAS 26 (revised 2016)	Accounting and Reporting by Retirement Benefit Plans
◆TAS 27 (revised 2016)	Separate Financial Statements
◆TAS 28 (revised 2016)	Investments in Associates and Joint Ventures
◆TAS 29 (revised 2016)	Financial Reporting in Hyperinflationary Economies
◆TAS 33 (revised 2016)	Earnings per Share
◆TAS 34 (revised 2016)	Interim Financial Reporting
◆TAS 36 (revised 2016)	Impairment of Assets
◆TAS 37 (revised 2016)	Provisions, Contingent Liabilities and Contingent Assets
◆TAS 38 (revised 2016)	Intangible Assets
◆TAS 40 (revised 2016)	Investment Property
◆TAS 41 (revised 2016)	Agriculture
◆TAS 104 (revised 2016)	Accounting for Troubled Debt Restructuring
◆TAS 105 (revised 2016)	Accounting for Investments in Debt and Equity Securities
◆TAS 107 (revised 2016)	Financial Instruments Disclosure and Presentation
◆TFRS 2 (revised 2016)	Share-based Payment
◆TFRS 3 (revised 2016)	Business Combinations
◆TFRS 4 (revised 2016)	Insurance Contracts
◆TFRS 5 (revised 2016)	Non-current Assets Held for Sale and Discontinued Operations
◆TFRS 6 (revised 2016)	Exploration for and Evaluation of Mineral Resources
◆TFRS 8 (revised 2016)	Operating Segments

3. Accounting Policies (Continued)

- 3.1 Thai Accounting Standards (TASs), Thai Financial Reporting Standards (TFRSs) and Interpretations (TSICs, TFRICs), effective for accounting periods on or after the current periods and will become effective in the future are as follows: (Continued)

Effective for accounting periods on or after January 1, 2017 (Continued)

◆ TFRS 10 (revised 2016)	Consolidated Financial Statements
◆ TFRS 11 (revised 2016)	Joint Arrangements
◆ TFRS 12 (revised 2016)	Disclosure of Interests in Other Entities
◆ TFRS 13 (revised 2016)	Fair Value Measurement
◆ TSIC 10 (revised 2016)	Government Assistance - No Specific Relation to Operating Activities
◆ TSIC 15 (revised 2016)	Operating Leases - Incentives
◆ TSIC 25 (revised 2016)	Income Taxes - Changes in the Tax Status of an Entity or its Shareholders
◆ TSIC 27 (revised 2016)	Evaluating the Substance of Transactions Involving the Legal Form of a Lease
◆ TSIC 29 (revised 2016)	Service Concession Arrangements: Disclosure
◆ TSIC 31 (revised 2016)	Revenue - Barter Transactions Involving Advertising Services
◆ TSIC 32 (revised 2016)	Intangible Assets - Web Site Costs
◆ TFRIC 1 (revised 2016)	Changes in Existing Decommissioning, Restoration and Similar Liabilities
◆ TFRIC 4 (revised 2016)	Determining Whether an Arrangement Contains a Lease
◆ TFRIC 5 (revised 2016)	Rights to Interests arising from Decommissioning, Restoration and Environmental Rehabilitation Funds
◆ TFRIC 7 (revised 2016)	Applying the Restatement Approach under TAS 29 (revised 2016) Financial Reporting in Hyperinflationary Economies
◆ TFRIC 10 (revised 2016)	Interim Financial Reporting and Impairment
◆ TFRIC 12 (revised 2016)	Service Concession Arrangements
◆ TFRIC 13 (revised 2016)	Customer Loyalty Programmes
◆ TFRIC 14 (revised 2016)	TAS 19 (revised 2016) - The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction
◆ TFRIC 15 (revised 2016)	Agreements for the Construction of Real Estate
◆ TFRIC 17 (revised 2016)	Distributions of Non-cash Assets to Owners
◆ TFRIC 18 (revised 2016)	Transfers of Assets from Customers
◆ TFRIC 20 (revised 2016)	Stripping Costs in the Production Phase of a Surface Mine
◆ TFRIC 21 (revised 2016)	Levies

3. Accounting Policies (Continued)

- 3.1 Thai Accounting Standards (TASs), Thai Financial Reporting Standards (TFRSs) and Interpretations (TSICs, TFRICs), effective for accounting periods on or after the current periods and will become effective in the future are as follows: (Continued)

Effective for accounting periods on or after January 1, 2018

◆TAS 1 (revised 2017)	Presentation of Financial Statements
◆TAS 2 (revised 2017)	Inventories
◆TAS 7 (revised 2017)	Statement of Cash Flows
◆TAS 8 (revised 2017)	Accounting Policies, Changes in Accounting Estimates and Errors
◆TAS 10 (revised 2017)	Events after the Reporting Period
◆TAS 11 (revised 2017)	Construction Contracts
◆TAS 12 (revised 2017)	Income Taxes
◆TAS 16 (revised 2017)	Property, Plant and Equipment
◆TAS 17 (revised 2017)	Leases
◆TAS 18 (revised 2017)	Revenue
◆TAS 19 (revised 2017)	Employee Benefits
◆TAS 20 (revised 2017)	Accounting for Government Grants and Disclosure of Government Assistance
◆TAS 21 (revised 2017)	The Effects of Changes in Foreign Exchange Rates
◆TAS 23 (revised 2017)	Borrowing Costs
◆TAS 24 (revised 2017)	Related Party Disclosures
◆TAS 26 (revised 2017)	Accounting and Reporting by Retirement Benefit Plans
◆TAS 27 (revised 2017)	Separate Financial Statements
◆TAS 28 (revised 2017)	Investments in Associates and Joint Ventures
◆TAS 29 (revised 2017)	Financial Reporting in Hyperinflationary Economies
◆TAS 33 (revised 2017)	Earnings per Share
◆TAS 34 (revised 2017)	Interim Financial Reporting
◆TAS 36 (revised 2017)	Impairment of Assets
◆TAS 37 (revised 2017)	Provisions, Contingent Liabilities and Contingent Assets
◆TAS 38 (revised 2017)	Intangible Assets
◆TAS 40 (revised 2017)	Investment Property
◆TAS 41 (revised 2017)	Agriculture
◆TFRS 2 (revised 2017)	Share-Based Payment
◆TFRS 3 (revised 2017)	Business Combinations
◆TFRS 4 (revised 2017)	Insurance contracts
◆TFRS 5 (revised 2017)	Non-currents Assets Held for Sale and Discontinued Operations
◆TFRS 6 (revised 2017)	Exploration for and Evaluation of Mineral Resources
◆TFRS 8 (revised 2017)	Operating Segments
◆TFRS 10 (revised 2017)	Consolidated Financial Statements
◆TFRS 11 (revised 2017)	Joint Arrangements

3. Accounting Policies (Continued)

- 3.1 Thai Accounting Standards (TASs), Thai Financial Reporting Standards (TFRSs) and Interpretations (TSICs, TFRICs), effective for accounting periods on or after the current periods and will become effective in the future are as follows: (Continued)

Effective for accounting periods on or after January 1, 2018 (Continued)

◆ TFRS 12 (revised 2017)	Disclosure of Interests in Other Entities
◆ TFRS 13 (revised 2017)	Fair Value Measurement
◆ TSIC 10 (revised 2017)	Government Assistance - No Specific Relation to Operating Activities
◆ TSIC 15 (revised 2017)	Operating Leases - Incentives
◆ TSIC 25 (revised 2017)	Income Taxes - Changes in the Tax Status of an Entity or its Shareholders
◆ TSIC 27 (revised 2017)	Evaluating the Substance of Transactions Involving the Legal Form of a Lease
◆ TSIC 29 (revised 2017)	Service Concession Arrangements: Disclosure
◆ TSIC 31 (revised 2017)	Revenue - Barter Transactions Involving Advertising Services
◆ TSIC 32 (revised 2017)	Intangible Assets - Web Site Costs
◆ TFRIC 1 (revised 2017)	Changes in Existing Decommissioning, Restoration and Similar Liabilities
◆ TFRIC 4 (revised 2017)	Determining whether an Arrangement contains a Lease
◆ TFRIC 5 (revised 2017)	Rights to Interests arising from Decommissioning, Restoration and Environmental Rehabilitation Funds
◆ TFRIC 7 (revised 2017)	Applying the Restatement Approach under TAS 29 (revised 2017) Financial Reporting in Hyperinflationary Economies
◆ TFRIC 10 (revised 2017)	Interim Financial Reporting and Impairment
◆ TFRIC 12 (revised 2017)	Service Concession Arrangements
◆ TFRIC 13 (revised 2017)	Customer Loyalty Programmes
◆ TFRIC 14 (revised 2017)	TAS 19 (revised 2017) Employee Benefits - The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction
◆ TFRIC 15 (revised 2017)	Agreements for the Construction of Real Estate
◆ TFRIC 17 (revised 2017)	Distributions of Non-cash Assets to Owners
◆ TFRIC 18 (revised 2017)	Transfers of Assets from Customers
◆ TFRIC 20 (revised 2017)	Stripping Costs in the Production Phase of a Surface Mine
◆ TFRIC 21 (revised 2017)	Levies

Federation of Accounting Professions (FAP) has issued a number of revised TASs, TFRSs and Interpretations, which are effective for accounting periods beginning on or after January 1, 2017 and January 1, 2018. The management of the Group has assessed the effects of the standards and interpretations and believes that their adoption will not have any significant impact on the consolidated and the separate financial statements.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies

3.2.1 Cash and Cash Equivalents

Cash and cash equivalents comprise cash on hand, deposits held at call with banks and other short-term highly liquid investments which have original maturities within three months. Bank overdrafts and short-term loans from financial institutions are included in current liabilities in the statements of financial position.

3.2.2 Trade Accounts and Other Accounts Receivable

Trade accounts and other accounts receivable are carried at net realizable value. Allowance for doubtful accounts are estimated based on uncollectible amounts estimating from outstanding receivables at the statement of financial position date based on collection experience of their current financial status, also with percentage of debt aging. Doubtful account is recorded as administrative expenses in profit or loss.

3.2.3 Inventories

Inventories are stated at the lower of cost and net realizable value. The cost is calculated by using the weighted average cost method. The cost of inventory comprises total purchasing costs, payments related to purchasing, discounts, quantity discounts, as well as contributions to or compensation from taxes and several funds. Net realizable value is calculated from estimated selling price in the ordinary course of business, less the costs of completion and related selling expenses. When net realizable value of inventories is lower than cost of acquisition, it is presented under cost of goods sold in the statement of income. An allowance for obsolescence of inventories will be recognized when inventories are obsoleted or defected.

3.2.4 Materials and Supplies

Materials and supplies are stated at cost calculated by using the weighted average cost method, less allowance for obsolescence of material and supplies when there are obsolete, defective or unserviceable items.

3.2.5 Non-current Assets and Liabilities Held-for-sale

Disposed assets or asset groups, including non-current assets and liabilities held-for-sale, are classified as asset held-for-sale if their carrying amounts will be recovered through a sale transaction rather than through continuing use. This condition is met only when the sale is highly probable and the asset is available for immediate sale in its present condition, subject only to terms that are usual and customary for sales of such assets. Management must commit to the sale of the assets and they must be actively marketed at a price that is reasonable compared to their current fair value, with the expectation that sale should be recorded as completed within one year from the date of classification. These disposed assets or asset groups are measured at the lower of carrying amount and fair value less costs to sell.

The Group ceases to depreciate and amortize property, plant and equipment and intangible assets from the date the assets meet the criteria for classification as assets held-for-sale. The Group continues to recognize liabilities, including interests and other expenses attributable to liabilities classified as held-for-sale.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.6 Investments in Subsidiaries

Subsidiaries are those companies which directly or indirectly controlled by the parent company. Control exists when the parent company has the power over the subsidiaries so as to obtain variable returns from the involvement with the subsidiaries and has the ability to affect those returns through the power over the subsidiaries. In case of the parent company has voting rights less than half of total voting rights in subsidiaries, the parent company will reconsider the related facts and circumstances in order to determine whether the parent company has the power to control over such subsidiaries or not.

The financial statements of subsidiaries are included in the consolidated financial statements from the date that the control commences until the date that the control ceases.

The parent company allocates profit or loss and each component of other comprehensive income or loss to the equity attributable to owners of the parent and the non-controlling interests even if this results in a deficit non-controlling interest balance.

The purchase method of accounting is used to account for business combinations, except the business combination under common control. The cost of a business combination is measured as the sum of fair value of any consideration transferred, the recognized amount of any non-controlling interest in the acquiree, and the fair value of the existing equity interest as of the purchasing date (if the business combination is achieved in stages).

- For each business combination, the Group measures the recognized amount of any non-controlling interest in the acquiree at either the fair value or the non-controlling interest's proportionate share of the net of identifiable assets of the acquiree.
- In the case of a business combination achieved in stages, the Group measures the acquisition-date fair value of the acquirer's previously-held equity interest in the acquiree and recognized gains or losses in statement of income.
- Costs related to the acquisition, including professional fees, advisory fees and other consulting fees, are recognized as expenses in statement of income.

The Group measures the identifiable assets and liabilities acquired at fair value as of the acquisition date.

Any changes in the equity interest in subsidiaries of the Group while control is retained are recorded as surplus (deficit) from the changes in the ownership interests in subsidiaries in equity.

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount of the investments is recorded in profit or loss.

Investments in subsidiaries have been presented in the separate financial statements under the cost method.

The list of investments in subsidiaries of the Group and proportion of ownership interests have been set out in Note 14.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.7 Investments in Joint Ventures and Associates

Joint ventures are joint arrangement whereby the Group has joint control of the arrangement and has rights to the net assets of the arrangement. The joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

Associates are those companies in which the Group has significant influence, but not control or joint control, over the financial and operating policies.

The Group uses the purchase method to record the acquisition of joint ventures and associates, except the business combination under common control. Acquisition costs which are higher than fair value of identifiable assets and liabilities of the Group's equity interest in joint ventures and associates are recorded as goodwill and included in the investment in joint ventures and associates.

The consolidated financial statements of the Group include the share of profit and loss from joint ventures and associates under equity method, from the date that significant influence commences until the date that significant influence ceases. Unrealized gains or losses on transactions between the Group and its joint ventures and associates are eliminated to the extent of the Group's interest in the joint ventures and associates unless the transactions provide evidence of impairment of the transferred assets.

The Group records share of profit or loss from joint ventures and associates in proportion to the Group's equity interest in those gains and losses. Any dividends received from joint ventures and associates are deducted from the book value of the investments.

When the Group's share of loss in joint ventures and associates equals or exceeds its interest in the joint ventures and associates, the Group does not recognize further losses, unless the Group has incurred collateral or constructive obligations or made payments on behalf of the joint ventures and associates.

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount of the investments is recorded in profit or loss.

Investments in joint ventures and associates have been presented under the cost method in the separate financial statements and under the equity method in the consolidated financial statements.

The list of investments in joint ventures and associates of the Group and proportion of ownership interests have been set out in Note 14.

3.2.8 Joint Operations

Joint operations are joint arrangement whereby the Group has rights to assets and obligations relating to the joint arrangement. The Group has recognized assets, liabilities, revenues and expenses by the portion of joint operations in the separate and the consolidated financial statements from the date that joint control commences until the date that joint control ceases.

The list of joint operations of the Group and transactions relating to its involvements have been set out in Note 14.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.9 Other Investments

Investments other than investments in subsidiaries, joint ventures, and associates are classified as available-for-sale investments and other long-term investments.

Investments in equity securities and mutual funds that are marketable securities are classified as available-for-sale investments and carried at fair value in the statements of financial position. Any changes in value are recognized as gain (loss) from fair value measurement of available-for-sale investments in other comprehensive income or loss and accumulated amounts are accumulated differences are presented in other components of equity under equity.

Investments in non-marketable equity securities, which are classified as other long-term investments, are carried at cost in the statement of financial position net of allowance for impairment. Impairment testing is performed when there is a factor indicating that the investment might be impaired. If the carrying amount of the investment is higher than its recoverable amount, impairment losses are recognized in profit or loss immediately.

Investment in held-to-maturity debt securities which an entity intends and has an ability to hold until the maturity date are classified as other long-term investments and carried at amortised cost in the statement of financial position. The Group will record loss on impairment in the statement of income immediately when it is highly probable that the Group cannot collect entire/some principals or interests as state in contracts.

Upon the disposal of investments, the difference between the net disposal proceeds and the carrying amount is recognized in profit or loss. When the available-for-sale investments are disposed, the Group will record the cumulative amount of fair value in other components of equity under equity as gain (loss) on disposal of investments. When disposing of some parts of the Group's particular investment in debt or equity securities, the carrying amount of the part disposed is calculated by using the weighted average carrying amount of the total holding of the investment.

3.2.10 Related Parties

Related parties of the Company are those enterprises or individuals that control or are controlled by the Company, or are under common control with the Company, including holding companies of subsidiaries and fellow Group subsidiaries, as well as those that have equity interests in the Company that result in significant influence or joint control over the Company. In addition, related parties include associates, joint ventures, the management and directors of the Company, and entities which the management or directors of the Company, directly or indirectly, control, jointly controlled, or have significant influence.

In considering each possible related party relationship, attention is directed more to the substance of the relationship than to the legal form.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.11 Foreign Currency Translation

The consolidated financial statements and the separate financial statements have been presented in Thai Baht, which is the Company's functional currency. Transactions of each company included in the consolidated financial statements are recorded in their own functional currencies.

Foreign currency transactions are translated into functional currency at the exchange rates prevailing at the transaction date. Monetary assets and liabilities at the statements of financial position date denominated in foreign currencies are translated into functional currency at the exchange rate prevailing at that date. Gains and losses resulting from the settlement of such transactions and from the translation of monetary assets and liabilities denominated in foreign currencies are recognized in profit or loss.

Assets and liabilities of foreign operations, that presentation currencies are foreign currencies, are translated into Thai Baht using the closing rate at the statements of financial position date. Revenues and expenses are translated into Thai Baht using the average rate during the period. Differences arising from currency translation are included in other comprehensive income and accumulated differences are presented in other components of equity under equity.

Upon the disposal of self-sustaining foreign entities, accumulated currency translation differences under shareholders' equity are recognized as gains or losses on disposal.

3.2.12 Borrowing Costs

Borrowing costs comprise interest and other costs associated with the borrowings. Borrowing costs incurred on qualifying assets are capitalized as a cost of the qualifying property until all the activities necessary to prepare the property for its intended use are substantially completed. When funds are specifically borrowed for the construction or the production of asset, the amount of borrowing costs capitalized is determined from the actual borrowing costs during the year less any income on the temporary investment of those borrowings. When funds are borrowed for general purpose, the Group multiplies the capitalization rate by the capital expenditure in allocating borrowing costs to costs of assets.

All other borrowing costs are expensed in the period they incurred.

3.2.13 Investment Properties

Investment properties are initially recognized at cost, including expenses directly associated with the asset acquisition, less accumulated depreciation and allowance for impairment.

The Group has selected the cost model for accounting for its investment properties. This model is in accordance with that described in the accounting policy for property, plant and equipment.

Depreciation is recorded as expenses in profit or loss and is calculated using the straight-line method over the estimated useful lives of the assets, which range from 5 to 30 years. Land and construction in progress are not depreciated.

3.Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.14 Property, Plant and Equipment

Property, plant and equipment are initially recognized at cost less accumulated depreciation and allowance for impairment. The costs comprise any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating. These include decommissioning costs, delivery and restoration costs, and any obligation associated with either its acquisition or a consequence of having used the items.

Repair and maintenance costs are recognized in profit or loss during the financial period in which they are incurred. The costs of significant asset improvements, major turnarounds and inspections are included in the carrying amount of the asset. In case of replacement, the Group writes off carrying value of replaced items.

The Group depreciates each significant component of property, plant and equipment separately.

The Group estimates the residual value of the property, plant and equipment based on current assessment of the amount that would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

The Group reviews the residual value, the useful lives and depreciation methods of assets at least once a year.

Depreciation is recorded as expenses in profit or loss and is calculated using the straight-line method or unit of production method over the estimated useful lives of the assets, which are as follows:

Buildings and building improvements	2 - 40 years
Machinery and equipment	2 - 40 years
Petroleum exploration and production properties	5 - 30 years or unit of production
Mining properties	Unit of production
Other assets	3 - 25 years

Land and construction in progress are not depreciated.

Gains or losses on disposal of property, plant and equipment are determined by comparing the proceeds from sales with the carrying amounts on the disposal dates, and are recorded in statement of income when incurred.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.14 Property, Plant and Equipment (Continued)

Petroleum Exploration and Production Properties

The petroleum exploration and production business accounts for its petroleum exploration and production properties in accordance with the successful efforts method for which the accounting policies are as follows:

Cost of Properties

The cost of properties comprises the total acquisition costs of petroleum rights or the acquisition costs of the portion of properties, decommissioning costs, as well as support equipment and facilities.

Exploratory drilling costs are capitalized as petroleum exploration and evaluation assets, and will be classified as petroleum exploration and production properties of the projects if their exploratory wells have identified proved reserves that have been found to be commercially producible. However, if the exploratory wells have not identified proved reserves or have identified proved reserves but have not been found to be commercially producible, such drilling costs will be expensed in the statement of income when incurred.

Exploratory costs, comprising geological and geophysical costs as well as area reservation fees during the exploration stage, are charged as expenses in the statement of income when incurred.

Development costs, whether relating to successful or unsuccessful development wells, are capitalized and classified as assets.

Depreciation

The capitalized acquisition costs of petroleum rights are depreciated using the unit of production method based on proved reserves. Depreciation of exploratory wells, development costs as well as decommissioning costs, except unsuccessful projects, are calculated using the unit of production method based on proved reserves or proved developed reserves. The Group recognizes changes in reserve estimates prospectively.

Depreciation of support equipment, facilities and pipelines are determined using the straight-line method over the useful lives of assets.

Proved reserves and proved developed reserves are calculated by the Group's own engineers and are based on the information received from the joint operators.

- 3. Accounting Policies (Continued)**
- 3.2 Significant Accounting Policies (Continued)
- 3.2.14 Property, Plant and Equipment (Continued)

Carried Cost under Petroleum Sharing Contracts

The petroleum exploration and production business records the carried costs under Petroleum Sharing Contracts using the following accounting policies:

Under Petroleum Sharing Contracts in which the government has a participating interest, some contracts require the contracting parties, excluding the government, to fund the costs of all exploration operations until the first development area is determined. During the exploration period, the contracting parties will carry an agreed upon proportion of the government's exploration costs (Carried Costs). When the project commences production, such carried costs will be fully recouped or recovered without interest by the contracting parties from the production of petroleum under the agreed procedures. The Group classifies the carried costs based on petroleum activities under the successful efforts method. The majority of them are recognized in petroleum exploration and production properties, exploration and petroleum exploration and evaluation assets in the statement of financial position and exploration expenses in the statement of income.

Mining Properties

The coal business accounts for its coal exploration and production properties, including coal mining property rights and deferred mining exploration and development expenditures, by the accounting policies as follows:

Coal Mining Property Rights

Coal mining property rights comprise the total acquisition costs of concession rights in coal mining including both coal mining exploration and development expenditures.

Deferred Mining Exploration and Development Expenditures

Development expenditures and costs of area development are capitalized as mining properties under exploration and evaluation assets and will be classified as mining properties under property, plant and equipment if they meet the criteria and it is highly probable that they can create future economic benefit. However, if it is proved that they cannot create future economic benefit, development expenditures and costs of area development will be fully expensed in the statement of income when incurred.

Depreciation

The capitalized acquisition costs of mining properties are depreciated using the unit of production method based on proved and probable reserves.

The volume of proportional production and the useful lives of coal mining concessions are estimated and reviewed by the Group.

3.Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.15 Goodwill

The Group initially records goodwill at cost, which equals to the excess of the acquisition costs over the fair value of the net assets acquired, and carries out a test for impairment of goodwill at least once a year or when there are circumstances indicate that an investment might be impaired. Where the fair value of the net assets exceeds the cost of acquisition at the acquisition date, the excess is recognized as a gain in the statement of income.

To test for impairment, the Group allocates goodwill from business combinations to each cash-generating unit (or group of cash-generating units) that is expected to receive benefit from the synergies of the combination. The Group evaluates the recoverable amount of each cash-generating unit (or group of cash-generating units) and if it is lower than the carrying amount of the unit, the Group recognizes impairment losses in profit or loss. Impairment losses of goodwill will not be reversed.

3.2.16 Intangible assets

Intangible assets are initially recognized at cost less accumulated amortization and allowance for impairment. Amortization is recorded as expenses in profit or loss.

The Group records the initial costs of intangible assets from business combination at the acquisition-date fair value of the assets. Intangible assets from other sources are initially recognized at their costs.

Intangible assets include computer software licenses, asset rights such as gas transmission pipelines, and other intangible assets, such as other operating rights, patents, and customer contracts.

Intangible assets are amortized and recorded as expenses in profit or loss using the straight-line method over the useful lives of the assets which range from 3 to 40 years, except customer contracts which are amortized based on estimated sales volume.

The Group reviews the residual value, useful lives and amortization methods of intangible assets at least once a year.

3.2.17 Exploration and Evaluation Assets

Petroleum Exploration and Evaluation Assets

Petroleum exploration and evaluation expenditures are capitalized at cost as exploration and evaluation assets. If the projects have identified the proved reserves that have been found to be commercially producible, the capitalized exploration and evaluation expenditures under these projects will be transferred to petroleum exploration and production properties under property, plant and equipment, which are subsequently measured as stated in Note 3.2.14.

The capitalized exploration and evaluation expenditure is charged to statement of income in the period in which the projects have not identified proved reserves or have identified proved reserves, but have not been found to be commercially producible.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.17 Exploration and Evaluation Assets (Continued)

Mining Properties

Exploration and evaluation expenditures are capitalized as assets at cost, where:

- a) Such costs are expected to be recovered when the areas are successfully developed and mining operations commence, or from the sales of the areas of interest.
- b) Exploration activities in the areas of interest have not reached the stage which permits a reasonable assessment of the existence of commercial recoverable reserves, and exploration activities in the areas of interest are continuing.

Exploration and evaluation expenditures which do not meet the above criteria will be fully expensed in profit or loss. If the areas are developed and mining operations commence, exploration and evaluation expenditures that capitalized as assets will reclassify to mining properties under property, plant and equipment, which are subsequently measured as stated in Note 3.2.14.

3.2.18 Impairment of Assets

The Group performs the following tests for impairment of assets:

- Goodwill is performed annually or whenever there is an indication that the asset may be impaired.
- Investment properties, property, plant and equipment, intangible assets and exploration and evaluation assets are performed whenever there is an indication that the assets may be impaired.

The Group recognizes an impairment loss when the recoverable amount of an asset is lower than its carrying amount, which is the higher of the asset's fair value less cost to sell and its value in use. The Group determines value in use by estimating the present value of future cash flows generated by the asset, discounted using a pre-tax discount rate which reflects current market assessments of the time value of money and the risk specific to the asset. In determining fair value less costs to sell, an appropriate valuation model is used. The calculation reflects the amount that the Group could obtain from the disposal of the asset after deducting the costs of disposal. Fair value means the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The Group recognizes an impairment loss in profit or loss.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.19 Leases

Finance Leases - Where the Group is the Lessee

Leases of property, plant and equipment, where the Group assumes substantially all the risks and rewards of ownership are classified as finance leases. The leased assets are capitalized at the lower of the estimated net present value of the underlying minimum lease payments or fair value of assets. Each minimum lease payment is allocated between liabilities and finance costs in order to achieve a constant interest rate on the remaining balance of the liabilities. The finance leases' liabilities less finance costs are presented as long-term loans. Finance costs are charged to profit or loss over the lease period. Depreciation is charged over the shorter of the useful life of the asset or the lease period.

Finance Leases - Where the Group is the Lessor

Leases of property, plant and equipment under which the Group transfers substantially all the risks and rewards of ownership to lessees are classified as finance leases. The Group realizes the leased assets under asset in the statement of financial position as loans at an amount equal to the net investment in the lease, and allocates finance income based on a pattern reflecting a constant periodic rate of return on the lessor's net investment outstanding in respect of the finance lease.

Operating Leases - Where the Group is the Lessee

Leases of assets where the lessor assumes a significant portion of the risks and rewards of ownership are classified as operating leases. Payments made under operating leases are charged to profit or loss using the straight-line method over the period of the lease.

The costs incurred upon termination of the operating lease agreements prior their maturity, such as penalty paid to the lessor, are recognized as expenses in the period in which the termination takes place.

Operating Leases - Where the Group is the Lessor

Leases of assets where the lessor assumes a significant portion of the risks and rewards of ownership are classified as operating leases. The assets held for operating leases are stated at cost and presented in the statement of financial position according to the nature of the assets. The group recognizes costs, including depreciation, relating to rental income as expenses and recognizes lease income over the lease term on a straight-line basis.

Accounting for an Arrangement Contains a Lease

The Group determined whether an arrangement contains a lease based on the substance of the arrangement. The arrangement contains a lease which depends on the use of a specific asset and the arrangement conveying to the purchaser (lessee) the right to control the use of the underlying asset.

The Group separates payments for the lease and other elements on the basis of their relative fair values. If the Group concludes that it is a finance lease but it is impracticable to separate the payments reliably, the Group will recognize an asset and a liability at an amount equal to the fair value of the underlying asset. Subsequently, the liability is reduced as payments are made and an imputed finance cost on the liability recognized using the Group's incremental borrowing rate of interest.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.20 Income Taxes

Current Tax

The Group is taxed on its non-promoted businesses pursuant to the Revenue Code of Thailand, the Petroleum Income Tax Act, B.E. 2514 and Amendment, B.E. 2532 and other laws and regulations related to corporate income tax of other countries in which the Group has invested.

Current tax is the expected tax payable on the taxable profit for the year, using tax rates enacted at the statements of financial position date in the taxable period, and any adjustment to tax payable in respect of previous years.

Deferred Tax

Deferred tax is recognized in the statements of financial position using the liability method for temporary differences between tax base of assets and liabilities and the carrying amounts in the financial statements. The principal temporary differences in consolidated financial statements arise from property, plant and equipment, provisions for employee benefit, provision for decommissioning costs, and cumulative loss carried forward.

Deferred tax is measured using the tax rates enacted at the statements of financial position date.

Deferred tax assets are recognized to the extent that it is highly probable that the future taxable profits of the Group will be available against which the temporary differences can be utilized. Deferred tax assets are reduced to the extent that it is no longer probable that the related tax benefits will be realized.

The Group recognized deferred tax as income or an expense and included in profit or loss for the period, except to the extent that the tax arises from a transaction or event which is recognized outside profit or loss, either in other comprehensive income or directly in equity, or a business combination.

Deferred tax assets and liabilities can only be offset if the entity has the legal right to settle on a net basis and the deferred tax balances relate to the same taxation authority.

The Group offsets deferred tax assets and deferred tax liabilities for presentation in the statement of financial position.

3.2.21 Advance Payments for Gas Purchased under Take-or-Pay Agreements

The Company has entered into gas purchase agreements with natural gas producers, under which the Company is required to take delivery of natural gas at annual minimum quantities. During each contract year, if the Company cannot accept natural gas according to the minimum quantities under the agreements, it is required to pay for the volume of natural gas which it cannot actually take (Take-or-Pay). After the end of each contract year, the Company and the natural gas producers have to agree on and accept the volume of gas that should be taken into the calculation of Take-or-Pay for that contract year, which is subject to the basis and conditions in the agreements. Under the agreements, the Company can take certain volumes of prepaid gas (Make-up) in subsequent years after taking delivery of natural gas at the minimum quantities for that given contract year. The Company recognizes its obligations under the agreements as advance payments for gas purchased.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.22 Provision for Decommissioning Costs

The Group records a provision for decommissioning costs whenever it is highly probable that an obligation will arise as a result of a past event and the amount of the obligation can be reliably estimated.

The Group recognizes a provision for decommissioning costs based on an estimate of the eventual costs relate to the removal of petroleum exploration and production properties and plant and equipment. These costs are included as part of the cost of the assets and are amortized based on proved reserves using the unit of production method and the straight-line method over the estimated useful lives of the assets, respectively. The estimates of decommissioning costs are determined based on reviews and estimates by the Group's engineers and management's judgment.

3.2.23 Provisions for Employee Benefit

Provisions for employee benefit of the Group are measured and recognized as follows:

1. Short-term employee benefits are recognized in profit or loss as expenses when incurred.
2. Post-employment benefits - defined contribution plans
The Company and its employees have jointly established a provident fund. The fund is monthly contributed by employees and by the Group. The fund's assets are held in a separate trust fund and the Group's contributions are recognized as expenses in profit or loss when incurred.
3. Post-employment benefits - defined benefit plans
The provisions under the defined benefit plan is determined based on actuarial techniques, using the projected unit credit method, in order to determine present value of the provisions and be recognized as a liability in the statements of financial position. Current service cost, past service cost, net interest on the net defined benefit liability are recognized as expenses in profit or loss. Remeasurements of the net defined benefit liability or asset, including actuarial gains and losses are recognized in other comprehensive income and accumulated amounts are recognized as retained earnings in equity.
4. Other long-term employment benefits
The provisions under the defined benefit plan is determined based on actuarial techniques, using the projected unit credit method, in order to determine present value of the provisions and be recognized as a liability in the statements of financial position. Current service cost, past service cost, net interest on the net defined benefit liability are recognized as expenses in profit or loss. Remeasurements of the net other long-term benefit liability or asset, including actuarial gains and losses are recognized in profit or loss immediately.
5. Termination benefits are recognized as a liability and an expense when, and only when, the Company is demonstrably committed to either:
 - Terminate the employment of an employee or a group of employees before the normal retirement date; or
 - Provide termination benefits as a result of an offer made in order to encourage voluntary redundancy.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.24 Revenue Recognition

The Group recognizes revenue from sales upon the delivery of products or when the significant risks and rewards of ownership are transferred to the customers. Revenue from services is recognized over the period in which the services are rendered, taking into account the stage of completion. These revenues are net of trade discounts.

Other revenue is recognized on the following basis:

Interest income - Time proportion basis using the effective yields of interest bearing assets
Royalty income - Accrual basis in accordance with the substance of the relevant agreements
Dividend income - When the right to receive the dividend is established.

Loyalty programmes

The Group has a customer loyalty programme whereby customers are awarded credits (Points) entitling them to the right to purchase products from the Group at a discount or qualify for a free gift. The fair value of the consideration received or receivable in respect of the initial sale is allocated between the Points and the other components of the sale. The amount allocated to the Points is estimated by reference to the fair value of the right to purchase products at a discount or fair value of the free gift. The fair value is estimated based on the amount of the discount adjusted to take into account the expected forfeiture rate. Such amount is deferred and recognised as revenue only when the Points are redeemed and the Group has fulfilled its obligations to supply the products. The amount of revenue recognised in those circumstances is based on the number of Points that have been redeemed in exchange for discounted products, relative to the total number of Points that is expected to be redeemed. In addition, deferred revenue is also released to profit or loss when it is no longer considered probable that the Points will be redeemed.

Revenue from sources other than those mentioned above is recognized using the accrual basis.

3.2.25 Government Grants

Government grants, including non-monetary grants, are recognized where there is reasonable assurance that the recipient will comply with all attached conditions and that the grant will be received. The Group recognizes the grants as income on a systematic basis over the periods for which the costs that the government grants are compensating. The Group recognizes the grants as a part of income in profit or loss.

3.2.26 Earnings per Share

Basic earnings per share is calculated by adjusting the profit attributable to owners of the parent with interests and other items related to subordinated capital debentures net of taxes related to such debentures and dividing the adjusted profit by the weighted average number of ordinary shares held by third parties during the year.

3.Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.27Financial Instruments

Financial assets in the statements of financial position include cash and cash equivalents, current investments, trade accounts receivable, other accounts receivable, available-for-sale investments, other long-term investments, lending loans, and derivative assets. Financial liabilities in the statements of financial position include bank overdrafts and short-term loans from financial institutions, trade accounts payable, other accounts payable, loans, and derivative liabilities. The particular recognition methods adopted are disclosed in the individual policy statements associated with each item.

The Group uses financial instruments to reduce its risk exposure associated with fluctuations in foreign currency exchange rates, interest rates as well as oil and product market prices. These instruments primarily comprise:

Forward Foreign Exchange Contracts

Forward foreign exchange contracts protect the Group from fluctuations in exchange rates by establishing the rates at which foreign currency assets will be realized or foreign currency liabilities will be settled. Forward foreign exchange contracts are recognized in the financial statements at inception. The premium or discount on the establishment of each agreement is amortized over the contract period.

Cross-currency and Interest Rate Swap Contracts

Cross-currency and interest rate swap contracts protect the Group from fluctuations in exchange rates and interest rates. Foreign currency financial assets and liabilities as at the statements of financial position date are protected by cross-currency contracts. The Group recognizes the total amount of interest received from/paid to the counterparties, according to derivatives under cross-currency and interest rate swap contracts in finance costs using the accrual basis and recognizes derivative assets/liabilities of cross-currency and interest rate swap contracts at fair value at the end of reporting period, in the statements of financial position. The Group recognizes movements in the fair value of derivatives in profit or loss.

Oil and Products Hedging Contract

The hedging contracts of oil and product prices aim to reduce the risk exposure associated with fluctuations in the global oil and product market prices in accordance with its purchase and sale agreements by determining its future prices. Gains or losses arising from these contracts are recorded in profit or loss at the maturity date of the contracts.

The risk management policy is described in Note 39.

3. Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.27 Financial Instruments (Continued)

Hedge Accounting

The Group considers hedge accounting criteria as follows:

For fair value hedges, a change in fair value of the hedging instruments and a change in fair value of the hedged items attributable to the risk being hedged are both recognized in profit or loss.

For cash flow hedges, a change in fair value of the effective portion of the hedging instrument is recognized in other comprehensive income, while a change in fair value of the ineffective portion of the hedging instruments is recognized in profit or loss.

3.2.28 Fair Value Measurement

The Group has measured fair value and disclosed the information relating to fair value measurement in accordance with TFRS 13 (revised 2016) “Fair Value Measurement”. The guidance under this standard will be applied when the Group requires to measure any assets and liabilities at fair value under relevant standards.

The Group uses the market approach to measure their assets and liabilities that are required to be measured at fair value by relevant financial reporting standards, except that the cost approach or income approach is used when there is no active market or a quoted market price is not available.

Fair Value Hierarchy

In applying the above-mentioned valuation techniques, the Group endeavors to use relevant observable inputs as much as possible by determining a fair value hierarchy that categorizes inputs into three levels as follows:

- Level 1 Use of quoted market prices in an observable active market for such assets or liabilities
- Level 2 Use of other observable inputs for such assets or liabilities, whether directly or indirectly
- Level 3 Used of unobservable inputs for such assets or liabilities such as the Group’s estimates of future cash flows

3.2.29 Use of Estimates and Significant Assumptions

The preparation of financial statements in conformity with Thai Financial Reporting Standards requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, income and expenses.

Estimates and underlying assumptions used in the preparation of financial statements are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

3.Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.29 Use of Estimates and Significant Assumptions (Continued)

Information about significant assumptions and the sources of contingent estimates that might impact on the carrying amounts of assets and liabilities presented in the financial statements are as follows:

Provisions

The Group recognizes a provision in the statements of financial position if, as a result of a past event, the Group has a present obligation that can be estimated reliably and it is probable that an outflow of economic benefits will be required to settle the obligation.

The Group records provisions for decommissioning costs when it is highly probable that a commitment will arise as a result of past circumstances and the amount can be estimated reliably. The Group recognizes the provisions for decommissioning costs based on estimated amount of decommissioning of completed construction that is ready for its intended use. These costs are included as part of assets and are amortized using the units of production method based on estimated proved reserves and the straight-line method over the estimated useful lives of the assets. The provision for decommissioning costs is determined based on reviews and estimates by the Group's engineers together with the management's judgment.

Provisions depend on various current circumstances such as laws and regulations, technologies and market prices. Therefore, the actual result is likely to be different from estimates and assumptions.

Income Tax

The Group is responsible for the payment of tax in various countries. When income tax payable is estimated, the Group uses significant judgment due to the numerous transactions and calculations arising from its operations.

The Group recognizes income tax payable based on estimated incremental tax payments. The difference between the actual tax paid and the estimate will affect income tax and deferred tax in the period the difference occurs.

A deferred tax asset will be recognized when it is highly probable that the Group will have sufficient net income against which to utilize the temporary difference. Assumptions related to future taxable income are uncertain and may change affecting the recognition of deferred tax assets.

Estimates of Petroleum Reserves

Petroleum reserves are of fundamental importance when assessing investments in various exploration projects and petroleum production businesses, including impairment testing. Changes in proved reserves will affect the present value of net cash flows and depreciation expenses which are calculated using the unit of production method.

The proved reserves are the volume of commercial petroleum production as of a certain date with a high probability of achievement under current economic conditions and production methods, as well as government's rules and regulations. The proved reserves will be checked and assessed annually by the Group's geologists and reservoir engineers.

3.Accounting Policies (Continued)

3.2 Significant Accounting Policies (Continued)

3.2.29 Use of Estimates and Significant Assumptions (Continued)

Exploration Costs

The petroleum exploration and production businesses capitalize drilling costs as assets. When they are over 12 months old, they are amortized as expenses in profit or loss except where there is (1) a discovery of proved reserves, or (2) a discovery of commercially adequate reserves whilst having future exploration and assessment plans. The decision to amortize drilling petroleum costs recorded as assets over 12 months should be made using the assumptions under current circumstances. In case those assumptions change in subsequent accounting periods, the petroleum drilling costs that are capitalized as assets will be written off as expenses in that accounting period.

Impairment of Assets

The Group considers recording an allowance for impairment of assets when an event or a circumstance indicates that the carrying amount of an asset is higher than its recoverable amount, which is the higher of the anticipated discounted cash flows from the continuing use of the asset or the fair value of the asset less any costs of disposal. As a result, the carrying amount of an asset is written down immediately to its recoverable amount. The decrease is recorded in profit or loss. Thus, the loss on impairment of assets excluding goodwill recognized in the prior period will be reversed if the estimates for indicated recoverable amount changes.

The Group's estimate of the expected amount of future petroleum production in petroleum exploration and production businesses is a key factor in impairment tests. The Group believes that these are the most reasonable indicators for estimating future cash flows. The future petroleum production comprises proved reserves and unproved reserves.

The estimation of discounted future cash flows depends on various factors such as the expected amount of future production, future selling prices, demand and supply in the market, risks and gross margins. The discounted rates used in the calculation of present value of future cash flows depend on the cost of capital of the asset unit.

3.2.30 Capital Risk Management

The capital management objective of the Group is to create returns for shareholders and other stakeholders whilst maintaining a reasonable capital structure to decrease the cost of capital.

3.2.31 Operating Segment

The operating segment information is reported by business segments and based on the internal management reports that are received and regularly reviewed by the Chief Operating Decision Maker (CODM) for allocating resources to the segments and assessing its performance.

3. Accounting Policies (Continued)

3.3 Reclassification

Reclassifications in accordance with Department of Business Development Announcement

On October 11, 2016 the Department of Business Development issued its notification “Definition of the abbreviated components required in the financial statements (No.2), B.E. 2559”. The notification is effective for accounting periods beginning on or after January 1, 2017. The Group has reclassified the items related to the exploration and evaluation assets, deficit from the change in the ownership interests in subsidiaries in the statement of financial position as at December 31, 2016, items related to selling and distribution expenses in the comparative statement of income for the year ended December 31, 2016 to comply with the aforementioned notification. These reclassifications had no effect to the Group’s net profit as previous reported.

The Group has reclassified the comparative financial information. The impact on the consolidated financial information is as follows:

Unit : Million Baht

	Consolidated financial statements		
	Previously reported	Reclassified increase (decrease)	Restated
Statement of financial position			
Current assets	741,490.62	93.05	741,583.67
Non-current assets	1,490,840.46	(93.05)	1,490,747.41

Divestment of PTTEP Oman Company Limited and Discontinued Operations

During the year 2016, PTTEP Offshore Investment Company Limited (PTTEPO) sold an investment in PTTEP Oman Company Limited (PTTEP OM), which is a subsidiary of the Group. The Group recognized profit from the divestment of US Dollar 20 million (Baht 704 million) as part of profit (loss) for the year from discontinued operations in the consolidated financial statements for the year ended December 31, 2016.

During 2017, PTTEPO had calculated net sale value in accordance with Final Completion Adjustment specified in the SPA, resulted in a decrease in net sale value of US Dollar 0.35 million (Baht 11.35 million). The Group has recognized the adjustment as profit (loss) for the period from discontinued operations in the consolidated financial statements for the year end December 31, 2017

As a result, the relevant part of the petroleum exploration and production business is classified as a discontinued segment. The Group presented the operating results of the discontinued segment separately from normal operating profits, and present it as profit (loss) from discontinued operations, net of tax in the consolidated statement of income, and other comprehensive income (loss) from discontinued operations, net of taxes in the consolidated statement of comprehensive income. The Group has reclassified the transactions of this segment in 2016 for the purpose of comparison with the current period financial information.

3. Accounting Policies (Continued)

3.3 Reclassification (Continued)

Divestment of PTTEP Oman Company Limited and Discontinued Operations (Continued)

The operating results of the discontinued operations in the consolidated financial statements for the years ended December 31, 2017 and 2016 are as follows:

	Unit : Million Baht	
	2017	2016
The consolidated statements of income		
Revenues	-	1,136.50
Expenses	-	(923.22)
Profit before income taxes from discontinued operations	-	213.28
Income taxes	-	(44.83)
Net profit from discontinued operations	-	168.45
Gain (loss) from divestment of investment	(11.35)	703.62
Total net profit (loss) from discontinued operations	(11.35)	872.07
		Unit : Baht
	2017	2016
Basic earnings per share from discontinued operations	-	0.20
		Unit : Million Baht
	2017	2016
The consolidated statements of comprehensive income		
Item that will be reclassified subsequently to profit or loss		
Currency translation differences	-	(146.49)

4. Cash and Cash Equivalents

Cash and cash equivalents as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Cash on hand	1,260.21	202.76	169.52	47.59
Call deposits held at banks	93,005.38	106,286.14	30,846.73	37,489.76
Fixed deposits	44,885.89	79,397.13	1,509.76	17,064.79
Treasury bills	14,566.49	16,583.42	-	-
Promissory notes	354.01	4,691.57	-	-
Bank of Thailand bonds	-	8,046.15	-	8,046.15
Restricted bank cash within 3 months	286.42	359.24	-	-
Other investments	11,830.62	-	6,165.65	-
Total	166,189.02	215,566.41	38,691.66	62,648.29

Call deposits held at banks, fixed deposits, treasury bills, promissory notes, Bank of Thailand bonds, restricted bank cash within 3 months and other investments, as at December 31, 2017 bear the interest at rates ranging from 0.00% - 12.09% per annum (December 31, 2016: interest rates range from 0.00% - 13.05% per annum).

5. Current Investments

Current investments as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Fixed deposits	175,001.14	150,351.08	41,262.33	36,938.69
Promissory notes	6.00	1,044.44	-	-
Bonds	3,507.19	3,486.66	2,859.96	3,047.45
Other investments	51,136.93	21,931.45	23,933.97	19,206.41
Total	229,651.26	176,813.63	68,056.26	59,192.55

Current investments as at December 31, 2017 bear the interest at rates ranging from 0.90% to 2.79% per annum (December 31, 2016: interest rates range from 0.80% to 5.87% per annum).

6. Trade Accounts Receivable

Trade accounts receivable as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Trade accounts receivable - others	170,901.53	140,502.28	82,123.38	71,335.20
<u>Less</u> Allowance for doubtful accounts	<u>(3,188.82)</u>	<u>(3,409.99)</u>	<u>(2,040.57)</u>	<u>(2,076.63)</u>
Trade accounts receivable - others - net	167,712.71	137,092.29	80,082.81	69,258.57
Trade accounts receivable - related parties - net (Note 9.1)	7,203.53	6,098.77	64,182.35	55,303.90
Total	174,916.24	143,191.06	144,265.16	124,562.47

Aging analysis is as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Within credit terms	169,972.04	138,347.50	139,396.74	122,382.46
Overdue				
- Within 3 months	4,700.53	3,618.05	4,761.12	1,297.60
- Over 3 - 6 months	133.98	442.28	110.76	299.41
- Over 6 - 12 months	74.80	746.85	-	627.93
- Over 12 months	3,300.02	3,702.97	2,113.42	2,288.30
	178,181.37	146,857.65	146,382.04	126,895.70
<u>Less</u> Allowance for doubtful accounts	<u>(3,265.13)</u>	<u>(3,666.59)</u>	<u>(2,116.88)</u>	<u>(2,333.23)</u>
Total	174,916.24	143,191.06	144,265.16	124,562.47

Trade accounts receivable - others as at December 31, 2017 include receivables from government agencies and state enterprises in the consolidated financial statements amounting to Baht 15,471.99 million (December 31, 2016: Baht 11,589.18 million), and in the separate financial statements amounting to Baht 13,560.72 million (December 31, 2016: Baht 10,927.55 million).

7. Other Accounts Receivable

Other accounts receivable as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Other accounts receivable	13,919.21	12,480.98	2,751.44	2,095.11
<u>Less</u> Allowance for doubtful accounts	<u>(412.11)</u>	<u>(319.09)</u>	<u>(255.28)</u>	<u>(252.47)</u>
Other accounts receivable	13,507.10	12,161.89	2,496.16	1,842.64
Advance payments	16,168.09	21,811.33	281.60	415.44
Refund receivable from the Oil Stabilization Fund	13,578.39	6,081.06	11,797.59	5,916.93
Current tax assets	<u>5,483.09</u>	<u>6,814.26</u>	<u>-</u>	<u>1,094.63</u>
Other accounts receivable - others - net	48,736.67	46,868.54	14,575.35	9,269.64
Other accounts receivable - related parties - net (Note 9.2)	1,412.97	1,786.77	1,974.49	1,587.97
Advance payments - related parties (Note 9.2)	<u>453.06</u>	<u>516.11</u>	<u>373.36</u>	<u>372.21</u>
Total	<u>50,602.70</u>	<u>49,171.42</u>	<u>16,923.20</u>	<u>11,229.82</u>

The refund receivable from the Oil Stabilization Fund mostly comprises compensation for locally manufactured oil and liquefied petroleum gas (LPG), or imported LPG for local uses, as well as compensation for Natural Gas for Vehicles (NGV) prices. The compensation rates are determined by the Committee of Energy Policy Administration.

8. Lending Loans

8.1 Short-term lending loans as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Current portion of financial lease receivable - others	605.19	436.71	-	-
Current portion of financial lease receivable - related parties (Note 9.2)	3.80	3.66	-	-
Short-term lending loans - others	622.34	-	-	-
Short-term lending loans - related parties	469.64	503.09	5,077.58	8,160.73
<u>Less</u> Allowance for doubtful accounts	<u>(469.64)</u>	<u>(413.09)</u>	<u>(428.84)</u>	<u>-</u>
Short-term lending loans - related parties - net (Note 9.2)	-	90.00	4,648.74	8,160.73
Total	<u>1,231.33</u>	<u>530.37</u>	<u>4,648.74</u>	<u>8,160.73</u>

8.2 Long-term lending loans as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Long-term financial lease receivable - others	5,354.19	5,959.37	-	-
Long-term financial lease receivable - related parties (Note 9.3)	56.66	60.47	-	-
Long-term lending loans - others	4,385.44	734.69	-	-
Long-term lending loans - related parties	9,282.31	8,263.29	44,875.26	80,994.63
<u>Less</u> Allowance for doubtful accounts	<u>-</u>	<u>-</u>	<u>(22,120.52)</u>	<u>(53,412.42)</u>
Long-term lending loans - related parties - net (Note 9.3)	9,282.31	8,263.29	22,754.74	27,582.21
Total	<u>19,078.60</u>	<u>15,017.82</u>	<u>22,754.74</u>	<u>27,582.21</u>

9. Related Party Transactions

Significant transactions carried out with related parties are as follows:

9.1 Trade accounts receivable - related parties as at December 31, 2017 and 2016

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2017	2016	2017	2016
Subsidiaries	-	-	59,744.47	51,470.79
Joint ventures	3,077.27	2,927.52	1,505.27	1,390.73
Associates	1,764.15	1,149.42	574.17	420.56
Other related parties	2,438.42	2,278.43	2,434.75	2,278.42
	7,279.84	6,355.37	64,258.66	55,560.50
<u>Less Allowance for doubtful accounts</u>	<u>(76.31)</u>	<u>(256.60)</u>	<u>(76.31)</u>	<u>(256.60)</u>
Total (Note 6)	7,203.53	6,098.77	64,182.35	55,303.90

Aging analysis is as follows:

	Unit: Million Baht			
	Consolidated		Separate	
	financial statements	financial statements	financial statements	financial statements
	2017	2016	2017	2016
Within credit terms	7,119.37	6,064.67	62,809.97	55,134.14
Overdue				
- Within 3 months	45.86	15.72	1,344.48	154.27
- Over 3 - 6 months	-	1.95	-	-
- Over 6 - 12 months	10.39	0.93	-	-
- Over 12 months	104.22	272.10	104.21	272.09
	7,279.84	6,355.37	64,258.66	55,560.50
<u>Less Allowance for doubtful accounts</u>	<u>(76.31)</u>	<u>(256.60)</u>	<u>(76.31)</u>	<u>(256.60)</u>
Total (Note 6)	7,203.53	6,098.77	64,182.35	55,303.90

9. Related Party Transactions (Continued)

- 9.2 Other accounts receivable, advance payments, current portion of financial lease receivable, and short-term lending loans - related parties as at December 31, 2017 and 2016

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
<u>Other accounts receivable</u>				
Subsidiaries	-	-	1,765.63	5,136.41
Joint ventures	604.99	177.05	403.97	26.26
Associates	263.92	212.86	2.74	6.37
Other related parties	596.47	1,505.30	0.69	-
	1,465.38	1,895.21	2,173.03	5,169.04
<u>Less</u> Allowance for doubtful accounts	(52.41)	(108.44)	(198.54)	(3,581.07)
Total (Note 7)	<u>1,412.97</u>	<u>1,786.77</u>	<u>1,974.49</u>	<u>1,587.97</u>
<u>Advance payments</u>				
Subsidiaries	-	-	62.24	62.46
Joint ventures	5.32	11.49	-	-
Other related parties	447.74	504.62	311.12	309.75
Total (Note 7)	<u>453.06</u>	<u>516.11</u>	<u>373.36</u>	<u>372.21</u>

9. Related Party Transactions (Continued)

- 9.2 Other accounts receivable, advance payments, current portion of financial lease receivable, and short-term lending loans - related parties as at December 31, 2017 and 2016 (Continued)

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
<u>Current portion of financial lease receivable</u>				
Joint ventures (Note 8.1)	3.80	3.66	-	-
<u>Short-term loans</u>				
Subsidiaries	-	-	5,077.58	8,160.73
Joint ventures	469.64	503.09	-	-
	469.64	503.09	5,077.58	8,160.73
<u>Less Allowance for doubtful accounts</u>	(469.64)	(413.09)	(428.84)	-
Total (Note 8.1)	-	90.00	4,648.74	8,160.73

Movements in short-term loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Balance as at January 1	90.00	438.88	941.84	861.84
- Payment for loans granted	96.42	65.69	327.28	318.87
- Receipt from loans granted	-	-	(798.81)	(235.37)
- Loss on exchange rate	-	-	(41.47)	(3.50)
- Reclassification	(90.00)	-	-	-
- Currency translation differences	-	(7.72)	-	-
- Allowance for doubtful accounts	(96.42)	(406.85)	(428.84)	-
Balance as at December 31	-	90.00	-	941.84
<u>Add Current portion (Note 9.3)</u>	-	-	4,648.74	7,218.89
Balance as at December 31 - net	-	90.00	4,648.74	8,160.73

Short-term loans - related parties as at December 31, 2016 in the consolidated financial statements bear the interest at rates ranging from 0.25% - 4.20% per annum, and in the separate financial statements as at December 31, 2017 bear the interest at rates ranging from 2.53% - 3.40% per annum (December 31, 2016: interest at rates ranging from 2.53% - 3.27% per annum).

9. Related Party Transactions (Continued)

9.3 Long-term financial lease receivable and long-term lending loans - related parties as at December 31, 2017 and 2016

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
<u>Long-term financial lease receivable</u>				
Joint ventures (Note 8.2)	56.66	60.47	-	-
<u>Long-term loans</u>				
Subsidiaries	-	-	44,875.26	75,240.86
Joint ventures	6,766.64	5,753.77	-	5,753.77
Associates	2,515.67	2,509.52	-	-
Total	9,282.31	8,263.29	44,875.26	80,994.63
<u>Less Allowance for doubtful accounts*</u>	-	-	(22,120.52)	(53,412.42)
Total (Note 8.2)	9,282.31	8,263.29	22,754.74	27,582.21

* The Company recorded allowance for doubtful accounts as at December 31, 2017 amounting to Baht 22,120.52 million (December 31, 2016: Baht 53,412.42 million) for a long-term lending loan to a subsidiary. The subsidiary used this loan to invest in its foreign subsidiary and associate; both of which encountered operational problems. The Company therefore recognized allowance for doubtful accounts based on assessment of the recoverable amount of such lending loan.

9. Related Party Transactions (Continued)

9.3 Long-term financial lease receivable and long-term lending loans - related parties as at December 31, 2017 and 2016 (Continued)

Details of financial lease receivable - related parties as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Financial lease receivable				
- Within 1 year	6.00	6.00	-	-
- Over 1 year but not over 5 years	24.00	24.00	-	-
- Over 5 years	46.00	52.00	-	-
Future finance income	(15.53)	(17.87)	-	-
Total	60.47	64.13	-	-

Movements in long-term lending loans - related parties are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Balance as at January 1	8,263.29	3,343.97	34,801.10	38,649.97
- Payment for loans granted	2,890.40	4,926.65	9,391.23	6,840.23
- Receipt from loans granted	(1,127.93)	-	(41,419.18)	(6,477.19)
- Loss on exchange rate	(738.98)	(7.25)	(6,661.58)	(541.74)
- Currency translation differences	246.24	(0.08)	-	-
- Reversal (recognition) of allowance for doubtful accounts	(250.71)	-	31,291.91	(3,670.17)
Balance as at December 31	9,282.31	8,263.29	27,403.48	34,801.10
Less Current portion (Note 9.2)	-	-	(4,648.74)	(7,218.89)
Balance as at December 31 - net	9,282.31	8,263.29	22,754.74	27,582.21

Long-term loans - related parties as at December 31, 2017 in the consolidated financial statements bear the interest at rates ranging from 3.66% - 6.56% per annum (December 31, 2016: interest at rates ranging from 1.00% - 6.56% per annum), and in the separate financial statements bear the interest at rates ranging from 2.63% - 4.68% per annum (December 31, 2016: interest at rates ranging from 2.55% - 4.50% per annum).

9. Related Party Transactions (Continued)

9.4 Trade accounts payable - related parties as at December 31, 2017 and 2016

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Subsidiaries	-	-	51,583.58	41,175.35
Joint ventures	863.80	957.78	269.00	292.06
Associates	317.81	500.03	254.07	446.57
Other related parties	2.59	1.90	-	-
Total	1,184.20	1,459.71	52,106.65	41,913.98

9.5 Other accounts payable, current portion of financial lease liability, and short-term loans - related parties as at December 31, 2017 and 2016

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
<u>Other accounts payable</u>				
Subsidiaries	-	-	3,440.80	4,495.18
Joint ventures	22.84	17.85	4.03	3.32
Associates	12.16	21.43	3.74	3.71
Other related parties	135.21	69.39	105.96	44.78
Total	170.21	108.67	3,554.53	4,546.99

Current portion of financial lease liability

Joint venture	398.68	437.63	398.68	437.63
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Short-term loans*

Subsidiaries	-	-	2,803.04	2,117.07
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* The Company has liquidity management policies within the Group include the use of the cash pooling method. Inter-company loans were used for short-term financial management of cash surpluses or deficits of each affiliate. Interests on these were calculated by using market interest rates.

9. Related Party Transactions (Continued)

9.6 Long-term finance lease liability - related parties as at December 31, 2017 and 2016

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Joint venture	4,274.28	5,155.97	4,274.28	5,155.97

Details of financial lease liability - related parties as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Financial lease liability				
- Within 1 year	456.77	500.65	456.77	500.65
- Over 1 year but not over 5 years	1,828.35	2,003.98	1,828.35	2,003.98
- Over 5 years	2,743.15	3,507.31	2,743.15	3,507.31
Future finance charges	(355.31)	(418.34)	(355.31)	(418.34)
Total	4,672.96	5,593.60	4,672.96	5,593.60

9. Related Party Transactions (Continued)

9.7 Revenue and expense transactions carried out with related parties

For the years ended December 31, 2017 and 2016

	Consolidated financial statements		Unit: Million Baht Separate financial statements	
	2017	2016	2017	2016
Revenues				
<u>Sales and service income</u>				
Subsidiaries	-	-	567,842.77	495,171.23
Joint ventures	25,711.82	24,589.04	13,426.17	12,997.86
Associates	14,129.30	9,029.29	2,561.39	1,821.41
Other related parties	14,477.24	14,695.83	14,467.74	14,688.11
<u>Interest income</u>				
Subsidiaries	-	-	2,063.58	2,647.99
Joint ventures	255.13	175.29	66.32	151.36
Associates	160.74	70.22	-	-
<u>Dividend income</u>				
Subsidiaries	-	-	28,263.50	20,136.51
Joint ventures	-	-	1,033.30	3,346.33
Associates	-	-	699.28	1,095.44
Other related parties	380.00	544.11	110.00	110.00
<u>Other income</u>				
Subsidiaries	-	-	4,047.92	4,608.96
Joint ventures	159.62	165.08	88.47	98.96
Associates	32.53	38.24	19.61	23.52
Other related parties	295.25	1,213.74	22.05	44.42
Expenses				
<u>Cost of goods purchased and services</u>				
Subsidiaries	-	-	516,960.35	455,367.00
Joint ventures	9,237.90	9,675.98	1,619.31	1,693.59
Associates	3,522.99	4,295.40	2,677.67	3,781.34
Other related parties	1,450.74	2,078.62	271.31	404.81
<u>Interest expenses</u>				
Subsidiaries	-	-	62.48	31.33
Joint ventures	63.02	67.90	63.02	67.90
<u>Other expenses</u>				
Subsidiaries	-	-	3,223.41	9,551.25
Joint ventures	190.80	947.00	58.50	3.07
Associates	111.36	74.77	4.90	4.95
Other related parties	359.34	355.77	227.23	169.81

9. Related Party Transactions (Continued)

9.7 Revenue and expense transactions carried out with related parties (Continued)

The aforementioned related party transactions exclude transactions carried out with government agencies and state enterprises.

Stipulation prices between the Company and its related parties are based on normal prices for the same types of business transactions carried out with non-related parties. Goods purchased from subsidiaries are charged at the normal prices determined by the subsidiaries with reference to global market prices.

9.8 Details of commitments to subsidiaries, joint ventures, associates and other related parties are stated in Note 45.1.

9.9 Crude oil and refined product purchase and sale transactions carried out with related parties without physical delivery, with the objective of maintaining crude oil and refined product reserves and inventory management, were reversed in the financial statements.

Detail of these transactions for the years ended December 31, 2017 and 2016 are as follow:

	Consolidated		Separate	
	financial statements		financial statements	
	2017	2016	2017	2016
Unit: Million Baht				
<u>Sales</u>				
Subsidiaries	-	-	7,981.66	1,824.11
<u>Purchases</u>				
Subsidiaries	-	-	8,167.99	1,898.75

9.10 Executive remunerations

Detail of executive remunerations for the years ended December 31, 2017 and 2016 are as follows:

	Consolidated		Separate	
	financial statements		financial statements	
	2017	2016	2017	2016
Unit: Million Baht				
<u>Directors remuneration</u>				
Meeting remuneration and bonuses	349.12	318.02	72.98	43.24
<u>Managements remuneration</u>				
Salaries, bonuses, and other employee benefits	983.26	914.90	75.12	68.64
Post-employment benefits	22.98	9.68	2.79	1.01
Total (Note 35)	1,355.36	1,242.60	150.89	112.89

Managements are those persons who have authority and responsibility for planning, directing and controlling the activities of an entity, directly or indirectly.

10. Inventories

Inventories as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Oil products	87,473.14	84,479.18	24,128.66	21,096.12
Gas products	2,560.71	1,513.34	2,557.43	1,510.07
Petrochemicals products	28,610.81	28,395.53	-	-
Others	3,629.45	3,289.89	746.72	689.88
	122,274.11	117,677.94	27,432.81	23,296.07
<u>Less</u> Allowance for decline in value of inventories and obsolescence	(402.31)	(794.40)	(329.28)	(308.09)
Total	121,871.80	116,883.54	27,103.53	22,987.98

The Fuel Oil Trading Act B.E. 2543 was amended by The Fuel Oil Trading Act (No.2) B.E. 2550 in accordance with Notification of the Department of Energy Business “Determination of Types, Rates, Criteria, Methods, and Conditions for Calculation of Oil Reserves B.E. 2558”. This Act prescribes that oil traders under section 7 must reserve crude oil and petroleum products at rates ranging from 1% - 20% of the total production output or imported volume. Inventories - legal reserves as at December 31, 2017 in the consolidated financial statements amounting to Baht 17,558.00 million (December 31, 2016: Baht 22,900.03 million), and in the separate financial statements amounting to Baht 6,682.59 million (December 31, 2016: Baht 5,808.71 million). These amounts were net of allowance for net realizable value.

In 2017, the Group wrote down inventories to their net realizable values and recognized the additional allowance for obsolescence of inventories as an expense of Baht (392.09) million in the consolidated financial statements (2016: Baht (3,116.24) million) and Baht 21.19 million in the separate financial statements (2016: Baht (545.49) million).

11. Materials and Supplies

Materials and supplies as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Spare parts, equipment and others	30,298.05	31,894.65	5,770.45	5,682.33
<u>Less</u> Allowance for obsolescence	(1,355.60)	(868.38)	(20.98)	(20.55)
Total	28,942.45	31,026.27	5,749.47	5,661.78

12. The Shareholder Restructuring of the Group

On December 16, 2016, at the Board of Directors Meeting No. 12/2016 of the Company, the Board passed a resolution to approve the transfer of all shares, which the Company held, in the petrochemical businesses in propane and bioplastic business chains, including service businesses which are related to each other, comprising HMC Polymers Co., Ltd. (HMC), PTT Asahi Chemicals Co., Ltd. (PTTAC), PTT MCC Biochem Co., Ltd. (PTTMCC), PTT Polymer Marketing Co., Ltd. (PTTPM), PTT Polymer Logistics Co., Ltd. (PTTPL), and PTT Maintenance & Engineering Co., Ltd. (PTTME), together with lending loan contracts to PTTAC, to PTT Global Chemical Public Co., Ltd. (PTTGC). In addition, the Board passed a resolution to approve the transfer by PTT Global Management Co., Ltd. (PTTGM) (formerly PTT PMMA Co., Ltd. (PTTPMMA)), in which the Company held 100% of shares, of rights to operate all of the PMMA Projects and any other relevant assets (collectively, the “Target Entities’ Assets”) to PTTGC as agreed.

On June 30, 2017, the Company reclassified the Target Entities’ Assets as non-current assets held-for-sale in separate financial statements and measured them at the lower of the carrying amount and fair value less cost to sell.

On July 3, 2017, the Company had transferred the Target Entities’ Assets including lending loans of PTTAC amounting to Baht 25,049.35 million. Also PTTGM had transferred the rights to operate all of the PMMA Projects amounting to Baht 11.77 million to PTTGC. The transfer of Target Entities’ Assets to PTTGC will be conducted in accordance with the shareholder restructuring of the Group by means of positioning PTTGC as the petrochemical flagship company of the Group. In the purpose of this event will enhance efficiency in the supply chain management and increase the competitiveness. Consequently, the Company had net loss by Baht 140.01 Million on separate financial statements. However, the Company received dividends over the investment periods from the Target Entities amounting to Baht 13,644.61 Million. There is no impact on the consolidated financial statements since this transfer of the Target Entities’ Assets is treated as the business combination under common control.

Nevertheless, the valuation of the Target Entities’ Assets had been evaluated by financial advisors who were expert in valuation business approaches following relevant international standards in order to provide the most reasonable prices.

13. Available-for-sale Investments

13.1 Details of available-for-sale investments

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Available-for-sale Investments of the Company</u>				
<u>Investments in Equity Securities</u>				
Dhipaya Insurance Public Co., Ltd. (TIP)	Thailand	Insurance	13.33	13.33
Bangkok Aviation Fuel Services Public Co., Ltd. (BAFS)	Thailand	Aircraft refuelling services	7.06	7.06
Star Petroleum Refining Public Co., Ltd. (SPRC)	Thailand	Refining	-	5.41
<u>Investments in Mutual Funds</u>				
Core Flexible Fund (CORE)	Thailand	Mutual fund	-	32.57
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
Vayupak fund 1 (VAYU1)	Thailand	Mutual fund		
Corporate Venture Capital Fund (CVC)*	United States of America	Mutual fund		
<u>Available-for-sale Investments of Subsidiaries</u>				
<u>Investments in Equity Securities</u>				
<i>PTTEP Group</i>				
Wentworth Resources Limited (WRL)	Canada	Oil and natural gas exploration	1.18	1.18
<i>IRPC Group</i>				
Bangkok Union Insurance Public Co., Ltd. (BUI)	Thailand	Insurance	0.35	0.35
TPI Polene Public Co., Ltd. (TPIPL)	Thailand	Property, construction and petrochemicals	0.14	-
<i>PTTER Group</i>				
Xanadu Mines Ltd. (XML)**	Mongolia	Mineral exploration	-	4.82
<i>PTTGM Group</i>				
Xanadu Mines Ltd. (XML)**	Mongolia	Mineral exploration	4.19	-

* Comprised Energy Impact Fund Limited Partnership, G2VP I, Limited Liability Company, Congruent Ventures I, Limited Partnership and Clean Energy Venture Fund I

** On June 1, 2017, PTTER sold all shares in XML to PTTGM.

13. Available-for-sale Investments (Continued)

13.1 Details of available-for-sale investments (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Available-for-sale Investments of Subsidiaries</u> (Continued)				
<u>Investment in Debt Securities</u>				
<i>PTTGC Group</i>				
Debt Securities Available for Sale (in Private Fund) (DSAFS)	Thailand	Private Fund		
<i>TOP Group</i>				
Debt Securities Available for Sale (in Private Fund) (DSAFS)	Thailand	Private Fund		
<u>Investments in Mutual Funds</u>				
<i>PTTLNG</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTNGD Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>EnCo</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTOR Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTT TANK</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTT Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTGC Group</i>				
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
<i>TOP Group</i>				
Core Flexible Fund (CORE)	Thailand	Mutual fund	-	16.29
CIMB - PRINCIPAL Energy and Petrochemical Index Fund (CIMB - PRINCIPAL EPIF)	Thailand	Mutual fund		
<i>PTTER Group</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		
<i>PTTRTC</i>				
Vayupak Fund 1 (VAYU1)	Thailand	Mutual fund		

13. Available-for-sale Investments (Continued)

13.2 Details of available-for-sale investments as at December 31, 2017 and 2016 are as follows:

Unit: Million Baht

Company	Ownership interest (%)		Consolidated financial statements		Separate financial statements		Dividend incomes	
	2017	2016	2017	2016	2017	2016	2017	2016
<u>Available-for-sale investments in Equity Securities</u>								
1. TIP	13.33	13.33	312.00	312.00	312.00	312.00	110.00	110.00
2. BAFS	7.06	7.06	24.00	24.00	24.00	24.00	54.90	60.75
3. SPRC	-	5.41	-	1,876.50	-	1,623.17	259.59	188.02
4. WRL	1.18	1.18	37.39	37.43	-	-	-	-
5. BUI	0.35	0.35	2.35	2.35	-	-	-	0.07
6. TPIPL	0.14	-	64.86	-	-	-	-	-
7. XML	4.19	4.82	239.83	262.94	-	-	-	-
Total			680.43	2,515.22	336.00	1,959.17		
<u>Available-for-sale investments in Debt Securities</u>								
8. DSAFS			11,988.88	5,430.65	-	-	-	-
Total			11,988.88	5,430.65	-	-		
<u>Available-for-sale investments in Mutual Funds</u>								
9. CORE	-	48.86	-	674.74	-	449.83	-	-
10. CIMB - PRINCIPAL EPIF			854.03	6,300.00	254.03	6,300.00	4,309.71	-
11. VAYU1			15.10	15.24	10.00	10.00	0.09	0.09
12. CVC			208.99	-	208.99	-	-	-
Total			1,078.12	6,989.98	473.02	6,759.83		
Total available-for-sale investments before changes in value of investments			13,747.43	14,935.85	809.02	8,719.00		
Allowance for changes in value			3,893.60	8,946.03	3,724.08	9,397.25		
<u>Less Allowance for impairment</u>			(38.62)	(42.34)	-	-		
Total			17,602.41	23,839.54	4,533.10	18,116.25	4,734.29	358.93

13. Available-for-sale Investments (Continued)

13.3 Movements in available-for-sale investments are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
As at January 1	23,839.54	13,352.99	18,116.25	13,108.79
- Additional investments	7,448.50	5,430.65	208.99	-
- Disposals of investments	(8,265.40)	-	(8,118.97)	-
- Unrealized gain (loss) on available-for-sale investments	(5,403.21)	5,055.51	(5,673.17)	5,007.46
- Currency translation differences	(17.02)	0.39	-	-
As at December 31	<u>17,602.41</u>	<u>23,839.54</u>	<u>4,533.10</u>	<u>18,116.25</u>

13.4 Significant events during the period ended December 31, 2017

SPRC

On November 16, 2017, the Company disposed all shares that the Company held in SPRC amounting to 234.56 million shares or equivalent to 5.41% of all issued and paid-up shares, for a total of Baht 3,706.09 million. The Company recognized gains on disposal of the investment in the consolidated financial statements and the separate financial statements amounting to Baht 1,801.65 million and Baht 2,054.98 million, respectively.

14. Investments in Subsidiaries, Joint Ventures and Associates

14.1 Details of subsidiaries, joint ventures and associates of the Company

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries</u>				
PTT Exploration and Production Public Co., Ltd. (PTTEP)	Thailand	Petroleum exploration and production	65.29	65.29
PTT LNG Co., Ltd. (PTTLNG)	Thailand	Natural gas	100.00	100.00
PTT Natural Gas Distribution Co., Ltd. (PTTNGD)	Thailand	Natural gas	58.00	58.00
PTT Global LNG Co., Ltd. (PTTGL) (The Group holds 100% shareholding)	Thailand	Investing in LNG business	50.00	-
Energy Complex Co., Ltd. (EnCo) (The Group holds 100% shareholding)	Thailand	Real estate development for rent	50.00	50.00
PTT Energy Solutions Co., Ltd. (PTTES) (The Group holds 100% shareholding)	Thailand	Technical and operational services	40.00	40.00
PTT Maintenance & Engineering Co., Ltd. (PTTME)* (The Group holds 100% shareholding)	Thailand	Factory maintenance and engineering services	-	40.00
Global Power Synergy Public Co., Ltd. (GPSC) (The Group holds 75% shareholding)	Thailand	Generation and supply of electricity, steam and water for industries	22.58	22.58
PTT (Cambodia) Limited (PTTCL)	Cambodia	Oil marketing	100.00	100.00
PTT Oil Myanmar Co., Ltd. (PTTOM)	Myanmar	Business services	100.00	100.00
PTT Oil and Retail Business Co., Ltd. (PTTOR)	Thailand	Management services and oil marketing	100.00	100.00
PTT Tank Terminal Co., Ltd. (PTT TANK)	Thailand	Terminal and warehouse	100.00	100.00
Thai Lube Blending Co., Ltd. (TLBC) (The Group holds 100% shareholding)	Thailand	Blending and bottling of lube oil	48.95	48.95
PTT International Trading Pte. Ltd. (PTTT)	Singapore	International oil trading	100.00	100.00
PTT International Trading London Limited (PTTT LDN)	England	International oil trading	100.00	100.00
PTT Polymer Logistics Co., Ltd. (PTTPL)* (The Group holds 100% shareholding)	Thailand	Logistics services	-	50.00
PTT Polymer Marketing Co., Ltd. (PTTPM)* (The Group holds 100% shareholding)	Thailand	Petrochemicals marketing	-	50.00
PTT Global Chemical Public Co., Ltd. (PTTGC)	Thailand	Petrochemicals and refining	48.89	49.42
Thai Oil Public Co., Ltd. (TOP)	Thailand	Oil refining	49.10	49.10

* On July 3, 2017, the Company sold all shares in PTTME, PTTPL and PTTPM to PTTGC.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.1 Details of subsidiaries, joint ventures and associates of the Company (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries</u> (Continued)				
IRPC Public Co., Ltd. (IRPC)	Thailand	Petrochemicals and refining	38.51	38.51
Thai Oil Power Co., Ltd. (TP) (The Group holds 100% shareholding)	Thailand	Generation and supply of electricity and steam	26.00	26.00
PTT Energy Resources Co., Ltd. (PTTER)	Thailand	International investment	100.00	100.00
PTT Global Management Co., Ltd. (PTTGM) (Former : PTT PMMA Co., Ltd. (PTTPMMA))	Thailand	Domestic and international investment	100.00	100.00
PTT Green Energy Pte. Ltd. (PTTGE)	Singapore	Investing in palm oil business	100.00	100.00
PTT Regional Treasury Center Pte. Ltd. (PTTRTC)	Singapore	Treasury services	100.00	100.00
Business Services Alliance Co., Ltd. (BSA)	Thailand	Management services	100.00	100.00
PTT Digital Solutions Co., Ltd. (PTT DIGITAL) (Former : PTT ICT Solutions Co., Ltd. (PTTICT)) (The Group holds 100% shareholding)	Thailand	Information technology and communication services	20.00	20.00
<u>Joint Ventures</u>				
Trans Thai-Malaysia (Thailand) Co., Ltd. (TTM(T))	Thailand	Natural gas	50.00	50.00
Trans Thai-Malaysia (Malaysia) Sdn. Bhd. (TTM(M))	Malaysia	Natural gas	50.00	50.00
District Cooling System and Power Plant Co., Ltd. (DCAP)	Thailand	Generation and supply of electricity and chilled water	35.00	35.00
PTT MCC Biochem Co., Ltd. (PTTMCC)* (The Group holds 50% shareholding)	Thailand	Petrochemicals	-	50.00
PTT Asahi Chemicals Co., Ltd. (PTTAC)* (The Group holds 50% shareholding)	Thailand	Petrochemicals	-	50.00
HMC Polymers Co., Ltd. (HMC)* (The Group holds 41.44% shareholding)	Thailand	Petrochemicals	-	41.44
<u>Associates</u>				
Thai Petroleum Pipeline Co., Ltd. (THAPPLINE) (The Group holds 49.59% shareholding)	Thailand	Oil transmission pipelines	40.40	40.40
KELOIL-PTT LPG Sdn. Bhd. (KPL)**	Malaysia	Bottling and sale of LPG	-	40.00
Petro Asia (Thailand) Co., Ltd. (PAT)	Thailand	Oil marketing	35.00	35.00

* On July 3, 2017, the Company sold all shares in PTTMCC, PTTAC and HMC to PTTGC.

** On December 10, 2017, the Company sold all shares in KPL.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of PTTEP Group:</u>				
PTTEP International Limited (PTTEPI)	Thailand	Petroleum	100.00	100.00
PTTEP Offshore Investment Company Limited (PTTEPO)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Southwest Vietnam Company Limited (PTTEP SV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Kim Long Vietnam Company Limited (PTTEP KV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Hoang-Long Company Limited (PTTEP HL)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Hoan-Vu Company Limited (PTTEP HV)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Algeria Company Limited (PTTEP AG)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Services Limited (PTTEP Services)	Thailand	Human resource support	100.00	100.00
PTTEP Siam Limited (PTTEPS)	Thailand	Petroleum	100.00	100.00
PTTEP Holding Company Limited (PTTEPH)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Indonesia Company Limited (PTTEP ID)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Africa Investment Limited (PTTEP AI)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Rommana Company Limited (PTTEPR)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Australia Pty Limited (PTTEP AU)	Australia	Petroleum	100.00	100.00
PTTEP South Asia Limited (PTTEP SA)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Semai II Limited (PTTEP SM)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Australia Perth Pty Limited (PTTEP AP)	Australia	Petroleum	100.00	100.00
PTTEP International Holding Co., Ltd. (PTTEP IH)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Southwest Vietnam Pipeline Co., Ltd. (PTTEP SVPC)	Cayman Islands	Gas transmission pipelines	100.00	100.00
PTTEP FLNG Holding Co., Ltd. (PTTEP FH)*	Hong Kong	Petroleum	100.00	100.00
PTTEP Netherland Holding Limited (PTTEP NL)	Cayman Islands	Petroleum	100.00	100.00
JV Marine Limited (JV Marine)	Cayman Islands	Petroleum	100.00	100.00
PTTEP South Mandar Limited (PTTEP SMD)	Cayman Islands	Petroleum	100.00	100.00
PTTEP South Sageri Limited (PTTEP SS)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Sadang Limited (PTTEP SD)	Cayman Islands	Petroleum	100.00	100.00
PTTEP Malunda Limited (PTTEP ML)	Cayman Islands	Petroleum	100.00	100.00

* On August 24, 2017, PTTEP approved for the registration for the dissolution of PTTEP FH.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of PTTEP Group: (Continued)</u>				
PTTEP Netherlands Coöperatie U.A. (PTTEP NC)	Netherlands	Petroleum	100.00	100.00
PTTEP Canada Limited (PTTEP CA)	Canada	Petroleum	100.00	100.00
PTTEP Canada International Finance Limited (PTTEP CIF)	Canada	Funding services for the Group's business	100.00	100.00
PTTEP MEA Limited (PTTEP MEA)*	Cayman Islands	Petroleum	-	100.00
PTTEP HK Holding Limited (PTTEP HK)	Hong Kong	Petroleum	100.00	100.00
PTTEP Netherlands Holding Coöperatie U.A. (PTTEP NH)	Netherlands	Petroleum	100.00	100.00
PTTEP Brazil Investment B.V. (PTTEP BI)	Netherlands	Petroleum	100.00	100.00
PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL)	Brazil	Petroleum	100.00	100.00
PTTEP Australia Offshore Pty Ltd (PTTEP AO)	Australia	Petroleum	100.00	100.00
PTTEP Australia Browse Basin Pty Ltd (PTTEP AB)	Australia	Petroleum	100.00	100.00
PTTEP Australia International Finance Pty Ltd (PTTEP AIF)**	Australia	Funding services for the Group's business	-	100.00
PTTEP Australasia Pty Ltd (PTTEP AA)**	Australia	Petroleum	-	100.00
PTTEP Australia Timor Sea Pty Ltd (PTTEP AT)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Finance) Pty Ltd (PTTEP AAF)**	Australia	Petroleum	-	100.00
PTTEP Australasia (Petroleum) Pty Ltd (PTTEP AAP)**	Australia	Petroleum	-	100.00
Tullian Pty Ltd (PTTEP AAT)**	Australia	Petroleum	-	100.00
PTTEP Australasia (Operations) Pty Ltd (PTTEP AAO)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AAA)	Australia	Petroleum	100.00	100.00
PTTEP Australasia (Staff) Pty Ltd (PTTEP AAS)	Australia	Petroleum	100.00	100.00

* On December 29, 2017, PTTEP MEA had received the approval of dissolution of the company from registrar.

** On March 19, 2017, PTTEP AIF, PTTEP AA, PTTEP AAF, PTTEP AAP, PTTEP AAT had received the approval of dissolution of the company from registrar.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of PTTEP Group: (Continued)</u>				
Cove Energy Limited (Cove)	England	Petroleum	100.00	100.00
Cove Energy Mozambique Rovuma Onshore Limited (CEMROL)*	Cyprus	Petroleum	100.00	100.00
Cove Energy East Africa Limited (CEEAL)	Cyprus	Petroleum	100.00	100.00
PTTEP Mozambique Area 1 Limited (PTTEP MZA1)	Cyprus	Petroleum	100.00	100.00
Cove Energy Kenya Limited (CEKL)*	Kenya	Petroleum	100.00	100.00
Sinphuhorm Holdings Limited (SHL)	Cayman Islands	Petroleum	100.00	100.00
PTTEP SP Limited (PTTEP SP)	England	Petroleum	100.00	100.00
PTTEP G7 Limited (PTTEP G7)	Thailand	Petroleum	100.00	100.00
PTTEP HK Offshore Limited (PTTEP HKO)	Hong Kong	Petroleum	100.00	100.00
PTTEP Treasury Center Company Limited (PTTEP TC)	Thailand	Treasury center for the Group's business	100.00	100.00
PTTEP Business Center Company Limited (PTTEP BC)	Thailand	Petroleum	100.00	100.00
PTTEP Mexico E&P Limited, S. de R.L. de C.V. (PTTEP MEP)	Mexico	Petroleum	100.00	-
<u>Subsidiary of PTTNGD Group:</u>				
Amata Natural Gas Distribution Co., Ltd. (AMATA NGD)	Thailand	Natural gas	80.00	80.00
<u>Subsidiary of PTTGL Group:</u>				
PTTGL Investment Limited (PTTGLI)	Hong Kong	Investing in LNG business	100.00	-
<u>Subsidiaries of GPSC Group:</u>				
Combined Heat and Power Producing Co., Ltd. (CHPP)	Thailand	Generation and supply of electricity and chilled water/construction and installation of electricity generating system	100.00	100.00
Natee Synergy Co., Ltd. (NSC)	Thailand	Investing in other companies	100.00	100.00
IRPC Clean power Co.,Ltd. (IRPCCP) (The Group holds 100% shareholding)	Thailand	Generation and supply of electricity steam and water for industries	51.00	51.00
Ichinoseki Solar Power 1 GK (ICHINOSEKI)	Japan	Generation and supply of electricity	99.00	99.00
GPSC International Holdings Limited (GPSCIH)	Hong Kong	Investing in other companies	100.00	100.00
<u>Subsidiary of PTTCL Group:</u>				
PTT (Lao) Co., Ltd. (PTT Lao)	Lao	Oil marketing	100.00	100.00

* On May 22, 2017, PTTEP approved for the registration for the dissolution of CEMROL and CEKL.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of PTTOR Group:</u>				
PTT Retail Management Co., Ltd. (PTTRM)	Thailand	Petrol station and convenience store management	100.00	100.00
PTT Retail Service Co., Ltd. (PTTRS)	Thailand	Human resource management	100.00	100.00
Thai Lube Blending Co., Ltd. (TLBC) (The Group holds 100% shareholding)	Thailand	Blending and bottling of lube oil	51.05	51.05
PTT Philippines Trading Corporation (PTTTC)	Philippines	Oil marketing	100.00	100.00
PTT Philippines Corporation (PTTPC)	Philippines	Oil marketing	100.00	100.00
<u>Subsidiary of PTTT Group:</u>				
PTT International Trading DMCC (PTTT DMCC)	United Arab Emirates	International oil trading	100.00	100.00
<u>Subsidiary of PTTPM Group:</u>				
Polymer Marketing DMCC Company Limited (PM DMCC)*	United Arab Emirates	Petrochemicals marketing	-	100.00
<u>Subsidiaries of PTTGC Group:</u>				
PTT Phenol Co., Ltd. (PPCL)	Thailand	Manufacturing and distributing petrochemicals products	100.00	100.00
PTT Maintenance and Engineering Co., Ltd. (PTTME)*	Thailand	Factory maintenance and engineering services	100.00	60.00
Thai Tank Terminal Limited (TTT)	Thailand	Service for the storage and handling of liquid chemicals, oil and gas	51.00	51.00
NPC Safety and Environmental Service Co., Ltd. (NPCSE)	Thailand	Safety and environmental services	100.00	100.00
PTT Chemical International (Asia Pacific ROH) Ltd. (AP ROH)**	Thailand	Services rendering to the Group	100.00	100.00
Thai Styrenics Co., Ltd. (TSCL)	Thailand	Manufacturing and distributing petrochemicals products	100.00	100.00
PTTGC International (Netherlands) B.V. (GCINTERNL)	Netherlands	Investing and operating in international business	100.00	100.00
TOC Glycol Co., Ltd. (TOCGC)	Thailand	Manufacturing and distributing petrochemicals products	100.00	100.00
Global Green Chemicals Plc. (GGC)	Thailand	Manufacturing and distributing biochemical products	72.29	100.00
Solution Creation Co., Ltd. (SOLUTIONCRE)	Thailand	Manufacturing and distributing petrochemical products and health and nutrition products	100.00	100.00

* On July 3, 2017, the Company sold all shares in PTTPM and PTTME to PTTGC.

** Under liquidation process

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of PTTGC Group: (Continued)</u>				
Bio Spectrum Co., Ltd. (BIOSPEC)*	Thailand	Manufacturing and distributing biochemical products	100.00	100.00
Auria BioChemicals Co., Ltd. (AURIA)	Thailand	Research and development of bio-based chemicals	100.00	100.00
PTT Chemical International Pte. Ltd. (CHINTER)	Singapore	Investing and operating in international business	100.00	100.00
GC Oxirane Co., Ltd. (GCO)	Thailand	Manufacturing and distributing petrochemicals products	100.00	-
GC Polyols Co., Ltd. (GCP)	Thailand	Manufacturing and distributing petrochemicals products	82.10	-
GC Treasury Co., Ltd. (GCTC)	Thailand	Treasury center for the Group's business	100.00	-
PTT Polymer Logistics Co., Ltd. (PTTPL)**	Thailand	Logistics services	100.00	50.00
PTT Polymer Marketing Co., Ltd. (PTTPM)**	Thailand	Petrochemicals marketing	100.00	50.00
PTTGC International (USA) Inc. (GCINTERUSA)	United States of America	Investing and operating in international business	100.00	100.00
Bangkok Polyethylene Plc. (BPE)*	Thailand	Manufacturing and distributing petrochemical products	-	100.00
Thai Fatty Alcohols Co., Ltd. (TFA)	Thailand	Manufacturing and distributing biochemical products	100.00	100.00
Myriant Corporation (MYRIANT)	United States of America	Research and development of bio-based chemicals	100.00	100.00
PTTGC America Corporation (AMERICACORP)	United States of America	Investing and operating in international business	100.00	100.00
PTTGC America LLC (AMERICALLC)	United States of America	Operating in petrochemical business	100.00	100.00
NPC S&E Security Guard Co., Ltd. (NPCSG)	Thailand	Safety services	100.00	100.00
Vencorex (Thailand) Co., Ltd. (VENCOREXTH)	Thailand	Manufacturing and distributing chemical specialties	100.00	100.00
Vencorex France S.A.S. (VCF)	France	Manufacturing and distributing chemical specialties	100.00	100.00
Vencorex Holding (VCR)	France	Manufacturing and distributing chemical specialties	90.82	85.00
PL Global Transport Co., Ltd. (PLGT)	Thailand	Transportation of polyethylene	100.00	-
Polymer Marketing DMCC Company Limited (PM DMCC)**	United Arab Emirates	Petrochemicals marketing	100.00	-

* Under liquidation process

** On July 3, 2017, the Company sold all shares in PTTPL and PTTPM to PTTGC.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of TOP Group:</u>				
Thaioil Power Co., Ltd. (TP) (The Group holds 100% shareholding)	Thailand	Generation and supply of electricity and steam	73.99	73.99
Thai Paraxylene Co., Ltd. (TPX)	Thailand	Paraxylene manufacturing and distribution	99.99	99.99
Thai Lube Base Public Company Limited (TLB)	Thailand	Lube base oil refining and distribution	99.99	99.99
Thaioil Marine Co., Ltd. (TM)	Thailand	Providing marine transportation services for petroleum and liquid chemical products	99.99	99.99
Thaioil Ethanol Co., Ltd. (TET)	Thailand	Investing in ethanol business and alternative energy products	99.99	99.99
Thaioil Energy Services Co., Ltd. (TES)	Thailand	Providing human resource management	99.99	99.99
Thaioil Solvent Co., Ltd. (TOS)	Thailand	Investing in solvent and chemical businesses	99.99	99.99
TOP SPP Co., Ltd. (TOPSPP)	Thailand	Generation and supply of electricity and steam	99.99	99.99
Thaioil Treasury Center Co., Ltd. (TTC)	Thailand	Treasury center for the Group's business	99.99	-
Sapthip Co., Ltd. (SAPTHIP)	Thailand	Ethanol products manufacturing and distribution	50.00	50.00
TOP Solvent Co., Ltd. (TS)	Thailand	Distribution of solvent and chemical products	99.99	99.99
Sak Chaisidhi Co., Ltd. (SAKC)	Thailand	Solvent and chemical products manufacturing and distribution	80.52	80.52
TOP Solvent (Vietnam) LLC. (TSV)	Vietnam	Distribution of solvent and chemical products	100.00	100.00
Thaioil Marine International Pte. Ltd. (TOMI)	Singapore	Investing in marine transportation for crude oil and petroleum product business	100.00	100.00
TOP Maritime Service Co., Ltd. (TMS)	Thailand	Providing marine transportation services for crew and utilities in Gulf of Thailand	55.00	55.00
LABIX Co., Ltd. (LABIX)	Thailand	Linear Alkyl Benzene manufacturing and distribution	75.00	75.00

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of IRPC Group:</u>				
Thai ABS Co., Ltd. (TABS)*	Thailand	Manufacturing and distributing of plastic resin	99.99	99.99
IRPC A&L Company Limited (IRPCAL)	Thailand	Manufacturing and distributing petrochemicals product	59.98	59.98
IRPC Oil Company Limited (OIRPC)	Thailand	Distributing of oil products and gas	99.99	99.99
Rak Phasak Company Limited (RAKPHASAK)	Thailand	Oil vessel rental service	99.99	99.99
IRPC Polyol Company Limited (IRPCP)	Thailand	Manufacturing and distributing of chemical products for polyurethanes	74.99	99.99
IRPC Technology Company Limited (TECHIRPC)	Thailand	Vocational school	99.99	99.99
R. Solution Co., Ltd. (IRPCS)**	Thailand	Service for security	99.50	99.50
TPI Internet Portal Co., Ltd. (TPIINTERNETPORTAL)***	Thailand	Distributing of oil products	99.99	99.99
<u>Subsidiaries of PTTER Group:</u>				
PTT Mining Limited (PTTML)****	Hong Kong	Investing in other companies	-	100.00
Straits (Brunei) Pte. Ltd. (Straits (Brunei))****	Singapore	Investing in other companies	-	100.00
Sakari Resources Ltd. (SAR)****	Singapore	Investing in coal mine business	-	95.49
Yoxford Holdings (YOXFORD)****	Mauritius	Investing in other companies	-	100.00
Madagascar Consolidated Mining SA (MCM)****	Madagascar	Coal mines	-	80.00
Tiger Energy Trading Pte. Ltd. (TET)****	Singapore	Coal mine marketing	-	100.00
Sakari Energy Pte. Ltd. (SAEnergy)****	Singapore	Investing in other companies	-	100.00
Reyka Wahana Digidjaya Pte. Ltd. (RWD)****	Singapore	Investing in other companies	-	100.00
Sakari Energy Trading Pte. Ltd. (SET)****	Singapore	Investing in other companies	-	100.00
Sakari Marine & Infrastructure Pte. Ltd. (SMI)****	Singapore	Marine engineering	-	100.00
PT Straits Consultancy Services (SCS)****	Indonesia	Management services	-	100.00
PT Bahari Perdana Persada (BPPD)****	Indonesia	Investing in other companies	-	100.00
PT Bahari Putra Perdana (BPPN)****	Indonesia	Investing in other companies	-	100.00

* On August 1, 2016, TABS transferred its entire business to IRPC and TABS also registered its dissolution with Ministry of Commerce on the same day.

** Under bankruptcy process.

*** Under liquidation process.

**** On June 1, 2017, PTTER sold all shares in PTTML, Straits (Brunei), SAR, YOXFORD, MCM, TET, SAEnergy, RWD, SET, SMI, SCS, BPPD and BPPN to PTTGM.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of PTTER Group: (Continued)</u>				
PT Reyka Wahana Digdjaya (RWD)*	Indonesia	Investing in other companies	-	100.00
PT Bahari Cakrawala Sebuku (BCS)*	Indonesia	Coal mines	-	100.00
PT Bumi Borneo Metalindo (BBM)*	Indonesia	Investing in other companies	-	100.00
PT Citra Pertiwi Nusantara (CPN)*	Indonesia	Coal transport equipment and delivery service	-	100.00
PT Bumiborneo Pertiwi Nusantara (BPN)*	Indonesia	Investing in other companies	-	100.00
PT Karbon Mahakam (KM)*	Indonesia	Coal mines	-	100.00
PT Metalindo Bumi Raya (MBR)*	Indonesia	Coal mines	-	100.00
PT Borneo Citrapertiwi Nusantara (BCN)*	Indonesia	Investing in other companies	-	100.00
PT Separi Energy (SE)*	Indonesia	Investing in other companies	-	100.00
PT Jembayan Muarabara (JMB)*	Indonesia	Coal mines	-	100.00
PT Kemilau Rindang Abadi (KRA)*	Indonesia	Coal mines	-	100.00
PT Arzara Baraindo Energitama (ABE)*	Indonesia	Coal mines	-	100.00
PT Cakrawala Abadi Jaya (CAJ)*	Indonesia	Investing in other companies	-	100.00
PT Sakti Utama Luas (SUL)*	Indonesia	Investing in other companies	-	100.00
Tri Tunggal Lestari Bersama (TTLB)*	Indonesia	Infrastructure business	-	100.00
PT Makassar Prima Coal (MPC)*	Indonesia	Coal mines	-	70.00
PTT International Holding Limited (PTTIH)*	Hong Kong	Investing in other companies	-	100.00
PTT International Investment Limited (PTTII)*	Hong Kong	Investing in other companies	-	100.00
PTT International (Singapore) Company Pte. Limited (PTT Inter (Sing))*	Singapore	Investing in other companies	-	100.00

* On June 1, 2017, PTTER sold all shares in RWD, BCS, BBM, CPN, BPN, KM, MBR, BCN, SE, JMB, KRA, ABE, CAJ, SUL, TTLB, MPC, PTTIH, PTTII and PTT Inter (Sing) to PTTGM.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of PTTGM Group:</u>				
PTT Mining Limited (PTTML)*	Hong Kong	Investing in other companies	100.00	-
Straits (Brunei) Pte. Ltd. (Straits (Brunei))*	Singapore	Investing in other companies	100.00	-
Sakari Resources Ltd. (SAR)*	Singapore	Investing in coal mine business	95.49	-
Yoxford Holdings (YOXFORD)*	Mauritius	Investing in other companies	100.00	-
Madagascar Consolidated Mining SA (MCM)*	Madagascar	Coal mines	80.00	-
Tiger Energy Trading Pte. Ltd. (TET)*	Singapore	Coal mine marketing	100.00	-
Sakari Energy Pte. Ltd. (SAEnergy)*	Singapore	Investing in other companies	100.00	-
Reyka Wahana Digdjaya Pte. Ltd. (RWD)*	Singapore	Investing in other companies	100.00	-
Sakari Energy Trading Pte. Ltd. (SET)*	Singapore	Investing in other companies	100.00	-
Sakari Marine & Infrastructure Pte. Ltd. (SMI)*	Singapore	Marine engineering	100.00	-
PT Straits Consultancy Services (SCS)*	Indonesia	Management services	100.00	-
PT Bahari Perdana Persada (BPPD)*	Indonesia	Investing in other companies	100.00	-
PT Bahari Putra Perdana (BPPN)*	Indonesia	Investing in other companies	100.00	-
PT Reyka Wahana Digdjaya (RWD)*	Indonesia	Investing in other companies	100.00	-
PT Bahari Cakrawala Sebuk (BCS)*	Indonesia	Coal mines	100.00	-
PT Bumi Borneo Metalindo (BBM)*	Indonesia	Investing in other companies	100.00	-
PT Citra Pertiwi Nusantara (CPN)*	Indonesia	Coal transport equipment and delivery service	100.00	-
PT Bumiborneo Pertiwi Nusantara (BPN)*	Indonesia	Investing in other companies	100.00	-
PT Karbon Mahakam (KM)*	Indonesia	Coal mines	100.00	-
PT Metalindo Bumi Raya (MBR)*	Indonesia	Coal mines	100.00	-
PT Borneo Citrapertiwi Nusantara (BCN)*	Indonesia	Investing in other companies	100.00	-
PT Separi Energy (SE)*	Indonesia	Investing in other companies	100.00	-
PT Jembayan Muarabara (JMB)*	Indonesia	Coal mines	100.00	-
PT Kemilau Rindang Abadi (KRA)*	Indonesia	Coal mines	100.00	-
PT Arzara Baraindo Energitama (ABE)*	Indonesia	Coal mines	100.00	-
PT Cakrawala Abadi Jaya (CAJ)*	Indonesia	Investing in other companies	100.00	-
PT Sakti Utama Luas (SUL)*	Indonesia	Investing in other companies	100.00	-
Tri Tunggal Lestari Bersama (TTLB)*	Indonesia	Infrastructure business	100.00	-

* On June 1, 2017, PTTER sold all shares in PTTML, Straits (Brunei), SAR, YOXFORD, MCM, TET, SAEnergy, RWD, SET, SMI, SCS, BPPD, BPPN, RWD, BCS, BBM, CPN, BPN, KM, MBR, BCN, SE, JMB, KRA, ABE, CAJ, SUL and TTLB to PTTGM.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.2 Details of subsidiaries and joint operations of the subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Subsidiaries of PTTGM Group: (Continued)</u>				
PT Makassar Prima Coal (MPC)*	Indonesia	Coal mines	70.00	-
PTT International Holding Limited (PTTIH)*	Hong Kong	Investing in other companies	100.00	-
PTT International Investment Limited (PTTII)*	Hong Kong	Investing in other companies	100.00	-
PTT International (Singapore) Company Pte. Limited (PTT Inter (Sing))*	Singapore	Investing in other companies	100.00	-
<u>Subsidiaries of PTTGE Group:</u>				
Sabran Brothers Pte. Ltd. (Sabran)	Singapore	Investing in other companies	100.00	100.00
Kalimantan Thailand Palm Pte. Ltd. (KTP)	Singapore	Investing in other companies	100.00	100.00
PTT Green Energy (Hong Kong) Limited (PTTGE HK)	Hong Kong	Financing	100.00	100.00
PTT Green Energy (Thailand) Co., Ltd. (PTTGE TH)	Thailand	Management services for PTTGE Group	100.00	100.00
<u>Subsidiary of BSA Group:</u>				
Sport Services Alliance Co., Ltd. (SSA)	Thailand	Football club management	100.00	100.00
Business Professional Solutions Co., Ltd. (BPS)	Thailand	Business management	100.00	-
<u>Subsidiary held by PTTEP and PTTER:</u>				
PTT FLNG Limited (PTT FLNG)**	Hong Kong	Petroleum	-	100.00
<u>Joint operations of PTTEP Group:</u>				
Carigali - PTTEPI Operating Company Sdn. Bhd. (CPOC)	Malaysia	Petroleum	50.00	50.00
Moattama Gas Transportation Company (MGTC)	Bermuda	Gas pipelines transportation	25.50	25.50
Taninthayi Pipeline Company LLC (TPC)	Cayman Islands	Gas pipelines transportation	19.32	19.32
Orange Energy Limited (Orange)	Thailand	Petroleum	53.95	53.95
B 8/32 Partners Limited (B8/32 Partners)	Thailand	Petroleum	25.00	25.00
Andaman Transportation Limited (ATL)	Cayman Islands	Gas pipeline transportation	80.00	80.00
Leismer Aerodrome Limited (LAL)	Canada	Air transportation services	32.00	32.00
Groupement Bir Seba (GBRS)	Algeria	Petroleum	35.00	35.00
Natuna 2 B.V. (Natuna 2)	Netherlands	Petroleum	50.00	50.00
Mozambique LNG1 Company Pte. Ltd. (MZ LNG1)	Singapore	Petroleum	8.50	-

* On June 1, 2017, PTTER sold all shares in MPC, PTTIH, PTTII and PTT Inter (Sing) to PTTGM.

** Completely registered its dissolution on June 16, 2017.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.3 Details of joint ventures and associates of subsidiaries

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Joint Ventures</u>				
<i>PTTEP Group</i>				
Erawan 2 FSO Bahamas Limited (Erawan 2)	Bahamas	FSO rental service	13.11	13.11
<i>GPSC Group</i>				
Thai Solar Renewable Co., Ltd. (TSR)	Thailand	Investing in other companies	40.00	40.00
Nam Lik1 Power Co., Ltd. (NL1PC)	Lao	Production and distribution of electricity	40.00	40.00
Nava Nakorn Electricity Generating Co., Ltd. (NNEG)	Thailand	Production and distribution of electricity	30.00	30.00
<i>PTTOR Group</i>				
OGP Energy Solutions Company Limited (OGPS)*	Thailand	Supply of ready-to-use energy	-	40.00
<i>PTTGC Group</i>				
Thai Ethoxylate Co., Ltd. (TEX)	Thailand	Manufacturing and distributing petrochemicals products	50.00	50.00
Emery Oleochemical (M) Sdn. Bhd. (EOM)	Malaysia	Manufacturing and distributing biochemicals products	50.00	50.00
Emery Specialty Chemical Sdn. Bhd. (ESC)	Malaysia	Manufacturing and distributing chemical specialties	50.00	50.00
NatureWorks LLC (NTR)	United States of America	Manufacturing and distributing bioplastic products	50.00	50.00
PTT MCC Biochem Co., Ltd. (PTTMCC)**	Thailand	Petrochemicals	50.00	-
PTT Asahi Chemicals Co., Ltd. (PTTAC)**	Thailand	Petrochemicals	50.00	-
HMC Polymers Co., Ltd. (HMC)**	Thailand	Petrochemicals	41.44	-
<i>TOP Group</i>				
TOP-NTL Pte. Ltd. (TOP-NTL)	Singapore	Fund management services	50.00	50.00
TOP-NTL Shipping Trust (TOP-NTL(BT))	Singapore	Investing in other companies	50.00	50.00
TOP-NYK MarineOne Pte. Ltd. (TOP-NYK)	Singapore	Marine transportation services	50.00	50.00
TOP Nautical Star Co., Ltd. (TOP-NS)	Thailand	Storage and marine transportation services	35.00	35.00
<i>IRPC Group</i>				
IRPC-PCC Co., Ltd. (IRPC-PCC)***	Thailand	Supply of petrochemicals	49.99	49.99
<i>PTTER Group</i>				
FEE (Bru) Pte. Ltd. (FEEBRU)****	Singapore	Coal mines	-	35.00

* On June 26, 2017, PTTOR sold all shares in OGPS to PTTGM.

** On July 3, 2017, the Company sold all shares in PTTMCC, PTTAC and HMC to PTTGC.

*** Under liquidation process.

**** On June 1, 2017, PTTER sold all shares in FEEBRU to PTTGM.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.3 Details of joint ventures and associates of subsidiaries (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Joint Ventures (Continued)</u>				
<i>PTTGM Group</i>				
OGP Energy Solutions Company Limited (OGPS)*	Thailand	Supply of ready-to-use energy	40.00	-
FEE (Bru) Pte. Ltd. (FEEBRU)**	Singapore	Coal mines	35.00	-
<i>PTTGE Group</i>				
Chancellor Oil Pte. Ltd. (Chancellor)	Singapore	Investing in other companies	77.56	77.56
<u>Associates</u>				
<i>PTTEP Group</i>				
PTTEP AP Group's associates***	Australia	Airbase services	50.00	50.00
<i>GPSC Group</i>				
Bangpa-in Cogeneration Co., Ltd. (BIC)	Thailand	Generation and supply of electricity and steam	25.00	25.00
Xayaburi Power Co., Ltd. (XPCL)	Lao	Hydroelectric power plant	25.00	25.00
<i>PTTOR Group</i>				
FST Aviation Services Limited (FST)	Hong Kong	Aircraft refuelling services	25.00	25.00
<i>PTTGC Group</i>				
PT Indo Thai Trading (ITT)	Indonesia	Petrochemicals	49.00	49.00
Vinythai Plc. (VNT)	Thailand	Petrochemicals	24.98	24.98
Eastern Fluid Transport Co., Ltd. (EFT)	Thailand	Infrastructure	22.65	22.65
Thai Eastern Topseeds Oil Co., Ltd. (TETSO)	Thailand	Petrochemicals	30.00	30.00
S.P. Petpack Inter Group Co., Ltd. (SPPETPACK)	Thailand	Petrochemicals	25.00	-
<i>TOP Group</i>				
T.I.M Ship Management Co., Ltd. (TIM)	Thailand	Marine transportation services	33.33	33.33
Maesod Clean Energy Co., Ltd. (MCE)****	Thailand	Manufacturing and distributing of Ethanol	-	30.00
Ubon Bio Ethanol Co., Ltd. (UBE)	Thailand	Manufacturing and distributing of Ethanol	21.28	21.28
<i>IRPC Group</i>				
UBE Chemicals (Asia) Public Co., Ltd. (UCHA)	Thailand	Manufacturing and distributing of Petrochemicals	25.00	25.00
<i>PTTER Group</i>				
East Mediterranean Gas Company S.A.E. (EMG)	Egypt	Natural gas transmission pipelines	25.00	25.00

* On June 26, 2017, PTTOR sold all shares in OGPS to PTTGM.

** On June 1, 2017, PTTER sold all shares in FEEBRU to PTTGM.

*** Associates of PTTEP AP Group consist of Mungalalu Truscott Airbase Pty Ltd. and Troughton Island Pty Ltd.

**** On February 16, 2017, TET, subsidiary of TOP, disposed its all shares in MCE.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.4 Investments in joint ventures in the consolidated financial statements as at December 31, 2017 and 2016

Unit: Million Baht

Company	Ownership interest (%)		2017		2016		Dividend income	
	2017	2016	Cost method	Equity method	Cost method	Equity method	2017	2016
1. TTM(T)	50.00	50.00	4,341.80	4,360.08	4,341.80	4,724.49	521.02	473.85
2. TTM(M)	50.00	50.00	1,001.31	1,299.72	1,001.31	1,294.15	76.58	164.32
3. DCAP	35.00	35.00	584.50	882.15	584.50	804.56	21.35	15.40
4. PTTMCC	50.00	50.00	930.12	459.98	930.12	551.43	-	-
5. PTTAC	50.00	50.00	6,909.41	6,555.07	6,909.41	4,310.62	-	-
6. HMC	41.44	41.44	9,117.12	12,849.21	9,117.12	12,315.37	2,194.99	2,692.76
7. Erawan 2	13.11	13.11	544.13	611.83	610.66	717.37	121.38	93.92
8. TSR	40.00	40.00	1,697.00	1,711.83	1,697.00	1,713.58	301.00	291.67
9. NL1PC	40.00	40.00	344.77	324.03	318.65	291.89	-	-
10. NNEG	30.00	30.00	480.90	588.63	480.90	466.58	-	-
11. TEX	50.00	50.00	210.00	708.82	210.00	688.24	71.40	70.88
12. EOM	50.00	50.00	4,965.77	4,526.47	4,965.77	5,101.78	-	-
13. ESC	50.00	50.00	407.04	-	407.04	81.61	-	-
14. NTR	50.00	50.00	4,793.33	2,486.60	4,793.33	3,236.20	1,018.00	-
15. TOP-NTL	50.00	50.00	0.25	11.32	0.25	10.08	-	-
16. TOP-NTL(BT)	50.00	50.00	24.05	43.00	24.05	27.86	-	-
17. TOP-NYK	50.00	50.00	273.88	420.36	273.88	440.83	34.00	26.48
18. TOP-NS	35.00	35.00	52.50	65.47	52.50	21.82	-	-
19. IRPC-PCC	49.99	49.99	5.00	5.68	5.00	11.02	5.50	-
20. OGPS	40.00	40.00	38.49	26.90	40.00	34.33	-	-
21. FEEBRU	35.00	35.00	214.84	135.18	235.55	148.21	-	-
22. Chancellor	77.56	77.56	2,971.00	1,297.74	3,257.34	1,422.81	-	-
			39,907.21	39,370.07	40,256.18	38,414.83		
Less Allowance for impairment			(3,185.83)	(1,432.92)	(3,492.89)	(1,571.02)		
Total			36,721.38	37,937.15	36,763.29	36,843.81	4,365.22	3,829.28

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.5 Investments in associates in the consolidated financial statements as at December 31, 2017 and 2016

Unit: Million Baht

Company	Ownership interest (%)		2017		2016		Dividend income	
	2017	2016	Cost method	Equity method	Cost method	Equity method	2017	2016
1. THAPPLINE	49.59	49.59	3,952.72	5,012.28	3,952.72	4,986.78	849.59	1,342.78
2. KPL	-	40.00	-	-	21.49	-	-	-
3. PAT	35.00	35.00	131.25	-	131.25	-	-	-
4. PTTEP AP Group's associates	50.00	50.00	48.94	229.97	53.66	249.98	-	4.00
5. BIC	25.00	25.00	923.75	812.20	673.44	492.02	20.29	40.58
6. XPCL	25.00	25.00	5,794.47	5,249.30	4,404.43	3,801.87	-	-
7. FST	25.00	25.00	0.76	1.39	0.85	1.56	-	-
8. ITT	49.00	49.00	125.28	200.67	125.28	148.22	-	-
9. VNT	24.98	24.98	3,297.39	4,632.40	3,297.39	4,210.33	133.22	118.42
10. EFT	22.65	22.65	2.27	19.53	2.27	15.64	7.25	7.25
11. TETSO	30.00	30.00	46.69	45.45	16.65	16.20	-	-
12. SPPETPACK	25.00	-	50.00	44.99	-	-	-	-
13. TIM	33.33	33.33	1.00	-	1.00	-	-	-
14. MCE	-	30.00	-	-	202.50	3.10	-	-
15. UBE	21.28	21.28	769.55	804.26	769.55	801.90	63.83	-
16. UCHA	25.00	25.00	5,299.82	4,927.18	5,299.82	4,701.98	-	-
17. EMG	25.00	25.00	15,977.09	12,858.69	17,516.97	14,098.01	-	-
			36,420.98	34,838.31	36,469.27	33,527.59		
Less Allowance for impairment			(16,108.34)	(12,858.69)	(17,669.71)	(14,098.01)		
Total			20,312.64	21,979.62	18,799.56	19,429.58	1,074.18	1,513.03

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.6 Investments in subsidiaries, joint ventures and associates in the separate financial statements as at December 31, 2017 and 2016

Unit: Million Baht

Company	Ownership interest (%)		Cost method		Dividend income	
	2017	2016	2017	2016	2017	2016
<u>Subsidiaries</u>						
1. PTTEP	65.29	65.29	71,390.42	71,390.42	10,367.45	7,127.62
2. PTTLNG	100.00	100.00	15,599.01	10,958.44	1,823.18	1,730.06
3. PTTNGD	58.00	58.00	418.14	418.14	870.00	-
4. PTTGL	50.00	-	5,210.72	-	-	-
5. EnCo	50.00	50.00	900.00	900.00	41.77	72.32
6. PTTES	40.00	40.00	62.50	62.50	-	-
7. PTTME	-	40.00	-	66.40	-	-
8. GPSC	22.58	22.58	4,949.93	4,949.93	389.01	355.18
9. PTTCL	100.00	100.00	103.49	103.49	-	-
10. PTTOM	100.00	100.00	16.15	16.15	-	-
11. PTTOR	100.00	100.00	8,621.67	8,621.67	-	-
12. PTT TANK	100.00	100.00	2,500.37	2,500.37	133.00	90.00
13. TLBC	48.95	48.95	140.00	140.00	3.50	8.68
14. PTTT	100.00	100.00	2.50	2.50	41.90	-
15. PTTT LDN	100.00	100.00	347.75	18.16	-	-
16. PTTPL	-	50.00	-	600.00	-	-
17. PTTPM	-	50.00	-	20.00	125.00	250.00
18. PTTGC	48.89	49.42	48,121.52	48,121.52	7,825.33	5,180.15
19. TOP	49.10	49.10	11,380.83	11,380.83	4,507.41	3,305.44
20. IRPC	38.51	38.51	28,467.24	28,467.24	1,810.03	1,731.33
21. TP	26.00	26.00	2,304.76	2,304.76	270.32	255.71
22. PTTER	100.00	100.00	33,702.67	33,702.67	-	-
23. PTTGM	100.00	100.00	33,007.14	217.14	-	-
24. PTTGE	100.00	100.00	11,750.64	11,750.64	-	-
25. PTTRTC	100.00	100.00	31.40	31.40	-	-
26. BSA	100.00	100.00	0.50	0.50	40.00	17.02
27. PTT DIGITAL	20.00	20.00	30.00	30.00	15.60	13.00
Investments in subsidiaries			279,059.35	236,774.87		
<u>Less</u> Allowance for impairment			(60,130.02)	(26,414.37)		
Total			218,929.33	210,360.50	28,263.50	20,136.51

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.6 Investments in subsidiaries, joint ventures and associates in the separate financial statements as at December 31, 2017 and 2016 (Continued)

Unit: Million Baht

Company	Ownership interest (%)		Cost method		Dividend income	
	2017	2016	2017	2016	2017	2016
<u>Joint Ventures</u>						
28. TTM(T)	50.00	50.00	4,341.80	4,341.80	521.02	473.85
29. TTM(M)	50.00	50.00	1,001.31	1,001.31	76.58	164.32
30. DCAP	35.00	35.00	584.50	584.50	21.35	15.40
31. PTTMCC	-	50.00	-	930.13	-	-
32. PTTAC	-	50.00	-	6,909.41	-	-
33. HMC	-	41.44	-	9,117.12	414.35	2,692.76
Total			5,927.61	22,884.27	1,033.30	3,346.33
<u>Associates</u>						
34. THAPPLINE	40.40	40.40	3,173.23	3,173.23	699.28	1,095.44
35. KPL	-	40.00	-	21.49	-	-
36. PAT	35.00	35.00	131.25	131.25	-	-
Investments in associates			3,304.48	3,325.97		
<u>Less</u> Allowance for impairment			(131.25)	(152.74)		
Total			3,173.23	3,173.23	699.28	1,095.44
Total			228,030.17	236,418.00	29,996.08	24,578.28

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.7 Movements in investments in the consolidated and the separate financial statements

14.7.1 Movements in investments in joint ventures under the equity method in the consolidated financial statements are as follows:

	Unit: Million Baht	
	2017	2016
As at January 1	36,843.81	39,090.09
- Share of profit from investments in joint ventures	5,461.84	2,980.57
- Dividend income	(4,365.22)	(3,829.28)
- Additional investments	26.12	238.28
- Share capital reduction	(13.34)	(1,371.27)
- Share of other comprehensive income of joint ventures	115.23	361.07
- Currency translation differences	(131.29)	(5.14)
- Loss on impairment	-	(620.51)
As at December 31	<u>37,937.15</u>	<u>36,843.81</u>

14.7.2 Movements in investments in associates under the equity method in the consolidated financial statements are as follows:

	Unit: Million Baht	
	2017	2016
As at January 1	19,429.58	22,929.98
- Share of profit from investments in associates	1,848.57	1,162.64
- Dividend income	(1,074.18)	(1,513.03)
- Additional investments	1,720.40	1,099.19
- Disposal of investments	(12.00)	-
- Share capital reduction	-	(0.01)
- Share of other comprehensive income (loss) of associates	89.47	(161.85)
- Currency translation differences	(22.22)	(92.70)
- Loss on impairment	-	(3,994.64)
As at December 31	<u>21,979.62</u>	<u>19,429.58</u>

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.7 Movements in investments in the consolidated and the separate financial statements (Continued)

14.7.3 Movements in investments in subsidiaries, joint ventures and associates under the cost method in the separate financial statements are as follows:

Unit: Million Baht

	<u>2017</u>	<u>2016</u>
As at January 1	236,418.00	237,593.74
- Additional investments	42,970.88	1,874.81
- Disposal of investments	(17,643.06)	(887.49)
- Share capital reduction	-	(1,325.00)
- Loss on impairment (Note 21)	<u>(33,715.65)</u>	<u>(838.06)</u>
As at December 31	<u>228,030.17</u>	<u>236,418.00</u>

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.8 Summary financial information of the joint ventures of the Company, after accounting policy adjustment are as follows:

Statements of financial position as at December 31, 2017 and 2016

Unit: Million Baht

	2017										2016													
	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	PTTMCC	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	PTTMCC	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	PTTMCC						
Current assets	5,278.15	2,526.93	1,284.51	-	-	-	4,782.47	2,460.28	1,085.59	5,349.63	8,470.65	310.15	15,091.41	5,335.01	2,309.95	-	-	-	17,874.66	5,976.71	2,641.13	23,574.36	26,997.10	3,318.36
Non-current assets	(2,250.66)	(1,189.42)	(626.44)	-	-	-	(1,573.98)	(771.59)	(605.68)	(3,624.13)	(3,869.78)	(301.50)	(9,398.74)	(4,073.09)	(447.58)	-	-	-	(11,634.16)	(5,077.12)	(822.31)	(16,678.61)	(9,211.43)	(2,224.16)
Net assets	8,720.16	2,599.43	2,520.44	-	-	-	9,448.99	2,588.28	2,298.73	8,621.25	22,386.54	1,102.85												

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.8 Summary financial information of the joint ventures of the Company, after accounting policy adjustment are as follows: (Continued)

Statements of income for the years ended December 31, 2017 and 2016

Unit: Million Baht

	2017						2016					
	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	PTTMCC	TTM(T)	TTM(M)	DCAP	PTTAC	HMC	PTTMCC
Revenues*	3,200.76	163.94	2,584.42	-	-	-	3,307.40	951.79	2,625.67	11,906.63	31,689.16	20.56
Expenses	(2,029.16)	(157.86)	(2,241.95)	-	-	-	(2,233.01)	(270.68)	(2,244.40)	(11,892.26)	(25,546.81)	(138.26)
Profit (loss) before taxes	1,171.60	6.08	342.47	-	-	-	1,074.39	681.11	381.27	14.37	6,142.35	(117.70)
Income taxes	26.94	(11.87)	(61.83)	-	-	-	(102.73)	(139.20)	(76.98)	2.48	(861.10)	-
Net profit (loss)	1,198.54	(5.79)	280.64	-	-	-	971.66	541.91	304.29	16.85	5,281.25	(117.70)

* Including gain (loss) on foreign exchange rate

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.9 Summary financial information of the associates of the Company, after accounting policy adjustment are as follows:

Statements of financial position as at December 31, 2017 and 2016

	Unit: Million Baht	
	2017	2016
	THAPPLINE	THAPPLINE
Current assets	4,980.30	4,910.55
Non-current assets	6,248.42	6,293.28
Current liabilities	(579.07)	(610.50)
Non-current liabilities	(113.41)	(108.89)
Net assets	10,536.24	10,484.44

Financial information of PAT, associate of the Company, was disclosed in Note 14.11

Statements of income for the years ended December 31, 2017 and 2016

	Unit: Million Baht	
	2017	2016
	THAPPLINE	THAPPLINE
Revenues*	3,504.35	3,517.90
Expenses	(1,269.93)	(1,229.87)
Profit before taxes	2,234.42	2,288.03
Income taxes	(452.52)	(459.79)
Net profit	1,781.90	1,828.24

Financial information of PAT, associate of the Company, was disclosed in Note 14.11

* Including gain (loss) on foreign exchange rate.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.10 Significant events during the period ended December 31, 2017

PTTLNG

On February 24, 2017, at the Board of Directors Meeting of PTT LNG Co., Ltd. (PTTLNG) No. 2/2017, the Board passed a resolution to approve the call up of additional share capital of Baht 1,864.56 million. The Company made the additional payment on March 31, 2017.

On April 24, 2017, at the Annual General Meeting of PTTLNG, the shareholders passed a resolution to increase 428 million authorized share capital, Baht 10 per share, amounting to Baht 4,280 million. PTTLNG called up share payments amounting to Baht 1,479.60 million, Baht 909.92 million and Baht 386.49 million. The Company made these payment on July 12, 2017, August 21, 2017 and December 28, 2017, respectively.

PTTGM/ PTTER

On December 16, 2016, at the Board of Directors Meeting No. 12/2016 of the Company, the Board passed a resolution to approve a restructuring of the shareholding and financing of PTT Energy Resources Co., Ltd. (PTTER). Accordingly, PTT Global Management Co., Ltd. (PTTGM) purchased all shares of companies held by PTTER, except for East Mediterranean Gas Company S.A.E. (EMG). PTTGM called up share payments amounting to Baht 40 million, Baht 22,750 million and Baht 10,000 million. The Company made these payment on June 26, 2017, June 28, 2017 and September 13, 2017, respectively. PTTER also made loan and accrued interest repayments to the Company totaling USD 950.75 million or equivalent to Baht 31,773.44 million.

Following this restructuring of the shareholding and financing, the Company estimated the recoverable amount of the investments in PTTGM and PTTER using the discounted future cash flow method. As a result of the restructuring, as at December 31, 2017, the Company recorded loss on impairment of the investments in PTTGM amounting to Baht 14,062.46 million and PTTER amounting to Baht 19,442.23 million totaling Baht 33,504.69 million, and reversed allowance for doubtful accounts of PTTER amounting to Baht 34,692.27 million in the separate financial statements.

PTTGL

On May 19, 2017, at the Board of Directors Meeting No. 5/2017 of the Company, the Board passed a resolution to establish PTT Global LNG Co., Ltd. (PTTGL) as a joint venture company with PTTEP Business Center Company Limited (PTTEP BC) to carry out business related to Liquefied Natural Gas (LNG). PTTGL is held by PTT and PTTEP BC with each having equal shareholding of 50%.

PTTGL has a registered capital of Baht 8 million, consisting of 8,000 ordinary shares at Baht 1,000 per share. The Company made payment for the shares amounting to Baht 4 million on June 22, 2017. On August 15, 2017, PTTGL called up share payment amounting to Baht 5,206.72 million. The Company made the share payment on August 23, 2017.

PTTT LDN

On July 21, 2017, at the Board of Directors Meeting No. 7/2017 of the Company, the Board passed a resolution to increase the authorized share capital of PTT International Trading London Limited (PTTT LDN). On August 31, 2017, PTTT LDN called up share payment of 10 million additional shares at USD 1 per share amounting to USD 10 million or equivalent to Baht 329.59 million. The Company made the share payment on September 15, 2017.

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.11 Additional information in respect of associates

The Company has not recognized its share of profit (loss) from some associates for the year ended December 31, 2017 amounting to Baht 11.60 million (2016: Baht (28.67) million) because, as at December 31, 2017, the Company had an unrealized allowance for its share of loss from these associates amounting to Baht 16.37 million (December 31, 2016: Baht 102.97 million).

14.12 Investments in subsidiaries, joint ventures and associates where voting rights and ownership interests differ are as follows:

<u>Company</u>	<u>Voting rights</u>	<u>Unit: Percentage</u>	
		<u>Ownership</u>	
Associate			
THAPPLINE	49.22		49.21

14.13 Material non-controlling interests

Financial information of subsidiaries that have material non-controlling interests are as follow:

<u>Company</u>	<u>Country of Incorporation</u>	<u>Non-controlling interests Shareholding (%)</u>	
		<u>2017</u>	<u>2016</u>
PTT Exploration and Production Public Co., Ltd. (PTTEP)	Thailand	34.71	34.71
Thai Oil Public Co., Ltd. (TOP)	Thailand	50.90	50.07
IRPC Public Co., Ltd. (IRPC)	Thailand	61.49	61.49
PTT Global Chemical Public Co., Ltd. (PTTGC)	Thailand	51.11	50.58
Global Power Synergy Public Co., Ltd. (GPSC)	Thailand	25.00	25.00

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.13 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations:

Summary of financial position as at December 31, 2017 and 2016

	2017					2016					Unit: Million Baht
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	
Current assets	188,400.09	126,211.39	47,904.09	140,737.59	9,917.98	185,972.83	115,730.64	39,970.19	127,513.47	11,665.02	
Non-current assets	439,721.21	102,095.86	139,100.85	294,226.34	49,964.37	490,916.70	101,995.80	132,529.68	265,652.73	46,248.10	
Current liabilities	(52,330.50)	(33,379.41)	(49,747.69)	(60,312.88)	(4,087.58)	(39,442.94)	(34,294.87)	(52,839.53)	(53,267.60)	(4,197.31)	
Non-current liabilities	(199,416.07)	(67,766.12)	(49,344.61)	(94,386.95)	(15,506.92)	(229,462.67)	(71,829.57)	(39,666.03)	(91,229.84)	(15,076.86)	
Net assets	376,374.73	127,161.72	87,912.64	280,264.10	40,287.85	407,983.92	111,602.00	79,994.31	248,668.76	38,638.95	
Owners of the parent	220,759.68	60,016.47	33,804.00	134,383.81	28,845.59	242,078.98	53,366.84	30,774.60	121,578.77	27,775.64	
Non-controlling interests	155,615.05	67,145.25	54,108.64	145,880.29	11,442.26	165,904.94	58,235.16	49,219.71	127,089.99	10,863.31	

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.13 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations: (Continued)

Summary of comprehensive income or loss for the years ended December 31, 2017 and 2016

	2017						2016					
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTGC	GPSC
Revenue	152,581.15	342,932.86	215,899.17	448,789.57	21,286.62	150,689.32	277,244.03	181,553.68	352,433.97	21,784.83		
Expenses	(126,014.73)	(312,078.03)	(201,085.09)	(402,699.27)	(17,689.69)	(127,744.87)	(253,355.23)	(172,530.25)	(323,528.82)	(18,772.62)		
Profit before taxes	26,566.42	30,854.83	14,814.08	46,090.30	3,596.93	22,944.45	23,888.80	9,023.43	28,905.15	3,012.21		
Income taxes	(5,986.95)	(5,529.49)	(2,181.34)	(3,863.24)	(256.76)	(10,084.73)	(2,295.46)	(282.42)	(3,025.09)	(140.23)		
Net profit	20,579.47	25,325.34	12,632.74	42,227.06	3,340.17	12,859.72	21,593.34	8,741.01	25,880.06	2,871.98		
Other comprehensive loss	(34,796.06)	(310.29)	(67.23)	(1,041.90)	(25.77)	(853.02)	(9.41)	(115.58)	(405.34)	(96.73)		
Total comprehensive income (loss)	(14,216.59)	25,015.05	12,565.51	41,185.16	3,314.40	12,006.70	21,583.93	8,625.43	25,474.72	2,775.25		
Owners of the parent	(9,281.50)	12,041.86	4,837.31	18,633.84	2,362.24	7,838.74	10,600.20	3,309.95	12,474.81	1,951.89		
Non-controlling interests	(4,935.09)	12,973.19	7,728.20	22,551.32	952.16	4,167.96	10,983.73	5,315.48	12,999.91	823.36		
Total dividend paid to non-controlling interests	5,512.39	4,607.79	2,912.16	8,550.66	430.76	3,788.96	3,376.83	2,777.74	5,693.02	393.30		

Unit: Million Baht

14. Investments in Subsidiaries, Joint Ventures and Associates (Continued)

14.13 Material non-controlling interests (Continued)

Financial information of subsidiaries that have material non-controlling interests, after accounting policy adjustment, before eliminations: (Continued)

Summary of cash flows for the years ended December 31, 2017 and 2016

	2017					2016					Unit: Million Baht
	PTTEP	TOP	IRPC	PTTGC	GPSC	PTTEP	TOP	IRPC	PTTGC	GPSC	
Cash flows from operating activities	89,704.08	33,985.38	20,385.01	58,395.96	3,152.97	80,480.38	23,181.63	7,227.46	44,490.25	4,130.09	
Cash flows from investing activities	(85,783.66)	(30,073.51)	(11,240.33)	(36,821.84)	(2,362.97)	(95,999.99)	(18,348.15)	(10,689.87)	(111.18)	(1,049.28)	
Cash flows from financing activities	(22,539.55)	(18,794.24)	(9,042.03)	(10,674.82)	(2,305.36)	(19,211.30)	(9,397.30)	1,928.77	(24,584.06)	(382.97)	
Others	(5,037.92)	(614.97)	-	1,386.71	(14.34)	(292.39)	(76.22)	-	-	-	
Net increase (decrease) in cash and cash equivalents	<u>(23,657.05)</u>	<u>(15,497.34)</u>	<u>102.65</u>	<u>12,286.01</u>	<u>(1,529.70)</u>	<u>(35,023.30)</u>	<u>(4,640.04)</u>	<u>(1,533.64)</u>	<u>19,795.01</u>	<u>2,697.84</u>	

15. Other Long-term Investments

15.1 Details of other long-term investments are as follows:

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Other Long-term Investments of the Company</u>				
<u>Long-term Investments in Equity Securities</u>				
Petro Asia (Sanshui) Co., Ltd. (PA (Sanshui))	China	Oil marketing	25.00	25.00
Petro Asia (Maoming) Co., Ltd. (PA (Maoming))	China	Oil marketing	20.00	20.00
Sarn Palung Social Enterprise Co., Ltd. (PTTSE) (The Group holds 100% shareholding)	Thailand	Social enterprise	20.00	-
Intoplane Services Co., Ltd. (IPS)	Thailand	Aircraft refuelling services	16.67	16.67
Colour Vision International Co., Ltd. (Corpus)	Thailand	Finished yarn production	0.48	0.48
Fuel Pipeline Transportation Co., Ltd. (FPT)*	Thailand	Oil transmission pipelines	-	-
<u>Long-term Investments in Debt Securities</u>				
Berli Jucker Public Co., Ltd. (BJC)	Thailand	Consumer products manufacturing and service		
Bangkok Dusit Medical Services Public Co., Ltd. (BDMS)	Thailand	Health care services		
Bangkok Mass Transit System Public Co., Ltd. (BTS)	Thailand	Transportation & logistics		
Indorama Ventures Public Co., Ltd. (IVL)	Thailand	Petrochemicals & chemicals		
The Commercial Bank (P.S.Q.C.) (CBQ)	Qatar	Banking		
Bank of Ayudhya Public Co., Ltd. (BAY)	Thailand	Banking		
Emirates NBD (ENBD)	United Arab Emirates	Banking		

* As at December 31, 2017 and 2016 the Company holds 0.0000090% of ownership interest.

15. Other Long-term Investments (Continued)

15.1 Details of other long-term investments are as follows: (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Other Long-term Investments of Subsidiaries</u>				
<u>Long-term Investments in Equity Securities</u>				
<i>PTTEP Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (PTTSE)	Thailand	Social enterprise	15.00	-
<i>PTTGL Group</i>				
Petronas LNG 9 Sdn. Bhd. (PL9SB)	Malaysia	LNG liquefaction	10.00	-
<i>GPSC Group</i>				
24M Technologies, Inc. (24M)	United States of America	Research and development of battery	18.00	19.00
Ratchaburi Power Co., Ltd. (RPCL)	Thailand	Electricity generation	15.00	15.00
Sarn Palung Social Enterprise Co., Ltd. (PTTSE)	Thailand	Social enterprise	10.00	-
<i>PTTOR Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (PTTSE)	Thailand	Social enterprise	10.00	-
<i>PTTT Group</i>				
KIC Oil Terminal Sdn. Bhd. (KOT)	Malaysia	Logistics services	10.00	10.00
Kadriah Integrated Facilities Sdn. Bhd. (KIF)	Malaysia	Logistics services	10.00	10.00
Kadriah I Ltd. (K I)	Malaysia	Logistics services	10.00	10.00
Kadriah II Ltd. (K II)	Malaysia	Logistics services	10.00	10.00
<i>PTTGC Group</i>				
Alliance Petrochemical Investment (Singapore) Pte. Ltd. (API)	Singapore	Investment in other companies	15.34	15.34
Exeltium SAS (EXS)	France	Electricity business	4.00	4.00
Sarn Palung Social Enterprise Co., Ltd. (PTTSE)	Thailand	Social enterprise	15.00	-
<i>TOP Group</i>				
Sarn Palung Social Enterprise Co., Ltd. (PTTSE)	Thailand	Social enterprise	15.00	-

15. Other Long-term Investments (Continued)

15.1 Details of other long-term investments are as follows: (Continued)

Company	Country of Incorporation	Business	Ownership interest (%)	
			2017	2016
<u>Other Long-term Investments of Subsidiaries</u> (Continued)				
<u>Long-term Investments in Equity Securities</u> (Continued)				
<i>IRPC Group</i>				
TPI EOEG Co., Ltd. (TPIE)	Thailand	Finance service	36.31	36.31
TPI Holding Co., Ltd. (TPIH)	Thailand	Investment in other companies	35.01	35.01
Pornchai Enterprises Co., Ltd. (PEC)	Thailand	Real estate for rent	23.65	23.65
Thai Special Steel Industries Public Co., Ltd. (TSSI)	Thailand	Steel wire manufacturing	16.24	16.24
Rayong Acetylene Co., Ltd. (RAC)	Thailand	Industrial gas manufacturing	13.04	13.04
DIA Polyacrylate Co., Ltd. (DIA)	Thailand	Plastic resin manufacturing	3.65	3.65
Sarn Palung Social Enterprise Co., Ltd. (PTTSE)	Thailand	Social enterprise	15.00	-

15. Other Long-term Investments (Continued)

15.2 Details of other long-term investments as at December 31, 2017 and 2016 are as follows:

Unit: Million Baht

Company	Ownership interest (%)		Cost/ Cost amortized				Dividends income	
			Consolidated financial statements		Separate financial statements			
	2017	2016	2017	2016	2017	2016	2017	2016
<u>Long-term investments in Equity Securities</u>								
1. PA (Sanshui)	25.00	25.00	6.06	6.06	6.06	6.06	-	-
2. PA (Maoming)	20.00	20.00	14.83	14.83	14.83	14.83	-	-
3. PTTSE	100.00	-	2.49	-	0.50	-	-	-
4. IPS	16.67	16.67	0.02	0.02	0.02	0.02	-	-
5. Corpus	0.48	0.48	0.60	0.60	0.60	0.60	-	-
6. FPT*	-	-	0.02	0.02	0.02	0.02	-	-
7. PL9SB	10.00	-	9,740.55	-	-	-	-	-
8. 24M	18.00	19.00	715.62	715.62	-	-	-	-
9. RPCL	15.00	15.00	888.75	888.75	-	-	270.00	420.00
10. KOT	10.00	10.00	114.83	125.90	-	-	-	-
11. KIF	10.00	10.00	47.59	52.17	-	-	-	-
12. K I	10.00	10.00	239.19	262.24	-	-	-	-
13. K II	10.00	10.00	63.93	70.10	-	-	-	-
14. API	15.34	15.34	290.24	290.24	-	-	-	14.11
15. EXS	4.00	4.00	282.88	282.88	-	-	-	-
16. TPIE	36.31	36.31	828.94	828.94	-	-	-	-
17. TPIH	35.01	35.01	1,415.90	1,415.90	-	-	-	-
18. PEC	23.65	23.65	1,118.95	1,118.95	-	-	-	-
19. TSSI	16.24	16.24	673.35	673.35	-	-	-	-
20. RAC	13.04	13.04	15.00	15.00	-	-	-	-
21. DIA	3.65	3.65	8.50	8.50	-	-	1.91	2.55
22. Other	-	-	2.00	0.50	-	-	-	-
Long-term investments in Equity Securities			16,470.24	6,770.57	22.03	21.53		
Less Allowance for impairment			(3,957.81)	(4,564.69)	(14.14)	(14.14)		
Total			12,512.43	2,205.88	7.89	7.39	271.91	436.66
<u>Long-term investments in Debt Securities</u>								
23. BJC			2,500.00	-	2,500.00	-	-	-
24. BDMS			420.70	-	420.70	-	-	-
25. BTS			451.10	-	451.10	-	-	-
26. IVL			500.00	-	500.00	-	-	-

* As at December 31, 2017 and 2016, the Company holds 0.0000090% of ownership interest, totaling 66 shares, amounting to Baht 22,220.00.

15. Other Long-term Investments (Continued)

15.2 Details of other long-term investments as at December 31, 2017 and 2016 are as follows:
(Continued)

Unit: Million Baht

Company	Ownership interest (%)		Cost/ Cost amortized				Dividends income	
			Consolidated financial statements		Separate financial statements			
	2017	2016	2017	2016	2017	2016	2017	2016
Long-term investments in Debt Securities (Continued)								
27. CBQ			6,502.92	-	6,502.92	-	-	-
28. BAY			2,505.49	-	2,505.49	-	-	-
29. ENBD			2,276.02	-	2,276.02	-	-	-
Total			15,156.23	-	15,156.23	-	-	-
Total			27,668.66	2,205.88	15,164.12	7.39	271.91	436.66

15.3 Movements in other long-term investments are as follows:

Unit: Million Baht

	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Long-term investments in Equity Securities				
As at January 1	2,205.88	1,969.13	7.39	7.39
- Additional investments	9,883.54	236.75	0.50	-
- Reversal of loss on impairment (Note 21)	562.00	-	-	-
- Currency translation differences	(138.99)	-	-	-
Long-term investments in Equity Securities as at December 31	12,512.43	2,205.88	7.89	7.39
Long-term investments in Debt Securities as at December 31	15,156.23	-	15,156.23	-
Total other long-term investments as at December 31	27,668.66	2,205.88	15,164.12	7.39

15.4 Significant events during the period ended December 31, 2017

PTTSE

On June 16, 2017, at the Board of Directors Meeting No. 6/2017 of the Company, the Board passed a resolution to approve the establishment of Sarn Palung Social Enterprise Co., Ltd. (PTTSE), which is the joint venture of PTT Public Co., Ltd., PTT Exploration and Production Public Co., Ltd., PTT Global Chemical Public Co., Ltd., IRPC Public Co., Ltd., Thai Oil Public Co., Ltd., Global Power Synergy Public Co., Ltd. and PTT Oil and Retail Business Co., Ltd. to support execution of social enterprise.

PTTSE has an initial registered share capital of Baht 10 million and the Company made these share payment amounting to Baht 0.50 million on September 5, 2017.

16. Investment Properties

Details of investment properties are as follows:

Unit: Million Baht

	Consolidated financial statements			Total
	Land	Buildings and building improvements	Construction in progress	
As at January 1, 2016				
Cost	5,204.67	2,308.50	-	7,513.17
<u>Less</u> Accumulated depreciation	-	(871.20)	-	(871.20)
Allowance for impairment	(354.35)	-	-	(354.35)
Net book value	4,850.32	1,437.30	-	6,287.62
For the year ended December 31, 2016				
Beginning net book value	4,850.32	1,437.30	-	6,287.62
- Additions	7.85	26.64	-	34.49
- Reclassifications	-	12.43	-	12.43
- Disposals - net	(0.50)	(1.72)	-	(2.22)
- Depreciation for the year	-	(104.77)	-	(104.77)
Ending net book value	4,857.67	1,369.88	-	6,227.55
As at December 31, 2016				
Cost	5,212.02	2,343.68	-	7,555.70
<u>Less</u> Accumulated depreciation	-	(973.80)	-	(973.80)
Allowance for impairment	(354.35)	-	-	(354.35)
Net book value	4,857.67	1,369.88	-	6,227.55
For the year ended December 31, 2017				
Beginning net book value	4,857.67	1,369.88	-	6,227.55
- Additions	1.29	13.24	6.16	20.69
- Reclassifications	4.82	27.02	(1.39)	30.45
- Disposals - net	(15.80)	(1.98)	-	(17.78)
- Depreciation for the year	-	(114.88)	-	(114.88)
- Reversal of loss on impairment (Note 21)	87.40	-	-	87.40
Ending net book value	4,935.38	1,293.28	4.77	6,233.43
As at December 31, 2017				
Cost	5,202.33	2,374.80	4.77	7,581.90
<u>Less</u> Accumulated depreciation	-	(1,081.52)	-	(1,081.52)
Allowance for impairment	(266.95)	-	-	(266.95)
Net book value	4,935.38	1,293.28	4.77	6,233.43

16. Investment Properties (Continued)

Details of investment properties are as follows: (Continued)

Unit: Million Baht

	Separate financial statements			Total
	Land	Buildings and building improvements	Construction in progress	
As at January 1, 2016				
Cost	3,574.41	467.63	-	4,042.04
<u>Less</u> Accumulated depreciation	-	(199.51)	-	(199.51)
Net book value	3,574.41	268.12	-	3,842.53
For the year ended December 31, 2016				
Beginning net book value	3,574.41	268.12	-	3,842.53
- Additions	-	3.23	-	3.23
- Reclassifications	-	12.43	-	12.43
- Disposals - net	-	(1.46)	-	(1.46)
- Depreciation for the year	-	(17.17)	-	(17.17)
Ending net book value	3,574.41	265.15	-	3,839.56
As at December 31, 2016				
Cost	3,574.41	480.29	-	4,054.70
<u>Less</u> Accumulated depreciation	-	(215.14)	-	(215.14)
Net book value	3,574.41	265.15	-	3,839.56
For the year ended December 31, 2017				
Beginning net book value	3,574.41	265.15	-	3,839.56
- Additions	-	4.11	6.16	10.27
- Reclassifications	(3.35)	27.03	(1.39)	22.29
- Disposals - net	-	(1.98)	-	(1.98)
- Depreciation for the year	-	(19.01)	-	(19.01)
Ending net book value	3,571.06	275.30	4.77	3,851.13
As at December 31, 2017				
Cost	3,571.06	503.64	4.77	4,079.47
<u>Less</u> Accumulated depreciation	-	(228.34)	-	(228.34)
Net book value	3,571.06	275.30	4.77	3,851.13

17. Property, Plant and Equipment (Continued)

Detail of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements							Total
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets	Construction in progress	
For the year ended December 31, 2016								
Beginning net book value	30,854.62	108,849.78	465,239.99	333,399.68	19,152.35	9,047.90	161,311.01	1,127,855.33
- Additions	2,058.92	763.75	4,017.41	39,757.66	574.98	1,084.59	61,340.46	109,597.77
- Borrowing costs	-	-	-	-	-	-	2,807.53	2,807.53
- Reclassifications	2,689.22	37,549.35	83,080.47	2,115.52	38.18	1,088.91	(122,730.80)	3,830.85
- Disposals - net	(12.07)	(155.06)	(751.30)	(7,693.53)	(22.53)	(173.02)	(43.46)	(8,850.97)
- Depreciation for the year	-	(10,968.21)	(37,561.30)	(71,071.46)	(1,523.72)	(2,169.00)	-	(123,293.69)
- Loss on impairment	-	(0.71)	(0.55)	(1,636.35)	(126.56)	-	(42.89)	(1,807.06)
- Reversal of loss on impairment	4.70	5.80	33.56	-	-	-	109.07	153.13
- Currency translation differences	(14.25)	(71.63)	(239.25)	(2,979.53)	(153.10)	(2.61)	(129.86)	(3,590.23)
Ending net book value	35,581.14	135,973.07	513,819.03	291,891.99	17,939.60	8,876.77	102,621.06	1,106,702.66
As at December 31, 2016								
Cost	35,790.82	276,184.68	890,494.80	915,475.02	62,309.54	23,030.01	104,973.41	2,308,258.28
<u>Less</u> Accumulated depreciation	-	(140,015.22)	(375,016.81)	(579,593.92)	(29,739.50)	(14,153.24)	-	(1,138,518.69)
Allowance for impairment	(209.68)	(196.39)	(1,658.96)	(43,989.11)	(14,630.44)	-	(2,352.35)	(63,036.93)
Net book value	35,581.14	135,973.07	513,819.03	291,891.99	17,939.60	8,876.77	102,621.06	1,106,702.66

Unit: Million Baht

17. Property, Plant and Equipment (Continued)

Detail of property, plant and equipment are as follows: (Continued)

	Consolidated financial statements							Unit: Million Baht
	Land	Buildings and building improvements	Machinery and equipment	Exploration and production properties	Mining Properties	Other assets	Construction in progress	
For the year ended December 31, 2017								
Beginning net book value	35,581.14	135,973.07	513,819.03	291,891.99	17,939.60	8,876.77	102,621.06	1,106,702.66
- Additions	4,183.63	3,109.69	13,977.09	48,607.48	988.64	983.82	46,142.24	117,992.59
- Borrowing costs	-	-	-	-	-	-	1,907.56	1,907.56
- Reclassifications	(40.64)	10,808.22	69,985.93	748.98	7.55	712.10	(82,934.42)	(712.28)
- Disposals - net	(1,512.38)	(130.94)	(585.82)	(2,857.05)	(615.21)	(61.88)	(284.52)	(6,047.80)
- Depreciation for the year	-	(11,400.46)	(40,701.22)	(54,131.68)	(1,521.34)	(2,191.35)	-	(109,946.05)
- Loss on impairment (Note 21)	-	(409.35)	(1,212.94)	-	(2,807.31)	(546.36)	(313.31)	(5,289.27)
- Reversal of loss on impairment (Note 21)	110.03	42.91	46.99	-	-	-	-	199.93
- Currency translation differences	(52.25)	(304.72)	(144.52)	(25,350.13)	(1,431.33)	(19.25)	(599.24)	(27,901.44)
Ending net book value	38,269.53	137,688.42	555,184.54	258,909.59	12,560.60	7,753.85	66,539.37	1,076,905.90
As at December 31, 2017								
Cost	38,369.18	288,813.65	966,165.37	879,673.52	53,209.26	23,852.24	68,250.88	2,318,334.10
Less Accumulated depreciation	-	(150,417.72)	(407,753.27)	(580,556.01)	(26,775.94)	(15,552.03)	-	(1,181,054.97)
Allowance for impairment	(99.65)	(707.51)	(3,227.56)	(40,207.92)	(13,872.72)	(546.36)	(1,711.51)	(60,373.23)
Net book value	38,269.53	137,688.42	555,184.54	258,909.59	12,560.60	7,753.85	66,539.37	1,076,905.90

As at December 31, 2017, the Group had pledged assets amounting to Baht 33,169.75 million (December 31, 2016: Baht 45,363.19 million.)

17. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Other assets	Construction in progress	
As at January 1, 2016						
Cost	8,595.14	39,071.27	329,012.29	13,277.50	46,271.34	436,227.54
<u>Less</u> Accumulated depreciation	-	(16,010.44)	(134,261.77)	(8,744.57)	-	(159,016.78)
Allowance for impairment	(22.07)	(4.70)	(681.67)	-	-	(708.44)
Net book value	8,573.07	23,056.13	194,068.85	4,532.93	46,271.34	276,502.32
For the year ended December 31, 2016						
Beginning net book value	8,573.07	23,056.13	194,068.85	4,532.93	46,271.34	276,502.32
- Additions	187.58	289.51	2,451.70	560.40	18,894.81	22,384.00
- Borrowing costs	-	-	-	-	1,055.04	1,055.04
- Reclassifications	2,690.29	2,426.32	21,704.51	817.23	(25,210.55)	2,427.80
- Disposals - net	-	(26.40)	(149.73)	(46.98)	-	(223.11)
- Depreciation for the year	-	(1,684.41)	(14,058.43)	(1,419.70)	-	(17,162.54)
- Loss on impairment	-	(0.16)	-	-	-	(0.16)
- Reversal of loss on impairment	4.70	4.70	8.83	-	-	18.23
Ending net book value	11,455.64	24,065.69	204,025.73	4,443.88	41,010.64	285,001.58
As at December 31, 2016						
Cost	11,473.01	41,570.53	348,960.01	14,496.95	41,010.64	457,511.14
<u>Less</u> Accumulated depreciation	-	(17,504.68)	(144,926.69)	(10,053.07)	-	(172,484.44)
Allowance for impairment	(17.37)	(0.16)	(7.59)	-	-	(25.12)
Net book value	11,455.64	24,065.69	204,025.73	4,443.88	41,010.64	285,001.58

17. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	Land	Buildings and building improvements	Machinery and equipment	Other assets	Construction in progress	
For the year ended December 31, 2017						
Beginning net book value	11,455.64	24,065.69	204,025.73	4,443.88	41,010.64	285,001.58
- Additions	933.85	512.10	1,266.91	482.85	19,454.27	22,649.98
- Borrowing costs	-	-	-	-	843.85	843.85
- Reclassifications	369.24	5,298.92	34,058.18	334.21	(41,071.59)	(1,011.04)
- Disposals - net	(1,745.72)	(51.98)	(23.49)	(45.74)	-	(1,866.93)
- Depreciation for the year	-	(1,848.00)	(14,546.11)	(1,429.20)	-	(17,823.31)
- Loss on impairment (Note 21)	-	(53.00)	(36.32)	-	-	(89.32)
- Reversal of loss on impairment (Note 21)	17.37	0.16	7.59	-	-	25.12
Ending net book value	11,030.38	27,923.89	224,752.49	3,786.00	20,237.17	287,729.93
As at December 31, 2017						
Cost	11,030.38	47,075.51	383,419.77	15,128.11	20,237.17	476,890.94
<u>Less</u> Accumulated depreciation	-	(19,098.62)	(158,630.96)	(11,342.11)	-	(189,071.69)
Allowance for impairment	-	(53.00)	(36.32)	-	-	(89.32)
Net book value	11,030.38	27,923.89	224,752.49	3,786.00	20,237.17	287,729.93

Borrowing costs were capitalized as a part of costs of property, plant and equipment. For the year of 2017, the Group used capitalization rates ranging from 1.10% - 5.25% (2016: 1.50% - 5.75%)

17. Property, Plant and Equipment (Continued)

Details of property, plant and equipment are as follows: (Continued)

As at December 31, 2017 and 2016, details of other assets include vehicles and natural gas pipeline acquired under finance leases which were recorded as machinery and equipment are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Cost	10,782.04	10,780.35	10,038.70	10,007.25
<u>Less</u> Accumulated depreciation	<u>(4,655.80)</u>	<u>(4,109.59)</u>	<u>(4,273.61)</u>	<u>(3,719.78)</u>
Net book value	<u>6,126.24</u>	<u>6,670.76</u>	<u>5,765.09</u>	<u>6,287.47</u>

18. Goodwill

Movements of goodwill are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2017	2016
Net book value as at January 1	50,778.17	51,408.13
- Business acquisition	-	(15.98)
- Loss on impairment of assets (Note 21)	(795.61)	(336.17)
- Currency translation differences	<u>(3,294.30)</u>	<u>(277.81)</u>
Net book value as at December 31	<u>46,688.26</u>	<u>50,778.17</u>

19. Intangible Assets

Details of intangible assets are as follows:

Unit: Million Baht

	Consolidated financial statements			
	Computer software	Right of use	Other Intangible assets	Total
As at January 1, 2016				
Cost	16,943.76	30,567.99	9,273.83	56,785.58
<u>Less</u> Accumulated amortization	(7,645.38)	(11,456.61)	(4,048.09)	(23,150.08)
Allowance for impairment	(11.82)	(122.02)	-	(133.84)
Net book value	9,286.56	18,989.36	5,225.74	33,501.66
For the year ended December 31, 2016				
Beginning net book value	9,286.56	18,989.36	5,225.74	33,501.66
- Business acquisition	118.87	-	-	118.87
- Additions	886.30	1,231.36	579.85	2,697.51
- Reclassifications	575.56	692.05	(430.86)	836.75
- Disposals - net	(17.69)	(32.63)	(22.22)	(72.54)
- Amortization for the year	(1,729.62)	(1,110.11)	(389.58)	(3,229.31)
- Loss on impairment	-	(319.36)	-	(319.36)
- Reversal of loss on impairment	-	32.63	-	32.63
- Currency translation differences	(6.83)	(41.01)	(18.04)	(65.88)
Ending net book value	9,113.15	19,442.29	4,944.89	33,500.33
As at December 31, 2016				
Cost	18,423.81	32,387.97	9,345.33	60,157.11
<u>Less</u> Accumulated amortization	(9,310.66)	(12,535.85)	(4,400.44)	(26,246.95)
Allowance for impairment	-	(409.83)	-	(409.83)
Net book value	9,113.15	19,442.29	4,944.89	33,500.33

19. Intangible Assets (Continued)

Details of intangible assets are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements			
	Computer software	Right of use	Other Intangible assets	Total
For the year ended December 31, 2017				
Beginning net book value	9,113.15	19,442.29	4,944.89	33,500.33
- Addition	889.65	270.51	731.62	1,891.78
- Reclassifications	1,293.48	71.97	(199.67)	1,165.78
- Disposals - net	(0.15)	(3.21)	(7.52)	(10.88)
- Amortization for the year	(1,853.24)	(1,088.12)	(430.46)	(3,371.82)
- Loss on impairment (Note 21)	-	(470.42)	(21.85)	(492.27)
- Currency translation differences	(307.51)	(18.27)	(249.46)	(575.24)
Ending net book value	9,135.38	18,204.75	4,767.55	32,107.68
As at December 31, 2017				
Cost	19,996.09	32,687.28	9,228.14	61,911.51
<u>Less</u> Accumulated amortization	(10,860.71)	(13,645.30)	(4,438.74)	(28,944.75)
Allowance for impairment	-	(837.23)	(21.85)	(859.08)
Net book value	9,135.38	18,204.75	4,767.55	32,107.68

19. Intangible Assets (Continued)

Details of intangible assets are as follows: (Continued)

	Separate financial statements			Unit: Million Baht
	Computer software	Right of use	Other Intangible assets	Total
As at January 1, 2016				
Cost	4,665.38	19,732.16	52.50	24,450.04
<u>Less</u> Accumulated amortization	<u>(2,522.91)</u>	<u>(7,280.35)</u>	<u>(2.66)</u>	<u>(9,805.92)</u>
Net book value	<u>2,142.47</u>	<u>12,451.81</u>	<u>49.84</u>	<u>14,644.12</u>
For the year ended December 31, 2016				
Beginning net book value	2,142.47	12,451.81	49.84	14,644.12
- Additions	240.94	0.07	15.00	256.01
- Reclassifications	422.13	219.79	-	641.92
- Disposals - net	(0.49)	-	-	(0.49)
- Amortization for the year	<u>(667.77)</u>	<u>(522.87)</u>	<u>(2.85)</u>	<u>(1,193.49)</u>
Ending net book value	<u>2,137.28</u>	<u>12,148.80</u>	<u>61.99</u>	<u>14,348.07</u>
As at December 31, 2016				
Cost	5,324.86	19,952.02	67.50	25,344.38
<u>Less</u> Accumulated amortization	<u>(3,187.58)</u>	<u>(7,803.22)</u>	<u>(5.51)</u>	<u>(10,996.31)</u>
Net book value	<u>2,137.28</u>	<u>12,148.80</u>	<u>61.99</u>	<u>14,348.07</u>
For the year ended December 31, 2017				
Beginning net book value	2,137.28	12,148.80	61.99	14,348.07
- Additions	304.03	5.55	-	309.58
- Reclassifications	1,063.82	5.76	-	1,069.58
- Disposals - net	(0.16)	-	-	(0.16)
- Amortization for the year	<u>(796.06)</u>	<u>(523.27)</u>	<u>(4.12)</u>	<u>(1,323.45)</u>
Ending net book value	<u>2,708.91</u>	<u>11,636.84</u>	<u>57.87</u>	<u>14,403.62</u>
As at December 31, 2017				
Cost	6,691.53	19,963.08	67.50	26,722.11
<u>Less</u> Accumulated amortization	<u>(3,982.62)</u>	<u>(8,326.24)</u>	<u>(9.63)</u>	<u>(12,318.49)</u>
Net book value	<u>2,708.91</u>	<u>11,636.84</u>	<u>57.87</u>	<u>14,403.62</u>

20. Exploration and evaluation assets

Details of exploration and evaluation assets are as follows:

	Unit: Million Baht		
	Consolidated financial statements		
	Petroleum exploration and evaluation assets	Mining properties	Total
As at January 1, 2016			
Cost	180,580.92	962.71	181,543.63
<u>Less</u> Allowance for impairment	(40,954.03)	(180.11)	(41,134.14)
Net book value	139,626.89	782.60	140,409.49
For the year ended December 31, 2016			
Beginning net book value	139,626.89	782.60	140,409.49
- Additions	696.37	6.78	703.15
- Reclassifications	(2,115.52)	(38.11)	(2,153.63)
- Disposals - net	(1,002.15)	-	(1,002.15)
- Loss on impairment	(50.85)	-	(50.85)
- Currency translation differences	(444.08)	(11.96)	(456.04)
Ending net book value	136,710.66	739.31	137,449.97
As at December 31, 2016			
Cost	178,484.00	918.13	179,402.13
<u>Less</u> Allowance for impairment	(41,773.34)	(178.82)	(41,952.16)
Net book value	136,710.66	739.31	137,449.97
For the year ended December 31, 2017			
Beginning net book value	136,710.66	739.31	137,449.97
- Additions	774.80	6.65	781.45
- Reclassifications	(749.00)	-	(749.00)
- Disposals - net	(46.31)	-	(46.31)
- Loss on impairment (Note 21)	(18,504.89)	-	(18,504.89)
- Currency translation differences	(10,110.27)	(61.23)	(10,171.50)
Ending net book value	108,074.99	684.73	108,759.72
As at December 31, 2017			
Cost	166,614.27	847.84	167,462.11
<u>Less</u> Allowance for impairment	(58,539.28)	(163.11)	(58,702.39)
Net book value	108,074.99	684.73	108,759.72

21. Impairment of Assets

The Group performs an impairment test on assets whenever events or circumstances suggest that the carrying amount of the assets may exceed its recoverable amount. For the intangible assets with an indefinite useful life or not yet available for use and goodwill from business combination, the Group shall perform impairment tests annually or when the indication exists. A loss on impairment is recognized when the recoverable amount of an asset is lower than its carrying amount. The recoverable amount is the higher of the asset's fair value less cost to sell and its value in use.

The loss on impairment of assets excluding the goodwill may be reversed if the estimates and assumptions applied in determining the recoverable amount change.

During the year 2017, the significant factors indicating that the assets of the Group may be impaired such as the risks from investing in non-operate or delay projects which not along with the plan, the change in business model of subsidiaries for the growth strategy, the business and financial restructuring of the Group, and significant changes in consumption patterns of assets and idle assets of the Group.

Determining recoverable amount, the Group applied significant estimations and assumptions relating to matters such as petroleum and coal reserves, oil and petrochemical prices, coal prices, foreign exchange rates, discount rates, capital expenditure, and operating expenditure.

During the year ended December 31, 2017, the Group recognized (reversal of) loss on impairment of assets in statements of income as follows:

	Unit: Million Baht	
	<u>Consolidated financial statement</u>	<u>Separate financial statement</u>
Investment in subsidiaries (Note 14.7.3)	-	33,715.65
Investment in other long-term investments (Note 15.3)	(562.00)	-
Investment property (Note 16)	(87.40)	-
Property, plant and equipment (Note 17)	5,089.34	64.20
Goodwill (Note 18)	795.61	-
Intangible assets (Note 19)	492.27	-
Exploration and evaluation assets (Note 20)	18,504.89	-
Other assets	614.93	1.51
Total	<u>24,847.64</u>	<u>33,781.36</u>

22. Income Taxes and Deferred Taxes

Applicable tax rates for the Group are as follows:

	<u>Rates (%)</u>
Petroleum income tax on petroleum business in Thailand pursuant to the Petroleum Income Tax Act, B.E. 2514 and B.E. 2532	50
Income tax under the Revenue Code of the Company and subsidiaries	20
Corporate income tax in foreign countries	5 - 50
Corporate Income tax from the Petroleum business in the Thai-Malaysia co-development area under the Petroleum Income Tax Act (No.5) B.E. 2541	0 - 20
Petroleum resource rent tax in Australia	40

22.1 Income taxes recognized in the statements of income for the years ended December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	<u>Consolidated</u>		<u>Separate</u>	
	<u>financial statements</u>	<u>financial statements</u>	<u>financial statements</u>	<u>financial statements</u>
	2017	2016	2017	2016
Current tax:				
Current tax	37,827.43	30,635.96	8,317.79	8,885.11
Adjustments in respect of current tax of previous year	(500.79)	1,146.50	(33.27)	898.99
	<u>37,326.64</u>	<u>31,782.46</u>	<u>8,284.52</u>	<u>9,784.10</u>
Deferred tax:				
Change in temporary differences	(3,495.81)	(3,442.61)	1,409.04	(711.33)
Tax effect of currency translation on tax base	(5,524.25)	(1,746.78)	-	-
	<u>(9,020.06)</u>	<u>(5,189.39)</u>	<u>1,409.04</u>	<u>(711.33)</u>
Total	<u><u>28,306.58</u></u>	<u><u>26,593.07</u></u>	<u><u>9,693.56</u></u>	<u><u>9,072.77</u></u>

22. Income Taxes and Deferred Taxes (Continued)

22.2 Movements in deferred taxes are as follows:

	Consolidated financial statements							Unit: Million Baht
	As at December 31, 2017							
	Net balance as at January 1, 2017	Profit (Loss)	Other comprehensive income (loss)	Currency translation differences	Others	Net balance	Deferred tax assets	Deferred tax liabilities
Property, plant and equipment	(61,688.36)	(1,219.95)	-	4,938.73	-	(57,969.58)	7,530.41	(65,499.99)
Intangible assets	(137.23)	145.54	-	9.86	-	18.17	183.26	(165.09)
Investments	116.32	(60.57)	-	-	-	55.75	55.75	-
Available-for-sale investments	(1,879.21)	-	1,135.50	(0.12)	-	(743.83)	1.31	(745.14)
Trade and other accounts receivable	(2,176.04)	(971.71)	-	10.62	-	(3,137.13)	451.07	(3,588.20)
Inventories	150.01	27.35	-	0.05	-	177.41	183.10	(5.69)
Loans	224.60	(365.10)	-	-	-	(140.50)	-	(140.50)
Provision for employee benefit	5,566.50	492.69	177.69	(235.34)	-	6,001.54	6,002.23	(0.69)
Provision for decommissioning costs	19,587.23	2,160.44	-	(1,754.93)	-	19,992.74	19,992.74	-
Cumulative loss carried forward	3,434.21	3,929.02	33.31	(366.65)	-	7,029.89	7,029.89	-
Petroleum resource rent tax in Australia	2,484.13	-	-	(218.37)	-	2,265.76	2,265.76	-
Tax effect of currency translation on tax base	(3,528.80)	5,524.25	-	46.43	-	2,041.88	2,069.52	(27.64)
Others	4,407.45	(641.90)	(582.74)	505.24	25.35	3,713.40	4,505.71	(792.31)
Total before set-off of taxes	(33,439.19)	9,020.06	763.76	2,935.52	25.35	(20,694.50)	50,270.75	(70,965.25)
Set-off of taxes						-	(35,169.53)	35,169.53
Net deferred tax assets (liabilities)						(20,694.50)	15,101.22	(35,795.72)

22. Income Taxes and Deferred Taxes (Continued)

22.2 Movements in deferred taxes are as follows: (Continued)

Unit: Million Baht

	Consolidated financial statements							
	As at December 31, 2016							
	Net balance as at January 1, 2016	Profit (Loss)	Other comprehensive income (loss)	Business acquisition	Currency translation differences	Net balance	Deferred tax assets	Deferred tax liabilities
Property, plant and equipment	(54,229.89)	(7,423.02)	-	-	(35.45)	(61,688.36)	8,780.45	(70,468.81)
Intangible assets	(9,721.23)	9,621.30	-	(34.29)	(3.01)	(137.23)	230.76	(367.99)
Investments	61.46	54.86	-	-	-	116.32	116.32	-
Available-for-sale investments	(877.45)	-	(1,001.66)	-	(0.10)	(1,879.21)	0.08	(1,879.29)
Trade and other accounts receivable	(2,098.42)	(76.46)	-	-	(1.16)	(2,176.04)	416.33	(2,592.37)
Inventories	20.69	130.19	-	-	(0.87)	150.01	151.49	(1.48)
Loans	268.72	(44.12)	-	-	-	224.60	239.26	(14.66)
Provision for employee benefit	5,144.22	211.31	230.89	-	(19.92)	5,566.50	5,567.20	(0.70)
Provision for decommissioning costs	15,818.31	3,294.16	-	-	474.76	19,587.23	19,940.65	(353.42)
Cumulative loss carried forward	5,754.54	(2,643.27)	407.88	-	(84.94)	3,434.21	3,434.21	-
Petroleum resource rent tax in Australia	2,502.02	-	-	-	(17.89)	2,484.13	2,484.13	-
Tax effect of currency translation on tax base	(5,345.55)	1,747.39	-	-	69.36	(3,528.80)	253.28	(3,782.08)
Others	2,356.96	317.05	1,806.09	-	(72.65)	4,407.45	5,714.66	(1,307.21)
Total before set-off of taxes	(40,345.62)	5,189.39	1,443.20	(34.29)	308.13	(33,439.19)	47,328.82	(80,768.01)
Set-off of taxes						-	(36,747.62)	36,747.62
Net deferred tax assets (liabilities)						(33,439.19)	10,581.20	(44,020.39)

22. Income Taxes and Deferred Taxes (Continued)

22.2 Movements in deferred taxes are as follows: (Continued)

	Separate financial statements						Unit: Million Baht
	As at December 31, 2017						
	Net balance as at January 1, 2017	Profit (Loss)	Other comprehensive income	Net balance	Deferred tax assets	Deferred tax liabilities	
Property, plant and equipment	(560.33)	26.74	-	(533.59)	-	(533.59)	
Intangible assets	136.51	(3.92)	-	132.59	132.59	-	
Investments	115.35	(60.46)	-	54.89	54.89	-	
Available-for-sale investments	(1,879.45)	-	1,134.64	(744.81)	-	(744.81)	
Trade and other accounts receivable	(772.41)	(1,141.67)	-	(1,914.08)	443.89	(2,357.97)	
Inventories	61.74	(0.03)	-	61.71	61.71	-	
Loans	239.25	(363.77)	-	(124.52)	-	(124.52)	
Provision for employee benefit	1,627.74	134.81	13.05	1,775.60	1,775.60	-	
Others	819.21	(0.74)	-	818.47	1,031.79	(213.32)	
Total before set-off of taxes	(212.39)	(1,409.04)	1,147.69	(473.74)	3,500.47	(3,974.21)	
Set-off of taxes				-	(3,500.47)	3,500.47	
Net deferred tax assets (liabilities)				(473.74)	-	(473.74)	

22. Income Taxes and Deferred Taxes (Continued)

22.2 Movements in deferred taxes are as follows: (Continued)

	Separate financial statements						Unit: Million Baht
	As at December 31, 2016						
	Net balance as at January 1, 2016	Profit (Loss)	Other comprehensive income (loss)	Net balance	Deferred tax assets	Deferred tax liabilities	
Property, plant and equipment	(346.59)	(213.74)	-	(560.33)	-	(560.33)	
Intangible assets	141.71	(5.20)	-	136.51	136.51	-	
Investments	60.48	54.87	-	115.35	115.35	-	
Available-for-sale investments	(877.96)	-	(1,001.49)	(1,879.45)	-	(1,879.45)	
Trade and other accounts receivable	(682.04)	(90.37)	-	(772.41)	410.98	(1,183.39)	
Inventories	60.26	1.48	-	61.74	61.74	-	
Loans	275.53	(36.28)	-	239.25	239.25	-	
Provision for employee benefit	1,352.12	103.02	172.60	1,627.74	1,627.74	-	
Others	(78.34)	897.55	-	819.21	1,147.14	(327.93)	
Total before set-off of taxes	(94.83)	711.33	(828.89)	(212.39)	3,738.71	(3,951.10)	
Set-off of taxes				-	(3,738.71)	3,738.71	
Net deferred tax assets (liabilities)				(212.39)	-	(212.39)	

23. Other Non-current Assets

Details of other non-current assets as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016*	2017	2016*
Long-term other accounts receivable	2,007.67	5,087.19	1,217.04	2,772.04
Advance payments and deferred charge	23,112.41	29,943.86	4,690.90	5,993.48
Advance payments for gas purchases	559.86	1,529.68	620.62	1,777.46
Decommissioning fund	4,292.84	4,151.82	-	-
Others	6,374.01	7,211.49	167.26	135.94
Total	<u>36,346.79</u>	<u>47,924.04</u>	<u>6,695.82</u>	<u>10,678.92</u>

The Company made advance payments for some gas that cannot take-up as the minimum volumes committed in the Gas Sales Agreements (Take-or-Pay). The Company has the right to take those volumes of prepaid gas (Make-up Right) in subsequent years, with no maturity period.

As at December 31, 2017, advance payments for gas purchases comprised the balance of advance payments made for gas purchases, from the Yadana gas fields in Myanmar, for the untaken-up gas volumes in 2000.

* The company has regrouped the financial information to be comparable with the current financial statement presentation.

24. Bank Overdrafts and Short-term Loans from Financial Institutions

As at December 31, 2017, the bank overdrafts and short-term loans from financial institutions bear interest at rates ranging from 1.61 % to 5.25% per annum (December 31, 2016: interest at rates range from 1.00% to 5.25% per annum).

25. Other Current Liabilities

Details of other current liabilities as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Undue output VAT	3,692.83	2,837.80	3,290.94	2,494.78
Provision for remuneration for the renewal of petroleum production	2,072.75	1,965.01	-	-
Others	3,192.93	3,158.26	1,274.88	895.35
Total	<u>8,958.51</u>	<u>7,961.07</u>	<u>4,565.82</u>	<u>3,390.13</u>

26. Long-term Loans

Details of long-term loans as at December 31, 2017 and 2016 are as follows:

Current portion of long-term loans

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Loans - Baht currency	13,742.71	17,970.11	14.51	4,143.52
Loans - foreign currencies	15,141.42	2,561.11	10,182.63	-
Debentures - Baht currency	26,049.47	22,820.12	18,549.47	8,136.00
Debentures - foreign currencies	10,562.90	19,775.03	-	11,208.06
Liabilities under finance leases	937.43	929.32	693.33	652.23
Total	66,433.93	64,055.69	29,439.94	24,139.81

Long-term loans

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Loans - Baht currency	76,554.42	78,668.68	1,000.00	7,014.51
Loans - foreign currencies	36,598.69	51,583.34	6,753.49	18,321.48
Debentures - Baht currency	194,970.13	206,065.19	109,715.20	128,297.47
Debentures - foreign currencies	131,981.09	177,048.98	28,152.20	51,715.68
Liabilities under finance leases	4,815.33	5,900.71	4,494.58	5,554.54
Total	444,919.66	519,266.90	150,115.47	210,903.68

26. Long-term Loans (Continued)

Long-term loans, including the current portion, outstanding as at December 31, 2017 and 2016 can be classified by types of interest rate as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Floating interest rate	129,584.07	137,231.35	10,182.63	21,260.77
Fixed interest rate	381,769.52	446,091.24	169,372.78	213,782.72
Total	511,353.59	583,322.59	179,555.41	235,043.49

Interest rates charged on long-term loans as at December 31, 2017 and 2016 are as follows:

	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Loans - Baht currency	0.50% - 7.83%	0.50% - 7.83%	0.50% - 7.83%	0.50% - 7.83%
Loans - Foreign currencies				
- US dollar	2.07% - 17.00%	1.85% - 17.00%	2.15%	2.54%
- EURO	2.50%	2.50% - 6.00%	-	-
- Japanese Yen	1.50% - 4.45%	1.50% - 4.45%	4.45%	4.45%
Debentures - Baht currency	2.21% - 6.80%	3.41% - 6.58%	3.50% - 6.80%	3.50% - 6.58%
Debentures - Foreign currencies				
- US dollar	3.63% - 6.51%	3.38% - 6.51%	4.50% - 5.88%	3.38% - 5.88%
- Japanese Yen	-	2.71%	-	2.71%
Liabilities under finance leases	3.60% - 12.00%	3.76% - 12.00%	3.76% - 4.65%	3.76% - 4.65%

26. Long-term Loans (Continued)

26.1 Loans

Movements of loans in Baht currency and foreign currencies for year ended December 31, 2017 are as follows:

Unit: Million

	Consolidated financial statements				Total in Baht equivalent
	Currency				
	Baht	USD	EURO	JPY	
As at January 1, 2017	96,638.79	1,149.51	126.32	26,160.94	150,783.24
- Additions	25,938.06	100.00	50.49	4,038.12	32,642.87
- Repayments	(32,122.78)	(141.27)	(10.48)	-	(37,413.55)
- Gain on exchange rates	-	-	-	-	(2,113.46)
- Currency translation differences	-	-	-	-	(1,862.25)
- Others	(156.94)	2.56	0.96	9.35	0.39
As at December 31, 2017	90,297.13	1,110.80	167.29	30,208.41	142,037.24
- Current portion	(13,742.71)	(444.67)	(10.69)	(419.99)	(28,884.13)
Long-term loans	76,554.42	666.13	156.60	29,788.42	113,153.11

Unit: Million

	Separate financial statements			Total in Baht equivalent
	Currency			
	Baht	USD	JPY	
As at January 1, 2017	11,158.03	310.00	23,000.00	29,479.51
- Additions	-	100.00	-	3,552.86
- Repayments	(10,143.52)	(100.00)	-	(13,743.77)
- Gain on exchange rates	-	-	-	(1,337.97)
As at December 31, 2017	1,014.51	310.00	23,000.00	17,950.63
- Current portion	(14.51)	(310.00)	-	(10,197.14)
Long-term loans	1,000.00	-	23,000.00	7,753.49

26. Long-term Loans (Continued)

26.1 Loans (Continued)

Loans - Baht currency

As at December 31, 2017, detail of long-term loan of the Company which is secured by the Ministry of Finance in Baht currency is as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
Baht	1,000	Fixed rate	Principal is repayable at the end of contract, in July 2020.

As at December 31, 2017, details of long-term loans from financial institutions of the subsidiaries in Baht currency are as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
Baht	5,000	Fixed rate	Principal is repayable every 3 months, totalling 39 instalments, commencing in March 2011.
Baht	10,000	6M FDR plus margin	Principal is repayable every 6 months, totalling 31 instalments, commencing in June 2018.
Baht	169	Fixed rate	Principal is repayable every 6 months, totalling 30 instalments, commencing in June 2017.
Baht	5,400	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in June 2012.
Baht	4,600	6M THBFIX plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in June 2012.
Baht	3,700	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in July 2015.
Baht	10,000	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in June 2016.
Baht	3,000	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in September 2017.

26. Long-term Loans (Continued)

26.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2017, details of long-term loans from financial institutions of the subsidiaries in Baht currency are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
Baht	4,000	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in December 2018.
Baht	5,000	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in June 2020.
Baht	15,000	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in November 2020.
Baht	2,500	6M THBFIX plus margin	Principal is repayable every 12 months, totalling 3 instalments, commencing in July 2016.
Baht	7,500	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 15 instalments, commencing in August 2011.
Baht	7,000	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 15 instalments, commencing in September 2013.
Baht	3,000	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in March 2014.
Baht	3,000	6M THBFIX plus margin	Principal is repayable in full at the end of contract, in June 2020.
Baht	6,000	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in March 2016.
Baht	5,000	6M THBFIX plus margin	Principal is repayable 2 times, in December 2020 and in June 2023.
Baht	6,320	Highest rate on 6-month-fixed deposit plus margin	Principal is repayable every 6 months, totalling 11 instalments, commencing in September 2013.

26. Long-term Loans (Continued)

26.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2017, details of long-term loans from financial institutions of the subsidiaries in Baht currency are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
Baht	3,650	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 17 instalments, commencing in September 2013.
Baht	7,000	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 20 instalments, commencing in March 2017.
Baht	700	3M BIBOR plus margin	Principal is repayable every 3 months, totalling 16 instalments, commencing in September 2014.
Baht	1,000	Fixed rate	Principal is repayable every 3 months, totalling 16 instalments, commencing in September 2016.
Baht	700	3M BIBOR plus margin	Principal is repayable every 3 months, totalling 20 instalments, commencing in March 2016.
Baht	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in April 2016.
Baht	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 14 instalments, commencing in May 2016.
Baht	900	Highest rate on 6-month- fixed deposit plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in May 2017.
Baht	500	Fixed rate	Principal is repayable every 3 months, totalling 33 instalments, commencing in June 2019.
Baht	14,357	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 24 instalments, commencing in February 2021.
Baht	6,004	3M THBFIX plus margin	Principal is repayable every 6 months, totalling 20 instalments, commencing in February 2021.
Baht	500	6M THBFIX plus margin	Principal is repayable in full at the end of contract in November 2020.

26. Long-term Loans (Continued)

26.1 Loans (Continued)

Loans - Baht currency (Continued)

As at December 31, 2017, details of long-term loans from financial institutions of the subsidiaries in Baht currency are as follows: (Continued)

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
Baht	1,500	MLR minus discount	Principal is repayable every 6 months, totalling 12 instalments, commencing in September 2012.
Baht	300	MLR minus discount	Principal is repayable every 6 months, totalling 12 instalments, commencing in September 2012.
Baht	324	MLR minus discount	Principal is repayable every month, totalling 60 instalments, commencing in April 2012.
Baht	228	MLR minus discount	Principal is repayable every month, totalling 60 instalments, commencing in January 2013.
Baht	365	MLR minus discount	Principal is repayable every month, totalling 80 instalments, commencing in June 2014.
Baht	365	MLR minus discount	Principal is repayable every month, totalling 80 instalments, commencing in October 2014.
Baht	420	MLR minus discount	Principal is repayable every month, totalling 77 instalments, commencing in October 2016.
Baht	141	6M FDR plus margin	Principal is repayable every 6 months, totalling 8 instalments, commencing in June 2017.
Baht	3,875	THBFIX plus margin	Principal is repayable every 3 months, totalling 31 instalments, commencing in June 2016.
Baht	3,875	THBFIX plus margin	Principal is repayable every 3 months, totalling 31 instalments, commencing in June 2016.
Baht	1,200	6M THBFIX plus margin	Principal is repayable every 6 months, totalling 12 instalments, commencing in June 2014.
Baht	1,800	6M FDR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in June 2015.

26. Long-term Loans (Continued)

26.1 Loans (Continued)

Loans – Foreign currency

As at December 31, 2017, details of long-term loans from financial institutions of the Company in foreign currency are as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
JPY	23,000	Fixed rate	Principal is repayable in full at the end of contract, in April 2036.
USD	210	3M LIBOR plus margin	Principal is repayable in full at the end of contract, in March 2018.
USD	100	3M LIBOR plus margin	Principal is repayable in full at the end of contract, in March 2018.

As at December 31, 2017, details of long-term loans from financial institutions of the subsidiaries in foreign currency are as follows:

Currency	Principal (unit: million)	Interest rate percent (per annum)	Repayment terms
JPY	8,503	JPY-LIBOR plus margin	Principal is repayable every 6 months, totalling 37 instalments, commencing in May 2018.
USD	75	LIBOR plus margin	Principal is repayable in full at the end of contract, in January 2018.
USD	100	LIBOR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in July 2015.
USD	500	LIBOR plus margin	Principal is repayable in full at the end of contract, in March 2021.
USD	75	LIBOR plus margin	Principal is repayable in full at the end of contract, in March 2021.
USD	100	6M LIBOR plus margin	Principal is repayable every 6 months, totalling 10 instalments, commencing in March 2016.
USD	600	1M LIBOR plus margin	Principal is repayable every month, totalling 327 instalments, commencing in February 2017.
EURO	190	3MEURIBOR plus margin	Principal is repayable every 12 months, totalling 6 instalments, commencing in 2017.

The Group has entered into derivative contracts on long-term loans to cover foreign currency exchange rates risks and interest rates risks as mentioned in Note 39.2 to Note 39.4.

26. Long-term Loans (Continued)

26.2 Debentures

Movements in debentures in Baht currency and foreign currencies for the year ended December 31, 2017 are as follows:

Unit: Million

	Consolidated financial statements			Total in Baht equivalent
	Currency			
	Baht	USD	JPY	
As at January 1, 2017	228,885.35	5,162.18	36,000.00	425,709.32
- Additions	15,000.00	-	-	15,000.00
- Repayments	(22,854.80)	(819.15)	(36,000.00)	(61,898.91)
- Gain on exchange rates	-	-	-	(8,187.67)
- Currency translation differences	-	-	-	(7,238.96)
- Others	(10.95)	3.98	-	179.81
As at December 31, 2017	221,019.60	4,347.01	-	363,563.59
- Current portion	(26,049.47)	(323.21)	-	(36,612.37)
Long-term debentures	<u>194,970.13</u>	<u>4,023.80</u>	<u>-</u>	<u>326,951.22</u>

Unit: Million

	Separate financial statements			Total in Baht equivalent
	Currency			
	Baht	USD	JPY	
As at January 1, 2017	136,433.47	1,436.45	36,000.00	199,357.21
- Repayments	(8,168.80)	(581.15)	(36,000.00)	(38,950.03)
- Gain on exchange rates	-	-	-	(4,091.10)
- Others	-	1.77	-	100.79
As at December 31, 2017	128,264.67	857.07	-	156,416.87
- Current portion	(18,549.47)	-	-	(18,549.47)
Long-term debentures	<u>109,715.20</u>	<u>857.07</u>	<u>-</u>	<u>137,867.40</u>

26. Long-term Loans (Continued)

26.2 Debentures (Continued)

Debentures - Baht currency

As at December 31, 2017, the details of unsecured, unsubordinated debentures in Baht currency of the Company are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
Baht	500	1,000	11	5.91	Interest is repayable every 6 months and mature in December 2018.
Baht	18,049	1,000	6 years 9 months 19 days	Year 1 - 4 : 4.00 Year 5 - 6 : 4.40 Year 7 : 5.50	Interest is repayable every 6 months and mature in November 2018.
Baht	1,000	1,000	15	5.90	Interest is repayable every 6 months and mature in May 2019.
Baht	15,000	1,000	6 years 11 months 24 days	Year 1 - 4 : 4.10 Year 5 - 6 : 5.10	Interest is repayable every 6 months and mature in May 2019.
Baht	10,000	1,000	6 years 9 months 15 days	Year 1 - 4 : 4.10 Year 5 - 6 : 5.10	Interest is repayable every 6 months and mature in May 2019.
Baht	22,000	1,000	6 years 11 months 19 days	4.75	Interest is repayable every 6 months and mature in November 2020.
Baht	4,118	1,000	15	5.95	Interest is repayable every 6 months and mature in August 2020.
Baht	1,030	1,000	15	6.53	Interest is repayable every 6 months and mature in May 2021.
Baht	10,000	1,000	6 years 11 months	4.00	Interest is repayable every 6 months and mature in November 2021.
Baht	4,200	1,000	6 years 27 days	3.50	Interest is repayable every 6 months and mature in November 2021.
Baht	4,000	1,000	12	4.50	Interest is repayable every 6 months and mature in February 2022.
Baht	10,000	1,000	10	6.58	Interest is repayable at the maturity date and mature in September 2023.

26. Long-term Loans (Continued)

26.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2017, the details of unsecured, unsubordinated debentures with the debenture holders' early redemption right of the Company in Baht currency are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
Baht	14,967	1,000	15	Year 1 - 5 : 5.00 Year 6 - 8 : 6.20 Year 9 - 15 : 6.80	Interest is repayable every 6 months and mature in March 2024. (The debenture holders can early redeem at the end of 8 th year.)
Baht	9,400	1,000	15	Year 1 - 5 : 4.25 Year 6 - 10 : 5.50 Year 11 - 15 : 5.75	Interest is repayable every 6 months and mature in July 2024. (The debenture holders can early redeem at the end of 10 th year.)
Baht	4,000	1,000	100	5.90	Interest is repayable every 6 months and mature in December 2110. (The debenture holders can early redeem at the end of 50 th and 75 th year and other cases specified in the regulations regarding the rights and obligations of the issuer and the debenture holders.)

26. Long-term Loans (Continued)

26.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2017, the details of unsecured, unsubordinated debentures in Baht currency of the subsidiaries are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
Baht	3,500	1,000	4	2.21	Interest is repayable at the maturity date and mature in September 2021.
Baht	1,500	1,000	7	2.82	Interest is repayable at the maturity date and mature in September 2024.
Baht	5,000	1,000	6	4.76	Interest is repayable at the maturity date and mature in August 2018.
Baht	3,364	1,000	5	4.50	Interest is repayable at the maturity date and mature in May 2019.
Baht	6,890	1,000	7	4.96	Interest is repayable at the maturity date and mature in May 2021.
Baht	2,500	1,000	15	4.625	Interest is repayable every 6 months and mature in March 2018.
Baht	5,000	1,000	10	4.80	Interest is repayable every 3 months and mature in May 2019.
Baht	8,200	1,000	5	3.91	Interest is repayable every 6 months and mature in June 2019.
Baht	11,400	1,000	15	4.82	Interest is repayable every 6 months and mature in June 2029.
Baht	1,942	1,000	10	5.50	Interest is repayable every 6 months and mature in June 2019.
Baht	3,000	1,000	5	4.13	Interest is repayable every 6 months and mature in March 2019.
Baht	3,000	1,000	7	4.61	Interest is repayable every 6 months and mature in March 2021.
Baht	7,000	1,000	10	4.84	Interest is repayable every 6 months and mature in March 2024.
Baht	10,000	1,000	7	4.50	Interest is repayable every 6 months and mature in August 2021.
Baht	3,000	1,000	12	4.80	Interest is repayable every 6 months and mature in April 2022.
Baht	7,500	1,000	15	5.05	Interest is repayable every 6 months and mature in March 2027.

26. Long-term Loans (Continued)

26.2 Debentures (Continued)

Debentures - Baht currency (Continued)

As at December 31, 2017, the details of unsecured, unsubordinated debentures with the debenture holders' early redemption right of the subsidiaries in Baht currency are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
Baht	10,000	1,000	4	3.05	Interest is repayable every 6 months and mature in August 2021.

Debentures - Foreign currency

As at December 31, 2017, the details of unsecured, unsubordinated debentures in foreign currency of the Company are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
USD	298	1,000	30	5.875	Interest is repayable every 6 months and mature in August 2035.
USD	571	1,000	30	4.50	Interest is repayable every 6 months and mature in October 2042.

26. Long-term Loans (Continued)

26.2 Debentures (Continued)

Debentures - Foreign currency (Continued)

As at December 31, 2017, the details of unsecured, unsubordinated debentures in foreign currency of the subsidiaries are as follows:

Currency	Principal (unit: million)	Par value (per share)	Period (years)	Interest rate percent (per annum)	Repayment terms
USD	323	1,000	5	3.707	Interest is payable every 6 months and mature in September 2018.
USD	700	1,000	10	5.692	Interest is payable every 6 months and mature in April 2021.
USD	490	1,000	30	6.35	Interest is payable every 6 months and mature in June 2042.
USD	1,000	1,000	10	4.25	Interest is payable every 6 months and mature in September 2022.
USD	500	1,000	10	3.625	Interest is payable every 6 months and mature in January 2023.
USD	500	1,000	20	4.875	Interest is payable every 6 months and mature in January 2023.

The Group has entered into derivative contracts on debentures to cover foreign currency exchange rates risks and interest rates risks as mentioned in Note 39.2 to Note 39.4.

26. Long-term Loans (Continued)

26.3 Liabilities under finance leases

Details of liabilities under finance leases as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Liabilities under finance leases				
- Within 1 year	1,028.09	1,030.98	766.97	735.85
- Over 1 year but not over 5 years	2,396.64	2,780.07	2,058.62	2,417.06
- Over 5 years	2,743.15	3,507.32	2,743.15	3,507.31
Future finance charges	<u>(415.12)</u>	<u>(488.34)</u>	<u>(380.83)</u>	<u>(453.45)</u>
Present value of liabilities under finance leases	<u>5,752.76</u>	<u>6,830.03</u>	<u>5,187.91</u>	<u>6,206.77</u>
Present value of liabilities under finance leases				
- Current liabilities	937.43	929.32	693.33	652.23
- Non-current liabilities	<u>4,815.33</u>	<u>5,900.71</u>	<u>4,494.58</u>	<u>5,554.54</u>
Total	<u>5,752.76</u>	<u>6,830.03</u>	<u>5,187.91</u>	<u>6,206.77</u>

26. Long-term Loans (Continued)

26.4 Maturities of long-term loans as at December 31, 2017 and 2016 are as follows:

Unit: Million Baht

	Consolidated financial statements					
	2017					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Liabilities Under Finance leases	Total
Within 1 year	13,742.71	15,141.42	26,049.47	10,562.90	937.43	66,433.93
Over 1 year but not over 5 years	51,316.90	27,351.64	129,215.78	55,570.48	2,187.41	265,642.21
Over 5 years	25,237.52	9,247.05	65,754.35	76,410.61	2,627.92	179,277.45
Total	90,297.13	51,740.11	221,019.60	142,543.99	5,752.76	511,353.59

Unit: Million Baht

	Consolidated financial statements					
	2016					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Liabilities Under Finance leases	Total
Within 1 year	17,970.11	2,561.11	22,820.12	19,775.03	929.32	64,055.69
Over 1 year but not over 5 years	59,834.93	41,376.95	134,777.01	36,617.82	2,546.45	275,153.16
Over 5 years	18,833.75	10,206.39	71,288.18	140,431.16	3,354.26	244,113.74
Total	96,638.79	54,144.45	228,885.31	196,824.01	6,830.03	583,322.59

26. Long-term Loans (Continued)

26.4 Maturities of long-term loans as at December 31, 2017 and 2016 are as follows: (Continued)

Unit: Million Baht

	Separate financial statements					Total
	2017					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Liabilities Under Finance leases	
Within 1 year	14.51	10,182.63	18,549.47	-	693.33	29,439.94
Over 1 year but not over 5 years	1,000.00	-	71,348.00	-	1,866.66	74,214.66
Over 5 years	-	6,753.49	38,367.20	28,152.20	2,627.92	75,900.81
Total	1,014.51	16,936.12	128,264.67	28,152.20	5,187.91	179,555.41

Unit: Million Baht

	Separate financial statements					Total
	2016					
	Baht Currency Loans	Foreign Currency Loans	Baht Currency Debentures	Foreign Currency Debentures	Liabilities Under Finance leases	
Within 1 year	4,143.52	-	8,136.00	11,208.06	652.23	24,139.81
Over 1 year but not over 5 years	7,014.51	11,160.77	85,897.47	-	2,200.29	106,273.04
Over 5 years	-	7,160.71	42,400.00	51,715.68	3,354.25	104,630.64
Total	11,158.03	18,321.48	136,433.47	62,923.74	6,206.77	235,043.49

27. Provisions for Employee Benefit

Movements in the present value of provisions for employee benefit are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
As at January 1	21,072.33	18,787.51	8,140.10	6,760.58
Service cost	1,676.40	1,519.84	681.99	534.21
Interest cost	596.11	547.23	274.96	225.65
Actuarial loss from provisions for post-employment benefit	1,023.08	1,136.39	65.27	863.03
Actuarial loss from provisions for other long-term employee benefit	103.01	54.82	6.16	12.67
Actual payment	(1,152.90)	(939.33)	(290.50)	(256.04)
Currency translation differences	(4.96)	(34.13)	-	-
As at December 31	<u>23,313.07</u>	<u>21,072.33</u>	<u>8,877.98</u>	<u>8,140.10</u>

Details of actuarial loss from provisions for post-employment benefit are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Loss from experience adjustments	170.81	817.50	-	789.21
(Gain) loss from changes in financial assumptions	290.24	(4,703.06)	(33.43)	(4,792.10)
Loss from changes in demographic assumptions	562.03	5,021.95	98.70	4,865.92
Total	<u>1,023.08</u>	<u>1,136.39</u>	<u>65.27</u>	<u>863.03</u>

27. Provisions for Employee Benefit (Continued)

Expenses recognized in the statements of income and comprehensive income for the years ended December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Service cost	1,676.40	1,519.84	681.99	534.21
Interest cost	596.11	547.23	274.96	225.65
Actuarial loss	1,126.09	1,191.21	71.43	875.70
Total	<u>3,398.60</u>	<u>3,258.28</u>	<u>1,028.38</u>	<u>1,635.56</u>
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Cost of sales and services	656.33	721.05	144.80	121.15
Selling and distribution expenses	209.48	71.09	202.99	66.25
Administrative expenses	1,484.57	1,319.84	612.53	584.12
Management remuneration	25.14	9.91	2.79	1.01
Other comprehensive loss	1,023.08	1,136.39	65.27	863.03
Total	<u>3,398.60</u>	<u>3,258.28</u>	<u>1,028.38</u>	<u>1,635.56</u>

Principal actuarial assumptions used in determining the present value of provisions for post-employment benefit of the Group are as follows:

	Annual percentage (%)	
	2017	2016
Discount rate	1.40 - 6.24	1.00 - 7.90
Inflation rate	1.00 - 6.50	1.00 - 7.86
Employee turnover rate	0.00 - 15.00	0.00 - 15.00
Mortality rate	based on the published statistics of each country	based on the published statistics of each country

27. Provisions for Employee Benefit (Continued)

Sensitivity analysis of principal actuarial assumption used in determining the present value of provisions for post-employment benefit of the Group as at December 31, 2017 and 2016 are as follows:

Unit: Million Baht

	Increase (decrease) in present value of the provisions	
	2017	2016
Discount rate		
Increase 1%	(3,237.50)	(2,916.65)
Decrease 1%	4,448.39	4,051.18

Weighted average duration of the provisions for post-employment benefit of the Group for the year 2017 is 18.90 years (for the year 2016: 16.55 years).

28. Long-term Provision for Decommissioning Costs

Movements in the provision for decommissioning costs which will occur in the future are as follows:

Unit: Million Baht

	Consolidated financial statements	
	2017	2016
As at January 1	72,751.56	75,746.67
- Additional provision	11,621.49	4,527.35
- Use during the year	(824.35)	(528.09)
- Reversal of non-occurred provision	(1,982.25)	(6,418.12)
- Currency translation differences	(6,701.01)	(576.25)
As at December 31	74,865.44	72,751.56
- Current portion	-	-
- Long-term portion	74,865.44	72,751.56

29. Other Non-current Liabilities

Other non-current liabilities as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016*	2017	2016*
Long-term other accounts payable	4,155.12	4,700.34	4,045.35	4,585.13
Provision for remuneration for the renewal of petroleum production	6,373.27	9,099.33	-	-
Long-term liability: Make-up	10,495.80	10,089.42	10,495.80	10,089.42
Deferred revenue	14,002.78	21,901.45	6,342.08	7,266.25
Others	2,817.26	3,484.71	985.38	977.42
Total	<u>37,844.23</u>	<u>49,275.25</u>	<u>21,868.61</u>	<u>22,918.22</u>

Long-term liability (Make-up) arises from the amount of the difference between the natural gas price for the committed gas volumes that the Company paid in advance and the natural gas price as at the date of taking the gas that exceeds the interest paid for the advance payment for untaken-up gas volume (Take-or-Pay). The Company has to distribute the difference to the parties who paid for the Take-or-Pay interest for the Yadana and Yetagun gas fields.

*The Company has regrouped the financial information to be comparable with the current financial statement presentation.

30. Share Capital

30.1 Share Capital - Authorized Shares

	Par Value (Baht per share)	The number of authorized shares (shares)	The value of authorized shares (Baht)
As at December 31, 2016	10	2,857,245,725	28,572,457,250
As at December 31, 2017	10	2,857,245,725	28,572,457,250

30.2 Share Capital - Issued and Paid-up Shares

	Number of issued and fully paid-up shares (shares)	Value of issued and fully paid-up shares (Baht)	Premium on Ordinary shares (Baht)	Total (Baht)
As at December 31, 2016	2,856,299,625	28,562,996,250	29,211,131,966	57,774,128,216
As at December 31, 2017	2,856,299,625	28,562,996,250	29,211,131,966	57,774,128,216

31. Reserves

31.1 Legal Reserve

Under the Public Limited Companies Act B.E. 2535, the Company is required to appropriate not less than 5% of its annual net profit as legal reserve until the reserve fund reaches 10% of the authorized share capital. The reserve is non-distributable. The Company's reserve has already reached the 10% of its authorized share capital, stipulated in the Act.

31.2 Reserve for Self-insurance Fund

Movements of reserves for self-insurance fund are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Balance as at January 1	1,174.39	1,145.11	1,174.39	1,145.11
Appropriated during the years	25.60	29.28	25.60	29.28
Balance as at December 31	1,199.99	1,174.39	1,199.99	1,174.39

The self-insurance fund was set up to provide insurance coverage for the Company's business. The Company appropriates net profit from operations and the interest income of the self-insurance fund each year to the fund.

32. Basic Earnings per Share

Basic earnings per share for the years ended December 31, 2017 and 2016 are as follows:

	Unit: Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Profit attributable to owners of the parent from continuing operations	135,187,012,229	94,039,732,600	104,473,797,974	70,808,045,526
Adjustment of profit	(1,670,431,798)	(1,251,699,863)	-	-
Profit for calculation of earnings per share from continuing operations	133,516,580,431	92,788,032,737	104,473,797,974	70,808,045,526
Profit (loss) for calculation of earnings per share from discontinued operations	(7,409,577)	569,345,640	-	-
Total profit	133,509,170,854	93,357,378,377	104,473,797,974	70,808,045,526
Number of weighted average of ordinary shares (shares)	2,856,299,625	2,856,299,625	2,856,299,625	2,856,299,625
Earnings per share from continuing operations (Baht/share)	46.74	32.48	36.58	24.79
Earnings per share from discontinued operations (Baht/share)	-	0.20	-	-
Earnings per share (Baht/share)	46.74	32.68	36.58	24.79

33. Sales and Service Income

Details of sales and service income for the years ended December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Oil products	1,176,823.54	955,098.93	1,063,863.70	937,419.90
Gas products	376,321.57	385,481.40	457,687.73	462,005.12
Petrochemicals products	384,770.99	318,839.37	28,899.40	32,955.13
Mining products	19,250.09	15,994.85	-	-
Non-oil businesses	13,639.54	11,773.68	8,564.63	6,825.20
Services	6,898.56	11,643.10	49.50	50.26
Others	18,017.78	20,014.71	315.47	137.88
Total	<u>1,995,722.07</u>	<u>1,718,846.04</u>	<u>1,559,380.43</u>	<u>1,439,393.49</u>

Sales and services income for the years ended December 31, 2017 and 2016 include sales to government agencies and state enterprises amounting to Baht 105,423.32 million and Baht 117,298.97 million in the consolidated financial statements, and Baht 90,145.20 million and Baht 106,279.70 million in the separate financial statements, respectively.

34. Other Income

Details of other income for the years ended December 31, 2017 and 2016 are as follows:

	Consolidated		Unit: Million Baht	
	financial statements		Separate	financial statements
	2017	2016	2017	2016
Transportation income	4,994.49	5,033.33	7,391.26	7,749.19
Dividend income	5,008.55	797.96	34,730.34	24,937.11
Interest income	8,630.25	5,625.35	4,072.99	4,521.72
Compensation for loan interest on advance payments for gas purchases	(2.09)	(2.00)	(2.09)	(2.00)
Gain on disposal of investments	2,673.81	1,887.21	1,950.95	-
Gain (loss) on derivatives	692.73	(8,981.50)	2,438.12	181.35
Others	6,270.77	5,322.30	4,418.39	3,375.50
Total	28,268.51	9,682.65	54,999.96	40,762.87

Compensation for loan interests on advance payments for gas purchases (Take-or-Pay) represents the compensation, which the Company received from the Electricity Generating Authority of Thailand (EGAT) and the Independent Power Plants (IPP) in order to absorb the interests on loans that the Company obtains to make advance payments for gas purchases.

35. Expenses by Nature

Details of expenses by nature for the years ended December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Changes in finished goods and work in process	(3,554.65)	(3,957.87)	(4,076.89)	(5,809.65)
Goods purchased and raw materials used	1,503,068.32	1,265,007.76	1,430,602.45	1,323,745.55
Executive remunerations (Note 9.10)	1,355.36	1,242.60	150.89	112.89
Staff costs	49,151.50	43,766.96	10,683.41	9,651.28
Outsourcing	8,943.99	8,434.78	7,860.15	7,654.19
Transportation	16,953.80	17,955.37	6,485.87	6,708.15
Depreciation and amortization	116,289.18	128,733.80	19,507.03	18,674.80
Repairment	14,238.46	15,179.11	3,328.61	3,566.93
Utilities	12,607.66	12,439.22	11,045.99	11,703.90
Rental fees and property insurance premium	9,276.83	9,119.56	3,570.71	3,759.54
Petroleum exploration expenses	1,744.62	2,595.14	-	-
(Reversal of) doubtful accounts	(149.73)	276.28	(34,459.12)	5,153.80
Loss on impairment of assets	24,847.64	7,203.00	33,781.36	793.45
Others	34,287.45	31,395.09	9,504.92	6,657.40
Total	<u>1,789,060.43</u>	<u>1,539,390.80</u>	<u>1,497,985.38</u>	<u>1,392,372.23</u>

36. Petroleum Royalties and Remuneration

Details of petroleum royalties and remuneration for the years ended December 31, 2017 and 2016 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2017	2016
Petroleum royalties	13,877.33	13,266.05
Special remuneration benefits	-	304.38
Total	<u>13,877.33</u>	<u>13,570.43</u>

37. Finance Costs

Details of finance costs for the years ended December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Interest expenses:				
Loans from financial institutions	10,897.35	8,949.88	856.10	1,040.92
Debentures	13,625.10	15,082.98	8,006.47	9,155.62
Liabilities under finance leases	109.52	124.01	86.47	95.96
Others	3,076.56	3,442.51	1.60	1.27
Other finance costs	<u>1,377.40</u>	<u>1,287.87</u>	<u>733.07</u>	<u>612.69</u>
Total	<u>29,085.93</u>	<u>28,887.25</u>	<u>9,683.71</u>	<u>10,906.46</u>

38. Operating Segments

These operating segments are consistent with the internal management reports provided to the Chief Operating Decision Maker (CODM), who makes decisions related to the allocation of resources to the segments and assesses their performance.

For management purposes, the Group is organized into business units based on types of products and services. The major segments of the Group are as follows:

Upstream Petroleum and Natural Gas Business Group

1. Petroleum exploration and production business:
The Group conducts petroleum exploration and production business both domestically and overseas. The Group is the operator and jointly invests with leading petroleum exploration and production companies. Most domestic projects are located in the Gulf of Thailand, while overseas projects are located in Asia Pacific, North America, Africa and the Middle East.
2. Natural gas business:
The Group conducts natural gas business including procurement, natural gas pipeline transmission, distribution, and natural gas separation. Products from the natural gas separation plants are used as feedstock for the petrochemical industry and as fuel in the household, transportation and industry sectors.
3. Coal business:
The Group conducts coal mining business, involving overseas exploration, production and distribution of coals.

Downstream Petroleum Business Group

1. Oil business:
The Group conducts marketing of petroleum products and lube oil in both domestic and overseas markets under an efficient operating system of procurement, storage, and distribution of products as well as the retail business at service stations.
2. International trading business:
The Group conducts international trading business including the import and export of petroleum and petrochemical products as well as other related products. This includes the price risk management and international chartering.
3. Petrochemical and Refining business:
The Group conducts refining business including the production and distribution of petroleum and petrochemicals products in both domestic and overseas markets.

Other operations of the Group are included in other segments, none of which constitutes a separately reportable segment.

The Group reorganized operating segment: PTT TANK by transferring from Oil business segments to Petrochemicals and Refining business segment and PTTGM by transferring from Petrochemicals and Refining business segment to Coal business segment. In addition, The Group transferred Coal business segment to be under the Upstream Petroleum and Natural Gas Business Group, according to the business operation and internal management reporting. For comparability, the Group also reorganized the operating segments in 2016.

38. Operating Segments (Continued)

Consolidated financial statements

For the year ended December 31, 2017

	Upstream petroleum and natural gas				Downstream petroleum			Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining				
Sales - others	20,882.31	326,587.98	19,250.09	539,951.90	500,248.27	588,597.24	204.28	-	1,995,722.07	
- related parties	126,842.35	139,050.22	325.05	7,343.88	435,367.41	362,130.15	4,750.27	(1,075,809.33)	-	
Net sales	147,724.66	465,638.20	19,575.14	547,295.78	935,615.68	950,727.39	4,954.55	(1,075,809.33)	1,995,722.07	
Gross profit (loss)*	125,450.52	100,450.00	7,998.46	34,723.87	3,079.59	144,131.22	(422.56)	(1,806.08)	413,605.02	
EBITDA	105,468.39	89,401.59	6,113.97	19,597.99	527.24	124,058.77	(314.40)	541.66	345,395.21	
Depreciation and amortization expenses	(55,769.82)	(18,887.94)	(1,890.34)	(4,143.70)	(33.31)	(34,519.22)	(1,044.85)	-	(116,289.18)	
Segment operating profit (loss)	49,698.57	70,513.65	4,223.63	15,454.29	493.93	89,539.55	(1,359.25)	541.66	229,106.03	
Share of profit from investments in joint ventures and associates	92.71	1,205.41	-	875.08	-	5,137.22	-	-	7,310.42	
Reversal of (loss) on impairment of assets	(18,504.89)	(101.85)	(4,229.09)	5.28	-	(2,017.09)	-	-	(24,847.64)	
Others	-	126.36	1.07	67.29	(0.23)	(281.09)	7,558.04	-	7,471.44	
Unallocated revenue and expenses:										
Interest income									8,630.25	
Gain on derivatives									692.73	
Gain on foreign exchange rate									13,650.64	
EBIT									242,013.87	
Profit for the year									184,610.02	

* Gross profit (loss) excludes depreciation and amortization expenses in cost of sales.

38. **Operating Segments (Continued)**

Consolidated financial statements

As at December 31, 2017

	Upstream petroleum and natural gas				Downstream petroleum			Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining				
Segment assets	584,407.86	442,302.28	26,218.20	114,904.93	93,781.17	748,140.88	147,540.85	-	2,157,296.17	
Inter-company assets	22,552.28	14,975.22	1,326.90	1,142.99	44,918.56	29,407.75	53,217.66	(167,541.36)	-	
Investments in joint ventures and associates	841.80	15,254.85	-	5,013.67	-	38,806.45	-	-	59,916.77	
Total segment assets	607,801.94	472,532.35	27,545.10	121,061.59	138,699.73	816,355.08	200,758.51	(167,541.36)	2,217,212.94	
Non-allocated assets									15,101.22	
Total assets									2,232,314.16	
Segment liabilities	219,605.72	87,372.23	5,004.35	34,488.14	110,722.15	298,036.47	192,733.64	-	947,962.70	
Inter-company liabilities	668.46	41,047.63	23,625.27	28,481.76	16,075.61	51,347.53	5,530.05	(166,776.31)	-	
Total segment liabilities	220,274.18	128,419.86	28,629.62	62,969.90	126,797.76	349,384.00	198,263.69	(166,776.31)	947,962.70	
Non-allocated liabilities									35,795.72	
Total liabilities									983,758.42	
Capital expenditure	49,911.49	24,094.42	1,941.52	9,685.63	193.90	34,977.64	865.00	-	121,669.60	

38. Operating Segments (Continued)

Consolidated financial statements

For the year ended December 31, 2016

	Upstream petroleum and natural gas				Downstream petroleum			Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining				
Sales - others	21,358.25	328,078.96	15,994.85	478,544.83	379,143.87	495,540.31	184.97	-	1,718,846.04	
- related parties	128,858.80	129,906.64	311.98	5,884.48	369,285.10	289,822.13	4,312.43	(928,381.56)	-	
Net sales	150,217.05	457,985.60	16,306.83	484,429.31	748,428.97	785,362.44	4,497.40	(928,381.56)	1,718,846.04	
Gross profit (loss)*	128,259.29	84,231.54	5,450.02	35,896.04	3,861.69	118,750.25	(412.44)	(1,872.98)	374,163.41	
EBITDA	107,464.39	72,082.29	4,177.81	22,917.63	2,865.25	102,622.92	669.73	(273.98)	312,526.04	
Depreciation and amortization expenses	(73,518.95)	(18,116.02)	(1,934.45)	(3,440.64)	(32.73)	(30,672.64)	(1,018.37)	-	(128,733.80)	
Segment operating profit (loss)	33,945.44	53,966.27	2,243.36	19,476.99	2,832.52	71,950.28	(348.64)	(273.98)	183,792.24	
Share of profit (loss) from investments in joint ventures and associates	73.71	1,203.99	(0.27)	896.87	-	1,969.21	(0.30)	-	4,143.21	
Reversal of (loss) on impairment of assets	(1,688.29)	(4,086.04)	(310.65)	35.78	-	(655.53)	(498.27)	-	(7,203.00)	
Others	872.10	418.19	1,171.37	16.42	6.27	59.61	(209.60)	-	2,334.36	
Unallocated revenue and expenses:										
Interest income									5,625.35	
Loss on derivatives									(8,981.50)	
Gain on foreign exchange rate									4,472.68	
EBIT									184,183.34	
Profit for the year									129,575.09	

* Gross profit (loss) excludes depreciation and amortization expenses in cost of sales.

38. Operating Segments (Continued)

Consolidated financial statements

As at December 31, 2016

	Upstream petroleum and natural gas				Downstream petroleum			Others	Elimination	Total
	Petroleum exploration and production	Natural gas	Coal	Oil	International trading	Petrochemicals and Refining				
Segment assets	653,353.23	411,369.32	32,336.26	96,666.99	96,337.48	714,989.76	160,423.45	-	2,165,476.49	
Inter-company assets	14,085.07	12,230.93	434.91	1,293.28	38,582.19	24,366.16	89,648.96	(180,641.50)	-	
Investments in joint ventures and associates	967.35	13,623.46	-	4,988.34	-	36,694.24	-	-	56,273.39	
Total segment assets	668,405.65	437,223.71	32,771.17	102,948.61	134,919.67	776,050.16	250,072.41	(180,641.50)	2,221,749.88	
Non-allocated assets									10,581.20	
Total assets									<u>2,232,331.08</u>	
Segment liabilities	229,580.96	88,524.87	4,596.39	31,301.25	117,536.15	295,155.49	250,018.57	-	1,016,713.68	
Inter-company liabilities	677.52	35,040.08	62,395.62	24,273.66	8,757.47	44,595.54	3,912.94	(179,652.83)	-	
Total segment liabilities	230,258.48	123,564.95	66,992.01	55,574.91	126,293.62	339,751.03	253,931.51	(179,652.83)	1,016,713.68	
Non-allocated liabilities									44,020.39	
Total liabilities									<u>1,060,734.07</u>	
Capital expenditure	41,067.07	25,958.73	1,039.34	7,673.76	152.86	36,317.66	823.50	-	113,032.92	

Pricing among business groups is based on normal market prices except for pricing among business groups within the Company, for which net market prices, after deducting management fees for petroleum terminals and operating fees, are applied.

39. Disclosure of Financial Instruments

The Group faces the principal financial risks associated with fluctuations in exchange rates, interest rates, and global oil market prices. The Group also has certain portions of sales, purchases and loans for operations nominated in foreign currencies which are paid in both fixed and floating interest rates. Accordingly, the management has entered into derivative contracts to cover these risks. The financial instruments used for hedging risks are forward foreign exchange contracts, interest rate swap contracts, cross-currency swap contracts, participating swap contracts etc. Risk exposure relating to global oil market prices is managed by forward oil contracts.

The department responsible for managing exposure to exchange rate risks and fluctuations in oil market prices has to report details of the costs and market prices of all financial instruments to management, including outstanding forward foreign exchange contracts and forward oil contracts. The reported information principally covers risk exposure from:

- foreign exchange rate risk
- currency risk
- currency and interest rate risk
- interest rate risk
- fluctuation in oil market price risk
- credit risk

39.1 Foreign Exchange Rate Risk

The Group has entered into forward foreign exchange contracts. The contract prices and exchange rates under the forward foreign exchange contracts as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht	
	Consolidated financial statements	
	2017	2016
Forward foreign exchange purchase contracts		
Baht 0.3088 - 0.3224 = 1 JPY	513.92	-
Baht 32.3700 - 36.1775 = 1 USD	70,122.18	-
Baht 34.6210 - 36.6700 = 1 USD	-	56,544.13
Baht 36.9500 - 40.3900 = 1 EUR	-	182.38
Baht 38.5400 - 40.3900 = 1 EUR	27.72	-
Baht 105.8000 - 106.8000 JPY = 1 USD	-	18.10
Forward foreign exchange sale contracts		
Baht 32.2340 - 38.3101 = 1 USD	51,918.08	-
Baht 34.6670 - 36.0880 = 1 USD	-	60,115.62
Baht 37.9516 - 37.9769 = 1 EUR	-	0.18
Baht 38.4370 - 38.6057 = 1 EUR	20.81	-

39. Disclosure of Financial Instruments (Continued)

39.1 Foreign Exchange Rate Risk (Continued)

The Group has entered into forward foreign exchange contracts. The contract prices and exchange rates under the forward foreign exchange contracts as at December 31, 2017 and 2016 are as follows: (Continued)

	Unit: Million Baht	
	Separate financial statements	
	2017	2016
Forward foreign exchange purchase contracts		
Baht 32.4747 - 33.1884 = 1 USD	21,116.03	-
Baht 34.9507 - 36.0642 = 1 USD	-	18,206.61
Forward foreign exchange sale contracts		
Baht 32.2340 - 38.3101 = 1 USD	41,036.11	-
Baht 34.6670 - 36.0200 = 1 USD	-	42,378.86

39.2 Currency Risk

The Group has entered into a cross-currency swap contracts of a long-term loan in the form of a participating swap contracts. The terms of such contract as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
JPY 23,000 million/USD 196.94 million	6,753.49	7,160.71	6,753.49	7,160.71

This contract has a maturity later than five years.

39. Disclosure of Financial Instruments (Continued)

39.3 Currency and Interest Rate Risk

The Group has entered into cross-currency swap contracts of other long-term investments, long-term loans and debentures. The terms of the outstanding cross-currency swap contracts as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Baht 2,636 million/USD 79.45 million	-	2,636.00	-	2,636.00
Baht 4,000 million/USD 120.55 million	4,000.00	4,000.00	4,000.00	4,000.00
Baht 3,000 million/USD 99.66 million	-	3,000.00	-	3,000.00
Baht 9,000 million/USD 285.42 million	9,000.00	9,000.00	9,000.00	9,000.00
Baht 2,500 million/USD 81.43 million	-	2,500.00	-	-
Baht 2,640 million/USD 85.59 million	-	3,081.50	-	-
Baht 5,000 million/USD 162.60 million	5,000.00	5,854.07	-	-
Baht 2,234.32 million/USD 64.10 million	-	2,234.32	-	-
Baht 2,113.43 million/USD 61.75 million	-	2,113.43	-	-
Baht 3,372.70 million/USD 100.00 million	3,372.70	-	-	-
Baht 6,777.40 million/USD 200.00 million	6,777.40	-	-	-
Baht 27,100 million/USD 844.85 million	27,100.00	27,100.00	-	-
USD 70 million/THB 2,331 million	2,276.02	-	2,276.02	-
USD 200 million/THB 6,880 million	6,502.92	-	6,502.92	-
JPY 36,000 million/USD 290.51 million	-	11,208.06	-	11,208.06
Total	<u>64,029.04</u>	<u>72,727.38</u>	<u>21,778.94</u>	<u>29,844.06</u>

39. Disclosure of Financial Instruments (Continued)

39.3 Currency and Interest Rate Risk (Continued)

The maturity periods of contracts are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Due within 1 year	16,500.00	23,006.81	9,000.00	16,844.06
Over 1 year but not over 5 years	36,129.04	33,020.89	12,778.94	9,000.00
Over 5 years	11,400.00	16,699.68	-	4,000.00
Total	<u>64,029.04</u>	<u>72,727.38</u>	<u>21,778.94</u>	<u>29,844.06</u>

39.4 Interest Rate Risk

The Group has entered into interest rate swap contracts of long-term loans and debentures. The terms of the outstanding interest rate swap contracts as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Interest rate swap contracts to swap floating for fixed rate in USD currency	-	10.00	-	-
Interest rate swap contracts to swap fixed for floating rate in USD currency	16,592.98	35,795.55	16,266.17	35,795.55
Interest rate swap contracts to swap floating for fixed rate in Baht currency	2,500.00	10,020.00	-	4,000.00
Interest rate swap contracts to swap fixed for floating rate in Baht currency	8,000.00	4,000.00	8,000.00	4,000.00
Interest rate swap contracts to swap floating for fixed rate in JPY currency	7,372.62	7,900.22	-	-
Interest rate swap contracts to swap floating for fixed rate in EUR currency	500.00	-	-	-
Total	<u>34,965.60</u>	<u>57,725.77</u>	<u>24,266.17</u>	<u>43,795.55</u>

39. Disclosure of Financial Instruments (Continued)

39.4 Interest Rate Risk (Continued)

The maturity periods of contracts are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Due within 1 year	3,426.61	4,520.00	-	1,500.00
Over 1 year but not over 5 years	24,299.42	47,012.00	22,266.17	42,295.55
Over 5 years	7,239.57	6,193.77	2,000.00	-
Total	<u>34,965.60</u>	<u>57,725.77</u>	<u>24,266.17</u>	<u>43,795.55</u>

39.5 Fluctuations in Oil Market Price Risk

The Group has entered into oil price derivatives. As at December 31, 2017, the volume of oil under those contracts that mature during January to December 2018 is 16.41 million barrels in the consolidated financial statements and 0.91 million barrels in the separate financial statements (as at December 31, 2016: 19.26 million barrels in the consolidated financial statements and 3.12 million barrels in the separate financial statements).

39.6 Credit Risk

Credit risk arises when customers do not comply with the terms and conditions of credit agreements, causing financial losses to the Company. However, the Company has managed risk by adjusting its credit policies according to the current economic situation, focusing on developing financial instruments by cooperating with financial institutions to support credit facilities provided to customers in order to buy the Company's products, such as the Dealer Financing and Supply Chain Credit project, the trade credit insurance, and the Payment card and Fleet card, aims to reduce credit risks of the Company. The Company also reduces credit risk by determining procedures for risk prevention and mitigation, including credit rating for all trading partners of the Company.

40. Fair Value Measurement

The fair value of the current portions of financial assets and liabilities approximates the carrying value due to the relatively short-term maturity of these financial instruments.

The fair value of long-term lending loans and borrowings carrying interest at market rates approximates the carrying values.

As at December 31, 2017 and 2016, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows:

As at December 31, 2017

Unit: Million Baht

	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	4,243.93	-	-	4,243.93
Mutual funds	1,113.97	-	170.86	1,284.83
Debt instruments	-	12,073.65	-	12,073.65
Derivatives				
Foreign currency forward contracts	-	2,445.39	-	2,445.39
Cross-currency swap contracts	-	1,749.74	-	1,749.74
Interest rate swap contracts	-	28.06	-	28.06
Commodity swap contracts	645.98	35.77	-	681.75
Other derivative contracts	-	826.97	-	826.97
Financial liabilities measured at fair value				
Derivatives				
Foreign currency forward contracts	0.64	3,043.35	-	3,043.99
Cross-currency swap contracts	-	801.56	-	801.56
Interest rate swap contracts	-	70.38	-	70.38
Commodity swap contracts	2,293.09	836.80	-	3,129.89
Other derivative contracts	-	13.37	-	13.37

40. Fair Value Measurement (Continued)

As at December 31, 2017 and 2016, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2016

Unit: Million Baht

	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	6,709.86	-	-	6,709.86
Mutual funds	11,719.17	-	-	11,719.17
Debt instruments	-	5,410.51	-	5,410.51
Derivatives				
Foreign currency forward contracts	-	957.36	-	957.36
Cross-currency swap contracts	-	618.97	-	618.97
Interest rate swap contracts	-	200.16	-	200.16
Commodity swap contracts	254.61	116.14	-	370.75
Other derivative contracts	-	378.56	-	378.56
Financial liabilities measured at fair value				
Derivatives				
Foreign currency forward contracts	-	139.95	-	139.95
Cross-currency swap contracts	-	6,330.63	-	6,330.63
Interest rate swap contracts	-	312.77	-	312.77
Commodity swap contracts	1,742.39	4,109.89	-	5,852.28
Other derivative contracts	-	45.26	-	45.26

40. Fair Value Measurement (Continued)

As at December 31, 2017 and 2016, the Group had the assets and liabilities that were measured at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2017

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	3,983.75	-	-	3,983.75
Mutual funds	378.49	-	170.86	549.35
Derivatives				
Cross-currency swap contracts	-	751.08	-	751.08
Interest rate swap contracts	-	3.43	-	3.43
Financial liabilities measured at fair value				
Derivatives				
Cross-currency swap contracts	-	86.70	-	86.70
Interest rate swap contracts	-	45.19	-	45.19

As at December 31, 2016

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Available-for-sale investments				
Equity instruments	6,549.82	-	-	6,549.82
Mutual funds	11,566.43	-	-	11,566.43
Derivatives				
Cross-currency swap contracts	-	618.97	-	618.97
Interest rate swap contracts	-	99.67	-	99.67
Financial liabilities measured at fair value				
Derivatives				
Cross-currency swap contracts	-	1,702.63	-	1,702.63
Interest rate swap contracts	-	212.29	-	212.29

40. Fair Value Measurement (Continued)

As at December 31, 2017 and 2016, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows:

As at December 31, 2017

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	15,195.46	-	15,195.46
Investment properties	-	12,951.15	9,829.62	22,420.77
Derivatives				
Foreign currency forward contracts	-	826.40	-	826.40
Foreign exchange option contracts	-	803.06	-	803.06
Commodity swap contracts	-	38.01	-	38.01
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	212,309.87	-	212,309.87
Debentures - foreign currencies	-	131,466.36	-	131,466.36
Derivatives				
Foreign currency forward contracts	-	428.58	-	428.58
Commodity swap contracts	-	43.25	-	43.25

40. Fair Value Measurement (Continued)

As at December 31, 2017 and 2016, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2016

	Unit: Million Baht			
	Consolidated financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investment properties	-	12,859.24	10,126.40	22,985.64
Derivatives				
Foreign currency forward contracts	-	53.90	-	53.90
Foreign exchange option contracts	-	648.61	-	648.61
Commodity swap contracts	-	136.21	-	136.21
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	250,494.92	-	250,494.92
Debentures - foreign currencies	-	212,803.71	-	212,803.71
Derivatives				
Foreign currency forward contracts	-	46.53	-	46.53
Commodity swap contracts	-	974.78	-	974.78

40. Fair Value Measurement (Continued)

As at December 31, 2017 and 2016, the Group had the assets and liabilities that were disclosed at fair value using different levels of inputs as follows: (Continued)

As at December 31, 2017

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investments in long-term debt securities	-	15,195.46	-	15,195.46
Investment properties	-	10,964.62	619.10	11,583.72
Derivatives				
Foreign currency forward contracts	-	817.24	-	817.24
Foreign exchange option contracts	-	803.06	-	803.06
Commodity swap contracts	-	38.01	-	38.01
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	144,110.09	-	144,110.09
Debentures - foreign currencies	-	34,228.14	-	34,228.14
Derivatives				
Foreign currency forward contracts	-	428.42	-	428.42
Commodity swap contracts	-	43.25	-	43.25

As at December 31, 2016

Unit: Million Baht

	Separate financial statements			
	Level 1	Level 2	Level 3	Total
Financial assets disclosed at fair value				
Investment properties	-	11,227.50	719.49	11,946.99
Derivatives				
Foreign currency forward contracts	-	53.90	-	53.90
Foreign exchange option contracts	-	648.61	-	648.61
Commodity swap contracts	-	136.21	-	136.21
Financial liabilities disclosed at fair value				
Debentures - Baht currency	-	151,921.49	-	151,921.49
Debentures - foreign currencies	-	63,394.46	-	63,394.46
Derivatives				
Foreign currency forward contracts	-	46.53	-	46.53
Commodity swap contracts	-	60.28	-	60.28

40. Fair Value Measurement (Continued)

Fair value valuation techniques and inputs for Level 2 valuation

The fair values of debt securities and derivatives were determined based on discounted future cash flow and valuation model techniques, using an appropriate risk-adjusted discount rate. Most of the inputs used for the valuation are observable in the relevant markets such as spot rates of foreign currencies, yield curves of the respective currencies, interest rate yield curves, bonds yield curves, and commodity price yield curves, etc.

The fair value of land categorized as investment property was determined by independent property appraisers under the market approach.

Fair value valuation techniques and inputs for Level 3 valuation

The fair values of available-for-sale investments in mutual funds were determined based on the net asset value as reported in the Capital Call Statement and translated by using the closing exchange rate.

The fair values of land and buildings for rent categorized as investment property were determined using the income approach. The inputs used for the valuation consisted of the rate of return and finance costs.

During the year, there was no transfer within the fair value hierarchy.

41. Subordinated Capital Debentures

In July 2017, the Group has carried out a capital structure management with respect to USD subordinated capital debentures as follows:

	Consolidated financial statements					
	Unit : Million USD			Unit : Million Baht		
	Before restructuring	(redeemed)/reissued	After restructuring	Before restructuring	(redeemed)/reissued	After restructuring
PTTEP						
Issuance and offering value	1,000.00	(854.69)	145.31			
Net value from finance cost	995.53	(850.88)*	144.65	32,206.55	(27,526.73)*	4,679.82
PTTEP TC						
Issuance and offering value	-	854.69**	854.69			
Net value from finance cost	-	853.59	853.59	-	28,572.58	28,572.58
Total						
Issuance and offering value	1,000.00	-	1,000.00			
Net value from finance cost	995.53	2.71	988.24	32,206.55	1,045.85	33,252.40

* PTTEP redeemed the subordinated capital debentures with the payment of USD 874.31 million (Baht 28,310.98 million)

** PTTEP Treasury Center Co., Ltd. (PTTEP TC), a subsidiary of PTTEP, issued and offered the subordinated capital debentures, fully guaranteed by PTTEP, in the same amount as what was redeemed by PTTEP. The subordinated capital debentures will be settled upon the liquidation of the issuing company (perpetual), or as per the redemption rights stipulated in the offering memorandum. The subordinated capital debentures were issued in the two following series:

- Series 1: Issued and offered on July 17, 2017 in the amount of USD 500 million with an initial fixed interest rate of 4.6% until July 17, 2022. The right to early redeem in full amount shall be first exercisable on July 17, 2022. Subsequent interest rates and redeemable rights are stipulated in the offering memorandum.
- Series 2: Issued and offered on July 26, 2017 in the amount of USD 354.69 million with an initial fixed interest rate of 4.875% until June 18, 2019. The right to early redeem in full amount shall be first exercisable on June 18, 2019. Subsequent interest rates and redeemable rights are stipulated in the offering memorandum.

These subordinated capital debentures pay the distributions semi-annually. However, PTTEP TC may elect to defer the payment of a distribution at its sole discretion without any limit as to the number of times. The deferred distributions will not bear additional interest. In case that they are deferred from and including the date falling 12 months from the date on which it is first deferred, they will be constituted as the principal of the securities. However, if PTTEP TC elects to defer distributions of those 2 series, both PTTEP, as a guarantor, and PTTEP TC are restricted from declaring any dividends. Also, they will procure that no distribution or other payment is declared, paid or made on any of its Junior Securities or its Parity Securities. Additionally, both PTTEP and PTTEP TC will be restricted from redeeming, reducing, cancelling, or buying-back of its Junior Securities or its Parity Securities. These subordinated capital debentures are legally subordinated to all other capital debentures issued by PTTEP TC, except for equity.

42. Dividend Payment

On April 28, 2017, at the 2017 Annual General Shareholders' Meeting of the Company, the shareholders approved dividend payments for the year 2016 of Baht 16.00 per share, approximately amounting to Baht 45,698.58 million. On September 16, 2016, the Company paid an interim dividend for the operating results of the first half of 2016 at Baht 6.00 per share for 2,855,946,746 shares, amounting to Baht 17,135.68 million. The remaining dividends were paid as follows:

Dividends	For operating period	Dividend payment rate (Baht/share)	Number of shares (shares)	Total dividend (million Baht)	Payment date
For the year 2016	July 1, 2016 - December 31, 2016	10.00	2,856,290,445	28,562.90	May 15, 2017

On August 18, 2017, at the Board of Directors Meeting No. 8/2017 of the Company, the Board approved interim dividend payments for the first half of 2017 as follows:

Dividends	For operating period	Dividend payment rate (Baht/share)	Number of shares (shares)	Total dividend (million Baht)	Payment date
Interim	January 1, 2017 - June 30, 2017	8.00	2,856,261,256	22,850.09	September 15, 2017

43. Promotional Privileges

The Company has been granted promotional privileges for the following activities from the Board of Investment (BOI) under the Investment Promotion Act, B.E. 2520

- ◆ the Ethane Separation Plant project
- ◆ the Gas Separation Plant Unit 6 project
- ◆ the Fourth Rayong-Kangkoi gas pipeline project
- ◆ the Thai-Myanmar onshore gas pipeline project
- ◆ the Nakhon Sawan gas pipeline project
- ◆ the Nakhon Ratchasima gas pipeline project
- ◆ the Fifth onshore gas pipeline project
- ◆ the Ratchaburi - Wang Noi 6 gas metering station to Ratchaburi province gas pipeline project
- ◆ Expansion of the First onshore gas pipeline project covering Rayong Chonburi and Saraburi new laid pipelines.

The promotional privileges include:

- ◆ an exemption from import duties on machinery approved by the BOI
- ◆ an exemption from corporate income tax on net income from the promoted business for periods of eight years starting from the date on which the income is first derived from such operations.

During the year 2017, the Company has exercised the privileges for the Ethane Separation Plant project and the Gas Separation Plant Unit 6 project.

The sales and service income of the Company from the promoted and non-promoted businesses for the years ended December 31, 2017 and 2016 are as follows:

	Unit: Million Baht	
	Separate financial statements	
	2017	2016
Promoted businesses	126,171.57	120,922.78
Non-promoted businesses	1,433,208.86	1,318,470.71
Total	<u>1,559,380.43</u>	<u>1,439,393.49</u>

43. Promotional Privileges (Continued)

Some subsidiaries received the following promotional privileges from the BOI under the Investment Promotion Act, B.E. 2520

TOP has been granted privileges for its oil refinery, power and steam generation, petroleum product production, chemical product production, ethanol product production, marine transportation, offshore crude oil unloading facilities and industrial zone. The promotional privileges include exemption from import duties and tax on the machinery and equipment approved by the BOI, exemption from corporate income tax on the net income from the promoted business for seven to eight years starting from the date on which income is first derived from such operations or eight years from the date on which the income is received subsequent to when the privileges were granted, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

PTTGC has been granted privileges for its production of upstream, intermediate and downstream petrochemical, utilities and production support facilities, jetty for loading and storage of liquid product and transportation by marine vessels, petroleum product production, research and development of polymer products and chemical formula, lab testing services and refinery. The promotional privileges include exemption from import duties and tax on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business up to 100% of its investment excluded the cost of land and working capital for eight years starting from the date on which income is first derived from such operations and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

GPSC has been granted privileges for its production of electricity, steam, water and chilled water. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

IRPC has been granted privileges for its manufacture of Acetylene Black, Compounded Plastic, the cogeneration and steam power plant project (CHP), Propylene project (PRP), Blown Film project, Recovery from Purge Gas at PP Plant project, EBSM Upgrading for ABS Specialties project (EBSM), Multi Product Pipeline project (MPPL), Polypropylene Resin ("PPE") project, High Pressure HDPE Compound project and Investment project in Industrial zone. The promotional privileges include exemption from import duties and tax on materials and necessary parts including machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for five to eight years starting from the date on which income is first derived from such operations, a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption, and double deduction of logistics, electricity and water expenses for a period of ten years since income is first derived from such operations.

PTTLNG has been granted promotional privileges, Category 7.1: Public utilities and basic services, for its liquefied natural gas transportation business. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business for eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five years starting from the expiry date of the corporate income tax exemption.

43. Promotional Privileges (Continued)

Some subsidiaries received the following promotional privileges from the BOI under the Investment Promotion Act, B.E. 2520 (Continued)

PTT TANK has been granted promotional privileges, Category 7.1: Public utilities and basic services for its loading/unloading facilities for cargo ship business. The promotional privileges include exemption from import duties on the machinery approved by the BOI, exemption from corporate income tax on the net income from the promoted business up to 100% of its investment for eight years starting from the date on which income is first derived from such operations, and allow to deduct loss carry forward incurred during tax exemption period from net income incurred after tax exemption period for five year starting from expiry date of the corporate income tax exemption.

PTTGM has been granted promotional privileges Category 6.11: Manufacture of petrochemicals for its manufacture of Polymethyl Methacrylate (PMMA) production business. The promotional privileges include exemption from import duties and tax on the machinery approved by the BOI, exemption from corporate income tax of the net income from the promoted business up to 100% of its investment exclude the cost of land and working capital for eight years starting from the date on which income is first derived from such operations, and a 50% reduction of corporate income tax on the net income from the promoted business for five year starting from the expiry date of the corporate income tax exemption.

As promoted company, the Group must comply with certain terms and conditions prescribed in the promotional certificates.

44. Proceeding regarding the Central Administrative Court's Ordering Temporary Suspension of Projects in Map Ta Phut Area

On June 19, 2009, the Stop Global Warming Association and a group of individuals totaling 43 parties (the Petitioners) filed a complaint with the Central Administrative Court (the Court) as the black case No. 908/2552, against eight government agencies, together with a motion seeking the Court injunction to temporarily suspend all operations and activities of 76 industrial projects in the Map Ta Phut area in Rayong Province.

On September 29, 2009, the Court ordered the temporary injunction by requiring the eight accused government agencies to issue the order to temporarily suspend all 76 projects pending the Court's judgment or order otherwise, except for those projects or activities which received the permits before the effective date of the Constitution of Kingdom of Thailand B.E. 2550 or which were not required to prepare the Environmental Impact Assessment (EIA) reports pursuant to the Ministerial Announcement of Ministry of Natural Resources and Environment dated June 16, 2009. 25 projects of the Group were under the suspension order, and three of those 25 projects belonged to the Company.

On October 16, 2009, the Group, as an interested person, submitted a motion to appeal the Court's order to the Supreme Administrative Court.

On December 2, 2009, the Supreme Administrative Court issued an order No. 592/2552 amending the Court's injunction by requiring the eight accused government agencies to order the temporary suspension of all projects or activities listed in the complaint except for 11 projects, which clearly, according to the Supreme Administrative Court, did not severely affect the community but were projects intended to mitigate pollution or only additional installation to the existing projects. Among those 11 projects, seven of them belonged to the Group, comprising one project of the Company and six projects of the other companies in the Group. Two projects of the Company were still under the Court's order to suspend.

On December 18, 2009, the public prosecutor submitted the answer rejecting all allegations in the complaint.

On September 2, 2010, the Court rendered a judgment revoking the permit of the projects listed in the complaint which, according to the law, were categorized as project that might severely affect the community and did not comply with the procedures set forth in Section 67 paragraph 2 of the Constitution, B.E. 2550. The revocation was effective as of the date of the judgment. One project of the Group is within the scope of the judgment.

On October 1, 2010, the 43 prosecutors appealed the Court's judgment to the Supreme Administrative Court. On December 7, 2010, the eight accused government agencies by the public prosecutors submitted a reply to the appeal. The appeal is currently under the consideration of the Supreme Administrative Court.

45. Commitments and Contingent Liabilities

Details of significant changes in commitments and contingent liabilities are as follows:

45.1 Details of commitments to subsidiaries, joint ventures, associates and other related companies are as follows:

45.1.1 The Company has provided loans to its subsidiaries and joint ventures with credit limits totalling Baht 139,119.64 million. As at December 31, 2017, the Company made these loans payments to its subsidiaries and joint ventures totalling Baht 49,952.83 million. The remaining credit limits were Baht 89,166.81 million.

45.1.2 The Company entered into the Sponsor Support Agreements with subsidiaries and joint ventures with credit limits equal to the sum of the loan obligations to financial institutions of such subsidiaries and joint ventures. Under these agreements, as at December 31, 2017, the Company had commitments of USD 56.91 million or equivalent to Baht 1,908.33 million.

45.1.3 The Company had obligations under the Shareholder Agreements to pay for ordinary shares in proportion to its shareholding. As at December 31, 2017, the Company had remaining obligations amounting to Baht 4,292.76 million.

45.2 Commitments under operating leases - the Group as a lessee, the future minimum lease payments under uncancellable operating leases as at December 31, 2017 and 2016 are as follows:

	Unit: Million Baht			
	Consolidated financial statements		Separate financial statements	
	2017	2016	2017	2016
Within 1 year	2,210.19	2,195.82	84.07	66.39
Over 1 year but not over 5 years	5,831.53	5,046.53	398.81	315.60
Over 5 years	7,038.09	5,681.37	1,419.47	1,131.64
Total	15,079.81	12,923.72	1,902.35	1,513.63

45.3 As at December 31, 2017, the Group had capital commitments of Baht 40,624.65 million in the consolidated financial statements.

45.4 As at December 31, 2017, the Group had outstanding letters of credit of Baht 26,442.68 million in the consolidated financial statements and Baht 4,796.20 million in the separate financial statements.

45.5 As at December 31, 2017, the Group had contingent liabilities in the form of letter of guarantee amounting to Baht 28,097.69 million in the consolidated financial statements and Baht 318.30 million in the separate financial statements.

45. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 45.6 A subsidiary entered into a contract to sell a product to the Company and the Company entered into a contract to resell the same product to a listed company. The term of the two contracts was 15 years, expiring on January 31, 2012. Before the expiration of the contract, the subsidiary notified the Company that the contract would not be renewed. Consequently, without product to resell, the Company had to notify the listed company that the contract would also not be renewed. The Company's notice was served to the listed company in accordance with the terms and conditions set forth in the contract. On December 3, 2009, the listed company submitted claims with the Thai Arbitration Institute (the Institute) requesting the Company and the subsidiary, as the seller and the supplier, respectively, to comply with the contracts by continuing to sell the product to the listed company or be jointly liable to pay damages.

On February 10, 2010, the subsidiary submitted motion with the Institute asking to dismiss the claims against it from the case list. The Institute issued an order to dismiss the claims relating to the subsidiary.

The Company forwarded the case to the Office of the Attorney General to submit a defense to the Institute. On April 28, 2010, the public prosecutor submitted the defense with the Institute for the Company. The tribunal finished the witness examination. Consequently, on March 25, 2016, the tribunal ruled that the Company make a partial payment for compensations to the listed company. However, the Company was of the opinion that the arbitral award might be both factually and legally inconsistent. Therefore, the Company could exercise its legal right by filing a motion with the court requesting the arbitral award to be revoked. On June 30, 2016, the Company by the public prosecutor filed a motion to revoke the arbitral award with the Civil Court. Currently, this case is under the consideration of the Civil Court. Subsequently, on December 16, 2016, the listed company submitted a motion with the Civil Court asking for the enforcement of the arbitral award. The Company by the public prosecutor submitted the objection with the Civil Court. Currently, the case is under the consideration of the Civil Court.

45. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 45.7 On May 26, 2010, the contractor for an onshore natural gas pipeline construction project (the “Contractor”) submitted claims to the Thai Arbitration Institute (the Institute) seeking overdue payment and damages for the work performed in the aforementioned project from the Company. The Company, however, considered that the submission of the claims was incompliant with the dispute resolution procedure agreed upon the contract. Therefore, the Company filed an opposition to the Contractor’s claim submission with the Institute and reserved right to protest such contractually incompliant claim submission in the arbitration procedure. After the claim submission, the Central Bankruptcy Court ordered the Contractor to be under an absolute receivership which rendered the official receiver to have sole power in any litigation pertaining to the Contractor’s assets. Subsequently, the Contractor’s official receiver has petitioned the Institute to substitute the Contractor in the dispute against the Company. Regarding the Contractor’s bankruptcy case, the Company submitted a motion for receiving a debt payment in accordance with the law as a creditor. With respect to the arbitration process, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Subsequently, the arbitral tribunal rendered an award ordering the Company to partially pay for the Contractor’s claims. However, the Company considered that the arbitral award is materially both factually and legally inconsistent. The Company, therefore, filed a motion to revoke the arbitral award, while the contractor submitted a motion with the Civil Court to enforce the arbitral award. On October 17, 2017, the Civil Court delivered a judgement to enforce the arbitral award whereby some penalty amounts were reduced. However, the Company is preparing to file an appeal of the judgement of the Civil Court with the Supreme Court.

On September 8, 2010, the Contractor by the official receiver submitted another claim to the Institute seeking overdue payment and damages from the Company for the work performed in connection with another pipeline construction project. The Company, however, considered that the submission of the claims was incompliant with the dispute resolution procedure agreed upon the contract. Therefore, the Company filed an opposition to the Contractor’s claim submission with the Institute and reserved the right to protest such contractually incompliant claim submission in the arbitration procedure. In contention against the alleged claims, the Company submitted the defense together with counterclaims seeking damages from the Contractor. Currently, the arbitral tribunal has been appointed and the case is now under the consideration of the tribunal.

- 45.8 On February 25, 2014, the contractor for an on-shore natural gas pipeline construction project (the “Contractor”) filed a lawsuit against the Company with the Civil Court on the grounds of wrongful termination and breach of contract and claimed for outstanding payment of the work and damages. On the contrary, the Company considered that all of the Company’s actions have been in accordance with the terms and conditions of the contract. Therefore, the Company forwarded the case to the Office of the Attorney General for consideration to arguing the case for the Company and the prosecutor has submitted the answer with the Court. Consequently, the Civil Court ordered the case be transferred to the Central Administrative Court for consideration and judgment because the Civil Court and the Central Administrative Court has the corresponding opinions that this case was an administrative case. The Civil Court transferred this case to the Central Administrative Court. Currently, the case is under the consideration of the Central Administrative Court.

45. Commitments and Contingent Liabilities (Continued)

Details of significant changes in commitments and contingent liabilities are as follows: (Continued)

- 45.9 On August 26, 2010, PTTEP Australasia (PTTEP AA) received a letter from the Government of Indonesia (GoI) claiming compensation relating to an incident in 2009 when oil and natural gas leaked from a well in PTTEP AA's Montara project in Australian territory in the Timor Sea. PTTEP AA rejected the claim on the basis that the evidence provided by the GoI was considered unproven and unsubstantiated. No verifiable scientific evidence was ever provided to support the claim.

On March 11, 2016, PTTEP AA received a letter from a firm of Australia lawyers representing a group of West Timorese seaweed farmers, notifying PTTEP AA of their intention to commence a legal action for compensation relating to the incident. Subsequently, on August 9, 2016 PTTEP AA was notified of a claim made in the Sydney Registry of the Federal Court of Australia seeking damages on behalf of a group of seaweed farmers (Class Action). The Statement of Claim as filed does not quantify the claim, and no supporting evidence has yet been presented to the court. PTTEP AA has appointed lawyers and is defending the claim.

On July 14, 2017, the Company and PTTEP received the official statement of claim filed by the Ministry of Environment and Forestry on behalf of GoI to the Indonesian Court seeking approximately USD 2.1 billion for damages related to the incident, however, the Company has not been the operator of Montara Project. The Company and two companies of PTTEP Group will proceed to defend against this lawsuit based on the facts and matters of law.

Currently, PTTEP considers that the claims from representative of West Timorese seaweed farmers and the GoI related to Montara oil spill incident remain unproven due to insufficient evidence to support the claim.

- 45.10 During the third quarter of 2014, the number of people in Rayong filed several lawsuits with the Civil Court and Rayong Provincial Court against PTTGC to claim the extra compensation from oil spill incident and to perform the rehabilitation of the sea and natural environmental recovery. Some cases have been dismissed and some cases have been passed a judgement by the Civil Court on August 25, 2016 ordered PTTGC to compensate for damages, including interest and rehabilitation, of approximately Baht 11.26 million. PTTGC has appealed on February 17, 2017. Nevertheless, there are remaining cases that are still on trial by Rayong Provincial Court, in which PTTGC believes that the outcome of the consideration will not result in material damage and material financial impact to PTTGC. Therefore, PTTGC has not provided against any loss that may result from this matter in the financial statements.

46. Other Event

46.1 On April 4, 2016, the Ombudsman of Thailand submitted a complaint to the Administrative Court against the Minister of Finance, the Minister of Energy, the Company and other defendants as a black case No. 510/2559, requesting the Court as follows:

- 1) To revoke the Cabinet Resolutions on December 18, 2007 and August 10, 2010.
- 2) To order the Minister of Finance, the Minister of Energy and the Company to conduct a segregate and transfer of net assets according to the plaintiff's allegation as of September 30, 2001 amounting to Baht 68,569.69 million, including other compensations and benefits.
- 3) To revoke the segregate of public assets and the preferential rights to establish the gas pipeline system according to the plaintiff's allegation.

On May 26, 2016, the Administrative Court ordered the Company to submit a defense, responding to the particular issue that was whether the Company completely transferred the assets of the Petroleum Authority of Thailand (the tenth defendant), which were public assets, to the first defendant (the Minister of Finance) in accordance with the Cabinet Resolution on December 18, 2007. The Company had the public prosecutor prepared the statement and additional statement for submission to the Administrative Court. Currently, the case is under the consideration of the Administrative Court.

Nevertheless, on December 14, 2007, the Supreme Administrative Court in a red case No. Fo. 35/2550, ordered the defendants to jointly segregate the public assets to the Minister of Finance, in accordance with the judgment. Therefore, on December 18, 2007, the Cabinet acknowledged the aforesaid judgment and assigned the Minister of Finance and the Minister of Energy to jointly segregate the public assets to comply with the judgment. Consequently, on December 26, 2008, the Supreme Administrative Court declared that the defendants had completely complied with the judgment of the Court. Furthermore, the plaintiff and the co-plaintiffs had submitted complaints regarding such segregation of public assets to the Court for four times but the Court ordered to dismiss such complaints and reaffirmed that the judgment of the Supreme Administrative Court in the red case No. Fo. 35/2550 was completed. Consequently, on August 10, 2010, the Cabinet acknowledged the conduct followed the Supreme Administrative Court's judgment in accordance with the proposals of the Minister of Energy and the Minister of Finance.

46. Other Event (Continued)

- 46.2 On November 18, 2016, at the Board of Directors Meeting No. 11/2016 of the Company, the Board passed a resolution to approved the restructuring of PTT by means of the transfer of the oil business unit, including its assets and liabilities of the business unit, and the shares of companies related to the oil business unit from the Company to PTT Retail Business Company Limited (PTTRB), the change of PTTRB's name to PTT Oil and Retail Business Company Limited (PTTOR), the appointment of PTTOR as the flagship company for the oil and retail business of the Group, and the preliminary plan for an initial public offering of the ordinary shares of PTTOR and the listing of PTTOR in the Stock Exchange of Thailand (the SET). The Company and government agencies will hold less than 50%, but no less than 45%, of total paid-up capital (the "Restructuring of PTT"). In addition, the Board passed a resolution to proceed with the request of the Restructuring of PTT to the relevant agencies such as the Ministry of Energy, The Board of Directors of State Enterprise Policy Office ("Superboard"), the Cabinet, and the shareholders' meeting of the Company, to consider granting approvals in accordance with the relevant rules and regulations.

On February 17, 2017, at the Meeting No. 1/2017 (the 11st Meeting) of the National Energy Policy Council (NEPC) passed resolutions to (1) acknowledge the proposed Restructuring of PTT and to instruct the Company to proceed in compliance with relevant laws, regulations, and related cabinet resolutions while taking into consideration the maximum benefit of the public and the nation and (2) agree with the opinion of the Cabinet Secretariat on the topic of the nation's energy security that the proposed business restructuring of PTT would not have an impact on the nation's energy security. Subsequently, the Ministry of Energy notified the cabinet of the NEPC's meeting resolutions.

On April 28, 2017, the 2017 Annual General Meeting of the Company's shareholders approved the Restructuring of PTT by means of the transfer of the oil business unit, including the assets and liabilities of the business unit and the shares of companies related to the oil business unit, from the Company to PTTOR (the "Restructuring of PTT"). The business transfer will occur only after the Company obtains any approvals and/or consent from relevant governmental authorities and/or agencies necessary for the Restructuring of PTT in accordance with relevant regulations, and the Board or persons assigned by the Board are authorized to enter into negotiations and determine the criteria, conditions, and other details related to the Restructuring of PTT; execute the business transfer agreements, other agreements and supporting documents; and undertake any act necessary for and relevant to the aforementioned businesses for the purposes of the Restructuring of PTT. The Annual General Meeting also acknowledged the feasibility of the plan to launch an initial public offering (IPO) of PTTOR's ordinary shares, and to offer ordinary shares of PTTOR to PTT's existing shareholders with rights to subscribe to allocated shares, but not to offer the shares to shareholders in cases where such offering would cause PTTOR to be subject to the rules and regulations of foreign countries (Preferential Share Offering) and to list PTTOR on the SET. The Company and government agencies will hold less than 50% of the total paid-up capital after launching an IPO and listing on the SET. On the contrary, the Company will hold no less than 45% the total paid-up capital. The Company will adhere to the opinions of the Office of the Securities and Exchange Commission (the SEC) in relation to the listing of PTTOR on the SET and will obtain approval from the SEC prior to proceed further.

47. Events after the Reporting Period

- 47.1 On February 20, 2018, at the Board of Directors Meeting No. 2/2018 of the Company, the Board passed a resolution to propose to the Annual General Meeting of the Company's shareholders for approval a dividend payment of Baht 20.00 per share for the year 2017. On September 15, 2017, the Company paid an interim dividend of Baht 8.00 per share as described in Note 42. Accordingly, the remaining dividend of Baht 12.00 per share or approximately Baht 34,276 million will be proposed for approval by the Annual General Meeting of the Company's shareholders for the year 2018.
- 47.2 On January 23, 2018, at the Extraordinary Shareholders' Meeting No. 1/2018 of PTT Global Management Co., Ltd. (PTTGM), the Shareholders passed an extraordinary resolution to increase the authorized it share capital Baht 100 per share in respect of 213.97 million shares, amounting to Baht 21,397.08 million. The Company made the share payment on February 1, 2018.
- 47.3 The board of directors of the Company approved these financial statements for public issuance on February 20, 2018.
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ISSUERS

PTT Public Company Limited
555 Vibhavadi Rangsit Road, Chatuchak
Bangkok 10900, Thailand

PTT Treasury Center Company Limited
555/2 Energy Complex, Building B, 14th Floor,
Vibhavadi Rangsit Road, Chatuchak
Bangkok 10900, Thailand

GUARANTOR (in respect of Guaranteed Notes)

PTT Public Company Limited
555 Vibhavadi Rangsit Road,
Chatuchak Bangkok 10900, Thailand

ARRANGERS

BNP Paribas
10 Collyer Quay
#34-01 Ocean Financial
Centre
Singapore 049315

**Citigroup Global
Markets Singapore
Pte. Ltd.**
8 Marina View
#21-00 Asia Square
Tower 1
Singapore 018960

**The Hongkong and
Shanghai Banking
Corporation Limited,
Singapore Branch**
10 Marina Boulevard
#45-01 Marina Bay
Financial
Centre Tower 2
Singapore 018983

**Standard
Chartered Bank
(Singapore) Limited**
Marina Bay
Financial Centre
(Tower 1)
8 Marina Boulevard
Level 20
Singapore 018981

DEALERS

BNP Paribas
10 Collyer Quay
#34-01 Ocean Financial
Centre
Singapore 049315

**Citigroup Global
Markets Inc**
388 Greenwich Street
New York, NY 10013
United States of
America

**The Hongkong and
Shanghai Banking
Corporation Limited,
Singapore Branch**
10 Marina Boulevard
#45-01 Marina Bay
Financial
Centre Tower 2
Singapore 018983

**Standard Chartered
Bank (Singapore)
Limited**
Marina Bay Financial
Centre (Tower 1)
8 Marina Boulevard
Level 20
Singapore 018981

TRUSTEE

Citicorp International Limited
20th Floor Citi Tower, One Bay East
83 Hoi Bun Road,
Kwun Tong, Kowloon
Hong Kong

PRINCIPAL PAYING AGENT, PAYING AGENT, EXCHANGE AGENT, TRANSFER AGENT, CALCULATION AGENT AND REGISTRAR

Citibank, N.A., London Branch
c/o Citibank, N.A., Dublin Branch
1 North Wall Quay
Dublin 1
Ireland

LEGAL ADVISORS

U.S. Legal Counsel to the Issuers and the Guarantor

Allen & Overy (Asia) Pte. Ltd.
50 Collyer Quay
#09-01 OUE Bayfront
Singapore 049321

Thai Legal Counsel to the Issuers and the Guarantor

Allen & Overy (Thailand) Co., Ltd.
23rd Floor Sindhorn Tower 3
130-132 Wireless Road
Bangkok 10330, Thailand

U.S. Legal Counsel to Arrangers and Dealers

Clifford Chance Pte. Ltd.
Marina Bay Financial Centre
25th Floor, Tower 3
12 Marina Boulevard
Singapore 018982

Thai Legal Counsel to Arrangers and Dealers

**Weerawong, Chinnavat &
Partners Ltd.**
22nd Floor, Mercury Tower
540 Ploenchit Road
Bangkok 10330, Thailand

U.S. Legal Counsel to the Trustee

Clifford Chance
27/F Jardine House
One Connaught Place,
Central, Hong Kong