30. Objectives and policies for financial risk management

The main financial liabilities of PetroRio refer to trade accounts payable to suppliers for goods and services to be used in its hydrocarbon exploration and production operations, debentures convertible into shares, and the financial security agreements. On the other hand, cash and cash equivalents are recorded in assets, as described in Notes 3 and 4.

The Company is exposed to market (interest and exchange rates), credit and liquidity risks, and its strategy is to make a portion of its investments in fixed and variable income assets, foreign exchange transactions, interest, swaps, derivatives, sundry commodities and other financial instruments for speculative purposes in various industries in Brazil and abroad in the short, medium and/or long term, to maximize the profitability and seek a higher return to its shareholder. By adopting this strategy, the Company is exposed to the risks inherent to such investments, and to fluctuations in the prices of these assets, which may negatively impact the Company's cash position.

The Board of Directors reviews and establishes policies for the management of each of these risks, which are summarized below.

Market risk

Market risk is the possibility of losses arising from the effect of the fluctuation of market values of financial instruments and commodities. The company constantly monitors the market and, when necessary, contracts derivative transactions to neutralize the impacts of these commodity price oscillations.

Derivative financial instruments - Hedge

In the year ended December 31, 2021, the Company entered into derivative agreements aimed at providing hedge against the risk of volatility in oil prices for the sales of 2021 and 2022.

Basically, the transactions protect the Company, which obtained minimum price (floor) per barrel as the chart below:

						Price	Position	
Operation	Type	Maturity	Settlement	Strike	Quantity	Engagement	US$ thousand	In thousands of reais
Purchase	PUT	12/31/2020	12/31/2020	43.50	2,000	3.500	-	-
Purchase	PUT	31/03/21	31/03/21	44.45	900	4.700	-	-
Purchase	PUT	30/06/21	30/06/21	68.25	400	0.230	-	-
Purchase	PUT	31/07/21	31/07/21	68.00	1,495	1.425	-	-
Purchase	PUT	31/08/21	31/08/21	67.50	935	2.370	-	-
Purchase	PUT	30/09/21	30/09/21	67.00	975	3.135	-	-
Purchase	PUT	31/10/21	31/10/21	66.25	488	3.710	-	-
Purchase	PUT	30/11/21	30/11/21	76.00	1,865	0.270	-	-
Purchase	PUT	31/01/22	-	74.00	1,860	2.690	1,364	7,612
Purchase	PUT	28/02/22	-	73.00	483	3.639	1,058	5,904
Purchase	PUT	31/03/22	-	72.00	527	4.299	1,676	9,353
Purchase	PUT	30/04/22	-	72.00	503	5.198	2,176	12,142
					12,431		**6,274**	**35,011**

Interest rate risk

Available funds are invested in securities issued by first-tier financial institutions at variable rates, mostly with daily liquidity, in compliance with prudential concentration limits.

Interest rate sensitivity

The table below shows the sensitivity to a possible change in interest rates, income and Company's shareholders' equity before taxation, where all other variables are kept constant.

Operation	Risk	Probable scenario	Scenario (I) 25%	Scenario (II) 50%
Impact on the securities	Decrease in CDI	112	(3)	(118)

For the earnings from financial investments and securities the CDI projections disclosed by BM&FBOVESPA for the period of 12 months as from December 31, 2021 were taken into account under the probable scenario (CDI 10.78%), a 25% reduction in the projected CDI was taken into account under scenario I and a 50% reduction was taken into account under scenario II, both in relation to the probable scenario.

Exchange risk

The Company's exposure to the risk of changes in foreign exchange rates relates primarily to the Company's operating activities and net investments in foreign subsidiaries. The table below shows the sensitivity to a change that may occur in the exchange rate and the impact on the income (loss) and Company's shareholders' equity before taxation.

Operation	Risk	Probable scenario	Scenario (I) 25%	Scenario (II) 50%
Impact on financial investments	USD decr.	51,118	(203,607)	(407,214)
Provision for abandonment (ARO)	USD incr.	(58,542)	(233,180)	(466,359)
Loans	USD incr.	(207,622)	(826,980)	(1,653,961)

For calculation of the amounts included in the above scenarios the average exchange rate projection disclosed by BM&FBOVESPA for the period of 12 months as from December 31, 2021 (US$ 1/R$ 5.9308). Under scenario I, this projection was increased by 25% and under scenario II, the curve was increased by 50%, both against the probable scenario.

Credit risk

The Company is exposed to credit risk in its operating activities and bank and/or financial institution deposits, foreign exchange transactions and other financial instruments. In order to mitigate such risks, the Group adopts a conservative management by investing short-term funds with day-to-day liquidity and post –fixed rates in first-class banks, bearing in mind ratings by the key risk agencies and respecting prudential concentration limits.

As for the credit risk of its sales transactions, the Company is analyzing the financial and equity position of its customers together with the service provider (trader), which also intermediates the oil sale transactions. During the year ended December 31, 2021 oil net sales were decentralized, with sales to clients Petrochina, Leeuwin, Shell, Trafigura, BP and Total and gas sales for only one client (Petrobras); however, they present an irrelevant credit risk, considering that its background does not show any delays or defaults.

Liquidity risk

Prudent management of risk implies maintaining cash consistent with the disbursement needs to cover its obligations, in accordance with the Company's business plan.

Consolidated

Year ended December 31, 2021	**up to 12 months**	**1-5 years**	**Total**
Liabilities			
Loans and financing	(553)	(3,307,368)	**(3,307,921)**
Suppliers	(292,239)	(400)	**(292,639)**
Labor obligations	(131,475)	-	**(131,475)**
Taxes and social contributions	(183,678)	-	**(183,678)**
Provision for abandonment	-	(692,289)	**(692,289)**
Provision for contingencies	-	(27,284)	**(27,284)**
Contractual charges (Leases - IFRS 16)	(137,784)	(455,553)	**(593,337)**
Other liabilities	(376,684)	(362)	**(377,046)**
	(1,122,413)	**(4,483,256)**	**(5,605,669)**

Year ended December 31, 2020	up to 12 months	1-5 years	Total
Liabilities			
Loans and financing	(1,519,966)	(389,753)	**(1,909,719)**
Suppliers	(236,889)	(13,640)	**(250,529)**
Labor obligations	(54,857)	-	**(54,857)**
Taxes and social contributions	(87,741)	-	**(87,741)**
Provision for abandonment	-	(638,504)	**(638,504)**
Provision for contingencies	-	(75,809)	**(75,809)**
Contractual charges (Leases - IFRS 16)	(223,579)	(402,521)	**(626,100)**
Other liabilities	-	(960)	**(960)**
	(2,123,032)	**(1,521,187)**	**(3,644,219)**

Parent company

Year ended December 31, 2021	up to 12 months	1-5 years	Total
Liabilities			
Suppliers and other	(220)	-	**(220)**
Labor obligations	(27,321)	-	**(27,321)**
Taxes and social contributions	(829)	-	**(829)**
Provision for contingencies	-	(500)	**(500)**
	(28,370)	**(500)**	**(28,870)**

Year ended December 31, 2020	up to 12 months	1-5 years	Total
Liabilities			
Suppliers and other	(3,940)	-	**(3,940)**
Labor obligations	(1,304)	-	**(1,304)**
Taxes and social contributions	(5,484)	-	**(5,484)**
Provision for contingencies	-	(500)	**(500)**
	(10,728)	**(500)**	**(11,228)**

Fair value of financial assets and liabilities

The "fair value" concept provides for the valuation of assets and liabilities based on market prices in the case of liquid assets, or based on mathematical pricing models otherwise. The level in the fair value hierarchy gives priority to unadjusted quoted prices in an active market. These financial instruments are grouped in levels from 1 to 3, based on the grade that their fair value is quoted:

a) Level 1: fair value measurement uses prices quoted (not corrected) in active markets, based on equal assets and liabilities.
b) Level 2: fair value measurement is derived from other inputs quoted included in Level 1, which are quoted through an asset or liability directly (i.e. as the prices) or indirectly (i.e. derivative of prices).

c) Level 3: fair value measurement is derived from valuation techniques that include and asset or liability that are not included in an active market.

	12/31/2021				12/31/2020			
	Parent company		Consolidated		Parent company		Consolidated	
	Book value	Fair value	Book value	Fair value	Book value	Fair value	Book value	Fair value
Financial assets								
Amortized cost:								
Accounts receivable (i)	-	-	915,033	915,033	-	-	386,165	386,165
Related parties	56,941	56,941	-	-	8,627	8,627	-	-
Fair value through profit or loss								
Cash and cash equivalents (ii)	23,581	23,581	970,681	970,681	27,480	27,480	809,273	809,273
Securities (ii)	350	350	3,680,185	3,680,185	-	-	22,793	22,793
Financial liabilities								
Amortized cost:								
Suppliers (i)	220	220	292,639	292,639	3,940	3,940	250,529	250,529
Loans and financing	-	-	3,307,921	3,307,921	-	-	1,909,719	1,909,719
Contractual charges (Leases - IFRS 16)	-	-	593,337	593,337	-	-	626,100	626,100
Accounts payable – acquisition of Wahoo	-	-	376,684	376,684	-	-	-	-

Market values ("fair value") estimated by management were determined by level 1 for those financial instruments below, and there were no transfers between measurement levels in the fair value hierarchy for the year ended December 31, 2021.

(i) The amounts related to the balance of accounts receivable and suppliers does not have significant differences in the fair value since receivable/payment turnover of these balances is 60 days on average.

(ii) The fair value measurements are obtained by directly observable variables (as well as prices) or indirectly (derived from prices).

31. Insurance (Not audited by independent auditors)

The Company has a policy of taking out insurance plan for the items subject to risks.

The Company is covered against major risks such as P&I to Frade's FPSO, Energy Package, which includes: Physical Damage over offshore assets, Operator's Extra Expenses (OEE - Well Control, Extra Expense/Reboring and Infiltration and Pollution, Cleaning and Contamination) and Offshore Liability (TPL) and Cargo/equipment coverage related to the Polvo and Frade field operations and D&O (Directors & Officers Liability) policy for directors and subordinates.

The insurance policies in force at December 31, 2021 cover the insured amount of R$ 29,223,745. In addition, the Company also contracts insurance for Operator' Extra Expenses, whose main exposures covered are as follows:

Insurance/Modality	Amount insured
Physical damages (Oil inventories)	996,668
Fixed Platform	1,015,651
Offshore Platform	124,445
FPSO Frade	4,134,592
Subsea Equipment	5,288,726
Offshore property (Pipeline)	162,951
Onshore properties (Pipeline)	65,292
Onshore Treatment Station	97,101
OEE production (Well control)	1,339,320
Offshore Civil Liability + Surplus	4,296,985
Cargo (Polvo)	5,000
D&O	40,000
P&I	7,533,675
General liability	5,000
Equity	13,200
Legal guarantee	230,571
Life insurance	4,649
PEM guarantee insurance - ANP	73,644
Travel Insurance Travel Guard	1,535
FPSO Bravo Hull and Machine	3,794,740
Total insured	**29,223,745**

32. Contingencies

Management of the Company and its subsidiaries, based on the opinion of its legal advisors regarding the possibility of success in several lawsuits, believes that the provisions recorded in the balance sheet on December 31, 2021 and 2020 in the amounts of R$ 27,284 and R$ 75,809, respectively, are sufficient to cover losses considered probable and reasonably estimated.

Provisions recorded

Currently, the Company is party to lawsuits with probable risk, which are basically labor claims that add up to R$ 15,282, tax claims of R$ 365, civil claims in the amount of R$ 11,637 (as of December 31, 2020, R$ 6,284, R$ 4,461 and R$ 55,282, respectively, in addition to the amount related to Frade's incident of R$ 9,782).

Regarding the civil action for annulment of an arbitration referring to the alleged unreasonable termination of two leasing contracts for drilling rigs of the subsidiary PetroRioOG, from the period in which PetroRioOG was the operator of exploratory blocks in the Solimões Sedimentary Basin, the Company paid the amount of R$ 87,367 corresponding to the undisputed portion of the lawsuit. The disputed portion remains in litigation, with a possible gain prognosis assessed by the Company's lawyers.

Incidents in Frade

Because of the incident of November 2011 at Frade Field, still in this period under operation by Chevron, the Company was notified by ANP in years 2011 and 2012. Additionally, on November 21, 2011, the Company received a fine from IBAMA (Brazilian Institute for the Environment and Renewable Natural Resources) in the amount of R$ 50,000 and on December 23, 2011, other fine in the amount of R$ 10,000. These fines, of R$ 37,762 and R$ 7,095, respectively, were paid in July 2013, at their restated amount, after negotiation with IBAMA. The differences between the provisioned amounts and the payments made have been reversed to the statement of income.

In September 2012, ANP issued 6 fines referring to the incident at Frade Field occurred in November 2011, totaling R$ 35,160. The Consortium waived the right to appeal and paid this amount during the 10-day appeal period, the fine being reduced by 30%. On September 21, 2012, the Frade Field Consortium paid the total amount of R$ 24,612.

The Company was cited in two public civil lawsuits filed by the Federal Public Prosecutor's Office (MPF) of Campos dos Goytacazes alleging environmental damage caused by oil leak, amounting to R$ 20 billion each. This civil suit was filed with the 1st Federal Court of Rio de Janeiro. At the end of 2012, the Company accrued the amount of R$ 95,000 related to the preventive and compensatory measures of the Term of Adjustment of Conduct (TAC), which was approved and signed in September 2013

with the MPF, ANP and IBAMA. This agreement supersedes the two civil lawsuits, which were initialed filed by the MPF.

In the fourth quarter of 2021, the balance of TAC was settled in the amount of R$ 15,249, corresponding to a 100% interest in the Frade field, monetarily updated after the acquisition of the remaining 30%, according to note 12c. The balances were monetarily restated and had a restatement of R$ 1,035 in 2021.

Other suits

According to the Group's legal advisors, risk of loss in other lawsuits is "possible" - R$ 1,936,067 (R$ 1,296,736 on December 31, 2020), of which R$ 1,275,797 is related to tax claims, R$ 621,400 is related to civil claims and R$ 38,870 to labor claims (R$ 682,510, R$ 585,111 and R$ 29,115, respectively, as of December 31, 2020). The lawsuits with the most relevant values are: an assessment from Receita Federal do Brasil ("RFB"), received in the third quarter of 2021, in the amount of R$ 656,818, drawn up to demand federal taxes suspended on the temporary admission of the FPSO Polvo and its mooring system, which is found duly challenged and awaiting judgment, still at the administrative stage; from Federação dos Pescadores do Rio de Janeiro ("FEPERJ"), in the amount of R$ 352,209, requesting reparation for alleged losses suffered by fishermen as a result of the Oil Spills of Frade Field in 2011/2012, when operated by Chevron, which is currently in the knowledge phase; from Procuradoria Geral da Fazenda Nacional, in the amount of R$ 196,425, charging IRPJ and CSLL due to the transfer pricing rules used at Jaguar in 2010, when operated by Chevron, and is awaiting trial of Appeal in 2nd instance; and lawsuit filed by bankruptcy estate of Geoquasar, in the amount of R$ 128,433, requesting compensation due to the termination of the contract for the provision of seismic data collection services in the Solimões Basin in 2013. The Company awaits of receiving the proceedings for the termination of the judicial process, which has a a ruling in favor of PetroRio O&G. Pursuant to accounting practices adopted in Brazil and IFRS, Management did not form a provision for contingencies for these lawsuits with likelihood of possible and remote loss.

33. Subsequente events

33.1 Capital increase

On January 3, 2021, the Board of Directors approved the Company's Capital Increase, resulting from the issuance of shares for the exercise of stock options granted to employees, in the amount of R$ 16,596, with the issuance of 4,315,540 new common shares.

ANNEX B – OFFERING MEMORANDUM

IMPORTANT NOTICE

THIS OFFERING IS AVAILABLE ONLY TO INVESTORS WHO ARE EITHER (1) QUALIFIED INSTITUTIONAL BUYERS ("QIBs") (AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT, AS AMENDED (THE "SECURITIES ACT")) OR (2) NON-U.S. PERSONS (WITHIN THE MEANING OF REGULATION S UNDER THE SECURITIES ACT) OUTSIDE THE UNITED STATES. PROSPECTIVE PURCHASERS ARE HEREBY NOTIFIED THAT SELLERS OF THE NOTES MAY BE RELYING ON THE EXEMPTION FROM THE PROVISIONS OF SECTION 5 OF THE SECURITIES ACT PROVIDED BY RULE 144A.

IMPORTANT: You must read the following before continuing. The following applies to the confidential offering memorandum following this page (the "Offering Memorandum"), and you are 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 ANY JURISDICTION WHERE IT IS UNLAWFUL TO DO SO. THE SECURITIES HAVE NOT BEEN, AND WILL NOT BE, REGISTERED UNDER THE SECURITIES ACT, OR THE SECURITIES LAWS OF ANY STATE OF THE U.S. OR OTHER JURISDICTION AND THE SECURITIES MAY NOT BE OFFERED OR SOLD WITHIN THE U.S. OR TO, OR FOR THE ACCOUNT OR BENEFIT OF, U.S. PERSONS (AS DEFINED IN REGULATION S UNDER THE SECURITIES ACT), EXCEPT PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND APPLICABLE LAWS OF OTHER JURISDICTIONS.

THE OFFERING MEMORANDUM AND THE OFFER OF THE NOTES ARE ONLY ADDRESSED TO AND DIRECTED AT PERSONS IN MEMBER STATES OF THE EUROPEAN ECONOMIC AREA WHO ARE "QUALIFIED INVESTORS" WITHIN THE MEANING OF ARTICLE 2(E) OF REGULATION (EU) 2017/1129 (THE PROSPECTUS REGULATION) AND RELATED IMPLEMENTATION MEASURES IN MEMBER STATES ("QUALIFIED INVESTORS"). IN THE EUROPEAN ECONOMIC AREA, ANY INVESTMENT OR INVESTMENT ACTIVITY TO WHICH THE OFFERING MEMORANDUM RELATES IS ONLY AVAILABLE TO, AND WILL BE ENGAGED IN WITH, QUALIFIED 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 UNITED KINGDOM. FOR THESE PURPOSES, A RETAIL INVESTOR MEANS A PERSON WHO IS ONE (OR MORE) OF: (I) A RETAIL CLIENT, AS DEFINED IN POINT (8) OF ARTICLE 2 OF REGULATION (EU) NO 2017/565 AS IT FORMS PART OF DOMESTIC LAW BY VIRTUE OF THE EUROPEAN UNION (WITHDRAWAL) ACT 2018 ("EUWA"); OR (II) A CUSTOMER WITHIN THE MEANING OF THE PROVISIONS OF THE FSMA AND ANY RULES OR REGULATIONS MADE UNDER THE FSMA TO IMPLEMENT DIRECTIVE (EU) 2016/97, WHERE THAT CUSTOMER WOULD NOT QUALIFY AS A PROFESSIONAL CLIENT, AS DEFINED IN POINT (8) OF ARTICLE 2(1) OF REGULATION (EU) NO 600/2014 AS IT FORMS PART OF DOMESTIC LAW BY VIRTUE OF THE EUWA; OR (III) NOT A QUALIFIED INVESTOR AS DEFINED IN ARTICLE 2 OF REGULATION (EU) 2017/1129 AS IT FORMS PART OF DOMESTIC LAW BY VIRTUE OF THE EUWA.

IN ADDITION, IN THE UNITED KINGDOM, THIS DOCUMENT IS BEING DISTRIBUTED ONLY TO, AND IS DIRECTED ONLY AT, AND ANY OFFER SUBSEQUENTLY MADE MAY ONLY BE DIRECTED AT PERSONS WHO ARE QUALIFIED INVESTORS (I) WHO HAVE PROFESSIONAL EXPERIENCE IN MATTERS RELATING TO INVESTMENTS FALLING WITHIN ARTICLE 19(5) OF THE FINANCIAL SERVICES AND MARKETS ACT 2000 (FINANCIAL PROMOTION) ORDER 2005, AS AMENDED (THE "ORDER") AND/OR (II) WHO ARE HIGH NET WORTH COMPANIES (OR PERSONS TO WHOM IT MAY OTHERWISE BE LAWFULLY COMMUNICATED) FALLING WITHIN ARTICLE 49(2)(A) TO (D) OF THE ORDER (ALL SUCH PERSONS TOGETHER BEING REFERRED TO AS "RELEVANT PERSONS"). THE OFFERING MEMORANDUM DOCUMENT MUST NOT BE ACTED ON OR RELIED ON IN THE UNITED KINGDOM BY PERSONS WHO ARE NOT RELEVANT PERSONS. IN THE UNITED KINGDOM, ANY INVESTMENT OR INVESTMENT ACTIVITY TO WHICH THE OFFERING MEMORANDUM RELATES IS ONLY AVAILABLE TO, AND WILL BE ENGAGED IN WITH, RELEVANT PERSONS. IN ADDITION, NO PERSON MAY COMMUNICATE OR CAUSE TO BE COMMUNICATED ANY INVITATION OR INDUCEMENT TO ENGAGE IN INVESTMENT ACTIVITY, WITHIN THE MEANING OF SECTION 21 OF THE FINANCIAL SERVICES AND MARKETS ACT 2000 (THE "FSMA"), RECEIVED BY IT IN CONNECTION WITH THE ISSUE OR SALE OF THE NOTES OTHER THAN IN CIRCUMSTANCES IN WHICH SECTION 21(1) OF THE FSMA DOES NOT APPLY TO THE ISSUER OF THE SECURITIES DESCRIBED IN THE OFFERING MEMORANDUM.

THE FOLLOWING OFFERING MEMORANDUM MAY NOT BE FORWARDED OR DISTRIBUTED TO ANY OTHER PERSON AND MAY NOT BE REPRODUCED IN ANY MANNER WHATSOEVER. 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 this Offering Memorandum or make an investment decision with respect to the securities, investors must be either (1) QIBs or (2) non-U.S. persons (within the meaning of Regulation S under the Securities Act) outside the United States. This Offering Memorandum is being sent at your request and by accepting the e-mail and accessing this Offering Memorandum, you shall be deemed to have represented to us that (1) you and any customers you represent are either (a) QIBs or (b) non-U.S. persons (within the meaning of Regulation S under the Securities Act) and that the electronic mail address that you gave us and to which this Offering Memorandum has been delivered is not located in the United States, and (2) that you consent to delivery of such Offering Memorandum by electronic transmission.

You are reminded that this Offering Memorandum has been delivered to you on the basis that you are a person into whose possession this 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 this Offering Memorandum to any other person.

The materials relating to the offering 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 Initial Purchasers or any affiliate of the Initial Purchasers is a licensed broker or dealer in that jurisdiction, the offering shall be deemed to be made by the Initial Purchasers or such affiliate on behalf of the Issuer in such jurisdiction.

This 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 neither the Initial Purchasers, nor any person who controls them nor any of their directors, officers, employees nor any of their agents nor any affiliate of any such person accept any liability or responsibility whatsoever in respect of any difference between this Offering Memorandum distributed to you in electronic format and the hard copy version available to you on request from the Initial Purchasers.

OFFERING MEMORANDUM
CONFIDENTIAL

Petrorio Luxembourg S.à r.l.

(a private limited liability company incorporated under the laws of Luxembourg)

U.S.$600,000,000
6.125% Senior Secured Notes due 2026

Unconditionally and Irrevocably Guaranteed by Petro Rio S.A. and its Subsidiary Guarantors

Interest payable on June 9 and December 9

Issue price: 100.000%

This offering memorandum (the "Offering Memorandum") relates to 6.125% Senior Secured Notes due 2026 (the "Notes") to be issued by Petrorio Luxembourg S.à r.l., a private limited liability company (*société à responsabilité limitée*) incorporated under the laws of Grand Duchy of Luxembourg, having its registered office at 13-15, avenue de la Liberté, L-1931 Luxembourg, Grand Duchy of Luxembourg, and registered with the Luxembourg Register of Commerce and Companies (*Registre de commerce et des sociétés, Luxembourg*) under number B169.949 (the "Issuer"), a wholly-owned subsidiary of Petro Rio S.A. – a Brazilian corporation ("PetroRio"), and secured by certain assets. The Notes will mature on June 9, 2026. Interest will accrue from June 9, 2021, and the first interest payment date will be December 9, 2021.

The Notes will be redeemable at the option of the Issuer, in whole or in part, at any time on or after June 9, 2024, at the redemption prices set forth in this Offering Memorandum, together with accrued and unpaid interest, if any, to the date of redemption. The Issuer may also redeem up to 35% of the Notes using the proceeds of certain equity offerings completed before June 9, 2024. In addition, at any time prior to June 9, 2024, the Issuer may redeem some or all of the Notes at a price equal to 100% of the principal amount, plus accrued and unpaid interest, plus a "make-whole" premium. The Issuer may also redeem the Notes upon certain changes in tax laws. If the Issuer sells certain of its assets or experiences specific kinds of changes of control, the Issuer must offer to purchase the Notes.

The Notes will be senior obligations of the Issuer and will be fully and unconditionally guaranteed (the "Notes Guaranties") on a senior secured basis by PetroRio and certain subsidiaries of PetroRio (collectively, the "Subsidiary Guarantors," and together with PetroRio, the "Guarantors"), as described under "*Description of Notes—Notes Guaranties.*" The Notes and the Notes Guaranties (as defined herein) will rank (a) effectively senior to all unsecured debt of the Issuer and the Guarantors to the extent of the value of the Collateral (as defined herein), (b) equally in right of payment with all senior existing and future obligations of the Issuer and the Guarantors, after the foreclosure of the Collateral, and (c) senior in right of payment to all existing and future subordinated indebtedness of the Issuer and the Guarantors, as further described in this Offering Memorandum.

In connection with the issuance of the Notes, the Notes and the Notes Guaranties will be secured by a first-priority security interest on the Collateral. The Collateral will consist of a first priority perfected security interest on (i) the shares issued under Brazilian and Luxembourg laws by the Guarantors, except for the shares issued by PetroRio (the "Share Collateral") and (ii) FPSO Bravo and FPSO Valente (together, the "Vessels Collateral", and together with the Share Collateral, the "Collateral"). In the event that the security interest in the Collateral is not perfected on the Issue Date and in any event within 60 days after the Issue Date, the amount of interest on the Notes will increase by 2.0% until such time as certain specified conditions are satisfied. See "*Description of Notes—Collateral—Interest Step-Up*." In the event that the security interest in (a) the Share Collateral is not perfected on or before (i) the date that is ten Business Days after the Issue Date, for Collateral relating to the Luxembourg Share Pledge Agreement and (ii) the date that is 90 days after the Issue Date, for Collateral relating to the Brazilian Share Pledge Agreements; and (b) the Vessel Collateral is not perfected on or before the date that is ten Business Days after the Issue Date, we will be in default under the Indenture (as defined herein). See "*Description of Notes—Default and Remedies—Events of Default.*" In the event of a failure to create and perfect liens on the Collateral, the Notes will not be secured by such assets, and the holders of the Notes will not be entitled to the proceeds from the sale of all or any of the proposed Collateral or any other remedies in connection therewith. See "*Description of Notes—Default and Remedies—Events of Default.*"

See "*Risk Factors*" beginning on page 29 for a discussion of certain risks that you should consider in connection with an investment in the Notes.

The Notes have not been registered, and the Issuer does not intend to register the Notes, under the U.S. Securities Act of 1933, as amended (the "Securities Act"), the securities laws of any state of the United States or the securities laws of any other jurisdiction. The Notes are being offered solely to qualified institutional buyers under Rule 144A and to non-U.S. persons outside the United States in reliance on Regulation S under the Securities Act. For further details about eligible offerees and resale restrictions, see "*Transfer Restrictions*."

There is currently no public market for the Notes. The Issuer intends to apply to list the Notes on the Singapore Exchange Securities Trading Limited (the "Singapore Stock Exchange"). The Singapore Stock Exchange assumes no responsibility for the correctness of any of the statements made, opinions expressed or reports contained in this Offering Memorandum. Admission to the Official List of the Singapore Stock Exchange is not to be taken as an indication of the merits of the Notes, the Issuer or PetroRio. For as long as the Notes are listed on the Singapore Stock Exchange and the rules of the Singapore Stock Exchange so require, the Notes will be traded on the Singapore Stock Exchange in a minimum board lot size of U.S.$200,000. There can be no assurance that a trading market in the Notes will develop or be maintained.

The delivery of the Notes is expected to be made to investors in book-entry form through The Depository Trust Company and its direct or indirect participants including Euroclear S.A./N.V. and Clearstream Banking, S.A. on or about June 9, 2021.

Joint Global Coordinators and Joint Bookrunners

Morgan Stanley **Itaú BBA** **BTG Pactual** **Safra** **Santander**

The date of this Offering Memorandum is June 2, 2021.

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In this Offering Memorandum, unless otherwise indicated or the context otherwise requires, all references to:

- the "Issuer" are to Petrorio Luxembourg S.à r.l., a private limited liability company (*société à responsabilité limitée*) incorporated under the laws of Luxembourg, having its registered office at 13-15, avenue de la Liberté, L-1931 Luxembourg, Grand Duchy of Luxembourg, and registered with the Luxembourg Register of Commerce and Companies (*Registre de commerce et des sociétés, Luxembourg*) under number B169.949;
- "PetroRio" are to Petro Rio S.A., a corporation (*sociedade por ações*) incorporated under the laws of Brazil;
- the "Group" are to PetroRio and its subsidiaries (including the Issuer);
- "we," "us," "our," and words of a similar effect are to PetroRio, the Issuer or the Group, as the context may require;
- "Guarantors" are to PetroRio, PetroRio International, PetroRio O&G, PetroRio Luxembourg, PetroRio do Brasil, PetroRio OPCO, PetroRio Jaguar and PetroRio White Shark;
- "PetroRio do Brasil" are to Petro Rio do Brasil Exploração Petrolífera S.A.;
- "PetroRio International" are to Petro Rio Internacional S.A.;
- "PetroRio Jaguar" are to Petro Rio Jaguar Petróleo Ltda.;
- "PetroRio Luxembourg" are to Petrorio Luxembourg Holding S.à r.l.;
- "PetroRio O&G" are to Petro Rio O&G Exploração e Produção de Petróleo Ltda.;
- "PetroRio OPCO" are to Petro Rio OPCO Exploração Petrolífera Ltda.;
- "PetroRio White Shark" are to Petro Rio White Shark Petróleo Ltda.;

- "Luxembourg" are to the Grand Duchy of Luxembourg;
- "ANP" are to the *Agência Nacional do Petróleo, Gás Natural e Biocombustíveis*, the Brazilian Agency for Oil, Natural Gas and Biofuels;
- "1C" refers to uncertainty ranges for Contingent Resources categories, as determined under the D&M Reserves Reports;
- "2C" refers to uncertainty ranges for Contingent Resources categories, as determined under the D&M Reserves Reports;
- "3C" refers to uncertainty ranges for Contingent Resources categories, as determined under the D&M Reserves Reports;
- "1P" are to estimated proved reserves as determined under the D&M Reserves Reports;
- "2P" are to estimated proved plus probable reserves as determined under the D&M Reserves Reports;
- "3P" are to estimated proved plus probable reserves plus possible reserves as determined under the D&M Reserves Reports;
- "bcf" are to billions of cubic feet;
- "boe" are to barrels of oil equivalent;
- "boepd" are to barrels of oil equivalent per day;
- "Brazil" are to the Federative Republic of Brazil;
- "CADE" are to the *Conselho Administrativo de Defesa Econômica*, the Brazilian Antitrust Authority;
- "Central Bank" are to the *Banco Central do Brasil*, the Central Bank of Brazil;
- "CNPE" are to the *Conselho Nacional de Política Energética*, the National Energy Policy Council of Brazil;
- "Contingent Resources" means quantities of petroleum and condensed and natural gas that are potentially recoverable from known accumulation by application of development projects, but which are not currently considered to be commercially recoverable due to one or more contingencies. Contingent Resources are further categorized in accordance with the level of certainty as 1C, 2C and 3C, according to the PRMS guidelines, and may be sub-classified based on project maturity and/or characterized by the economic status;
- "IBAMA" are to the *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis*, the Brazilian Institute of Environment and Renewable Natural Resources;
- "Itaipu Field" are to the ANP Concession BM-C-32;
- "gross reserves" are to the total estimated petroleum remaining to be produced from the relevant property after the date of the relevant D&M Reserves Report, without pro-rating for our working interest therein;
- "Mboe" are to thousands of barrels of oil equivalent;
- "MMboe" are to millions of barrels of oil equivalent;
- "Mboepd" are to thousands of barrels of oil equivalent per day;
- "Mscm" are to millions of cubic meters;
- "Mscmpd" are to millions of cubic meters per day;

- "net reserves" are to the total estimated petroleum remaining to be produced from the relevant property after the date of the relevant D&M Reserves Report, after pro-rating for our working interest therein;
- "Possible Reserves" means those additional reserves of oil and gas that, as per the analysis of geoscience and engineering data are less likely to be recoverable than Probable Reserves. The total quantities ultimately recovered from the project have a low probability to exceed the sum of proved plus probable plus possible reserves (3P), which is equivalent to the high estimate scenario. When probabilistic methods are used, there should be at least a 10% probability that the actual quantities recovered will equal or exceed the 3P estimate;
- "Probable Reserves" means those additional reserves of oil and gas that, as per the analysis of geoscience and engineering data are less likely to be recoverable than Proved Reserves but more likely to be recovered than Possible Reserves. It is equally likely that actual remaining quantities recovered will be greater than or less than the sum of the estimated proved plus probable reserves (2P). In this context, when probabilistic methods are used, there should be at least a 50% probability that the actual quantities recovered will equal or exceed the 2P estimate;
- "Proved Reserves" means those additional reserves of oil and gas that, as per the analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable from a given date forward from known reservoirs and under defined economic conditions, operating methods, and government regulations. If deterministic methods are used, the term "reasonable certainty" is intended to express a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability (P90) that the quantities actually recovered will equal or exceed the estimate;
- "*real*," "*reais*" and "R$" are to the official currency of Brazil;
- "Subsidiaries" or "subsidiaries" are to subsidiaries of PetroRio;
- "U.S.$," "U.S. dollar," or "U.S. dollars" are to the official currency of the United States of America;
- "Wahoo Field" are to the ANP Concession BM-C-30; and
- "working interest" are to the right granted to the lessee of a property to explore for and to produce and own oil, gas, or other minerals. The working interest owners bear the exploration, development and operating costs on either a cash, penalty or carried basis.

We, Morgan Stanley & Co. LLC, Itau BBA USA Securities, Inc., Banco BTG Pactual S.A. – Cayman Branch, Banco Safra S.A. (acting through its Cayman Islands Branch) and Santander Investment Securities Inc. (together, the "Initial Purchasers") have not authorized anyone to provide any information other than that contained in this Offering Memorandum prepared by us. We and the Initial Purchasers take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should assume that the information in this Offering Memorandum is accurate only as of the date on the front cover of this Offering Memorandum, regardless of time of delivery of this Offering Memorandum or any sale of the Notes. Our business, financial condition, results of operations and prospects may change after the date on the front cover of this Offering Memorandum. Neither we nor the Initial Purchasers are making an offer to sell the Notes in any jurisdiction where the offer or sale is not permitted.

We, having made all reasonable inquiries, confirm that the information contained in this Offering Memorandum with regard to the Initial Purchasers and us is true and accurate in all material respects, that the opinions and intentions expressed in this Offering Memorandum are honestly held, and that there are no other facts the omission of which would make this Offering Memorandum as a whole or any of such information or the expression of any such opinions or intentions misleading in any material respect. We accept responsibility accordingly.

We are relying on exemptions from registration under the Securities Act for offers and sales of securities that do not involve a public offering. The Notes offered are subject to restrictions on transferability and resale and may not be transferred or resold in the United States, except as permitted under the Securities Act and applicable U.S. state securities laws pursuant to registration or exemption from them. By purchasing the Notes, you will be deemed to have made the acknowledgements, representations, warranties and agreements described under the section of this Offering Memorandum entitled "*Transfer Restrictions*." You should understand that you may be required to bear the financial risks of your investment in the Notes for an indefinite period of time.

Application will be made for the listing of the Notes on the Singapore Stock Exchange. However, we cannot assure you that the application will be approved. The offering and settlement of the Notes are not conditioned upon obtaining the listing. There can be no assurance that the prices at which the Notes will sell in the market after this offering will not be lower than the initial offering price or that an active trading market for the Notes after the completion of the offering will develop and continue after this offering.

We have prepared this Offering Memorandum for use solely in connection with the proposed offering of the Notes. This Offering Memorandum is personal to the offeree to whom it has been delivered and does not constitute an offer to any other person or to the public in general to acquire the Notes. Distribution of this Offering Memorandum to any person other than the offeree and those persons, if any, retained to advise that offeree with respect thereto, is unauthorized. Each offeree, by accepting delivery of this Offering Memorandum, agrees to the foregoing.

Neither this Offering Memorandum nor any other information supplied in connection with the Notes should be considered as a recommendation by us or the Initial Purchasers that any recipient of this Offering Memorandum or any other information supplied in connection with the Notes should subscribe for or purchase any Notes. Each investor contemplating subscribing for or purchasing any Notes should make its own independent investigation of our financial condition and affairs, and its own appraisal of our creditworthiness. This Offering Memorandum does not constitute an offer of, or an invitation by or on behalf of us, the Initial Purchasers or the Trustee (as defined herein) to subscribe to, or purchase, any of the Notes in any jurisdiction where such offer is not permitted. The distribution of this Offering Memorandum and the offering of the Notes in certain jurisdictions may be restricted by law. Persons into whose possession this Offering Memorandum comes are required by us, the Initial Purchasers and the Trustee to inform themselves about and to observe any such restrictions. None of us, nor any of the Initial Purchasers represents that this Offering Memorandum may be lawfully distributed, or that any Notes may be lawfully offered, in compliance with any applicable registration or other requirements in any such jurisdiction, or pursuant to an exemption available thereunder, or assumes any responsibility for facilitating any such distribution or offering. In particular, no action has been taken by us or the Initial Purchasers that is intended to permit a public offering of any Notes or distribution of this Offering Memorandum in any jurisdiction where action for that purpose is required. Accordingly, no Notes may be offered or sold, directly or indirectly, and neither this Offering Memorandum nor any advertisement or other offering material may be distributed or published in any jurisdiction, except under circumstances that will result in compliance with any applicable laws and regulations.

We have prepared this Offering Memorandum solely for use in connection with the proposed offering of the Notes, and it may only be used for that purpose. The Issuer and the Initial Purchasers reserve the right to reject any offer to purchase, in whole or in part, for any reason, or to sell less than all of the Notes offered by this Offering Memorandum.

This Offering Memorandum summarizes certain documents and other information and we refer you to them for a more complete understanding of what we discuss in this Offering Memorandum. In making an investment decision, you must rely on your own examination of our company and the terms of this offering and the Notes, including the merits and risks involved.

The Initial Purchasers make no representation or warranty, express or implied, as to the accuracy or completeness of the information contained in this Offering Memorandum. Nothing contained in this Offering Memorandum is, or shall be relied upon as, a promise or representation by us or the Initial Purchasers as to the past or the future.

We, the Guarantors and the Initial Purchasers are not making any representation to any purchaser of the Notes regarding the legality of an investment in the Notes under any investment law or similar laws or regulations. You should not consider any information in this Offering Memorandum to be advice whether legal, business, accounting or tax. You should consult your own attorney or other professional for any legal, business, accounting or tax advice regarding an investment in the Notes.

You must comply with all applicable laws and regulations in force in any jurisdiction in which you purchase, offer or sell the Notes or possess or distribute this Offering Memorandum and must obtain any consent, approval or permission required for your purchase, offer or sale of the Notes under the laws and regulations in force in any jurisdiction to which you are subject or in which you make such purchases, offers or sales. None of us, the Issuer, the Initial Purchasers or their affiliates will have any responsibility therefor.

This Offering Memorandum has been prepared on the basis that any offer of Notes in any Member State of the European Economic Area (each, a "Relevant Member State") will be made pursuant to an exemption under the Prospectus Regulation from the requirement to publish a prospectus for offers of Notes. Accordingly any person making or intending to make an offer in that Relevant Member State of Notes which are the subject of the offering contemplated in this Offering Memorandum may only do so in circumstances in which no obligation arises for the Issuer or any of the Initial Purchasers to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation, in each case, in relation to such offer. Neither the Issuer nor the Initial Purchasers have authorized, nor do they authorize, the making of any offer of Notes in circumstances in which an obligation arises for the Issuer or the Initial Purchasers to publish or supplement a prospectus for such offer. The expression "Prospectus Regulation" means Regulation (EU) 2017/1129, as amended.

This Offering Memorandum has been prepared on the basis that any offer of Notes in the UK will be made pursuant to an exemption under the UK Prospectus Regulation from the requirement to publish a prospectus for offers of Notes. Accordingly any person making or intending to make an offer in the UK of Notes which are the subject of the offering contemplated in this Offering Memorandum may only do so in circumstances in which no obligation arises for the Issuer or any of the Managers to publish a prospectus pursuant to section 85 of the Financial Services and Markets Act 2000 (as amended, "FSMA") or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation, in each case, in relation to such offer. Neither the Issuer nor the Initial Purchasers have authorized, nor do they authorize, the making of any offer of Notes in circumstances in which an obligation arises for the Issuer or the Initial Purchasers to publish or supplement a prospectus for such offer. The expression "UK Prospectus Regulation" means Regulation (EU) 2017/1129, as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018.

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). 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 Directive 2014/65/EU (as amended, "MiFID II"); or (ii) a customer within the meaning of Directive (EU) 2016/97 (as amended, 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 (as amended, 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 has been prepared and therefore offering or selling the Notes or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation. This Offering Memorandum has been prepared on the basis that any offer of Notes in any member state of the EEA will be made pursuant to an exemption under the Prospectus Regulation from the requirement to publish a prospectus for offers of notes. This Offering Memorandum is not a prospectus for the purposes of the Prospectus Regulation.

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 United Kingdom ("UK"). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client, as defined in point (8) of Article 2 of Regulation (EU) No 2017/565 as it forms part of domestic law by virtue of the European Union (Withdrawal)

Act 2018 ("EUWA"); (ii) a customer within the meaning of the provisions of the Financial Services and Markets Act 2000 (as amended, "FSMA") and any rules or regulations made under the FSMA to implement Directive (EU) 2016/97, where that customer would not qualify as a professional client, as defined in point (8) of Article 2(1) of Regulation (EU) No 600/2014 as it forms part of domestic law by virtue of the EUWA; or (iii) not a qualified investor as defined in Article 2 of Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the EUWA (the "UK Prospectus Regulation"). Consequently no key information document required by Regulation (EU) No 1286/2014 as it forms part of domestic law by virtue of the EUWA (the "UK PRIIPs Regulation") for offering or selling the Notes or otherwise making them available to retail investors in the UK has been prepared and therefore offering or selling the Notes or otherwise making them available to any retail investor in the UK may be unlawful under the UK PRIIPs Regulation. This Offering Memorandum has been prepared on the basis that any offer of Notes in the UK will be made pursuant to an exemption under the UK Prospectus Regulation from the requirement to publish a prospectus for offers of notes. This Offering Memorandum is not a prospectus for the purposes of the UK Prospectus Regulation.

Independent Petroleum Engineers

Information in this offering memorandum regarding our proved, possible and probable reserves, developed reserves, undeveloped reserves, estimated reserves, gross reserves, net reserves, contingent resources, total contingent resources, gross contingent resources, net contingent resources, and prospective resources, was derived from the D&M Reserves Reports (as defined below) included elsewhere in this offering memorandum. See "Oil and Gas Reserves and Production Information" and "Summary Historical Reserves and Contingent Resources Data." These reports do not include all the information that may be important for an investment decision.

Projections

You should note that the projections contained in this offering memorandum reflect our judgment as to our future production, capital expenditures, operating expenditures, revenues and returns based on a number of assumptions. See "Risk Factors—*Risks Relating to the Group, its Business and the Oil and Gas Industry—Oil and natural gas reserves estimates may be inaccurate and our actual revenues may be lower than our projections,*" and "*—The information on our reserves and contingent resources included in this Offering Memorandum are based on technical reports issued in January 2021 and April 2020 by independent certifying companies, which may be changed in the future*."

ALTHOUGH WE BELIEVE THAT THE PROJECTIONS INCLUDED IN THIS OFFERING MEMORANDUM ARE BASED ON REASONABLE ASSUMPTIONS, INVESTORS SHOULD BE AWARE THAT THESE PROJECTIONS ARE SUBJECT TO MANY RISKS AND UNCERTAINTIES AND MAY BE MATERIALLY DIFFERENT FROM ACTUAL RESULTS. NO ASSURANCE CAN BE GIVEN THAT THESE ASSUMPTIONS ARE CORRECT.

We do not intend to update or revise these projections to reflect circumstances existing after the date of this offering memorandum. These projections do not constitute a guarantee of our future performance. The D&M Reserves Reports do not comprise all the information that may be important for an investment decision. In view of these uncertainties, investors should not rely only on these projections to make an investment decision and are urged to carefully analyze all of the information included in this offering memorandum, including our financial statements and related notes.

Various assumptions are related to commercial, political and economic factors that might occur in Brazil or in other oil and natural gas-producing regions in the future and their potential impact on our business, as well as on commercial, political and economic factors that might occur or continue to occur in the Brazilian oil and natural gas market or in other oil and natural gas-producing regions, which are beyond our control. We cannot guarantee that the commercial, political and economic assumptions are accurate or accurately reflect the future projections. You should conduct your own investigations and make your own analysis of the projections included in this offering memorandum.

In addition, we cannot guarantee that our future operations involving exploration and production of oil and natural gas will not be materially adversely affected in the future by political, environmental or other

matters, many of which are beyond our control. Our estimates regarding our ability to discover reserves, to produce and generate revenue as well as the quantity and quality of oil and natural gas to be discovered in our exploration blocks are inherently uncertain. When projecting such future potential rates of production of oil and natural gas, we may have failed to take into account various relevant factors. See "Oil and Gas Reserves and Production Information" and "Risk Factors— Risks Relating to the Group, its Business and the Oil and Gas Industry."

Notice to Investors within Brazil

THE NOTES (AND THE RELATED NOTES GUARANTIES) HAVE NOT BEEN, AND WILL NOT BE, REGISTERED WITH THE BRAZILIAN SECURITIES AND EXCHANGE COMMISSION (*COMISSÃO DE VALORES MOBILIÁRIOS*) ("CVM"), AND MAY NOT BE PLACED, DISTRIBUTED, OFFERED OR SOLD IN BRAZILIAN CAPITAL MARKET, EXCEPT IN CIRCUMSTANCES THAT DO NOT CONSTITUTE A PUBLIC OFFERING, PLACEMENT OR UNAUTHORIZED DISTRIBUTION OF SECURITIES IN THE BRAZILIAN CAPITAL MARKET, UNDER BRAZILIAN LAWS AND REGULATIONS. DOCUMENTS RELATING TO THE OFFERING OF THE NOTES, AS WELL AS INFORMATION CONTAINED THEREIN, MAY NOT BE SUPPLIED TO THE PUBLIC IN BRAZIL, NOR BE USED IN CONNECTION WITH ANY OFFER FOR SUBSCRIPTION OR SALE OF THE NOTES TO THE PUBLIC IN BRAZIL. PERSONS WISHING TO OFFER OR ACQUIRE THE NOTES WITHIN BRAZIL SHOULD CONSULT WITH THEIR OWN COUNSEL AS TO THE APPLICABILITY OF REGISTRATION REQUIREMENTS OR ANY EXEMPTION THEREFROM.

Notice to Investors within Luxembourg

The terms and conditions relating to this Offering Memorandum have not been approved by and will not be submitted for approval to the Luxembourg Financial Sector Supervisory Authority (*Commission de Surveillance du Secteur Financier*) for purposes of public offering or sale in Luxembourg. Accordingly, the Notes may not be offered or sold to the public in Luxembourg, directly or indirectly, and neither this Offering Memorandum, the Indenture nor any other circular, prospectus, form of application, advertisement or other material related to such offer may be distributed, or otherwise be made available in or from, or published in, Luxembourg except in circumstances where the offer benefits from an exemption to or constitutes a transaction otherwise not subject to the requirement to publish a prospectus, in accordance with Regulation (EU) 2017/1129 and the Luxembourg law of July 16, 2019 on prospectuses for securities.

Additional Information

While any Notes remain outstanding, the Issuer and the Guarantors will make available, upon request, to any holder and any prospective purchaser of Notes the information required pursuant to Rule 144A(d)(4)(i) under the Securities Act, during any period in which the Issuer and the Guarantors (1) is not subject to, and in compliance with, Section 13 or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or (2) becomes exempt from such reporting requirements pursuant to, and in compliance with, Rule 12g3-2(b) of the Exchange Act (as amended from time to time and including any successor provision).

PRESENTATION OF FINANCIAL AND OTHER INFORMATION

General

The financial and related operating information contained in this Offering Memorandum presents the consolidated financial position of PetroRio, the ultimate parent of the Issuer and each of the Subsidiary Guarantors and other PetroRio entities named herein. We have elected this presentation, rather than a presentation focused on the Issuer because our management believes that PetroRio is the entity whose financial statements are most relevant to each investor in determining whether to invest in the Notes. The financial statements of PetroRio under International Financial Reporting Standards ("IFRS"), as issued by the International Accounting Standards Board ("IASB"), are attached to this Offering Memorandum as described below. We have provided the financial statements of the Issuer and several other entities, as detailed below, as attachments to this Offering Memorandum.

The use of the Issuer as the entity whose debt obligations are being offered hereby has been designed to ensure that holders of the Notes have debt obligations that (i) rank senior to all unsecured debt of the Issuer to the extent of the value of the Collateral and (ii) after the foreclosure of the Collateral, rank *pari passu* with all unsecured debt of the Issuer. The Issuer has historically maintained financial statements under IFRS and they are attached to this offering memorandum as described below.

Finally, we have provided additional credit enhancement in the form of guarantees by PetroRio and the Subsidiary Guarantors (and future Guarantors as contemplated in "*Description of Notes—Future Guarantors*"), also to ensure that holders of the Notes will have debt obligations that (i) rank senior to all unsecured debt of the Guarantors to the extent of the value of the Collateral and (ii) after the foreclosure of the Collateral, rank *pari passu* with all unsecured debt of the Guarantors. Since the Subsidiary Guarantors do not in the ordinary course maintain financial statements under IFRS and because the Subsidiary Guarantors themselves are being presented herein as additional credit support as described above, our management has determined that the Subsidiary Guarantors' financial statements will not be attached to this Offering Memorandum as the financial information on PetroRio (which consolidates the Subsidiary Guarantors) addresses what management believes is most integral to an investors decision on whether to invest in the Notes.

Financial Information

The financial information included in this Offering Memorandum should be read in conjunction with the Consolidated Financial Statements and the Issuer Financial Statements (each as defined below). This Offering Memorandum includes the following financial statements in respect of the Group:

PetroRio Financial Information

This Offering Memorandum includes the following financial statements in respect of PetroRio:

- the audited individual and consolidated financial statements of Petro Rio S.A. as of and for the year ended December 31, 2019, which include comparative financial information as of and for the year ended December 31, 2018 (the "2019 Audited Consolidated Financial Statements");
- the audited individual and consolidated financial statements of Petro Rio S.A. as of and for the year ended December 31, 2020, which include comparative financial information as of and for the year ended December 31, 2019 (the "2020 Audited Consolidated Financial Statements" and, together with the 2019 Audited Consolidated Financial Statements the "Audited Consolidated Financial Statements"); and
- the unaudited individual and consolidated interim financial information of Petro Rio S.A. as of March 31, 2021 and for the three-month periods ended March 31, 2021 and 2020 (the "Unaudited Individual and Consolidated Interim Financial Information" and, together with the Audited Consolidated Financial Statements, the "Consolidated Financial Statements").

The Audited Consolidated Financial Statements are presented in Brazilian *reais* and have been prepared in accordance with IFRS and have been audited by Ernst & Young Auditores Independentes S.S. ("EY

Brazil"), an independent registered public accounting firm. The Unaudited Individual and Consolidated Interim Financial Information is presented in Brazilian *reais* and have been prepared in accordance with International Accounting Standard 34, Interim Financial Reporting ("IAS 34"), as issued by the IASB. The Audited Consolidated Financial Statements include results for subsidiaries of PetroRio, including the Issuer. Certain figures included in this Offering Memorandum have been rounded for ease of presentation. Percentage figures included in this Offering Memorandum have not in all cases been calculated on the basis of such rounded figures but on the basis of such amounts prior to rounding. For this reason, percentage amounts in this Offering Memorandum may vary from those obtained by performing the same calculations using the figures in the Consolidated Financial Statements. Furthermore, certain numerical figures presented as totals may not always be arithmetic aggregations of the figures that preceded them due to rounding.

Issuer Financial Information

This Offering Memorandum also includes the following financial statements in respect of the Issuer:

- the audited financial statements of Petrorio Luxembourg S.à r.l. as of and for the year ended December 31, 2019, which include comparative financial information as of and for the year ended December 31, 2018 (the "Issuer 2019 Audited Financial Statements"); and
- the audited financial statements of Petrorio Luxembourg S.à r.l. as of and for the year ended December 31, 2020, which include comparative financial information as of and for the year ended December 31, 2019 (the "Issuer 2020 Audited Financial Statements" and, together with the Issuer 2019 Audited Financial Statements, the "Issuer Financial Statements").

The Issuer Financial Statements are attached to this Offering Memorandum and are presented in U.S. dollars and have been prepared in accordance with Luxembourg legal and regulatory requirements (Luxembourg GAAP). PetroRio believes that Luxembourg GAAP differs from IFRS as promulgated by the IASB. PetroRio does not believe that the preparation of the Issuer Financial Statements on the basis of IFRS would have had a material effect thereon as a whole, though this statement represents only our views and has not been confirmed by Ernst & Young, Société Anonyme Luxembourg, – Cabinet de revision agréé ("EY Luxembourg") or any other independent auditor and should be considered by any potential investor in the Notes on this basis. The Issuer Financial Statements have been audited by EY Luxembourg, an independent registered public accounting firm. EY Luxembourg was appointed as the Issuer's independent auditor on March 31, 2017. Historically, interim financial statements have not been prepared for the Issuer, though quarterly management prepared financial statements for the Issuer on a standalone basis and that are not subject by a review of EY Luxembourg will be provided to holders of Notes following the offering of the Notes. See "*Description of Notes—Certain Covenants—Reports to Holders.*"

Subsidiary Guarantor Financial Information

This Offering Memorandum does not include standalone financial statements for each of the Subsidiary Guarantors for the reasons stated above. As of and for the three-month period ended March 31, 2021, the Subsidiary Guarantors represented in the aggregate 102.2%, 100.0% and 99.4% of the Group's adjusted EBITDA, net revenue and total assets, respectively.

The table below sets forth each of the Subsidiary Guarantors' adjusted EBITDA, net revenue and total assets as a percentage of the Group's total as of and for the three-month period ended March 31, 2021.

Subsidiary Guarantor	Adjusted EBITDA	Net revenue	Total assets
	(% of Group total)(unaudited)		
PetroRio O&G	43.8%	42.0%	32.5%
PetroRio Luxembourg	21.3%	—	2.0%
PetroRio Jaguar	33.4%	0.1%	48.0%
PetroRio White Shark	(1.0)%	51.6%	7.8%

Subsidiary Guarantor	Adjusted EBITDA	Net revenue	Total assets
	(% of Group total)(unaudited)		
Petro Rio Internacional	0.4%	2.1%	9.2%
Petro Rio do Brasil	0.0%	—	—%
Petro Rio OPCO	4.3%	4.2%	—%
Total	**102.2%**[1]	**100.0%**	**99.4%**[2]

(1) Total adjusted EBITDA of 102.2% does not include the adjusted EBITDA attributable to PetroRio S.A., which represents (2.2)%.

(2) Does not include the total asset attributable to PetroRio S.A., which represents 0.6%.

Frade Field Historical Financial Information

On March 25, 2019, we completed the acquisition of a 51.74% working interest in the Frade Field (and related operational assets) from Chevron Corporation ("Chevron"), and on October 1, 2019, we completed the acquisition of an additional 18.26% working interest in the Frade Field (and related operational assets) from INPEX. See "*Business—Properties in Production and Development—The Frade Field*." As of December 31, 2019, our interest in the Frade Field thus reflected the acquisition of five separate companies, including Petro Rio Jaguar Petróleo Ltda., Frade LLC and Frade B.V., acquired from Chevron (the "Frade Field Chevron Acquisition"), and Petro Rio White Shark Petróleo Ltda. and IONC (Japan), both acquired from INPEX Corporation ("INPEX") (the "Frade Field INPEX Acquisition" and collectively with the Frade Field Chevron Acquisition, referred to herein as the "Frade Field Acquisitions").

We have only prepared financial statements for PetroRio Jaguar and PetroRio White Shark for the year ended December 31, 2019 in accordance with IFRS, which were audited by BKR – Lopes, Machado (the "Jaguar and White Shark 2019 Audited Financial Statements"), because PetroRio Jaguar and PetroRio White Shark represented the vast majority of the revenues, assets and liabilities related to the Frade Field. No audited financial statements for Frade LLC, IONC (Japan) and Frade B.V. existed at the time of the Frade Field Acquisitions because these entities had an immaterial amount of revenue, assets and liabilities, and therefore we have not prepared audited financial statements for these entities. We have not included the Jaguar and White Shark 2019 Audited Financial Statements in this Offering Memorandum for two main reasons. First, in connection with our reassessment of some estimates during the re-auditing of the PetroRio Audited Consolidated Financial Statements, it was determined that various adjustments as described herein were needed to the 2018 and 2019 audits previously performed and that the Jaguar and White Shark 2019 Audited Financial Statements were not subject to the changes made in the discount rate for abandonment provisions, reduction of liabilities or adjustment to the price paid by us for interests in the Frade Field. Because of this lack of direct comparability, we have determined that providing the Jaguar and White Shark 2019 Audited Financial Statements could lead to confusion for investors seeking to determine whether to invest in the Notes offered hereby. Second, as from March 25, 2019, the PetroRio Audited Consolidated Financial Statements consolidated our 51.74% working interest in the Frade Field, which management believes shows the impact of the bulk of the Frade Field Acquisitions, with the 51.74% working interest reflected from and after March 25, 2019 and the remaining 18.26% reflected from and after October 1, 2019, both being the actual dates of acquisition. Pursuant to the Frade Field Petrobras Acquisition, we acquired an additional 30% working interest in the Frade Field from Petrobras. The Frade Field Petrobas Acquisition closed on February 5, 2021 and since February 5, 2021, PetroRio accounts for 100% of the working interests in the field.

As further discussed in the sections entitled "Business—Overview" and "Business—History and Development," we have made certain strategic acquisitions that have materially impacted our business. In particular, on March 25, 2019, we completed the acquisition of a 51.74% working interest in the Frade Field from certain subsidiaries of Chevron pursuant to the Frade Field Chevron Acquisition. On October 1, 2019, we completed the acquisition of an additional 18.26% working interest in the Frade Field from certain

subsidiaries of INPEX pursuant to the Frade Field INPEX Acquisition, after which we had a 70% working interest in the Frade Field.

On November 28, 2019, we entered into an agreement with certain subsidiaries of Petróleo Brasileiro S.A. — Petrobras ("Petrobras") for the acquisition of the remaining 30% working interest in the Frade Field pursuant to the Frade Field Petrobras Acquisition (as defined herein). The Frade Field Petrobras Acquisition closed on February 5, 2021. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field. See "*Business—Details on the Acquisition of Fields—The Frade Field Petrobras Acquisition*."

Tubarão Martelo Field Historical Financial Information

On February 3, 2020, we signed an agreement with Dommo Energia S.A. ("Dommo Energia") for the acquisition of an 80% working interest in, and operatorship of, the Tubarão Martelo Field pursuant to the Tubarão Martelo Field Acquisition (as defined herein). On July 2, 2020, the ANP approved the Tubarão Martelo Field Acquisition. The Tubarão Martelo Field Acquisition closed on August 3, 2020. Accordingly, since August 4, 2020, PetroRio accounts for 80% of the working interest in the Tubarão Martelo Field. See "*Business—Properties in Production and Development—The Tubarão Martelo Field*."

Significant Changes in Accounting Practices

CPC 06 (R2) – Leasing Operations (IFRS 16 – Leases)

On January 1, 2019, PetroRio adopted *CPC 06 (R2) – Leasing Operations* (*IFRS 16 – Leases*) ("IFRS 16"), which replaces the previous lease accounting requirements under *CPC 06 (R1)* (*IAS 17 – Leases*) ("IAS 17") and introduces significant changes to the accounting and disclosure of operational leases.

On adoption of IFRS 16, we recognized lease liabilities and corresponding "right-of-use" assets in relation to leases which had previously been classified as "operating leases" under IAS 17. The lease liabilities were measured at the present value of the remaining lease payments, discounted using our incremental borrowing rate as of January 1, 2019. The right-of-use asset is depreciated using the straight-line method from the date of commencement of the lease to the earlier of the end of the useful life of the asset or the term of the agreement. The estimated useful lives of the right-of-use assets are determined on the same basis as those of property and equipment. For more information, see note 16 to the Unaudited Individual and Consolidated Interim Financial Information and notes 2.24, 2.25 and 16 to the 2020 Audited Consolidated Financial Statements.

CPC 23 – Accounting Policies, Changes in Accounting Estimates and Rectification of Errors

Change in Accounting Estimates

In January 2021, we asked DeGolyer and MacNaughton ("DeGolyer"), an independent international certifier, to reassess the Polvo Field and the Manati Field, focusing on the proved developed reserves. We compared the reserves included in the 2021 D&M Reserves Report and the reserves report prepared by DeGolyer in 2020, and added the production of each field for the year ended December 31, 2020 to the reserve numbers in the 2021 D&M Reserve Report, and as a result, we concluded that:

- the Polvo Field, showed an increase in its useful life through 2036, and, accordingly is expected to increase our recovery of proved reserves to 12.6 million barrels. The increase of Polvo Field's useful life means that we will amortize the Polvo Field assets, including the "Polvo A" Fixed Platform, over a longer period of time; and
- the Manati Field, decreased its useful life through 2025, and, accordingly, reduced our recovery of proved reserves to 46 million m^3, 7% of the total proved reserves considered in 2017, when we acquired a 10% working interest in the Manati Field. The decrease of Manati Field's useful life means that we amortize Manati Field's assets over a shorter period of time.

In April 2020, the Issuer acquired the FPSO Bravo for a purchase price of U.S.$140 million. The FPSO Bravo is a FPSO vessel dedicated to the Tubarão Martelo Field ("FPSO Bravo"), and which will be dedicated

as well to the Polvo Field following the completion of the TBMT-Polvo Tieback Project, to replace the FPSO that was chartered from BW Offshore for the Polvo Field. The FPSO Bravo is currently owned by PetroRio O&G, putting an end to the term of the FPSO charter agreement which was previously in place between Issuer and Dommo Energia. This change represented a reduction of R$433,631 thousand in leasing assets and liabilities for the year ended December 31, 2020.

Restatements

According to the CPC 23 – Accounting Policies, Changes in Accounting Estimates and Rectification of Errors, after reassessing certain topics and aiming at a better submission of its equity position and our operational and economic performance, as well as a more suitable interpretative application of the standards issued by the IASB and the CPC, we reviewed our audited financial statements for the years ended December 31, 2018 and 2019 ("Retrospective Restatement"). As a result of the adjustments identified in our financial statements for the year ended December 31, 2018, the Retrospective Restatement was carried out, and the 2019 Audited Consolidated Financial Statements approved at the shareholders' meeting held on December 4, 2020 include the presentation of the adjusted figures for the year ended December 31, 2018, as set forth in Note 2.25 to the 2019 Audited Consolidated Financial Statements. EY Brasil, the auditor responsible for auditing the 2019 Audited Consolidated Financial Statements, included the years ended December 31, 2018 and 2019 in its audit opinion, and is responsible for both periods. Therefore, an audit opinion for the year ended December 31, 2018 did not need to be reissued. Our financial information as of and for the years ended December 31, 2019 and 2018 derived from the Audited Consolidated Financial Statements and included in this Offering Memorandum reflect the restated amounts. There were no such restatements in respect of our financial information as of December 31, 2020 and for the years ended December 31, 2020 and 2019 derived from 2020 Audited Consolidated Financial Statements and included in this Offering Memorandum.

Non-IFRS Financial Measures

EBITDA, adjusted EBITDA, adjusted EBITDA margin and net debt (cash) are supplemental non-IFRS financial measures that are used by management and external users of the Consolidated Financial Statements, such as industry analysts, investors, lenders and rating agencies. These non-IFRS financial measures should not be considered as alternatives to, or more meaningful than, comparable financial measures determined in accordance with IFRS.

EBITDA, Adjusted EBITDA, EBITDA Margin and Adjusted EBITDA Margin

We define EBITDA as income (loss) for the year or period before depreciation and amortization expenses, financial revenues and expenses, and current and deferred income tax and social contribution. We define adjusted EBITDA as EBITDA less other operating revenues (expenses), net and the effects of the adoption of IFRS 16. As the depreciation of the FPSO Bravo in the year ended December 31, 2020 was recorded in "other operating revenues (expenses), net" line item, this expense was removed from the calculation of adjusted EBITDA as it is already included in the calculation of EBITDA. The effects of the adoption of IFRS 16 (interest, adjustment to present value and depreciation) are already excluded to the calculation of EBITDA due to their nature. To calculate the adjusted EBITDA, we add back rental expenses that under IFRS 16 are no longer included in our cost to modify the EBITDA artificially. We define EBITDA margin as EBITDA divided by net revenue. We define adjusted EBITDA margin as adjusted EBITDA divided by net revenue. None of EBITDA, adjusted EBITDA, EBITDA margin or adjusted EBITDA margin is a measure of profit or cash flows as determined by IFRS.

We believe EBITDA, adjusted EBITDA, EBITDA margin and adjusted EBITDA margin are useful because they allow us to more effectively evaluate our operating performance and compare the results of our operations from period to period without regard to our financing methods or capital structure. We exclude the items listed above from income (loss) for the year or period in arriving at EBITDA and adjusted EBITDA because these amounts can vary substantially from company to company within our industry depending upon accounting methods and book values of assets, capital structures and the method by which the assets were acquired. EBITDA and adjusted EBITDA should not be considered as alternatives to, or more meaningful

than, income for the year or period or cash flow from operating activities as determined in accordance with IFRS or as an indicator of our operating performance or liquidity. Certain items excluded from EBITDA and adjusted EBITDA are significant components in understanding and assessing a company's financial performance, such as a company's cost of capital and tax structure and significant and/or recurring write-offs, as well as the historic costs of depreciable assets, or unrealized gains in commodity risk management contracts, none of which are components of EBITDA and adjusted EBITDA. Our computation of EBITDA and adjusted EBITDA may not be comparable to other similarly titled measures of other companies.

For a reconciliation of EBITDA and adjusted EBITDA to the IFRS financial measure of income for the years ended December 31, 2020, 2019 and 2018 and March 31, 2021 and 2020, see "*Summary—Summary Historical Financial and Other Data—Other Financial and Operating Data—Reconciliation of Income (Loss) to EBITDA and Adjusted EBITDA*."

Beginning on January 1, 2019, we have calculated EBITDA and EBITDA margin after giving effect to the adoption of IFRS 16. The EBITDA and EBITDA margin figures for the year ended December 31, 2018 included in this Offering Memorandum do not give effect to the adoption of IFRS 16, and therefore may not be comparable with the EBITDA and EBITDA margin figures for the year ended December 31, 2020 and 2019 included in this Offering Memorandum, which do give effect to the adoption of IFRS 16. Therefore, we have also included in this Offering Memorandum adjusted EBITDA and adjusted EBITDA margin figures for the years ended December 31, 2020 and 2019 which do not give effect to the adoption of IFRS 16 for the purpose of comparability among periods. See "*Summary—Summary Historical Financial and Other Data—Other Financial and Operating Data—Reconciliation of EBITDA and EBITDA Margin to Adjusted EBITDA and Adjusted EBITDA Margin*."

Net Debt (cash)

We define net debt (cash) as the sum of current and non-current loans and financing and debentures (gross debt), less cash and cash equivalents, securities and restricted cash. Net debt (cash) is not a measure that is defined under IFRS or any other generally accepted accounting principles, do not have a standardized meaning, and different companies may use different definitions for net debt (cash). Therefore, our definition of net debt (cash) may not be comparable to the definitions used by other companies. We believe net debt (cash) is a useful measure in assessing our degree of indebtedness in relation to our cash position. Our definition of net debt (cash) excludes any capital lease which would be considered an operating lease under IFRS prior to the adoption of IFRS 16.

For a reconciliation of net debt (cash) to the relevant IFRS financial measure as of March 31, 2021 and 2020, and December 31, 2020, 2019 and 2018, see "*Summary—Summary Historical Financial and Other Data*."

Translation of *Reais* into U.S. Dollars

Unless otherwise stated, all financial information and other amounts included in this Offering Memorandum are expressed in Brazilian *reais*, or R$. We have translated some of the *real* amounts contained in this Offering Memorandum into U.S. dollars. Unless otherwise stated, the rate used to translate these amounts is R$5.6973 to U.S.$1.00, which was the commercial U.S. dollar selling rate as of March 31, 2021, as reported by the Brazilian Central Bank on its electronic information system, SISBACEN, under transaction code PTAX800, Option 5, "*venda*." This information is presented solely for the convenience of the reader and is not in accordance with generally accepted accounting principles. You should not interpret the currency translations in this Offering Memorandum as a representation that the amounts in Brazilian *reais* represent current values in U.S. dollars. Additionally, you should not interpret such translations as a representation that the amounts in the Brazilian *reais* have been, could have been or could be converted into U.S. dollars at this or any other foreign exchange rates. As of May 26, 2021, the exchange rate for the Brazilian *real* against the U.S. dollar was R$5.3164 per U.S.$1.00, representing an appreciation of the Brazilian *real* of 6.7% compared to March 31, 2021.

Industry and Market Data

Market data, other statistical information, information regarding recent developments in Brazil and certain industry forecast data used in this Offering Memorandum were obtained from internal reports and studies, where appropriate, as well as estimates, market research, publicly available information and industry publications. Industry publications generally state that the information they include has been obtained from sources believed to be reliable, but that the accuracy and completeness of such information is not guaranteed and forecasts in particular may be impacted by the COVID-19 pandemic and oil price disruption, as well as general economic downturn. Similarly, internal reports and studies, estimates and market research, which we believe to be reliable and accurately extracted by us for use in this Offering Memorandum, have not been independently verified. However, we believe such data is accurate and agree that we are responsible for the accurate extraction of such information from such sources and its correct reproduction in this Offering Memorandum.

OIL AND GAS RESERVES AND PRODUCTION INFORMATION

DeGolyer and MacNaughton Reserves Reports

The information included in this Offering Memorandum regarding estimated quantities of reserves is derived from the following reports prepared by DeGolyer:

- the report as of January 1, 2021 on reserves and revenue of certain fields in Brazil with interests attributable to PetroRio (the "2021 D&M Reserves Report"), a copy of which is attached hereto as Annex A; and
- the report as of April 30, 2020 on reserves and revenue of certain fields in Brazil with interests attributable to PetroRio (the "2020 D&M Reserves Report" and, together with the 2021 D&M Reserves Report, the "D&M Reserves Reports"), a copy of which is attached hereto as Annex B.

DeGolyer has prepared our certified reserve reports since the beginning of our operations. While we constantly evaluate the market of independent reserve engineering firms by technical and financial criteria, we have chosen to continue to work with DeGolyer due to their familiarity with our assets developed over the course of their work with us, as well as their specialized knowledge of the Campos Basin, where most of our assets are located, from their work with Petrobras and other major oil and gas companies. See "*Business—Oil and Natural Gas Reserves—Independent Qualified Reserves Engineers*."

The reserves estimates in the D&M Reserves Reports were prepared in accordance with the Petroleum Resources Management System ("PRMS") approved in March 2007 (and revised in June 2018) by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, the Society of Petroleum Evaluation Engineers, the Society of Exploration Geophysicists, the Society of Petrophysicists and Well Log Analysts and the European Association of Geoscientists & Engineers. Under PRMS, proved reserves are estimated quantities of oil, condensate and natural gas from which there is geological and engineering data that demonstrate with reasonable certainty that they are recoverable in future years from known reservoirs under existing economic and operating conditions.

Unless noted otherwise, the reserves information provided throughout this Offering Memorandum refers to "gross" reserves. Gross reserves represent the total estimated petroleum remaining to be produced from the relevant property after the date of the relevant D&M Reserves Report, and "net" reserves represent that portion of gross reserves attributable to our working interests after deducting interests held by others, including royalties paid in kind. As our government royalties are paid in cash, the net reserves figures provided throughout this Offering Memorandum have not been reduced in consideration of such royalty obligation.

The reserves information provided throughout this Offering Memorandum as of January 1, 2021 and derived from the 2021 D&M Reserves Report reflects estimates of the extent and value of the net and gross reserves of the Polvo Field, the Tubarão Martelo Field, the Frade Field and the Manati Field and Contingent Reserves of the Wahoo-Itaipu Field. The Tubarão Martelo Field Acquisition (as defined herein), pursuant to which we acquired our working interests in the Tubarão Martelo Field, closed on August 3, 2020. The Frade Field Petrobras Acquisition (as defined herein), pursuant to which we acquired an additional 30% working interest in the Frade Field, closed on February 5, 2021. See "*Summary—Acquisitions*" and note 12(c) to the Unaudited Individual and Consolidated Interim Financial Information.

The reserves information provided throughout this Offering Memorandum as of January 1, 2021 and derived from the 2021 D&M Reserves Report reflects estimates of the extent and value of the net and gross reserves of the Polvo Field and the Manati Field.

The projected forecasts and estimated economic limits occur beyond the expiration of the concession agreements for the Polvo Field, the Tubarão Martelo Field and the Frade Field. PetroRio has represented that it will meet the conditions required by the ANP to obtain concession extensions. Based on this representation, and at PetroRio's request the reserves evaluated herein consider the potential concession extensions for those fields.

The oil and sales gas reserves of the properties in which PetroRio has a working interest are expressed in the D&M Reserves Reports in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3), respectively. In this Offering Memorandum, oil reserves are also expressed in "boe," utilizing a conversion factor of 1 bbl to 1 boe, and sales gas reserves are also expressed in "Mscm," utilizing a conversion factor of 1 million cubic feet to 0.02831685 Mscm. In this Offering Memorandum, gas reserves are also expressed in "boe," utilizing a conversion factor of 1 MCF to 0.1781 BOE.

In general, estimates of crude oil, natural gas liquids and conventional natural gas reserves are based upon a number of variable factors and assumptions, such as production rates, ultimate reserves recovery, timing and amount of capital expenditures, ability to transport production, marketability of oil and natural gas, royalty rates, the assumed effects of regulation by governmental agencies and future operation costs, all of which may vary materially from actual results. For those reasons, among others, estimates of crude oil, natural gas liquids and conventional natural gas reserves attributable to any particular group of properties may vary over time.

RESERVES ENGINEERING IS A SUBJECTIVE PROCESS OF ESTIMATING UNDERGROUND ACCUMULATIONS OF OIL AND NATURAL GAS THAT CANNOT BE MEASURED IN AN EXACT MANNER, AND THE ACCURACY OF ANY RESERVES OR RESOURCE ESTIMATE IS A FUNCTION OF THE QUALITY OF AVAILABLE DATA AND OF ENGINEERING AND GEOLOGICAL INTERPRETATION AND JUDGMENT. ESTIMATES BY DIFFERENT ENGINEERS OFTEN VARY, SOMETIMES SIGNIFICANTLY.

Production Information

Unless noted otherwise, the production information in this Offering Memorandum reflects the average daily production volumes at our properties attributable to our working interests for the periods indicated. We have noted throughout this Offering Memorandum where certain production information also reflects average daily production volumes attributable to our working interests. We have not made any pro forma adjustments in respect of the Wahoo-Itaipu Acquisitions, as the Wahoo and Itaipu fields are not yet operational.

Unless noted otherwise, the production information in this Offering Memorandum in respect of:

- the three-month period ended March 31, 2021 reflects average daily production volumes at the Polvo Field, the Frade Field (attributable to our 70% working interest through February 4, 2021 and attributable to our 100% working interest since February 5, 2021), the Tubarão Martelo Field (attributable to our 80% working interest) and the Manati Field (attributable to our 10% working interest). We are in the process of selling our working interest in the Manati Field pursuant to the Manati Field Sale (as defined below). When the Manati Field Sale closes, its effect will retroact to January 1, 2021 and we will no longer be entitled to cash generated by Manati, including payments under the Petrobras Take-or-Pay Agreement, calculated as of January 1, 2021;
- the year ended December 31, 2020 reflects average daily production volumes at the Polvo Field, the Frade Field (attributable to our 70% working interest), the Tubarão Martelo Field (attributable to our 80% working interest) and the Manati Field (attributable to our 10% working interest) and has not been adjusted to give effect to the Frade Field Petrobras Acquisition, which closed on February 5, 2021;
- the year ended December 31, 2019 reflects average daily production volumes at the Polvo Field, the Frade Field (attributable to our 51.74% working interest therein from March 25, 2019 to October 1, 2019 following the Frade Field Chevron Acquisition and our 70% working interest therein from October 1, 2019 to December 31, 2019 following the Frade Field INPEX Acquisition) and the Manati Field (attributable to our 10% working interest); and
- the year ended December 31, 2018 reflects average daily production volumes at the Polvo Field and the Manati Field (attributable to our 10% working interest).

FORWARD-LOOKING STATEMENTS

This Offering Memorandum contains statements that constitute forward-looking statements. Many of the forward-looking statements contained in this Offering Memorandum can be identified by the use of forward-looking words such as “anticipate,” “believe,” “could,” “expect,” “should,” “plan,” “intend,” “will,” “estimate” and “potential,” among others.

Forward-looking statements appear in a number of places in this Offering Memorandum and include, but are not limited to, statements regarding our intent, belief or current expectations. Forward-looking statements are based on our management’s beliefs and assumptions and on information currently available to our management. Such statements are subject to risks and uncertainties, and actual results may differ materially from those expressed or implied in the forward-looking statements due to various factors, including, but not limited to, those identified in the “Risk Factors” section of this Offering Memorandum and in our Annual Report incorporated by reference herein. These risks and uncertainties include factors relating to:

- the outbreak of the novel coronavirus (“COVID-19”), the onset of novel or variant strains and dissemination delays of vaccines for COVID-19, as well as other pandemics and their impacts on the sanitary, health, political and economic conditions worldwide and specifically in Brazil;
- the volatility of oil and natural gas prices;
- operating risks, including equipment failures and the amounts and timing of revenues and expenses;
- termination of, or intervention in, concessions, rights or authorizations granted by the Brazilian government to us;
- uncertainties inherent in making estimates of our oil and natural gas data, including our reserves;
- discovery and development of oil and natural gas reserves;
- unforeseen technical difficulties in the operation of our equipment and the provision of our services;
- implementation of our strategies;
- maintenance and growth of our customer base, as well as the financial and operational situation of our customers and the availability of credit for our customers;
- competition in the sector, changes in demand for our services and products, pressures on price formation, introduction of new products and services by our competitors;
- our ability to serve our customers satisfactorily;
- leaks, oil splashes, gas release or soil contamination resulting from storage operations and activities; delays, excess or increase in costs not foreseen in the implementation or execution of our projects;
- our ability to integrate recently acquired businesses or those we may acquire in the future, as well as to obtain the expected synergy for these acquisitions;
- our ability to implement our expansion strategy, through acquisitions or organically;
- our ability to obtain financing for our projects and acquisition plans;
- our ability to keep up with and adapt to technological innovations;
- interruptions, stoppages or operational failures related to our exploration activities and those of our subsidiaries;
- increase in operating costs, including, but not limited to: (i) the cost of raw materials; (ii) operating and maintenance costs; (iii) regulatory and environmental taxes, as well as (iv) creation of new taxes and/or increase on existing taxes;
- negative factors or trends that may affect our business, market share, financial condition, liquidity or the results of our operations;

- our level of capitalization and indebtedness and our ability to contract new financing on favorable terms and conditions;
- changes in the competitiveness of our industry;
- political instability in Brazil;
- governmental interventions, resulting in changes in the economy, taxes, tariffs, regulatory environment or environmental regulations in Brazil and other countries in which we operate;
- changes in general economic conditions, including, for example, inflation, interest rates, exchange rates, which have experienced significant volatility since the onset of the COVID-19 pandemic, employment levels, population growth and consumer confidence;
- changes in laws and regulations, including those involving tax, labor and zoning issues;
- our ability to obtain, maintain and renew applicable governmental authorizations and licenses, including environmental authorizations and licenses that enable our projects;
- our ability to locate, explore and produce oil and gas reserves in our existing fields and in new fields that we may acquire in the future;
- impacts arising from the contamination of our employees with COVID-19;
- unavailability of drilling units and other equipment;
- diverging interests on economic and financial issues and disagreements between us and our partners, which may result in litigation;
- *force majeure* events that affect Brazil and the other markets in which we operate;
- impacts of future laws and regulations on our business; and
- other factors affecting our current operating results, financial condition, liquidity, performance, prospects, opportunities, results and market, discussed under the "Risk Factors" section of this Offering Memorandum.

Forward-looking statements speak only as of the date they are made, and we do not undertake any obligation to update them in light of new information or future developments or to release publicly any revisions to these statements in order to reflect later events or circumstances or to reflect the occurrence of unanticipated events.

SUMMARY

This summary highlights certain information appearing elsewhere in this Offering Memorandum. As this is a summary, it does not contain all of the information that you should consider in making an investment decision. You should read this entire Offering Memorandum carefully, including the information under "Forward-Looking Statements," "Risk Factors," "Selected Historical Financial Information," "Management's Discussion and Analysis of Financial Condition and Results of Operations," as well as the Consolidated Financial Statements and the accompanying notes thereto included elsewhere in this Offering Memorandum before investing in the Notes.

Overview

According to the ANP's monthly production bulletin issued in May 2021, relating to production for March 31, 2021, we have established ourselves as one of the main oil and gas companies operating currently in Brazil and the leading company among the independent oil and gas companies in Brazil based on production volume of oil and gas products, with a focus on operating and developing producing assets and a core portfolio consisting of four operating fields, three located in the Campos Basin and one located in the Camamu-Almada Basin in offshore Brazil.

Our strategy is centered around the acquisition and development of producing hydrocarbon fields, since our acquisition of a controlling working interest in the Polvo Field in 2014. By reducing operating costs, investing in targeted redevelopment initiatives and implementing enhanced oil recovery ("EOR") techniques, we have been able to increase our assets' reserves and production, as well as extend their economic life, while at the same time maintaining leading health, safety and environmental ("HSE") standards. At the Polvo Field, we were able to reduce lifting and other operational costs by 65% from R$1,250,000 thousand (or U.S.$240,000 thousand) in 2013 to R$434,408 thousand (or U.S.$85,855 thousand) in 2020 and extend its economic life by approximately 18 years to 2035 through extensive well interventions, drilling and maintenance work, and the expected synergies with the neighboring Tubarão Martelo Field.

Our strategy has been bolstered by Petrobras' strategy to divest its mature fields in Brazil in favor of pre-salt exploration areas, which has allowed us to make key acquisitions in recent years. Following our acquisition of the remainder of the working interest in the Polvo Field in 2015, we diversified our asset portfolio in 2016 and 2017 by acquiring non-operating interests in the Manati Field, a gas producing field. On November 5, 2020, we announced the sale of our 10% working interest in the Manati Field, held through our subsidiary Petro Rio Coral Exploração Petrolífera Ltda., to Gas Bridge. The Manati Field Sale is subject to the satisfaction of conditions precedent, including the Petrobras Condition Precedent. See "*Business—Properties in Production and Development —Manati Field —Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

In 2019, 2020 and 2021, we announced acquisitions of controlling working interests in the Frade Field, in which we have had a 100% working interest since February 5, 2021, and the Tubarão Martelo Field, in which we have an 80% interest. As of March 31, 2021, we hold a 100% working interest in the Frade Field and an 80% interest in the Tuburão Martelo Field, which are located near the Polvo Field in the Campos Basin and present immediate opportunities for operational synergy, including through shared logistics and potential tie-back developments.

On November 18, 2020, PetroRio Jaguar and BP Energy do Brasil Ltda. ("BP Brazil") entered into an agreement pursuant to which PetroRio Jaguar will acquire a 37.5% working interest in the BM-C-30 Block (the "Wahoo Field") and a 60% working interest in the BM-C-32 Block (the "Itaipu Field"), each owned by BP Brazil, subject to the satisfaction of conditions precedent, including regulatory approvals (the "Wahoo Itaipu BP Acquisition"). On March 4, 2021 we announced the signing of an agreement with Total Brasil for the acquisition of a 28.6% working interest in the Wahoo Field (the "Wahoo Total Acquisition" and together with the Wahoo-Itaipu BP Acquisition, the "Wahoo-Itaipu Acquisitions"). The Wahoo-Itaipu Acquisitions,

which remain subject to conditions precedent, will entitle us to a 64.3% working interest in the Wahoo Field. These transactions are consistent with our strategy of inorganic growth.

We are classified as an Operator A by the ANP, which allows us to operate offshore (including shallow, deep and ultra-deep waters) and onshore blocks in Brazil.

As described below, we have experienced significant growth during the last few years. According to our internal data, our production increased from 23.4 Mboepd in the three-month period ended March 31, 2020 to 31.3 Mboepd in the three-month period ended March 31, 2021. See "*Oil and Gas Reserves and Production Information.*"

Furthermore, our certified net proved and probable reserves increased from 192.6 MMboe as of April 30, 2020 to 209.3 MMboe as of January 1, 2021, and our certified 2C contingent resources totaled 141 MMboe as of January 1, 2021, according to the 2021 D&M Reserves Reports. See "*Oil and Gas Reserves and Production Information.*"

The following graph shows our current assets, assets being acquired or sold, and other main information.

PetroRio at a Glance

Company's Asset Base

	Cluster Polvo + TBMT	Cluster Frade + Wahoo	Manati[1]	Petrorio[2]
Basin	Campos	Campos	Camamu	-
Operator	PetroRio	PetroRio	Petrobras	-
PetroRio's Working Interest	95%[3]	100% | 64.3%[4]	10%	-
PetroRio's Owned Production Units	1 FPSO + 1 Fixed Platform	1 FPSO	-	2 FPSO 1 Fixed Plataform
1P Reserves (MMbbl)	62.9	55.6	0.03	119
2P Reserves (MMbbl)	110.6	94.7	0.04	206
Contingent Resources 1C | 2C (MMbbl)	-	87.4 | 118.3	-	87.4 | 118.3
1Q21 Production (kboe/d)	Polvo: 8.3 TBMT: 6.2	Frade 16.1 Wahoo: -	2.1	32.7
Water Depth	100m	1,300m – 1,400m	80m	-
Abandonment Forecast (1P)	2037	2050	2026	-

FRADE | POLVO | TUBARÃO MARTELO (TBMT) | MANATI

Source: D&M Reserves Reports for reserves data; and PetroRio management information for all other data.

(1) We are in the process of selling our working interest in the Manati Field pursuant to the Manati Field Sale. See "*Business—Properties in Production and Delevopment—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

(2) Production volume proportional to our participation in the following assets: 70% in the Frade Field through February 4, 2021 and 100% in the Frade Field since February 5, 2021; 100% in the Polvo Field; 80% in the Tubarão Martelo Field and 10% in the Manati Field.

(3) Pre-tieback: 100% of the Polvo Field and 80% of the Tubarão Martelo Field. Post-tieback: 95% of the Polvo Field and the Tubarão Martelo Field.

(4) As adjusted to give effect to the acquisition of an additional 28.6% working interest in Wahoo as announced in March 2021. The Wahoo-Itaipu Acquisitions are subject to the satisfaction of conditions precedent. See "*Business—Material Contracts—The Wahoo Field and Itaipu Field*."

Details on the Acquisition of Fields

The Frade Field Petrobras Acquisition

On November 28, 2019, we entered into a stock purchase agreement with Petrobras for the acquisition of Petrobras' (1) rights and obligations in connection with the exploration, development and production of oil and natural gas, corresponding to a 30% working interest in the Frade Field, which is located in the Campos Basin, north shore of the state of Rio de Janeiro, and (2) 30% of the share capital of Frade B.V., entity that holds the offshore assets used to develop the Frade Field. The Frade Field Petrobras Acquisition closed on February 5, 2021. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field.

This transaction was carried out by one of our subsidiaries, and we now hold 100% of the Frade Field and the totality of the field production. We plan to initiate the revitalization plan of the Frade Field. The Frade Field Petrobras Acquisition also grants us the totality of the benefits deriving from our initiatives to reduce costs and to increase the production since the effective date of its acquisition.

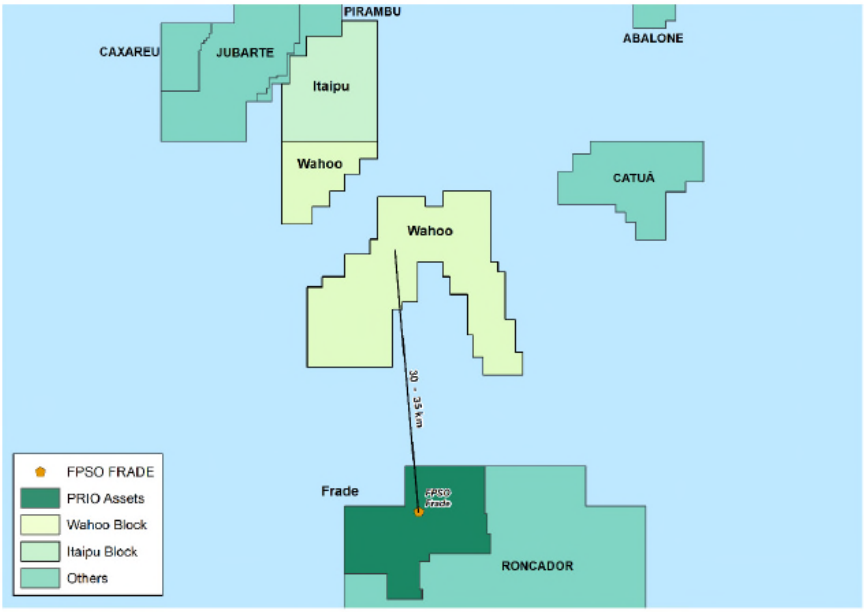
The Wahoo-Itaipu Acquisition

On November 19, 2020, we announced that we entered into an agreement with BP Brazil to acquire a 35.7% working interest in the Wahoo Field, and a 60% working interest in the Itaipu Field for the total amount of U.S.$100 million. The remaining member of the Wahoo Field consortium is IBV, which holds a working interests of 36% in this field. Total owns the remaining 40% working interest in the Itaipu Field.

On March 4, 2021 we announced the Wahoo Total Acquisition. The Wahoo-Itaipu Acquisitions, which remain subject to the satisfaction of conditions precedent, will entitle us to a 64.3% working interest in the Wahoo Field.

The Wahoo Field is located about 30-35 km from the Frade Field. It has a water depth of 1,400 meters and a carbonate reservoir in the pre-salt layer of 5 to 7 thousand meters. Oil was first discovered in the Wahoo Field in 2008 and formation tests were carried out in 2010. The Wahoo Field has production potential of over 140 million barrels (considering an interest of 100% in the Wahoo field) and its acquisition is consistent with our value generation strategy.

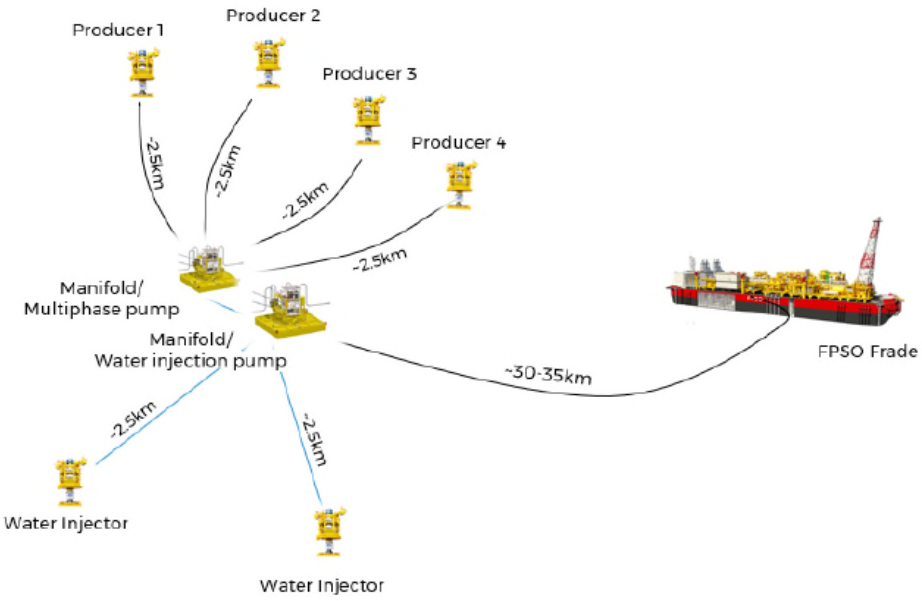
The Itaipu Field, discovered in 2009, has three pilot wells drilled and is close to the Parque das Baleias cluster. The graph below sets forth the geographic location of the Wahoo Field and the Itaipu Field.



Source: PetroRio's geology and geophysics department.

The Wahoo-Itaipu Acquisitions are aligned with the strategy of our business model, of forming production clusters through tiebacks, field redevelopment and operational optimization. During the investment analysis period, we identified that it would be possible to make the interconnection between the Wahoo Field and the Frade Field, taking advantage of the existing infrastructure. This project includes the drilling of four producing wells, two injection wells, the installation of a submarine manifold with multiphase pumps for the flow of produced oil and injected water, and the tieback between the manifold and the FPSO Frade.

The graph below shows the planned tieback between the Frade Field and the Wahoo Field.



Source: PetroRio's management data.

The Wahoo-Itaipu Acquisitions reflect our capabilities to carry out strategic M&A acquisitions in the Brazilian oil and gas market.

Recent Developments

Polvo Field Drilling Result

On May 10, 2021, we announced drilling in the Polvo Field's Eocene reservoir, which resulted in a well with initial production of 2,500 boepd. This well is still in the assessment period and is recorded in the 2021 D&M Reserves Report.

The well's estimated recoverable production is of approximately 4 MMboe. Polvo Field's production will increase to 12,000 boepd and is expected to contribute to reduce our lifting costs.

Chevron Repayment

On May 5, 2021 we paid Chevron in respect of the Frade Field Chevron Acquisition SPA. See "*Business—Material Contracts—The Frade Field—The Frade Field Acquisition SPA.*"

Stock Split

On April 30, 2021, PetroRio's Board of Directors approved a stock split of PetroRio's outstanding shares of common stock at a ratio of one-to-five. Accordingly, every share was split into five shares. PetroRio's shares began trading on a split adjusted basis on May 6, 2021. As a result of the share split, PetroRio issued 702,664,676 common shares and the total number of outstanding common shares increased to 878,330,845 common shares. The purpose of the stock split was to increase liquidity of PetroRio's common shares.

Appointment of Chief Financial Officer

On April 9, 2021, PetroRio's Board of Directors appointed Mr. Milton Salgado Rangel Neto as Chief Financial Officer of PetroRio. Mr. Roberto Bernardes Monteiro will continue to serve as Chief Executive Officer and Investor Relations Officer. See "*Management—Executive Officers.*"

Impacts of the COVID-19 Pandemic

As a result of the COVID-19 outbreak, and the resulting global containment measures as well as actions taken by the OPEC, we are currently facing oil market conditions marked by increased supply, along with a significant reduction in demand. These two main factors led to an oil surplus build up, resulting in a sharp drop in oil prices in the three-month period ended March 31, 2020 (Brent price fell by more than 55% between December 2019 and March 2020, according to our management). Following OPEC's agreement in April 2020 to cut production in response to reduced demand and sustained low oil prices, as well as the gradual reopening of economies and reduction in social distancing measures during this period, Brent oil prices had reached U.S.$63.54 per barrel as of March 31, 2021 and U.S.$51.80 per barrel as of December 31, 2020.

As a consequence of the recent volatility in oil prices, we have taken decisive measures, such as postponing our capital expenditures, including ongoing drilling campaigns in connection with the Frade Field Redevelopment Plan. We have also reduced our operating and administrative expenses through, among other measures, renegotiations with suppliers and temporarily reducing the compensation of all onshore employees and officers.

We have also implemented a number of safety measures designed to protect the health of our personnel at our onshore and offshore facilities, such as:

- reduction in the number of non-essential personnel located at our facilities and implementation of screening procedures (with support from medical professionals) for all personnel entering our offshore facilities;

- restriction of personnel movement to the minimum required to operate our facilities in a safe and efficient manner (with no international travel allowed and domestic travel allowed only for out-of-state employees critical to the operation of offshore facilities);
- increase in availability of protective, sanitation and hygiene products at our facilities;
- remote working arrangements for personnel based at our onshore facilities and suspension of all social events; and
- increased and consistent communication with our personnel regarding measures in place.

We are continuously monitoring the situation to adjust our response if necessary.

As a result of the measures we have implemented in response to the COVID-19 pandemic we have achieved certain cost reductions, as set out below. We compared the budget approved in December 2019 for the year 2020, and the budgeted amounts after taking into consideration the impact of COVID-19 in April 2020:

- reduction of our budget operational and administrative expenses by 13%, from U.S.$175 million (U.S.$104 million for the Polvo Field, and U.S.$71 million for the Frade Field) to U.S.$152 million (U.S.$89 million for the Polvo Field, and U.S.$63 million for the Frade Field) as the result of renegotiations with suppliers;
- reduction of our budget general and administrative expenses by 15%, from U.S.$21.7 million to U.S.$18.5 million as the result of payroll reductions, people on board/extension of on board periods, and suspension of corporate activities, sponsorships, travels and new hires; and
- reduction on our budget capital expenditures by 84%, from U.S.$179 million (U.S.$33 million for the Polvo Field, U.S.$100 million for the Frade Field, U.S.$16 million for ongoing drilling campaigns at the Tubarão Martelo Field, and U.S.$30 million for the TBMT-Polvo Tieback Project), to U.S.$29 million (U.S.$18 million for the Polvo Field, and U.S.$11 million for the Frade Field).

Review of Business Plan and Further Measures Adopted

Taking into consideration the uncertainty and volatility related to the spread of COVID-19 and the decrease in Brent oil prices during the first half of 2020, in addition of the several monitoring and prevention measures we adopted, we also reviewed our business plan and decided to postpone all investments (capital expenditures) in our assets and reduce expenses (operating expenditures, and general and administrative expenses) to readjust to this new scenario, such as:

- immediate reduction of people on board (POB) and extension of onboard periods for all assets we operate, keeping personnel movement at a minimum necessary in order to operate safely and efficiently;
- increased availability of protective, sanitation and hygiene products in onshore and offshore facilities directly related to our production, particularly in locations with higher exposure;
- increased frequency of communication and awareness to all employees and service providers stationed in onshore and offshore locations;
- adoption of screening procedures at the airport – with support from registered nurses – of personnel boarding the platforms. This includes 48-hour monitoring before embarking to identify potential cases;
- reduction of operating expenditures to U.S.$12.5 million per month (100% for the Polvo Field, and 100% for the Frade Field), compared to U.S.$16 million per month in 2019 (100% for the Polvo Field, and 100% for the Frade Field);

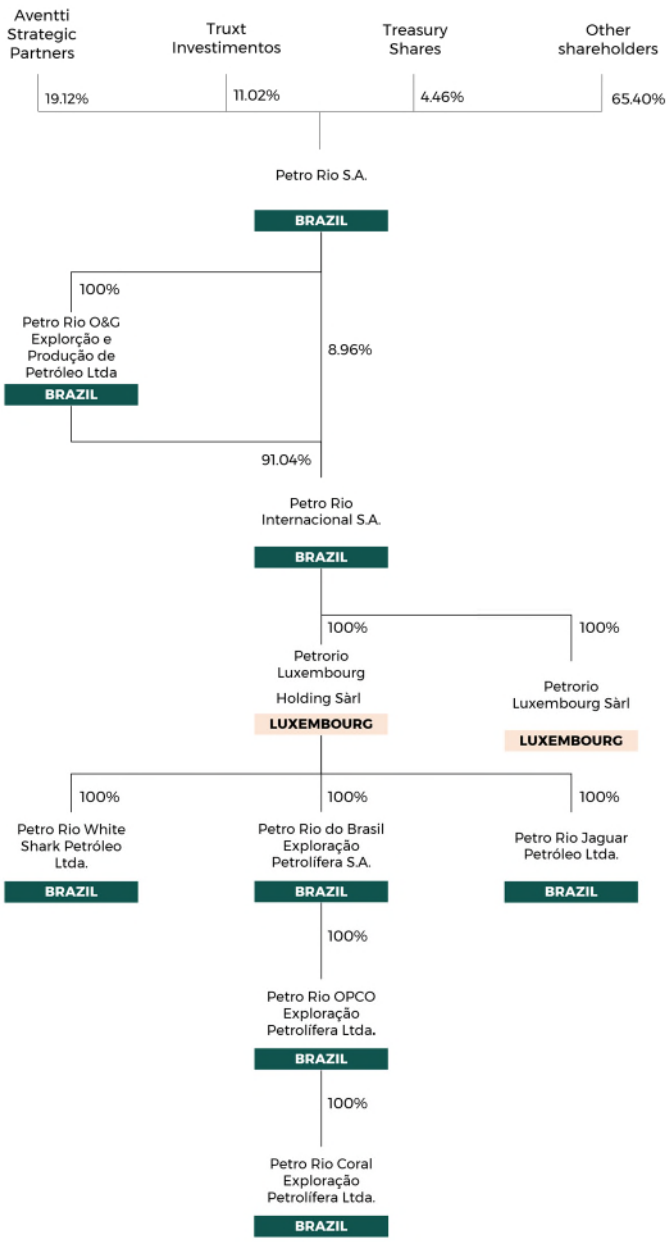
- steps to the re-commission the tanks in the FPSOs dedicated to the Tubarão Martelo Field and the Polvo Field, which increased our nominal oil storage capacity to 3.5 million barrels, resulting in more flexibility to offtakes dependent on the market conditions;
- suspension of all international travel, and limitation of domestic travel solely to employees critical to offshore facilities who reside in other states (preference to travel by car); and
- all in-person events have been suspended.

In addition to the measures above, (i) employees located at the corporate headquarters and onshore units started to work remotely (home office); (ii) we postponed 100% of our capital expenditures scheduled for the period from March to December, with the exception of approximately U.S.$10 million related to maintaining the security of current operations; and (iii) we reduced the salaries of onshore employees and officers was determined.

As the impacts resulting from the COVID-19 outbreak are continuous and still developing, we will continue to assess the evolution of the effects on our revenues, costs and expenses, investment, maintenance and/or divestment in assets, results, business and prospects, including any possible changes in our ability to continue operating our business.

Corporate Information

The following chart illustrates our corporate structure as of the date of this offering memorandum.



The Issuer maintains a registered office at 13-15 Avenue de la Liberté, L-1931, Luxembourg. Our principal executive offices are located at Praia de Botafogo, 370, 13th floor, Botafogo, in the city of Rio de Janeiro, State of Rio de Janeiro, Brazil, telephone number +55 21 3721-3800. Our website is www.petroriosa.com.br. The information on our website does not constitute part of this Offering Memorandum.

THE OFFERING

The following summary contains basic information about the Notes and is not intended to be complete. For a more complete understanding of the Notes, please refer to the section entitled "Description of Notes" in this Offering Memorandum.

Issuer	Petrorio Luxembourg S.à r.l.
Notes Offered	U.S.$600 million aggregate principal amount of 6.125% senior secured notes due 2026 (the "Notes").
Issue Date	June 9, 2021
Maturity Date	June 9, 2026
Interest Rate	6.125% In the event that the security interest on the Collateral is not perfected on the Issue Date and in any event within 60 days after the Issue Date, the amount of interest on the Notes will increase by 2.0% until such time as certain specified conditions are satisfied. See "*Description of Notes—Collateral—Interest Step-Up.*"
Interest Payment Dates	June 9 and December 9 (each an "Interest Payment Date"), commencing December 9, 2021.
Use of Proceeds	The net proceeds from this offering will be used primarily to repay existing indebtedness, as well as for general corporate purposes.
Additional Amounts	The Issuer will pay such additional amounts ("Additional Amounts") as will result in receipt by the holders of the Notes of such amounts as would have been received by them had no such withholding or deduction been required, subject to certain exceptions set forth under "*Description of Notes—Additional Amounts.*"
Optional Redemption	The Notes will be redeemable at the option of the Issuer, in whole or in part, at any time on or after June 9, 2024, at the redemption prices set forth in this Offering Memorandum, together with accrued and unpaid interest, if any, to the date of redemption. At any time prior to June 9, 2024, the Issuer may redeem up to 35% of the original principal amount of the Notes with the proceeds of certain equity offerings at a redemption price of 106.125% of the principal amount of the Notes, together with accrued and unpaid interest, if any, to the date of redemption. See "*Description of Notes—Optional*

	Redemption—Optional Redemption with Proceeds of Equity Offerings."
	At any time prior to June 9, 2024, the Issuer may also redeem some or all of the Notes at a price equal to 100% of the principal amount of the Notes, plus accrued and unpaid interest, plus a "make-whole premium."
Optional Redemption for Changes in Taxes	The Notes may be redeemed, at the Issuer's election, in whole but not in part, on any date prior to the maturity date at a price equal to 100% of the outstanding principal amount thereof, together with any Additional Amounts and accrued and unpaid interest, if any, to (but excluding) the redemption date. See "*Description of Notes—Optional redemption—Optional Redemption upon a Tax Event*."
Change of Control Offer that results in a Ratings Decline	The occurrence of a Change of Control that results in a Rating Decline(as defined herein) will be a triggering event requiring the Issuer to offer to purchase from you all or a portion of your Notes at a price equal to 101% of their principal amount, together with accrued and unpaid interest, if any, to the date of purchase.
Security	The Notes will be secured over time by a first-priority security interest on the Collateral (as defined herein). Once perfected as contemplated herein, the Collateral will consist of a first-priority security interest on (i) the shares issued under Brazilian and Luxembourg laws by the Guarantors, except for the shares issued by PetroRio (the "Share Collateral") and (ii) the Vessels (the "Vessels Collateral", together with the Share Collateral, the "Collateral"). The security interests in the Share Collateral will be effected pursuant to one pledge and two fiduciary assignment agreements governed by the laws of Brazil (the "Brazilian Share Pledge Agreements") and one pledge agreement governed by the laws of Luxembourg (the "Luxembourg Share Pledge Agreement"), based on the jurisdiction of organization or entity where the shares have been pledged. The security interests in the Vessels Collateral will be effected pursuant to two Vessel Mortgages (as defined herein), and the associated Vessel Deeds of Covenant (as defined herein), governed by the laws of the Bahamas and perfected within 10 days of the Issue Date (the "Bahamian Security Package"). While the security interests will be granted and appropriate pledge agreements

(or equivalent agreements) will be executed at the Issue Date, filing of appropriate notices and public recording of the existence of these liens will only take place following the Issue Date and will not be fully perfected until such time as the foregoing has been done. For a discussion of the relevant actions, time periods, potential step up in interest rates and other consequences (including the occurrence of an event of default in the event a lien on the Collateral is not perfected within the time period agreed under the Indenture), see "*Description of Notes—Collateral—Interest Step-Up" and "Description of Notes—Default and Remedies—Events of Default*." Under certain circumstances, the Issuer will be required to cause additional security interests to be granted, including through its subsidiaries. See "*Description of Notes—Future Pledges of Equity Interests*."

Under certain circumstances, the Collateral may be released without the consent of the holders of Notes. See "*Description of Notes—Collateral—Collateral Release*."

In the event that the security interest on the Collateral is not perfected on or before the Issue Date and in any event within 60 days after the Issue Date, the amount of interest on the Notes will increase by 2.0% until such time as certain specified conditions are satisfied. See "*Description of Notes—Collateral—Interest Step-Up*."

In the event that the security interest in (a) the Share Collateral is not perfected on or before (i) the date that is ten Business Days after the Issue Date, for Collateral relating to the Luxembourg Share Pledge Agreement and (ii) the date that is 90 days after the Issue Date for Collateral relating to the Brazilian Share Pledge Agreements; and (b) the Vessel Collateral is not perfected on or before the date that is ten Business Days after the Issue Date, we will be in default under the Indenture. See "*Description of Notes—Default and Remedies—Events of Default*." In the event of a failure to create and perfect liens on the Collateral, the Notes will not be secured by such assets, and the holders of the Notes will not be entitled to the proceeds from the sale of all or any of the proposed Collateral or any other remedies in connection therewith.

Ranking	The Notes will be the Issuer's senior secured obligations and will: • be senior obligations of the Issuer, secured by a first priority security interest on the Collateral; • rank effectively senior to all unsecured obligations of the Issuer to the extent of the value of the Collateral; • rank equally in right of payment with all senior existing and future obligations of the Issuer after the foreclosure of the Collateral; • rank senior in right of payment to all existing and future subordinated indebtedness of the Issuer; • be guaranteed by the Initial Guarantors as described under "*—Notes Guaranties*"; • rank effectively junior to any future secured obligations of PetroRio, the other Initial Guarantors and their subsidiaries with a security interest on assets not constituting Collateral, in each case, to the extent of the value of the collateral securing such obligations; and • be structurally subordinated to any existing or future indebtedness or other obligations of any subsidiary of PetroRio that is not the Issuer or does not guarantee the Notes.
Guaranties	On the Issue Date, the Issuer's obligations under the Notes and the Indenture will be guaranteed under the Notes Guaranties jointly and severally on a senior basis by PetroRio and the following Subsidiary Guarantors, all of which together with PetroRio, are referred to herein as the "Guarantors": Subsidiary Guarantor — Jurisdiction Petro Rio Internacional S.A. — Brazil Petro Rio do Brasil Exploração Petrolífera S.A. — Brazil Petro Rio Jaguar Petróleo Ltda. — Brazil Petro Rio White Shark Petróleo Ltda. — Brazil

	Petro Rio OPCO Exploração Petrolífera Ltda.	Brazil
	Petrorio Luxembourg Holding S.à r.l.	Luxembourg
	Petro Rio O&G Exploração e Produção de Petróleo Ltda.	Brazil

As of and for the three-month period ended March 31, 2021, the Issuer and the Guarantors represented in the aggregate 102.2%, 100.0% and 99.4% of the Group's adjusted EBITDA, net revenue and total assets, respectively.

Ranking of the Notes Guaranties ..... The Notes Guaranties of each Guarantor will:

- be senior obligations of relevant Guarantor, secured by a first lien on the Collateral;
- rank effectively senior to all unsecured indebtedness of that Guarantor to the extent of the value of the Collateral;
- rank equally in right of payment with all senior existing and future senior unsecured obligations of that Guarantor after the foreclosure of the Collateral (except those obligations of the Guarantors incorporated under the laws of Brazil preferred by operation of Brazilian law, including, without limitation, labor and tax claims);
- rank senior in right of payment to all existing and future subordinated indebtedness of that Guarantor;
- rank effectively junior to any future secured obligations of that Guarantor with a security interest on assets not constituting Collateral, in each case, to the extent of the value of the collateral securing such obligations; and
- be structurally subordinated to any existing or future Indebtedness or other obligations of any subsidiary of PetroRio that is not the Issuer or does not guarantee the Notes.

The Notes Guaranties may be released in certain circumstances. See "*Description of Notes—Release of the Notes Guaranties.*"

As of March 31, 2021, the PetroRio's subsidiaries (other than the Issuer) that do not guarantee the Notes do not have any indebtedness.

Substitution of Issuer	The Issuer may, without the consent of the holders of the Notes and subject to certain conditions, be replaced and substituted by PetroRio or any wholly-owned subsidiary of PetroRio, as principal debtor in respect of the notes. See "*Description of Notes—Substitution of the Issuer*." Such substitution might be treated for U.S. federal income tax purposes as a deemed disposition of Notes by you in exchange for new notes issued by the new obligor. For more information, see "U.S. Federal Income Taxation—Substitution of the Issuer."
Certain Covenants	The Indenture will contain covenants that will, among other things, limit the ability of PetroRio, the Issuer and each subsidiary to: • incur additional indebtedness; • pay dividends or make distributions or repurchase or redeem stock; • prepay, redeem or repurchase certain indebtedness; • make loans and investments; • sell assets; • incur liens; • enter into transactions with affiliates; • enter into agreements restricting the ability of the PetroRio's subsidiaries to pay dividends; and • consolidate, merge or sell all or substantially all of the Group's assets. These covenants will be subject to a number of exceptions and qualifications. For more details, see "*Description of Notes—Certain Covenants.*"
Suspension of Covenants on Achievement of Investment Grade Status	If on any date following the Issue Date, the Notes achieve Investment Grade (as defined herein) and certain other conditions are satisfied, certain provisions of the Indenture will cease to apply to the Notes. See "*Description of Notes—Suspension of Certain Covenants*."
Additional Notes	The Issuer may issue additional Notes having identical terms and conditions as the Notes other than the Issue Date, the issue price and the first interest payment; provided that if such additional Notes are not fungible with the Notes for U.S. federal income tax purposes, such Additional

	Notes will have a separate CUSIP number. The issuer will only be permitted to issue additional Notes if, at the time of such issuance, the Issuer and its Restricted Subsidiaries (as defined herein) are in compliance with the covenants contained in the Indenture. Any Additional Notes will be part of the same issue as the Notes that the Issuer is currently offering and will vote on all matters with the Notes and share collectively the Collateral described herein.
Form and Denomination	The Notes will initially be issued in the form of one or more global notes without interest coupons, registered in the name of The Depository Trust Company ("DTC"), or its nominee. The Notes will be issued in minimum denominations of U.S.$200,000 and integral multiples of U.S.$1,000 in excess thereof.
Trading and Listing	The Issuer intends to apply to list the Notes on the Singapore Exchange Securities Trading Limited (the "Singapore Stock Exchange"). We cannot assure you, however, that this application will be accepted, or if accepted, that, once listed, the Notes will remain so listed. The Notes will be traded in a minimum board lot size of U.S.$200,000 as long as the Notes are listed on the Singapore Stock Exchange.
No Registration Rights	We are not required to, and do not intend to, register the Notes for sale under the Securities Act or the securities laws of any other jurisdiction or offer to exchange the Notes for notes registered under the Securities Act or the securities laws of any other jurisdiction.
Absence of Public Market for the Notes	The Notes are a new issue of securities and there is currently no established trading market for the Notes. Accordingly, there can be no assurance as to the development or liquidity of any market for the Notes.
Transfer Restrictions	The Notes have not been and will not be registered under the Securities Act or the securities laws of any state in the United States and are subject to certain restrictions on transfer and resale. See "*Transfer restrictions*."
Governing Law	The Indenture, the Notes and the Notes Guaranties will be governed by the laws of the State of New York.
Trustee, Registrar, Paying Agent and Transfer Agent.....	The Bank of New York Mellon.

Luxembourg Collateral Agent.....	The Bank of New York Mellon.
Bahamas Collateral Agent.....	TMF Group New York, LLC
Brazilian Collateral Agent.....	TMF Brasil Administração e Gestão de Ativos Ltda., in its capacity as a Collateral Agent in Brazil (together with The Bank of New York Mellon as Luxembourg Collateral Agent, and TMF Group New York, LLC, as Bahamas Collateral Agent, the "Collateral Agents").
Risk Factors.....	Investing in the Notes involves substantial risks and uncertainties. See "*Risk factors*" and other information included in this Offering Memorandum for a discussion of factors you should carefully consider before deciding to purchase any Notes.

SUMMARY HISTORICAL FINANCIAL AND OTHER DATA

The following tables present PetroRio's summary historical financial data, prepared in accordance with IFRS, on a consolidated basis, as of and for the periods indicated below. The financial information as of and for the years ended December 31, 2020, 2019 and 2018 has been derived from and should be read in conjunction with the Audited Consolidated Financial Statements and the accompanying notes thereto included elsewhere in this Offering Memorandum. The financial information as of March 31, 2021 and for the three-month periods ended March 31, 2021 and 2020 has been derived from and should be read in conjunction with the Unaudited Individual and Consolidated Interim Financial Information and the accompanying notes thereto included elsewhere in this Offering Memorandum. The Audited Consolidated Financial Statements have been prepared in accordance with IFRS and the Unaudited Individual and Consolidated Interim Financial Information have been prepared in accordance with IAS 34. The columns in U.S. dollars are free translations of the corresponding figures, converted directly from the original statements in Brazilian *reais* at an exchange rate of R$5.6973 to U.S.$1.00 as of March 31, 2021. See "*Presentation of Financial and Other Information.*" The summary historical financial data should also be read in conjunction with "*Management's Discussion and Analysis of Financial Condition and Results of Operations.*"

Income Statement Data

	Three-month period ended March 31,			Year ended December 31,			
	2021	**2021**	**2020**	**2020**	**2020**	**2019**	**2018**
	(U.S.$ thousands) (unaudited) [1]	*(R$ thousands) (unaudited)* [1]		*(U.S.$ thousands) (unaudited)* [1]	*(R$ thousands) (audited)*		
Net revenue	**115,025**	**655,334**	**223,162**	**334,226**	**1,904,185**	**1,644,346**	**848,920**
Costs of products/services	(41,516)	(236,531)	(206,826)	(225,883)	(1,286,926)	(940,379)	(524,489)
Gross revenue	**73,509**	**418,803**	**16,336**	**108,342**	**617,259**	**703,967**	**324,431**
Operating revenues (expenses)							
Geology and geophysics expenses	(1,211)	(6,900)	(151)	(83)	(471)	(595)	(2,560)
Personnel expenses	(4,148)	(23,634)	(10,554)	(6,644)	(37,853)	(48,245)	(54,478)
General and administrative expenses	(590)	(3,364)	(9,495)	(7,633)	(43,487)	(25,147)	(19,305)
Expenses with outsourced Services	(2,129)	(12,131)	(16,461)	(8,116)	(46,242)	(34,519)	(33,751)
Taxes and rates	(1,011)	(5,759)	(2,296)	(2,875)	(16,378)	(11,130)	(5,547)
Depreciation and amortization expenses	(5,264)	(29,992)	(41,571)	(33,966)	(193,516)	(126,080)	(2,330)
Other operating revenues (expenses), net	(3,554)	(20,250)	115,104	116,448	663,437	420,005	(19,845)
Operating income (loss) before financial income (loss)	**55,601**	**316,773**	**50,912**	**165,473**	**942,749**	**878,256**	**186,615**
Financial revenues	9,505	54,154	654,267	257,868	1,469,151	377,142	316,685
Financial expenses	(73,052)	(416,202)	(757,750)	(338,374)	(1,927,820)	(714,396)	(265,815)
Income (loss) before income tax and social contribution	**(7,947)**	**(45,275)**	**(52,571)**	**84,967**	**484,080**	**541,002**	**237,485**

	Three-month period ended March 31,			Year ended December 31,			
	2021	2021	2020	2020	2020	2019	2018
	(U.S.$ thousands) (unaudited) [1]	*(R$ thousands) (unaudited)* [1]		*(U.S.$ thousands) (unaudited)*[1]		*(R$ thousands) (audited)*	
Current income tax and social contribution	(13,967)	(79,573)	(12,142)	(13,540)	(77,140)	(55,658)	(42,969)
Deferred income tax and social contribution	10,366	59,056	3,252	8,069	45,973	357,002	11,780
Income (loss) for the period	**(11,548)**	**(65,792)**	**(61,461)**	**79,496**	**452,913**	**842,346**	**206,296**

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

Balance Sheet Data

	As of March 31,		As of December 31,			
	2021	2021	2020	2020	2019	2018
	(U.S.$ thousands)[1] *(unaudited)*	*(R$ thousands) (unaudited)*	*(U.S.$ thousands) (unaudited)*[1]		*(R$ thousands) (audited)*	
Assets						
Current assets						
Cash and cash equivalents	559,042	3,185,031	142,045	809,273	459,396	186,993
Securities	13,659	77,820	4,001	22,793	226,301	607,441
Restricted cash	19,443	110,770	8,775	49,996	52,223	11,628
Accounts receivable	3,961	22,568	67,780	386,165	374,598	34,932
Oil inventories	65,977	375,890	32,675	186,160	120,101	56,214
Inventory of consumables	3,491	19,891	1,493	8,506	5,373	2,084
Financial instruments	1,930	10,994	2,620	14,926	9,354	—
Recoverable taxes	18,455	105,144	22,821	124,321	116,773	67,011
Advances to suppliers	10,996	62,647	10,223	58,245	52,171	37,949
Advances to partners	4,941	28,153	15,270	86,997	86,278	2,922
Prepaid expenses	4,078	23,233	4,492	25,594	10,333	1,659
Other receivables	108	613	—	—	189	202
	706,081	**4,022,754**	**311,196**	**1,772,976**	**1,513,090**	**1,009,035**
Non-current assets classified available for sale	13,082	74,533	12,013	68,439	—	26,581
	719,163	**4,097,287**	**323,208**	**1,841,415**	**1,513,090**	**1,035,616**
Non-current assets						
Advances to suppliers	2,211	12,596	2,211	12,596	12,596	12,596
Deposits and pledges	2,675	15,243	3,566	20,317	27,249	19,621
Recoverable taxes	5,652	32,203	5,766	32,848	32,384	25,711

	As of March 31,		As of December 31,			
	2021	2021	2020	2020	2019	2018
	(U.S.$ thousands)[(1)] (unaudited)	*(R$ thousands) (unaudited)*	*(U.S.$ thousands) (unaudited)[(1)]*		*(R$ thousands) (audited)*	
Deferred taxes	45,460	258,998	35,094	199,942	160,313	11,340
Right-of-use (Lease CPC 06.R2 IFRS 16)	72,584	413,532	64,914	369,836	452,067	—
Property, plant and equipment	594,012	3,384,265	589,580	3,359,013	2,602,523	270,347
Intangible assets	197,923	1,127,624	167,951	956,866	689,529	140,949
	920,517	**5,244,461**	**869,082**	**4,951,418**	**3,909,119**	**480,564**
Total assets	**1,639,680**	**9,341,748**	**1,192,290**	**6,792,833**	**5,489,751**	**1,516,180**
Liabilities and shareholders' equity						
Current liabilities						
Suppliers	20,979	119,524	41,579	236,889	87,232	73,258
Labor obligations	7,214	41,101	9,629	54,857	39,359	14,923
Taxes and social contributions	21,168	120,602	15,400	87,741	83,441	37,010
Loans and financing	330,424	1,882,524	266,787	1,519,966	1,224,306	222,437
Debentures	—	—	—	—	—	306
Advances from partners	—	—	—	—	40	6,792
Contractual Charges (Lease IFRS 16)	33,322	189,846	44,345	252,645	223,049	—
Other liabilities	—	—	—	—	12,356	16,260
	413,108	**2,353,597**	**377,740**	**2,152,098**	**1,669,783**	**370,986**
Liabilities directly linked to non-current assets classified as held for sale	81	462	(465)	(2,649)	—	—
	413,189	**2,354,059**	**377,275**	**2,149,449**	**1,669,783**	**370,986**
Non-current liabilities						
Suppliers	2,360	13,448	2,394	13,640	13,233	13,413
Loans and financing	49,366	281,251	68,410	389,753	421,270	25,718
Debentures	149,783	853,359	—	—	—	69,366
Provision for abandonment of facilities (ARO)	16,024	91,295	112,071	638,504	763,633	36,438
Provision for contingencies	—	—	13,306	75,809	65,613	17,441
Contractual Charges (Lease IFRS 16)	72,341	412,151	65,549	373,455	389,433	—
Other liabilities	169	960	169	960	1,685	644
	290,043	**1,652,464**	**261,890**	**1,492,121**	**1,654,867**	**163,020**
Shareholders' equity						
Realized Capital	931,278	5,305,772	583,943	3,326,900	3,316,411	3,273,114
Capital reserves	56,427	321,483	56,405	321,359	228,027	67,094
Accumulated translation adjustment	149,444	851,426	101,771	579,820	150,335	94,057

	As of March 31,		As of December 31,			
	2021	2021	2020	2020	2019	2018
	(U.S.$ thousands)[1] (unaudited)	*(R$ thousands) (unaudited)*	*(U.S.$ thousands) (unaudited)[1]*		*(R$ thousands) (audited)*	
Equity valuation adjustments	—	—	—	—	—	(79,314)
Accumulated losses	(189,153)	(1,077,664)	(268,624)	(1,530,431)	(2,372,777)	(2,579,073)
Income (loss) for the year/period	(11,548)	(65,792)	79,470	452,766	842,346	206,296
Non-controlling interest	—	—	149	849	759	—
	936,448	**5,335,225**	**553,115**	**3,151,263**	**2,165,101**	982,174
Total liabilities and shareholders' equity	**1,639,680**	**9,341,748**	**1,192,290**	**6,792,833**	**5,489,751**	**1,516,180**

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

Cash Flow Statement Data

	Three-month period ended March 31,			Year ended December 31,			
	2021	2021	2020	2020	2020	2019	2018
	(U.S.$ thousands)[1] (unaudited)	*(R$ thousands) (unaudited)*		*(U.S.$ thousands) (unaudited)[1]*		*(R$ thousands) (audited)*	
Net cash from operating activities	126,925	723,130	236,752	283,914	1,617,546	439,049	243,304
Net cash invested in investment activities	(66,013)	(376,098)	(693,448)	(102,705)	(585,142)	(1,377,686)	(278,309)
Net cash (invested in) from financing activities	340,628	1,940,661	295,929	(125,199)	(713,295)	1,192,303	121,033
Translation adjustment	15,457	88,065	16,549	5,400	30,767	18,738	8,520
Net increase (decrease) in cash and cash equivalents	**416,997**	**2,375,758**	**(144,218)**	**61,411**	**349,876**	**272,404**	94,548

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

Other Financial and Operating Data

The following table sets forth certain key financial information as of and for the periods indicated.

	Three-month period ended March 31,			Year ended December 31,			
	2021	2021	2020	2020	2020	2019	2018
	(U.S.$ thousands, except %)[1] (unaudited)	*(R$ thousands, except %) (unaudited)*		*(U.S.$ thousands)[1] (unaudited)*		*(R$ thousands) (audited)*	
Net revenue	115,025	655,334	223,162	334,226	1,904,185	1,644,346	848,920

	Three-month period ended March 31,			Year ended December 31,			
	2021	2021	2020	2020	2020	2019	2018
	(U.S.$ thousands, except %)[1] (unaudited)	*(R$ thousands, except %) (unaudited)*		*(U.S.$ thousands)[1] (unaudited)*	*(R$ thousands) (audited)*		
Income (loss) for the period/year	(11,548)	(65,792)	(61,461)	79,496	452,913	842,346	206,296
EBITDA[2]	78,761	448,723	182,567	313,578	1,786,549	1,387,214	259,077
Adjusted EBITDA[3]	262,529	1,495,705	981,742	153,878	876,689	803,533	278,922
EBITDA margin[4]	68.5%	68.5%	81.8%	93.8%	93.8%	84.4%	30.5%
Adjusted EBITDA margin[5]	65.3%	65.3%	14.7%	46.0%	46.0%	48.9%	32.9%
Net debt (cash)[6]	(212,354)	(1,209,846)	1,836,871	180,376	1,027,657	907,656	(488,235)
Net debt (cash)/adjusted EBITDA	(0.8)x	(0.8)x	1.9x	1.2x	1.2x	1.1x	(1.7)x

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

(2) EBITDA, adjusted EBITDA, EBITDA margin and adjusted EBITDA margin are non-IFRS financial measures. We define EBITDA as income (loss) for the year or period before depreciation and amortization expenses, financial revenues and expenses, and current and deferred income tax and social contribution. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*."

(3) We define adjusted EBITDA as EBITDA less other operating revenues (expenses), depreciation expense – FPSO Bravo, and the effects of the adoption of IFRS 16. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*." For the three-month periods ended March 31, 2021 and 2020, Adjusted EBITDA is computed on a last-twelve-month basis.

(4) We define EBITDA margin as EBITDA divided by net revenue. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*."

(5) We define adjusted EBITDA margin as adjusted EBITDA divided by net revenue. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*."

(6) We define net debt (cash) as the sum of current and non-current loans and financing and debentures (gross debt), less cash and cash equivalents, securities and restricted cash. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*."

The following table sets forth certain key operating data as of and for the periods indicated.

	Three-month period ended March 31, 2021	Year ended December 31,		
		2020	2019	2018
Production (Mboepd)	32.7[1]	31.8	22.5[2]	11.9[3]
Frade Field	16.1	13.8	11.7	—
Polvo Field	8.3	9.4	8.5	8.8
Tubarão Martelo Field	6.2	7.1	—[5]	—[5]
Manati Field	2.1	1.5	2.3	3.1
Lifting cost (U.S.$ per barrel)	14.3	14.5	22.9	32.6
Reserve replacement ratio	3,914%	460%	581%	89%
Remaining 2P reserve life (years)[6]	25	25	—	9
Frade Field	22	20	—	—
Polvo Field	25	25	—	9
Tubarão Martelo Field	25	25	—	—
Manati Field[7]	5	7	—	6

(1) This production figure reflects production at the Polvo Field, the Frade Field (attributable to our 100% working interest) and the Manati Field (attributable to our 10% working interest) in the three-month period ended March 31, 2021. As such, this production figure gives effect to the Frade Field Petrobras Acquisition since February 5, 2021, the date that the Frade Field Petrobras Acquisition closed. See "*Oil and Gas Reserves and Production Information—Production Information.*"

(2) This production figure reflects production at the Polvo Field, the Frade Field (attributable to our 100% working interest) and the Manati Field (attributable to our 10% working interest) for the period indicated. See "*Oil and Gas Reserves and Production Information—Production Information.*"

(3) This production figure reflects production at the Polvo Field and the Manati Field (attributable to our 10% working interest) for the period indicated. See "*Oil and Gas Reserves and Production Information—Production Information.*"

(4) This production figure reflects production at the Tubarão Martelo Field for the period attributable to the 80% working interest that we acquired following completion of the Tubarão Martelo Field Acquisition on August 3, 2020.

(5) We announced the Tubarão Martelo Field Acquisition in February 2020, therefore we have not included production information for the Tubarão Martelo Field in respect of periods prior to the year ended December 31, 2020.

(6) Remaining 2P reserve life is derived from the 2021 D&M Reserves Report and presents reserves data as of January 1, 2021.

(7) We are in the process of selling our working interest in the Manati Field pursuant to the Manati Field Sale. See "Business—Properties in Production and Development—The Manati Field—Overview" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

Reconciliation of Income (Loss) to EBITDA and EBITDA Margin

The following table presents a reconciliation of EBITDA and EBITDA margin to the IFRS measure of income for the three-month periods ended March 31, 2021 and 2020, and the years ended December 31, 2020, 2019 and 2018.

	Three-month period ended March 31,			Year ended December 31,			
	2021	**2021**	**2020**	**2020**	**2020**	**2019**	**2018**
	(U.S.$ thousands, except %) (unaudited) [(1)]	*(R$ thousands, except %) (unaudited)*		*(U.S.$ thousands, except %) (unaudited)* [(1)]	*(R$ thousands, except %) (unaudited)*		
Income (loss) for the period	**(11,548)**	**(65,792)**	**(61,461)**	**79,496**	**452,913**	**842,346**	**206,296**
(+) Depreciation and amortization	23,160	131,950	131,655	148,105	843,800	508,958	72,462
(+/-) Financial result, net[(2)]	63,547	362,048	103,483	80,506	458,669	337,254	(50,870)
(+/-) Income and social contribution taxes[(3)]	3,601	20,517	8,890	5,470	31,167	(301,344)	31,189
EBITDA[(4)]	**78,761**	**448,723**	**182,567**	**313,578**	**1,786,549**	**1,387,214**	**259,077**
Net revenue	115,025	655,334	223,162	334,226	1,904,185	1,644,346	848,920
EBITDA Margin[(5)]	**68.5%**	**68.5%**	**81.8%**	**93.8%**	**93.8%**	**84.4%**	**30.5%**

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

(2) Financial results, net includes financial revenues and financial expenses for the period.

(3) Income and social contribution taxes includes current income tax and social contribution and deferred income tax and social contribution for the period.

(4) EBITDA is a non-IFRS financial measure. We define EBITDA as income (loss) for the year or period before depreciation and amortization expenses, financial revenues and expenses, and current and deferred income tax and social contribution. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures.*" Beginning on January 1, 2019, we have calculated EBITDA and EBITDA margin after giving effect to the adoption of IFRS 16. The EBITDA and EBITDA margin figures for the year ended December 31, 2018 included in this Offering Memorandum do not give effect to the adoption of IFRS 16. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures" and "Reconciliation of EBITDA and EBITDA Margin to Adjusted EBITDA and Adjusted EBITDA Margin.*"

(5) EBITDA margin is a non-IFRS financial measure. We define EBITDA margin as EBITDA divided by net revenue. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures.*"

Reconciliation of EBITDA and EBITDA Margin to Adjusted EBITDA and Adjusted EBITDA Margin

The following table presents a reconciliation of EBITDA and EBITDA Margin to adjusted EBITDA and adjusted EBITDA margin for the three-month periods ended March 31, 2021 and 2020, and the years ended December 31, 2020, 2019 and 2018.

	Three-month period ended March 31			Year ended December 31,			
	2021	**2021**	**2020**	**2020**	**2020**	**2019**	**2018**
	(U.S.$ thousand) (unaudited) [(1)]	*(R$ thousands) (unaudited)*		*(U.S.$ thousand) (unaudited)* [(1)]	*(R$ thousands) (unaudited)*		*(R$ thousands)*
EBITDA	**78,761**	**448,723**	**182,567**	**313,578**	**1,786,549**	**1,387,214**	**259,077**
(+/-) Other operating revenues (expenses), net[(2)]	3,554	20,250	(115,104)	(116,448)	(663,437)	(420,005)	19,845
(+) Depreciation expenses of FPSO Bravo [(3)]	—	—	—	(5,076)	(28,918)	—	—
(+/-) Effects of the adoption of IFRS 16(4)	(7,196)	(40,999)	(34,757)	(38,177)	(217,505)	(163,676)	—
Adjusted EBITDA[(5)]	**75,119**	**427,974**	**32,706**	**153,878**	**876,689**	**803,533**	**278,922**
Net revenue	115,025	655,334	223,162	334,226	1,904,185	1,644,346	848,920
Adjusted EBITDA Margin[(6)]	**65.3%**	**65.3%**	**14.7%**	**46.0%**	**46.0%**	**48.9.0%**	**32.9%**

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

(2) For more information, see note 2 to the 2020 Audited Consolidated Financial Statements.

(3) As the depreciation of the FPSO Bravo in the year ended December 31, 2020 was recorded in "other operating revenues (expenses), net" line item, this expense was removed from the calculation of adjusted EBITDA as it is already included in the calculation of EBITDA. See "Presentation of Financial and Other Information—Non-IFRS Financial Measures."

(4) Beginning on January 1, 2019, we have calculated EBITDA and EBITDA margin after giving effect to the adoption of IFRS 16. The EBITDA and EBITDA margin figures for the year ended December 31, 2018 included in this Offering Memorandum do not give effect to the adoption of IFRS 16. See "Presentation of Financial and Other Information—Non-IFRS Financial Measures."

(5) EBITDA and adjusted EBITDA are non-IFRS financial measures. We define EBITDA as income (loss) for the year or period before depreciation and amortization expenses, financial revenues and expenses, and current and deferred income tax and social contribution. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures.*" We define adjusted EBITDA as EBITDA less other operating revenues (expenses), net and the effects of the adoption of IFRS 16. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures.*"

(6) Adjusted EBITDA margin is a non-IFRS financial measure. We define adjusted EBITDA margin as adjusted EBITDA divided by net revenue. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures.*"

Gross Debt and Net Debt (Cash)

The following table presents our gross debt and net debt (cash) as of March 31, 2021, December 31, 2020, 2019 and 2018.

	Three-month period ended March 31,		As of December 31,			
	2021	**2021**	**2020**	**2020**	**2019**	**2018**
	(U.S.$ thousand) (unaudited) [(1)]	*(R$ thousands) (unaudited)*	*(U.S.$ thousand) (unaudited)* [(1)]		*(R$ thousands) (audited)*	
Current liabilities						
Loans and financing	330,424	1,882,524	266,787	1,519,966	1,224,306	222,437
Debentures	—	—	—	—	—	306
Non-current liabilities						
Loans and financing	49,366	281,251	68,410	389,753	421,270	25,718
Debentures	—	—	—	—	—	69,366
Gross Debt	**379,790**	**2,163,775**	**335,197**	**1,909,719**	**1,645,576**	**317,827**
Cash and cash equivalents	(559,042)	(3,185,031)	(142,045)	(809,273)	(459,396)	(186,993)
Securities	(13,659)	(77,820)	(4,001)	(22,793)	(226,301)	(607,441)
Restricted cash	(19,443)	(110,770)	(8,775)	(49,996)	(52,223)	(11,628)
Total Cash	**(592,144)**	**(3,373,621)**	**(154,821)**	**(882,062)**	**(737,920)**	**(806,062)**
Net Debt (Cash)	**(212,354)**	**(1,209,846)**	**180,376**	**1,027,657**	**907,656**	**(488,235)**

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

SUMMARY HISTORICAL RESERVES AND CONTINGENT RESOURCES DATA

The tables below summarize our oil and natural gas reserves and Contingent Resources evaluated by DeGolyer, an independent qualified reserves evaluator. The tables below summarize the reserves and Contingent Resources data contained in the 2021 D&M Reserves Reports and, as a result, may contain slightly different numbers than the reports due to rounding. The recovery, reserves and Contingent Resources estimates of our oil and natural gas reserves provided herein are estimates only and there is no assurance that the estimated reserves or Contingent Resources will be recovered. Actual oil and natural gas reserves and Contingent Resources may be greater than or less than the estimates provided herein. See "*Oil and Gas Reserves and Production Information*."

The Polvo Field, the Frade Field, the Manati Field, the Tubarão Martelo Field and the Wahoo-Itaipu Field were evaluated by DeGolyer effective January 1, 2021. Gross reserves are defined as the total estimated petroleum remaining to be produced from these properties after January 1, 2021, while net reserves are defined as that portion of the gross reserves attributable to the working interests held by PetroRio after deducting all interests held by others, including royalties paid in kind. Our government royalty obligation is paid in cash; therefore, net reserves have not been reduced in consideration of this royalty obligation.

The estimated gross and net proved developed, proved undeveloped, total proved, probable, possible reserves and contingent resources, as of January 1, 2021, of the properties in which PetroRio has a working interest is set forth in the table below, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

	Gross Reserves			Net Reserves		
	Oil (10^3bbl)	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**
Proved						
Developed	69,172	337	139,264	64,320	34	13,927
Undeveloped	52,486	—	2.653	54,269	—	2,653
Total Proved	121,658	337	141,917	118,589	34	16,580
Probable	88,659	16	12,087	86,672	1	5,823
Possible	116,474	50	25,077	113,694	6	6,657
Contingent Resources						
1C	125,594	—	159,672	80,757	—	102,669
2C	167,751	—	198,849	107,864	—	127,860
3C	235,888	—	228,135	151,676	—	146,691

(1) Net proved undeveloped reserves are higher than the gross proved undeveloped reserves due to the net interest in the Tubarão Martelo field, which will increase from 80 percent to 95 percent following completion of the TBMT-Polvo Tieback Project.

(2) Probable and possible reserves have not been risk adjusted to make them comparable to proved reserves.

(3) Projected forecasts and estimated economic limits occur beyond the expiration of the concession agreements for the Polvo Field, the Tubarão Martelo Field and the Frade Field. PetroRio has represented that it will meet the conditions required by the ANP to obtain concession extensions. Based on this representation, and at PetroRio's request the reserves evaluated herein consider the potential concession extensions for those fields.

The estimated gross proved and probable reserves and gross contingent resources, as of January 1, 2021, of PetroRio by property is set forth in the table below, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

	Gross Reserves					
	Proved[1]			Probable[2]		
	Oil (10^3bbl)	Condensate (10^3bbl)	Sales Gas (10^6ft^3)	Oil (10^3bbl)	Condensate (10^3bbl)	Sales Gas (10^6ft^3)
Polvo	34,935	—	—	25,327	—	—
Tubarão Martelo	31,051	—	—	24,322	—	—
Frade	55,672	—	2,653	39,010	—	5,128
Manati[3]	—	337	139,264	—	16	6,959
Total	121,658	337	141,917	88,659	16	12,087

	Gross Contingent Resources					
	1C			2C		
	Oil (10^3bbl)		Sales Gas (10^6ft^3)	Oil (10^3bbl)		Sales Gas (10^6ft^3)
Wahoo	125,594	—	159,672	167,751	—	198,849
Frade Extension	6,646	—	2,626	10,443	—	3,351
Total	132,240	—	162,298	178,194	—	202,200

(1) Probable and possible reserves have not been risk adjusted to make them comparable to proved reserves.

(2) These figures are the difference between 2P *minus* 1P gross reserves.

(3) We are in the process of selling our working interest in the Manati Field pursuant to the Manati Field Sale. See "Business—Properties in Production and Development—The Manati Field—Overview" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

The estimated net proved and probable reserves, as of January 1, 2021, of PetroRio by property is set forth in the table below, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

	Net Reserves					
	Proved[1]			Probable[1]		
	Oil (10^3bbl)	Condensate (10^3bbl)	Sales Gas (10^6ft^3)	Oil (10^3bbl)	Condensate (10^3bbl)	Sales Gas (10^6ft^3)
Polvo	33,474	—	—	24,334	—	—
Tubarão Martelo	29,443	—	—	23,328	—	—
Frade	55,672	—	2,653	39,010	—	5,128
Manati[2]	—	34	13,927	—	1	695
Total	118,589	34	16,580	86,672	1	5,823

	Net Contingent Resources					
	1C			2C		
	Oil (10^3bbl)		Sales Gas (10^6ft^3)	Oil (10^3bbl)		Sales Gas (10^6ft^3)
Wahoo	80,757	—	102,669	107,864	—	127,860
Frade Extension	6,646	—	2,626	10,443	—	3,351
Total	87,403	—	105,295	118,307	—	131,211

Notes:—

(1) Probable and possible reserves have not been risk adjusted to make them comparable to proved reserves.

(2) We are in the process of selling our working interest in the Manati Field pursuant to the Manati Field Sale. See "Business—Properties in Production and Development—The Manati Field—Overview" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

RISK FACTORS

An investment in the Notes involves a high degree of risk. You should consider and read carefully all of the risks and uncertainties described below, together with all of the other information contained in this Offering Memorandum before making an investment in the Notes. If any of the following risks actually occurs, our business, business prospects, financial condition, results of operations or cash flows could be materially adversely affected.

The risks described below are on the date of this Offering Memorandum the risks that we know and believe may adversely affect us. The risks below are not the only ones we face. Additional risks that are not currently known to us, or which we currently consider immaterial, may also affect our business. This Offering Memorandum also contains estimates and other disclosures that involve risks and uncertainties. Our results may differ significantly from those previously projected as a result of certain factors, including the risks faced by us, as described below and in other sections of this Offering Memorandum. When determining whether to invest, you should also refer to the other information contained in this Offering Memorandum, including our consolidated financial statements and the related notes thereto. You should also carefully review the cautionary statements referred to under "Forward-Looking Statements." Our actual results could differ materially and adversely from those anticipated in this Offering Memorandum.

For purposes of this section, when we state that a risk, uncertainty or problem may, could or will have an "adverse effect" on us or "adversely affect" us, we mean that the risk, uncertainty or problem could have an adverse effect on our business, financial condition, results of operations, cash flow and/or liquidity, except as otherwise indicated. You should view similar expressions in this section as having a similar meaning.

Risks Related to the Group, its Business and the Oil and Gas Industry

Our business and growth are dependent on our ability to continue developing our oil and gas fields and prospects, and executing acquisitions of new fields. The areas where we decide to drill new wells may not produce oil of a commercial quantity or quality, or may not produce any oil. Unless we are able to acquire new oil and natural gas reserves and/or replace our existing oil and natural gas reserves, our reserves and production will be reduced over time.

As oil and natural gas are non-renewable natural resources, the continuity of the sector depends on the discovery of new reserves. Without the addition of new reserves through acquisition, recovery or exploration activities, our reserves and production will naturally decline over time as our existing reserves are being explored and the concession contracts expire.

There is no guarantee that we will continue to implement a strategy to expand our proved production reserves through the acquisition of new assets. In addition, there is no guarantee that, if new wells are drilled in these fields, they will produce oil or, if they do, that production will be of a commercial quantity or quality.

Our future oil and natural gas reserves and production and therefore our cash flows and revenues, are highly dependent on our ability to develop our existing reserves, and to use cost-effective methods to find additional recoverable reserves at our existing fields. In addition, our strategy revolves around the acquisition and development of oil and gas fields, and even though we have had success in identifying and developing commercially exploitable fields and drilling locations in the past, we may be unable to replicate that success in the future. We may not be able to identify any more commercially exploitable fields or successfully drill, complete or produce more oil or gas reserves, and the wells which we have drilled and currently plan to drill within our blocks or concession areas may not discover or produce additional commercially viable quantities of oil or gas that would allow us to continue to operate profitably. If we are unable to replace our current and future production, the value of our reserves will decrease, and our business, financial condition and results of operations will be materially adversely affected.

There are inherent risks and uncertainties relating to the exploration and production of oil and natural gas, as the evaluations of our resources and reserves are based on studies that may take into account several

variables that may not be exact and may involve a significant degree of uncertainty, which may adversely affect us.

The success of our business depends on our ability to find, develop and produce oil and gas reserves at our existing fields and at new fields that we may acquire in the future. The exploration and production of oil and natural gas involves a high degree of risk.

We face challenges and uncertainties related to the nature, scope and results of our future activities, as well as cash availability issues. As a result of the sector in which we operate or of other circumstances specifically related to us, it may be necessary to change the way we perform our activities, which could have a material adverse effect on us.

In the event that one or more of the exploration and drilling programs is not completed, or is postponed or terminated, including as a result of interruptions caused by the COVID-19 pandemic, our operating results may be adversely affected and our operations will differ from the activities described in this Offering Memorandum.

Our decisions to explore, develop or otherwise exploit prospects at our existing, including fields still in the process of being acquired, such as the Wahoo and Itaipu Fields (which are still in the exploration phase, making any reserve estimate for these fields even more imprecise), or at new fields we acquire in the future will depend in part on studies and evaluations conducted by us and/or by third parties, including studies on the estimates of volumes of oil and natural gas resources in our fields (Certification of Reserves), as well as on the evaluation of seismic and other data obtained through geophysical, geochemical and geological analysis, production data and engineering studies, which are, by nature, complex and may be imprecise, built on assumptions that may not be confirmed and that are beyond our control. Our resources and reserves, as well as the cash flows associated with them, involve a significant degree of uncertainty and may, therefore, be significantly different from those indicated in these studies and assessments, including in the Certification of Reserves.

Downward revisions of our contingent and prospective resources resulting from study reviews and/or access to additional data, may result in lower than expected production levels, which could materially and adversely impact our business, financial condition or operational results.

In addition, the commercial viability of a given hydrocarbon pool depends on a number of factors, such as the content and the proximity of infrastructure, as well as prevailing oil and natural gas prices that are subject to considerable volatility, regulatory issues, such as price regulation, taxes, royalties, land tax, import and export of oil and natural gas, and labor and environmental protection issues. Additional factors that may impact our ability to develop and produce oil and gas reserves include: (i) high competition for acquisitions of attractive reserves and resources; (ii) limitations on oil recovery, particularly at mature fields, including delays obtaining in environmental permits and authorizations relating to effluent disposal; (iii) access to sufficient capital to fund future acquisitions, exploration or development activities; (iv) undue delays in obtaining environmental or other regulatory permits and consents and (v) extreme weather or other geological conditions.

It is also difficult to project the costs of implementing an exploratory drilling program due to the inherent uncertainties of the drilling process, the costs associated with encountering various adverse drilling conditions, such as over-pressured zones and tools lost in the drill hole, and changes in drilling plans and locations as a result of prior exploratory wells or additional seismic data and interpretations thereof.

Additionally, offshore drilling (which constitutes the entirety of our drilling operations) generally requires more time and more advanced drilling technologies, involving a higher risk of technological failure and usually higher drilling costs. Offshore projects often lack proximity to existing oilfield service infrastructure, requiring significant capital investment in flow line infrastructure before we can bring the oil or gas associated with a commercial discovery to market, increasing both the financial and operational risk involved with these operations. These operations are also subject to the hazards inherent to marine operations, such as risks associated with environmental liability, risk of total loss of vessels, governmental requisitions, service downtime on vessels, defaults by contractors, equipment defects, fires, explosions, capsizing, sinking, grounding, collision, damage from severe weather, risks associated with ship-to-ship transfers and marine life

infestations. Because of the lack of and high cost of infrastructure, some offshore reserve discoveries may never be economically viable.

Future oil and natural gas exploration may involve unprofitable efforts, especially in fields which are still in process of being acquired, such as the Wahoo and Itaipu Fields, not only from dry wells, but also from wells that are productive but do not produce sufficient net revenues to return a profit after drilling, operating and other costs. Completion of a well may not ensure profits on the investment or recovery of drilling, completion and operating costs related to the well. In addition, drilling hazards or environmental damage could greatly increase the cost of operations, and various field operating conditions may adversely affect the production from successful wells. The impact generated by these factors cannot be predicted with any certainty and, individually or collectively, may result in non-economical reserves. In addition, we will remain subject to the normal risks inherent to the oil and natural gas industry, such as unusual and unexpected geological changes in the parameters and variables of the petroleum system and operations, political and regulatory affairs including changes to government take provisions and additional decommissioning requirements. If our future exploration or development costs exceed our estimates, or if they do not produce results which meet our expectations, such future exploration or developments efforts may not be commercially successful, which could materially adversely impact our business, financial condition and results of operations.

In addition, activities in the oil and gas sector can be dangerous and may be subject to interruption in the event of certain casualties. The Group's operations are subject to significant hazards and risks inherent in the oil and gas sector, including:

- explosions and fires;
- blowouts and other operational disruptions in relation to the Group's upstream exploration;
- disruption to, or reduction of, production operations;
- leaks, spills, release of gas or soil contamination from site operations and storage;
- natural disasters;
- ruptures and spills from crude and product carriers or storage tanks;
- equipment break-downs and other mechanical or system failures;
- improper installation or operation of equipment;
- transportation accidents or disruption of deliveries of crude oil, fuel, equipment and other supplies;
- disruption of electricity, water and other utility services;
- labor disputes;
- contamination of employees with COVID-19;
- errors and breaches by our contractors or operators of their obligations to us;
- increase of the price of raw materials or of labor costs;
- inability to attract a sufficient number of skilled workers;
- delays or additional requirements in obtaining permits and regulatory or other governmental licenses, including approvals from regulatory and environmental agencies;
- inability to meet conditions set forth in concession contracts;
- divergent interests relating to economic and financial issues and disagreements between us and our partners that may result in litigation;
- unavailability of drilling units and other equipment, and;
- community opposition activities.

If any of these events were to occur, they could result in environmental damage, injury to persons, loss of life and/or a failure to produce oil or gas in commercial quantities. They could also result in significant delays to our drilling programs, a partial or total shutdown of operations, significant damage to our equipment and equipment owned by third parties and personal injury or wrongful death claims being brought against us.

A pandemic, epidemic or outbreak of an infectious disease would adversely affect the demand and price of oil and natural gas.

On March 11, 2020, the World Health Organization, or WHO, declared that the COVID-19 outbreak is a global pandemic. Since then, the COVID-19 pandemic has had, and continues to have, an unpredictable adverse impact on the world economy. Due to its impact on worldwide commercial activity, the COVID-19 pandemic has already significantly affected oil prices more than expected as a result of the deceleration of the growth of worldwide oil demand in 2020.

In its April 2020 Monthly Oil Market Report, OPEC announced a decrease in its outlook for global oil demand for 2020 from 99.7 million barrels per day to 92.8 million barrels per day, as a result of the impacts of the COVID-19 pandemic. As of the date of this Offering Memorandum, the long-term effects of the COVID-19 pandemic on our business cannot be determined with any level of certainty. Further, if the COVID-19 pandemic persists, or if any another pandemic, epidemic or outbreak of infectious disease occurs, this may lead to an economic downturn that could further reduce the demand for and the price of oil and natural gas, which could materially adversely affect our business.

In March 2020, OPEC and non-OPEC producers (sometimes referred to as OPEC+) met in Vienna, Austria, to discuss the prospect of extending or increasing oil production cuts, in light of a decrease in demand due to the COVID-19 pandemic. No consensus was reached among the 24 participating countries, effectively eliminating quotas and reduction targets as of April 1, 2020. As a consequence, Saudi Arabia, the world's largest oil exporter, through its state-owned company Saudi Aramco, decided to lower the official selling price of its Arab light crude by around U.S.$8 per barrel, the largest monthly decrease in 20 years. Concurrently, it announced plans to increase production to at least 10 million barrels per day by April. At the time, the sustained impact of the COVID-19 pandemic across the world led to a sharp decrease in demand as most countries continue to announce containment measures (border closures, flight cancellations, self-isolation and quarantine, large gathering restrictions and bar and restaurant closures, among others). Following OPEC's agreement in mid-April 2020 to cut production in response to reduced demand and sustained low oil prices, as well as the gradual reopening of economies and reduction in social distancing measures during this period, Brent oil prices had increased to U.S.$22.74 per barrel as of March 31, 2020. In March 2021, the Brent oil prices reached U.S.$65.41 per barrel. The full extent and duration of the COVID-19 pandemic's impact on the world economy, including oil prices, are yet uncertain, demand and oil and natural gas prices could be materially adversely affected, which would have a negative effect on our operational results.

Our business requires significant capital investment and significant maintenance expenses and we may not be able to finance such expenses on satisfactory terms.

Because the oil and natural gas industry is capital intensive, and our strategy is centered on the development of mature offshore fields, we expect to make substantial investments in our business and operations for the acquisition, exploration and production of oil and natural gas reserves. Our investments in fixed and intangible assets and acquisitions of oil and gas assets amounted to R$266,144 thousand (or U.S.$46,714 thousand), R$857,582 thousand (or U.S.$150,524 thousand) and R$1,722,759 thousand (or U.S.$311,158 thousand) during the three-month period ended March 31, 2021 and the years ended December 31, 2020 and 2019, respectively, which include costs incurred in connection with the Frade Field Acquisition in 2019.

The actual amount and timing of our future investments may differ materially from our estimates as a result of commodity prices, actual drilling results, the availability of drilling rigs and other equipment and services, regulatory, technological and competitive developments, as well as any measures taken in response to any environmental or health and safety emergencies.

Our future operational cash flow is affected by, among other factors:

- The ability to locate or acquire reserves;
- The ability to extract oil and natural gas from these reserves;
- The deadlines anticipated in engineering projects to make investments in production, maintenance, upgrades and equipment;
- The cost and time to obtain government authorizations and/or concession contracts;
- The performance of our fields;
- The effects of competition from large companies operating in the oil and gas sector; and
- The prices at which oil and natural gas are traded.

Our financing needs may require us to alter or increase our capitalization substantially through the issuance of debt or equity securities or the sale of assets, which could increase our leverage.

If our capital requirements were to differ materially from our current plans, we may require further financing. In addition, we may incur significant financial indebtedness in the future, which may involve restrictions on other financing and operating activities. There is no assurance that we will be able to obtain adequate financing in the future or that such financing will be on commercially reasonable terms to us. This could cause our cost of doing business to increase, limit our ability to pursue acquisition opportunities, reduce cash flow used for drilling and place us at a competitive disadvantage. A significant reduction in cash flows from operations or the availability of credit could materially adversely affect our ability to achieve our planned growth and operating results.

Oil and gas operations involve a high degree of risk and we may not be fully insured against all risks we face in our business.

Oil and gas drilling and production operations at our onshore and offshore properties are subject to many risks, including the risk of fire, explosions, mechanical failure, pipe or well cement failure, well casing collapse, pressure or irregularities in formations, chemical and other spills, unauthorized access to hydrocarbons, accidental flows of oil, natural gas or well fluids, sour gas releases, contamination of oil and gas, vessel collision, structural failure, loss of buoyancy, storms or other adverse weather conditions and other occurrences that may negatively affect our operations. Our operations are also subject to the hazards and risks normally incidental to the exploration, development and production of natural resources, any of which could result in work stoppages, damage to persons or property and possible environmental damage. Should any of these risks materialize, we could incur in significant civil liability claims, administrative fines or penalties, as well as criminal sanctions against us and/or our officers, in addition to legal defense costs, remedial costs and indemnifications. We could also suffer substantial losses due to injury or loss of life, human health risks, severe damage to or destruction of property, natural resources and equipment, pollution or other environmental damage, unplanned production outage, partial or total shutdown of operations, significant delays to drilling programs, cleanup responsibilities and compensation for damages caused, regulatory investigation and penalties, increased public interest in our operational performance and suspension of operations.

In addition, offshore drilling activities, which constitute the entirety of our drilling operations, generally involve greater risk of mechanical problems than onshore drilling activities. For instance, prior to our acquisition of the Frade Field in 2019, two oil spills occurred. The first in late 2011 and the second in early 2012. As a result of these incidents, drilling activities and production were suspended.

Damages we suffer and the liabilities to which we are exposed may exceed the policy limits of our insurance. The insurance policies we maintain do not provide complete coverage against all operating risks. In addition, our insurance does not cover penalties or fines that may be assessed by governmental authorities. If we are unable to make claims against our insurers, our financial position, results of operations, cash flows and reputation may be negatively impacted.

Further, we also cannot guarantee that we will be able to renew our current insurance policies or renew them under favorable terms, or engage the same insurance companies or similar insurance companies. If any

risk materializes and is not covered by our insurance policies, we will incur additional costs to repair or replace our damaged assets or to indemnify third parties, which will adversely affect our operating results and reputation. In case we are not able to renew insurance policies or if we incur losses that are not fully covered by these policies, we may be materially and adversely affected. Also, in case of insured events, the coverage of our insurance policies is subject to the payment of the respective premium. Our failure to pay such premiums combined with the occurrence of a casualty may expose us to risks, as covered damages would not be subject to insurance coverage by the insurer.

We may be unable to comply with the terms of our concession contracts, which may result in fines, other penalties and, depending on the severity of the non-compliance, the loss of present or future concession contracts. Our business and results may be adversely and materially affected by any fines or loss of concession agreements.

Under Brazilian law, oil and gas activities are controlled and regulated by the Federal Government, which grants, by means of a concession contract, the right to oil exploration. Under the terms of the Petroleum Law, and Law No. 8,987, of February 13, 1995, as amended, or Concessions Law, these concession contracts may be subject to early termination in circumstances, including in situations of: (i) expropriation by the Federal Government for reasons of public interest; (ii) revocation of the concession (under the terms of the concession contract); (iii) failure to comply with the obligations established in the concession contracts, including, without limitation, failure to complete the minimum exploratory program; or (iv) bankruptcy of the party to the concession contract. In the cases of early termination of the concession agreements, the conceded assets must be returned to the Federal Government. In the event that the Federal government decides to terminate concession agreements or recover conceded assets, indemnity payments may not be sufficient to offset the investment we made.

The early termination of concession contracts will not release us from liability for damages caused to third parties as a result of the concession granted, subject to the applicable statutory limitations and delay periods. Further, the early termination of concession contracts will not release us from obligations owed to our creditors.

In the event that a concession contract is terminated due to non-compliance with legal, regulatory or contractual rules, the indemnity to be paid by the Federal Government may be significantly reduced by the imposition of fines or other penalties.

In addition, in the case of early termination of present or future concession agreements, it is not possible to ensure that the amount of any indemnity will be sufficient to offset the investment made, the implied rate of return or the loss of future profit on assets not yet fully amortized. Concession contracts under which we, or our partners, are authorized to explore and produce oil and natural gas are subject to acceleration provisions, non-renewal, confiscation in certain circumstances and certain provisions having similar effects. Additionally, we may not be able to renew these contracts, which may have a material adverse effect on our business, financial condition or operational results.

Oil and natural gas reserves estimates may be inaccurate and our actual revenues may be lower than our projections.

We make estimates of oil and natural gas reserves, upon which we base our financial projections. We make these reserve estimates using various assumptions, including assumptions as to oil and natural gas prices, drilling and operating expenses, capital expenditures, taxes and cost of capital. Some of these assumptions are inherently subjective, and the accuracy of our reserve estimates relies in part on the ability of our management team, engineers and other advisors to make accurate assumptions. Economic factors beyond our control, such as interest rates and exchange rates, also impact the value of our reserves. The process of estimating oil and gas reserves is complex, and requires us to make significant assumptions in the evaluation of available geological, geophysical, engineering and economic data for each property.

As a result, our reserve estimates are inherently imprecise. The reserves disclosed by us are not assurances of quantity, quality, viability or of the profitability of current or future operations given that there are numerous uncertainties inherent in the estimation of economically recoverable oil and natural gas reserves. Actual future

production, oil and natural gas prices, revenues, taxes, development expenditures, operating expenses and quantities of recoverable oil and gas reserves may vary substantially from those we estimate. If actual production results vary substantially from our reserve estimates, this could materially reduce our revenues, which could have a material adverse effect on our results of operations.

Furthermore, our reserves may be significantly lower than what we currently indicate in estimates of our portfolio's volume and what is reported by companies that review our reserve estimates. Downward revisions in our reserve estimates could lead to lower future production, which could have a material adverse effect on our business, financial condition and results of operations.

The information on our reserves and contingent resources included in this Offering Memorandum are based on technical reports issued in January 2021 and April 2020 by independent certifying companies, which may be changed in the future.

The information on our reserves and contingent resources included in this Offering Memorandum, including details on production curves, estimated, proven, probable, possible and contingent reserves, estimates of net revenue from our fields and their present value were extracted from the reports prepared by DeGolyer in January 2021 and April 2020, or D&M Reserve Reports.

The accuracy of the estimates presented in connection with our reserves varies due to several factors and assumptions, such as fluctuations in the oil and natural gas prices and may be revised over time. Any downward revision to the estimated amounts of our proved reserves may adversely affect our financial condition and operation results.

Accordingly, the reserves and revenue estimates presented in our D&M Reserve Reports should be considered as estimates that may change in light of additional information on production and other data may become available. In addition to being based only on information currently available, these estimates are also subject to the uncertainties inherent in the critical interpretation of the consulting firm hired to prepare these reports. Therefore, an incorrect or imprecise interpretation by this consulting firm may negatively affect our production and reserves prognosis and, consequently, our operating results.

Our identified potential drilling location inventories are scheduled over many years, making them susceptible to uncertainties that could materially alter the occurrence or timing of their drilling.

As part of our growth strategy, we identify and plan potential drilling locations, including those without proved and undeveloped reserves.

Our ability to drill and explore the potential locations we identify depends on a number of factors, including oil and natural gas prices, the availability and cost of capital, drilling and production costs, the availability of drilling services and equipment, drilling results, the quality and commercial viability of oil discovered, lease expirations, the availability of gathering systems, marketing and transportation constraints, refining capacity, regulatory approvals and other factors. Because of the uncertainty inherent in these factors, there can be no assurance that the various potential drilling locations we have identified will ever be drilled or, if they are, that we will be able to produce oil or natural gas from these or any other potential drilling locations.

Most of our production and revenues are derived from four fields, of which three are located in the Campos Basin and one in the Camamu-Almada Basin.

Most of our production of oil and gas is concentrated in four blocks: the Frade Field, the Polvo Field, the Tubarão Martelo Field and the Manati Field. Any setbacks experienced at any of these blocks, in particular the Frade Field, which accounts for most of our production and revenue, could have a material adverse effect on our business, financial condition and results of operations. On November 5, 2020, we announced the sale of our 10% working interest in the Manati Field, held through our subsidiary Petro Rio Coral Exploração Petrolífera Ltda., to Gas Bridge (the "Manati Field Sale"). When the Manati Field Sale closes, its effect will retroact to January 1, 2021 and we will no longer be entitled to the cash generated by Manati, including payments under the Petrobras Take-or-Pay Agreement, calculated as of January 1, 2021. The Manati Field

Sale is subject to the satisfaction of conditions precedent, including the Petrobras Condition Precedent. See "*Business—Properties in Production and Development—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

Furthermore, as a result of the concentration of these wells in the Campos Basin and in the Camamu-Almada Basin, we may be disproportionately exposed to the impact of delays or interruptions of production from these wells caused by significant governmental regulation, transportation capacity constraints, curtailments of production, natural disasters, transportation interruptions or other events that impact this area.

Our results of operations could be materially adversely affected by fluctuations in foreign currency exchange rates.

We sell our oil mainly in the international markets under agreements that are denominated in U.S. dollars and other foreign currencies. Exchange rates between the Brazilian *real* and U.S. dollar have fluctuated significantly in the past and may do so in the future. An appreciation of the Brazilian *real* could increase our costs, when analyzing the financial performance of our oil fields in U.S. dollars, and negatively impact our results of operations. Furthermore, we may be exposed to translation risk when financial statements denominated in Brazilian *reais* are translated to U.S. dollars, and vice-versa. In addition, as exchange rates fluctuate, the comparability of revenues and expenses between periods will be impacted.

Through our non-operating 10% working interest in the Manati Field (whose sale to Gas Bridge, as of January 1, 2021, remains subject to the satisfaction of conditions precedent, including regulatory approvals (See "*Business—Properties in Production and Development—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.)), we are exposed to fluctuations in the *real* against the U.S. dollar when analyzing its financial performance in U.S. dollars, as our Brazilian revenues and expenses are mostly denominated in *reais* for our gas operation. In the past, the Central Bank has intervened to control unstable movements in foreign exchange rates.

We cannot predict whether the Central Bank or the Brazilian government will continue to permit the *real* to float freely or will intervene in the exchange rate market through the return of a currency band system or otherwise. Furthermore, Brazilian law provides that, whenever there is a serious imbalance in Brazil's balance of payments or there are reasons to foresee a serious imbalance, temporary restrictions may be imposed on remittances of foreign capital abroad, which may impair the transfer of our financial resources abroad, including to make principal and interest payments on the Notes. We cannot assure you that such measures will not be taken by the Brazilian government in the future. The *real* has experienced frequent and substantial volatility in relation to the U.S. dollar and other foreign currencies, which could materially and adversely affect the growth of the Brazilian economy and our business, financial condition and results of operations. The *real* has experienced heightened volatility as a result of the COVID-19 pandemic which could adversely affect the growth prospects of the Brazilian economy and our business.

Our debt and cash management could be materially adversely affected by fluctuations in foreign currency exchange rates.

As of March 31, 2021, a significant portion of our financial debt was denominated in currencies other than the Brazilian *real*. A substantial portion of our indebtedness is, and is expected to continue to be, denominated in or indexed to the U.S. dollar. A further depreciation of the Brazilian *real* against the U.S. dollar will increase our debt balance and our debt service reported in Brazilian *reais*, and the amount of *reais* necessary to pay principal and interest on a foreign currency debt will increase with this depreciation. This can negatively affect our business in a few ways:

- cash management and liquidity: if the majority of our cash balance is deposited in Brazilian *reais* at the time of a severe depreciation of against the U.S. dollar, our ability to use our cash to repay our debt balance or pay interest expenses denominated in U.S. dollars will be reduced.
- financial covenant management: we must comply with certain financial covenants under our current debt instruments (and potentially under other debt facilities in the future), such as a net leverage and interest coverage ratio. In the case of a severe depreciation of the Brazilian *real*,

our reported debt in Brazilian *reais* could dramatically increase and therefore indicate an unexpected increase in the net leverage ratio or an unexpected decrease in the interest coverage ratio measured for a specific period.

Alternatively, following an appreciation of the Brazilian *real*, some of our operating expenses, administrative expenses, capital expenditures and investments will increase if analyzed in U.S. dollars. As most of our revenues are denominated in U.S. dollars, in the case of a substantial appreciation of the Brazilian *real*, our cash generation relative to our capacity to service debt may decrease.

Any of the situations described above may have an adverse and material impact on us.

Our debt profile could change in the future and we could incur floating rate debt that could not be hedged, potentially increasing financial costs under a scenario of increasing interest rates.

To the extent we increase our indebtedness with newly contracted debt, we may incur in additional interest expenses. In the future, an increasing portion of our total indebtedness could consist of floating rate debt in the future. We might not enter into derivative contracts or similar financial instruments or make other arrangements with third parties to hedge against the risk of an increase in interest rates.

To the extent that such floating rates rise, we may incur additional financial expenses. Moreover, as we refinance our existing debt in the coming years, our debt profile, specifically as it relates to the ratio of fixed to floating interest rates, the ratio of short-term to long-term debt, and the currencies in which our debt is denominated or to which it is indexed.

Changes that affect the composition of our debt and cause rises in short or long-term interest rates may increase the cost of servicing our debt, which could have an adverse effect on our results and financial condition.

Our inability to access equipment and infrastructure in a timely manner may hinder our access to oil and natural gas markets and generate significant incremental costs or delays in our oil and natural gas production.

Our ability to market our oil and natural gas production depends substantially on the availability and capacity of processing facilities, oil tankers, transportation facilities (such as pipelines, crude oil unloading stations and trucks) and other infrastructure, which may be owned and operated by third parties. Our failure to obtain such facilities on acceptable terms or on a timely basis could materially harm our business. We may be required to shut down oil and gas wells because access to transportation or processing facilities may be limited or unavailable when needed. If that were to occur, then we would be unable to realize revenue from those wells until arrangements are made to deliver the production to the market, which could cause a material adverse effect on our business, financial condition and results of operations.

We may not be able to access hydrocarbon pipelines, storage and loading facilities when needed. Pipeline facilities in Brazil often operate close to their full capacity and seasonal capacity restrictions may occur, particularly in natural gas pipelines. Changes to the natural gas infrastructure currently under analysis in Brazil may also impact the access to essential facilities and gas pipelines. Our gas production from the Manati Field is transported on Petrobras-operated pipelines. If those pipelines became unavailable or reserved capacity became insufficient, our overall production levels in the Manati Field would be negatively impaired.

On November 5, 2020, we announced the sale of our 10% working interest in the Manati Field, held through our subsidiary Petro Rio Coral Exploração Petrolífera Ltda., to Gas Bridge. When the Manati Field Sale closes, its effect will retroact to January 1, 2021 and we will no longer be entitled to the cash generated by Manati, including payments under the Petrobras Take-or-Pay Agreement, calculated as of January 1, 2021. The Manati Field Sale is subject to the satisfaction of conditions precedent, including the Petrobras Condition Precedent. See "*Business—Properties in Production and Development—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

Our oil production at the Frade Field, the Tubarão Martelo Field and the Polvo Field is sold to market through ship-to-ship transfers from the relevant field's dedicated FPSO to a tanker chartered or owned by the final off-taker client. If the offloading facilities of any of the FPSO Frade, the FPSO Bravo (which operates at

the Tubarão Martelo Field) and the FPSO Polvo were to experience operational setbacks or delays due to maintenance or repair works, our ability to transport our oil production from these fields could be adversely impacted. Common operating risks related to ship-to-ship activities include, but are not limited to, mechanical and information technology issues, damage to infrastructure, risk of capsizing or running aground, accidents involving employees or third parties; and environmental hazards, such as oil spills from vessels or inadequate waste disposal.

The development of our proved undeveloped reserves may take longer and may require higher levels of capital expenditures than we currently anticipate and, therefore, our proved undeveloped reserves ultimately may not be developed or produced.

Development of our undeveloped reserves may take longer and require higher levels of capital expenditures than we currently anticipate. Additionally, delays in the development of our reserves or increases in costs to drill and develop such reserves will reduce the standardized measure value of our estimated proved undeveloped reserves and future net revenues estimated for such reserves, and may result in some projects becoming uneconomic, causing the quantities associated with these uneconomic projects to no longer be classified as reserves. There can be no assurance that we will not experience similar delays or increases in costs to drill and develop our reserves in the future, which could result in further reclassifications of our reserves, and render the development of these reserves inviable, materially adversely affecting our results and financial condition.

We have not entered into any long-term sales or offtake agreements for the production from the Frade Field, and we cannot provide any guarantees to establish long-term sales or offtake agreements for any of our oil fields in the future.

The oil produced in the Frade Field is sold on the spot market through our trading unit, which is based at PetroRio Luxembourg, as we have not entered into any long-term agreements for the sale or offtake thereof. We cannot provide any assurance that we will enter into a long-term sales or offtake agreement with respect to the oil produced at the Frade Field and, even if we do so, we cannot provide any guarantee as to the terms of such agreement, including the degree to which they are favorable to us, or as to its maintenance. In addition, crude oil sales on the spot market exposes us directly to market risk and volatility. We cannot guarantee long-term sales or offtake agreements for any of our oil fields.

The PetroChina Marketing Agreement is an offtake agreement with PetroChina for oil produced at the Polvo Field shall be valid for six months after the repayment date of the bridge financing entered into with Prisma. There can be no assurance that we will be able to enter into another offtake agreement for the Polvo Field (or any of our other fields) in the future on commercially reasonable terms or at all, or that there will be no termination of this agreement prior to its term, which could mean no single or fixed buyer for our production. Therefore, we rely on the availability of spot buyers in the international market.

We are not, and may not be in the future, the sole owner or operator of all of our licensed areas and do not, and may not in the future, hold all of the working interests in our licensed areas. Therefore, we may not be able to control the timing of exploration or development efforts, associated costs, or the rate of production of any non-operated and, to an extent, any non-wholly owned, assets.

We are not the operator of the Manati Field, in which we hold a 10% working interest. Currently, the Manati Field is operated by Petrobras, which is the holder of a 35% working interest under the relevant concession contract. The terms of the joint operations agreement governing the Manati Field requires that certain actions be approved by supermajority vote and each party has a vote equal to its respective working interest. See "*Business—Properties in Production and Development—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

In addition, the terms of future license or venture agreements may require at least the majority of working interests to approve certain actions. As a result, we may have limited ability to exercise influence over operations or prospects in the blocks operated by our partners, or in blocks that are not wholly-owned or

operated by us. Furthermore, we may have disagreements with our partners in respect of the Tubarão Martelo and the CE-M-715 Fields, in which we hold an 80% and a 50% working interest, respectively.

In August 2020, Petrobras announced that it will start the binding phase of a bidding procedure aimed at the divestiture of its working interest in the Manati Field. As a result, Petrobras may no longer be the Manati Field's operator in the near future.

A breach of contractual obligations by our partners who are the operators of the Manati Field (or future blocks in which we acquire a partial working interest in the future that are not operated by us) could affect our rights under exploration and production contracts. We rely on our partners in the fields in which we have a working interest and that we are not an operator to obtain the respective products (oil & gas) and, consequently, the revenue from these products. Reliance on our partners could also prevent us from realizing our target returns for those activities. For instance, we sell our production from the Manati Field to Petrobras under a take-or-pay agreement. In April 2020, Petrobras invoked the *force majeure* clause of the Manati Field Offtake Agreement, and suspended its performance of its obligations thereunder, citing the COVID-19 outbreak. We and our partners in the Manati Field resolved this contractual dispute with Petrobras by amending the Manati Field Offtake Agreement to reduce the take or pay volume in 2020 and increase, in the same amount, the volume for 2021.

Under applicable law, consortium members are jointly and severally liable before the ANP and the Federal Government for the liabilities arising out of the concession contract. As a consequence, any failure by a consortium member to fulfil relevant obligations under the concession contract may have a material adverse effect on the other partners, even if a joint operating agreement regulating the obligations and rights of the parties is executed.

Other consortium members of our oil and gas concession agreements may default on their obligations to pay the cash calls required by the operator under the relevant joint operating agreements. In such a scenario, we may be required under the terms of the relevant joint operating agreement to contribute all or part of any such funding shortfall. Any such delay or inability of a consortium member to pay the cash calls required by the operator, may adversely affect our business, financial condition, results of operations.

Moreover, we may not be able to control the timing of exploration or development activities or the amount of capital expenditures at the Manati Field (or future blocks in which we acquire a partial working interest in the future that are not operated by us). The success and timing of exploration and development activities operated by our partners will depend on a number of factors that will be largely outside of our control, including:

- the timing and amount of capital expenditures;
- the operator's expertise and financial resources;
- approval of other block partners in drilling wells;
- the scheduling, pre-design, planning, design and approvals of activities and processes;
- selection of technology; and
- the rate of production of reserves, if any.

This limited ability to exercise control over the operations on some of our license areas may adversely impact our business, financial condition and results of operations.

We are exposed to health, environment and safety risks in our operations, which may lead to accidents, significant losses, administrative proceedings and legal liabilities.

Some of our main activities may cause accidents, such as oil spills, product leaks, fires and explosions. In particular, deep-water and ultra-deep-water activities present various risks, such as oil spills and explosions in our exploration and production units, including platforms, ships, pipelines, and terminals, among other assets owned or operated by us. These events may occur due to technical failures, human errors or natural events, among other factors. The occurrence of one of these events, or other related incidents, may result in

various damages such as death, serious environmental damage and related expenses (including, for example, cleaning expenses and compensation for the damages caused). As a consequence, we may incur expenses to repair, remedy or pay for the damages caused, or to pay any fines imposed by the competent authorities.

In Brazil, the federal environmental protection agency, IBAMA has the authority to suspend operations in the event of such accidents, some of which may take a substantial period to be resumed. In addition, these events can result in criminal liability and administrative fines ranging of up to R$50 million and the imposition of complex remedial and offsetting measures, both with respect to the environment and the affected individuals. Due to the abundant marine fauna and flora in Brazil, oil and gas activities in the country are highly scrutinized.

In addition, public health epidemics such as the COVID-19 pandemic could cause health restrictions to our workforce or that of our suppliers and, therefore, impact the operation of some of our facilities, including our platforms, refineries, terminals, among others. This condition could have a negative impact on our results and financial condition. Finally, we may face difficulties in obtaining, maintaining or renewing environmental authorizations and operating licenses and may suffer damages to our reputation.

We are highly dependent on certain members of our management and technical team.

The ability, expertise, judgment and discretion of our management and our technical and engineering teams are key in discovering and developing oil and natural gas resources. Our performance and success are dependent to a large extent upon key members of our management and exploration team, and their loss or departure, for any reason, could be detrimental to our future success. In addition, our ability to manage our anticipated growth depends on our ability to recruit and retain qualified personnel. Our ability to retain our employees is influenced by the economic environment and the remote locations of our exploration blocks. There is strong competition in our industry to hire employees in operational, technical and other areas, and the supply of qualified employees is limited in the regions where we operate and throughout Latin America generally. The loss of any of our key management or other key employees of our technical team or our inability to hire and retain new qualified personnel could have a material adverse effect on us.

Our success also depends on our ability to continue to train, develop and retain our personnel so they can assume qualified senior positions in the future. We cannot assure you that we will be effective in training and developing our workforce sufficiently, nor that we will be able to achieve this goal without incurring additional costs. Any such failure could adversely affect our results and our business.

Acquisitions that we have announced or recently completed, including our acquisitions of interests in the Frade Field, the Tubarão Martelo Field, the Wahoo Field and the Itaipu Field, and any future acquisitions, strategic investments, partnerships or alliances could be difficult to integrate and/or identify, could divert the attention of key management personnel, disrupt our business and materially adversely affect us.

Our strategy is centered around the increase of our oil and gas reserves and production through the acquisition and development of fields, prospects, reserves and leaseholds, including in regions in which we do not currently operate. The successful acquisition and integration of producing properties, including the Wahoo-Itaipu Acquisition and the Wahoo Acquisition, requires an assessment of several factors, including:

- recoverable reserves;
- future oil and natural gas prices;
- development and operating costs; and
- potential environmental and other liabilities.

The accuracy of these assessments is inherently uncertain. Our review and the review of advisors and independent reserves engineers is not able to reveal all existing or contingent liabilities. Inspections may not always be performed on every well, and environmental conditions are not necessarily observable even when an inspection is undertaken. We, our advisors and our independent reserves engineers may apply different assumptions when assessing the same field. Even when contingent liabilities are identified, the seller may be unwilling or unable to provide effective contractual protection against all or part of the problems. We often

are not entitled to contractual indemnification for environmental liabilities and acquire properties on an "as is, where is" basis. Even in those circumstances in which we have contractual indemnification rights for pre-closing liabilities, these indemnification rights are usually capped and subject to time limitations, and it remains possible that the seller will not be able to satisfy its contractual obligations. There can be no assurance that problems related to the assets or management of the companies and operations we have acquired, or operations we may acquire or add to our portfolio in the future, will not arise in future, and these problems could have a material adverse effect on our business, financial condition and results of operations.

Significant acquisitions, including the acquisitions of the Frade Field, the Tubarão Martelo Field, the Wahoo Acquisition and the Wahoo-Itaipu Acquisition, and other strategic transactions may involve other risks, including:

- diversion of our management's attention to evaluating, negotiating and integrating significant acquisitions and strategic transactions;
- challenge and cost of integrating acquired operations, information management and other technology systems and business cultures with ours while carrying on our ongoing business;
- contingencies and liabilities that could not be or were not identified during the due diligence process, including with respect to possible deficiencies in the internal controls of the acquired operations;
- obligations imposed by the ANP to approve the transactions, including obligations related to operatorship transitions; and
- challenge of attracting and retaining personnel associated with acquired operations.

We also face certain risks relating to the TBMT-Polvo Tieback Project, which involves the tie back of the Polvo Field to the recently acquired Tubarão Martelo Field. The TBMT-Polvo Tieback Project is a complex and time-consuming undertaking and is subject to various operational risks. In addition, this project could be delayed due to the ongoing suspension of our capital expenditures as a part of the measures we implemented to manage the impact of the COVID-19 outbreak. If the TBMT-Polvo Tieback Project is not completed prior to the expiration in 2021 of our charter of the FPSO Polvo from BW Offshore ("FPSO Polvo"), we could be required to renew the FPSO Polvo charter for a period longer than is required to complete the project, at additional costs to us.

On November 19, 2020, our controlled subsidiary PetroRio Jaguar entered into an agreement with BP Energy do Brasil Ltda., or BP Brazil, pursuant to which PetroRio Jaguar agreed to acquire a 37.5% stake in the Wahoo Field and a 60% stake in the Itaipu Field owned by BP Brazil, subject to the satisfaction of conditions precedent, including regulatory approvals, or the Wahoo-Itaipu Acquisition. On March 4, 2021 we announced the signing of an agreement with Total E&P do Brasil Ltda. ("Total Brasil") for the acquisition of a 28.6% working interest in the Wahoo Field ("Wahoo Acquisition"). Together with the interest in the Wahoo Field from the Wahoo-Itaipu Acquisition, our interest in the Wahoo Field will be 64.3% of the concession after the acquisitions are concluded, both subject to the satisfaction of conditions precedent, including regulatory approvals.

It is also possible that we may not identify suitable acquisition targets or strategic investment, partnership or alliance candidates. Our inability to identify suitable acquisition targets, strategic investments, partners or alliances, or our inability to complete such transactions, may negatively affect our competitiveness and growth opportunities. Moreover, if we fail to properly evaluate acquisitions, alliances or investments, we may not achieve the anticipated benefits of any such transaction, and we may incur costs in excess of what we initially anticipate.

Future acquisitions financed with our own cash could deplete cash and working capital available to adequately fund our operations. We may also finance future transactions through debt financing (including the issuance of debt securities on the international capital markets), issuance of equity securities, existing cash, cash equivalents or investments, or a combination of the foregoing. Acquisitions financed with the issuance of our equity securities could be dilutive, which could affect the market price of our stock. Acquisitions financed

with debt could require us to dedicate a substantial portion of our cash flow to principal and interest payments and could subject us to restrictive covenants.

Developments in the economic environment and in the oil and gas industry and other factors have resulted, and may result, in substantial write-downs of the carrying amount of certain of our assets, which could adversely affect our results and financial condition.

We monitor changes in economic and operational expectations that may indicate deterioration or loss of the recoverable value of our assets, which, after being identified, lead to calculations to verify whether the net book value exceeds the recoverable value, and, if confirmed, we record a provision for devaluation, adjusting the book value to the recoverable value (impairment tests). Our impairment tests are performed by a comparison of the carrying amount of an individual asset or a cash generating unit with its recoverable amount. Whenever the recoverable amount of an individual asset or cash generating unit is less than its carrying amount, an impairment loss is recognized to reduce the carrying amount to the recoverable amount.

Changes in the economic, regulatory, business or political environment in Brazil or other markets where we operate, such as the recent significant decline in international crude oil and gas prices, the devaluation of the real, as well as changes in financing conditions, such as deterioration of risk perception and interest rates, among other factors, may affect the original profitability estimates of our projects, which could adversely affect our business, financial condition or results of operations.

Strikes, work stoppages or labor unrest by our employees or by the employees of our suppliers, contractors or consortium partners could materially adversely affect our results and our business.

Disagreements on how we manage our business, in particular divestments and their implications for our personnel, changes in our strategy, human resources policies regarding compensation, benefits and headcount, implementation of regulations recently created relating to health and pension plans, changes in labor law and negotiations of collective bargaining agreements with workers' unions may lead to judicial inquiries, labor unrest, strikes and stoppages.

Strikes, work stoppages or other forms of labor unrest at any of our facilities or our major suppliers, contractors, consortia partners or their facilities or in sectors of society that affect our business could impair our ability to complete major projects and impact our ability to continue our operations and achieve our long-term objectives.

We rely on third-party suppliers of goods and services for the operation and execution of our projects and, as a result, we may be materially adversely affected by failures or delays, or by the unilateral termination by such suppliers of our agreements with them.

Our operations rely on the availability of drilling equipment, drilling services and access to third-party-owned and operated infrastructure on commercially reasonable terms. These goods and services may be scarce and may not be readily available at the times and places required or at favorable rates. We are also susceptible to the risks of performance and product delivery within our supply chain. If our third-party suppliers and service providers delay, fail to deliver goods and services owed to us, or if they unilaterally terminate our supply agreements with them, we may not meet our operational goals within the expected timeframe. In this case, we may ultimately need to postpone one or more of our projects, which may have an adverse effect on our results and financial condition.

In particular, we rely on certain suppliers for key aspects of the successful execution of the TBMT-Polvo Tieback Project, and if any of these suppliers were to fail to perform their obligations to us, we may be unable to find additional or replacement suppliers in a timely manner, on terms that are commercially reasonable to us or with the requisite technical capabilities. In addition, it is possible that the TBMT-Polvo Tieback Project will not be completed prior to the expiration of our charter of the FPSO Polvo from BW Offshore. In such a scenario, the FPSO Bravo (which we acquired on April 20, 2020) would not be available to process and offload the production from the Polvo Field, and we could have to renew the FPSO Polvo charter for a period longer than is required to complete the TBMT-Polvo Tieback Project. There can be no assurance that we would be

able to renew the charter for the FPSO Polvo on commercially reasonable terms or at all, which could have an adverse effect on our business, financial condition and results of operations.

Contractors and other third-party service providers may also cause losses or third-party liability or losses to us by their performance. We may be subject to liability claims due to the inherently hazardous nature of its business, including for acts and/or omissions of sub-contractors and other service providers. We may also be liable for the operations of our contractors with respect to governmental authorities, consortium partners or other third parties. Any indemnities the Group may receive from such parties may be inadequate and/or difficult to enforce. We are subject to minimum local content requirements in some of our concession contracts. In this case, we may not meet the minimum percentages of local content required in those agreements with appropriate financial conditions and, as a result, we may be impacted by penalties in our contracts.

Additionally, there may be risks of delays in the customs clearance process caused by external factors, which may impact the supply of goods to us and affect our operations and projects. Furthermore, disruptions due to health events such as the COVID-19 pandemic could adversely impact our supply chain and, in turn, our business, financial condition and results of operations.

We are exposed to the credit risks of our customers and any material default by our key customers could materially adversely affect us.

Financial problems encountered by our customers could limit our ability to collect amounts owed to us, or to enforce the performance of obligations owed to us under contractual arrangements.

The combination of declining cash flows as a result of a decline in commodity prices, a reduction in borrowing basis under reserves-based credit facilities and the lack of availability of debt or equity financing may result in a significant reduction of our customers' liquidity and limit their ability to make payments or perform on their obligations to us.

Some of our customers may be highly leveraged, and, in any event, are subject to their own operating expenses. Therefore, the risk we face in doing business with these customers may increase. Other customers may also be subject to regulatory changes, which could increase the risk of defaulting on their obligations to us. Financial problems experienced by our customers could result in the impairment of our assets, a decrease in our operating cash flows and may also reduce or curtail our customers' future use of our products and services, which may have an adverse effect on our revenues and may lead to a reduction in reserves.

Furthermore, the COVID-19 pandemic has severely impacted the global economy and commercial activities generally, which has affected the credit worthiness of our customers. For instance, we sell our production from the Manati Field to Petrobras under a take-or-pay agreement. In April 2020, Petrobras invoked the *force majeure* clause of the Manati Field Offtake Agreement, and suspended its performance of its obligations thereunder, citing the COVID-19 outbreak. We and our partners in the Manati Field resolved this contractual dispute with Petrobras by amending the Manati Field Offtake Agreement to reduce the take or pay volume in 2020 and increase, in the same amount, the volume for 2021.

Likewise, in June 2020, BW Offshore also invoked the *force majeure* clause of the charter agreement for the FPSO Polvo and suspended production at the unit, following certain members of the production team testing positive for COVID-19. The alleged *force majeure* event lasted until July 2020 and we are still discussing whether the event constituted a *force majeure* or not. At this time, given the uncertainty of the lasting effect of the COVID-19 pandemic, other impacts on our customers and the market in general cannot be determined with certainty, and the resulting impacts on the financial condition of these customers could have a material adverse effect on our revenue.

Unfavorable decisions in administrative, judicial or arbitral proceedings involving us, our subsidiaries, managers and/or shareholders may cause a material adverse effect in our business, financial performance and reputation.

We, our managers and/or shareholders currently are, and may in the future become, involved in legal proceedings related to civil, tax, labor, regulatory and criminal laws and regulations. We cannot guarantee that the results of these proceedings will be favorable or that we will have partial or total provisions in place for

any liabilities arising from such proceedings. If decisions on the judicial, arbitral and administrative proceedings to which we are a party are contrary to our interests, we could be adversely affected. Furthermore, decisions contrary to ours, our managers and/or shareholders' interests that may prevent the conduct of business as initially planned, or which may eventually reach substantial amounts or impede the conduct of our business may adversely affect our business, results of operations, financial condition and reputation. Additionally, governmental authorities may have different understandings and interpretations from those adopted by us in the conduct of our business, which may subject us to financial and non-financial sanctions.

As a result of the 2011-2012 Frade Field Oil Spills, which occurred prior to our acquisition of the Frade Field, the operations at the Frade Field were suspended for more than two years. Production at the Frade Field was allowed to resume partially in 2013 and the full resumption of drilling activities was allowed by the ANP from 2016 onward. Eventually, Chevron, the operator of the Frade Field at the time, and the ANP and other regulatory authorities at the federal and state level entered into settlement agreements or terms of adjustment of conduct ("*Termos de Ajustamento de Conduta*" or "TACs"). After we acquired the Frade Field, we assumed Chevron's obligations under the Frade Field Monitoring Plan. In case we fail to perform any obligation thereunder, we could be subjected to fines and penalties, as well as suspension of our operations at the Frade Field, any of which could adversely affect our business.

In addition, Chevron was sued by several fishermen from the state of Rio de Janeiro State for damages they suffered as a result of the 2011-2012 Frade Field Oil Spills. As of December 31, 2020, 18 lawsuits are currently pending in the courts of Rio de Janeiro – RJ, Campo dos Goytacazes – RJ, Anchieta – ES, Itapemerim – ES, and Marataízes – ES, of which (i) ten lawsuits have each an amount of R$72 thousand, and (ii) eight lawsuits have each an amount of R$84 thousand. The claims in all 18 lawsuits are loss of profits and pain and suffering. Additionally, the Federation of the Fishermen of State of Rio de Janeiro (*Federação dos Pescadores do Rio de Janeiro* or "FEPERJ") filed a claim against PetroRio Jaguar (formerly Chevron Brasil Upstream Frade Ltda.) seeking damages for alleged losses incurred by its constituent fishermen as a result of the 2011-2012 Frade Field Oil Spills. The lawsuit involves claims for damages in the amount of R$338 million.

In the event of unfavorable decisions on judicial or administrative proceedings involving us, one or more of our managers and/or our subsidiaries, such unfavorable decisions may prevent them from continuing to act as our management and prevent us and/or our subsidiaries from entering into contracts with public authorities or to receive tax or credit benefits or incentives, directly or indirectly. Nevertheless, we cannot assure you that proceedings described under "*Business—Legal Proceedings*" or other legal proceedings will not materially adversely affect our reputation, business, financial condition or results of operations.

We are subject to an ongoing CVM administrative proceeding in Brazil and some members of our management are subject to other ongoing administrative proceedings before the CVM.

We are currently party to an administrative proceeding carried out by the CVM in connection with the disclosure of past investments. If found liable, we may be subject to the penalties provided for in Law No. 6,385/76, which includes the payment of fines.

Mr. Nelson de Queiroz Sequeiros Tanure, the current chairman of our board of directors, is party to another administrative proceeding carried out by the CVM, and may be subject to one or more penalties provided for under article 11 of Law No. 6,385/76.

In addition, Mr. Roberto Bernardes Monteiro, our current chief executive officer, is party to two separate administrative proceedings carried out by the CVM, in connection with previous positions he held in other publicly-held companies before he joined us. The decision of these proceedings imposed the payment of fines of R$300 thousand and R$500 thousand. Such proceedings are currently pending judgment before the Council of Appeals of the National Finance System (CRSFN), which may result in the maintenance of the fines above mentioned. An unfavorable decision contrary to our interests or our management's interest could adversely affect our reputation and the price of our Notes. See "Business—Legal and Regulatory—Legal Proceedings—CVM Proceedings."

Failures to prevent, detect in a timely manner, or correct behaviors inconsistent with our ethical principles and rules of conduct may have a material adverse effect on us.

We are subject to the risk that our management, employees, contractors, suppliers or any person doing business with us may engage in fraudulent activity, corruption or bribery, circumvent or override our internal controls and procedures or misappropriate or manipulate our assets for their personal benefit or of third parties, against our interest. This risk is heightened by the fact that we have a large number of complex, valuable contracts with local and foreign suppliers and the wide variety of counterparties involved in our business.

We are required to comply with applicable anti-money laundering laws, anti-terrorism financing laws, sanctions and other regulations in Brazil and in other jurisdictions.

We cannot guarantee that all of our employees and contractors will comply with our principles and rules of ethical behavior and professional conduct. Any failure, whether actual or perceived, to abide by our ethical principles or to comply with applicable governance or regulatory obligations could harm our reputation, limit our ability to obtain financing and have a material adverse effect on our results and financial condition.

If we fail to comply with applicable laws and regulations, the government authorities with jurisdiction over us may impose fines and other penalties. In addition, any such acts may result in material financial losses or reputational harm to us which could in turn have an adverse effect on our business, financial condition and results of operations.

Additionally, we cannot guarantee that there will be no future investigations, developments of investigations or allegations against us or any of our affiliates, employees or members of our board of directors. Future investigations, allegations or developments could adversely affect our reputation, business, financial condition, operating results, and the trading price of our Notes.

We are subject to complex and evolving environmental, social, health and safety laws and regulations, compliance with which may increase our capital expenditures and operating costs and have a material adverse effect on us.

We and our operations are subject to various international, foreign, federal, state and local environmental, health and safety laws and regulations that provide for, requirements to obtain, maintain and renew environmental licenses and authorizations, restrictions and prohibitions on spills, releases or emissions of various substances produced in association with oil and gas operations, and also typically require that wells and facility sites be operated, maintained, abandoned and reclaimed to the satisfaction of applicable regulatory authorities. Such laws and regulations are extensive, complex, evolving and subject to differing interpretations, and our compliance therewith can require significant expenditures.

Our failure to comply with such regulations may result in civil, administrative and criminal liabilities, such as fines, imposition of remedial and/or compensatory obligations, suspension of activities, among other sanctions, some of which may be material. If we are unable to prevent or repair environmental damage, we may be required to suspend our operations. In addition, there may be an obligation to remedy or indemnify others for the damage caused to the environment, our own employees, outsourced workers, surface workers, neighboring communities or to third parties who may be affected by environmental damage we may cause. Pursuant to the Brazilian law, there is no statute of limitations for environmental damage liability. The payment of administrative, criminal or reparative and compensatory actions, or the payout of environmental claims, may result in significant costs, which may reduce the funds we have available or represent a significant adverse effect on our business.

Environmental legislation is evolving in a manner we expect may result in stricter standards and enforcement, larger fines and liability and potentially increased capital expenditures and operating costs. The discharge of oil, natural gas, hazardous substances or other pollutants into the air, soil or water may give rise to liabilities to foreign governments and third parties, even if such incident did not involve negligence or fault, and may require us to incur costs to remedy such discharge. The application of environmental laws to our business, climate change policies for reducing greenhouse gas emissions by future implementation of carbon pricing mechanisms such as national emissions trading and/or carbon taxes may cause us to curtail our production or increase the costs of our production, development or exploration activities, which could have an

adverse effect on our financial condition and results of operations. Failure to comply with environmental legislation may also have an adverse impact on our business, affecting the results of operations and/or our financial condition.

More restrictive environmental laws, international agreements among countries in which we operate, new trends in oil and natural gas exploration and production business or effects resulting from climate change may negatively affect operations and, consequently, our results. We operate production fields offshore in Brazil. Our exploration, evaluation and development activities of blocks and operation of fields producing oil and natural gas depends, among other factors, on adequate conditions for the survey of seismic data, drilling, construction and access to pipelines, processing and storage facilities. Environmental license of the transportation and water support from the competent environmental bodies is required. More restrictive environmental laws may delay the development of activities, generating higher operating costs. In addition, there is a risk that the activities we engage in may require special licenses and authorizations issued by government agencies, as in the case of the existence of archaeological sites or other areas of relevant environmental interest in the vicinity of the blocks, which may cause delays in our timetables or impair our activity. Our activities may be impaired in the event of a failure to obtain licenses to operate in certain blocks or locations.

Likewise, trends in the production business, such as the decrease in the number of wells in producing fields, may reduce the volume of oil and gas produced from the discoveries. In addition, future international agreements may introduce restrictions on oil activities in environmentally sensitive areas, and severe climatic change may generate long periods of rain, storms and other events that may affect our operational activities and results, especially in maritime areas. Should one or more of these changes occur, our exploration, development and production goals may be affected, directly impacting our financial results.

We are required to obtain environmental permits, authorizations, licenses and other regulatory approvals for certain activities. Delays in obtaining such permits, authorizations, licenses or regulatory approvals can result in significant slow-downs in the exploration and development of our fields.

Our exploration, development and production activities require us to obtain certain permits, authorizations, licenses and other regulatory approvals from various governmental authorities, and such operations are and will be governed by laws and regulations governing exploration, development and production, labor standards, occupational health, waste disposal, toxic substances, land use, environmental protection, safety and other matters. There can be no assurance that all licenses and permits that we may require to carry out the exploration and development of our projects will be obtained or renewed on reasonable terms or on a timely basis, or that compliance with the relevant laws and regulations will not have an adverse effect on any project that we may undertake.

All phases of the oil and gas business present environmental risks and hazards and are subject to environmental laws and regulation, including, but not limited to, those relating to discharges of hazardous substances into the environment, the handling, storage, transportation and disposal of waste. The technical requirements of these laws and regulations are becoming increasingly complex, stringently enforced and expensive to comply with and this trend is likely to continue. The environmental licenses require, among other things, that we periodically report our compliance with standards set by environmental agencies. Such licenses, authorizations and permits contain conditions and requirements that must be met to continue in force. Failure to obtain, renew or comply with our environmental authorizations, operating licenses and/or related conditions may cause delays in our deployment of new activities, increased costs, criminal liability, monetary fines or even suspension of the affected activity, which may have a material adverse effect on our financial condition, business, prospects and results.

Environmental legislation provides for, among other things, restrictions and prohibitions on spills, releases or emissions of various substances produced in association with oil and gas operations. The legislation requires that wells and facility sites be operated, maintained, abandoned and reclaimed to the satisfaction of the relevant regulatory authorities. Compliance with such legislation can require significant expenditures and a breach may result in the imposition of fines and penalties, some of which may be material and adversely affect our operational results.

The discharge of oil, natural gas or other pollutants into the air, soil or water may give rise to environmental liabilities, including to foreign governments and third parties and may require us to incur costs to remedy and compensate them for the discharge. No assurance can be given that environmental laws will not result in a curtailment of production or a material increase in the costs of production, development or exploration activities or otherwise adversely affect us.

In the recent past, we and other oil and gas companies in Brazil have experienced significant delays from Brazilian authorities with respect to the issuance of such licenses. Unanticipated licensing delays can result in significant delays and cost overruns in the exploration and development of blocks, and could affect our financial condition and results of operations. We cannot guarantee that these delays will not continue or worsen in the future. We cannot assure that the terms and conditions to obtain and renew environmental licenses and other authorizations will not be changed by the ANP, the IBAMA or the applicable government authorities, or that an expired license, authorization or permit will be timely renewed. In addition, as the requirements to obtain such permits, licenses and other regulatory approvals become increasingly complex, it is possible that our efforts to satisfy such requirements will increase our costs substantially in the future, which could result on a material adverse effect on our operational results.

We cannot guarantee that we maintain or will maintain up to date all licenses and authorizations necessary to conduct our business, that we comply or will comply with all conditions of the environmental licenses and authorizations or that we will renew such licenses and authorizations within the applicable terms, and failure to comply with any of the above could subject us to the payment of fines, suspension of our activities, and criminal liability, which could result on material adverse effect on our operational results.

Licenses and permits for the installation and operation of the real estate property related to us.

We face risks related to authorizations, licenses and permits for the installation and operation of our properties, which depend on regular applications to and renewals from regulatory bodies, such as local governments and fire department for our regular installation and operation.

With respect to licenses issued by the local government, we highlight the occupancy certificates, or *Habite-se*, and the installation and operation license, or LIF. The *Habite-se* certifies that the buildings on our properties were built in accordance with the plans approved by the relevant authorities and in accordance with municipal legislation, with no validity term. The LIF authorizes business activities on our properties. Without this license, operation of non-residential activities may result in a suspension of our use of the site and the imposition of fines. Furthermore, the suspension of use may continue for the duration of the period during which the license is needed, or, if a license is not obtained, could result in a permanent prohibition of use.

The buildings we use, such as administrative offices, are regulated by the fire department through its inspection reports, or AVCB. Without an inspection report, we may be subject to an audit, with the application of gradual and cumulative penalties, which range from notices, fines, and in more extreme cases, a ban from use of the relevant establishment.

We cannot guarantee that we currently maintain valid licenses needed to operate all of our establishments or that we fully meet the conditions of the licenses and authorizations, nor can we guarantee that we will procure, in the future, the renewal of these licenses and authorizations within an adequate timeframe. A lack of these authorizations may interfere with our current operating activities and we may be subject to financial losses arising from fines, as well as procedures for reallocating activities to other properties in the event that it is impossible to remain in the properties due to the irregularity of said licensing and authorizations.

We may be subject to the regulation and control of other public authorities, in addition to those that we currently understand to be the only applicable authorities. We cannot guarantee that these authorities will not require that we obtain other licenses, permits and authorizations. Failure to obtain or renew LIFs and AVCBs may preclude us from operating our establishments, in addition to issues related to insurance in the event of an accident, and, above all, damages to our reputation.

Finally, we cannot guarantee compliance of registration before with real estate authorities of local and federal governments, nor can we assure there are no liens on our property, which may result in seizure. Any

loss of real estate arising from a tax enforcement decision or lien would impede our use thereof, which may affect our operations.

There may be liens recorded on our assets, including properties occupied by us, which may have a negative impact on us and our business.

We cannot guarantee that the properties we occupy are not subject to certain obligations, restrictions or liens recorded by secured parties with the applicable real estate registries. Any existence of liens on our assets, including properties, may result in the loss of such property in case we do not fulfill our obligations and the security interest is enforced, which may preclude us to continue our business on the property. For example, in December 2020, we pledged the FPSO Bravo and the shares of PetroRio O&G, PetroRio White Shark, PetroRio Jaguar, PetroRio OPCO, PetroRio International and Brasoil as collateral to PSS Oil and Gas LLCGLAS Trust Corporation Limited. We intend to repay PSS Oil and Gas LLC with the proceeds of the notes offered hereby, releasing the current encumbrances over such assets and subsequently providing these assets as collateral for the benefit of the note holders.

Potential legislative and regulatory actions addressing climate change could significantly impact our industry and us, causing increased costs and reduced demand for oil and natural gas.

The 2015 United Nations Climate Change Conference adopted by consensus the 2015 Paris Climate Agreement. The agreement deals with greenhouse gas, or GHG emission reduction measures, targets to limit global temperature increases and requires countries to review and "represent a progression" in their intended nationally determined contributions, which set emissions reduction goals every five years, beginning in 2020. Compliance with legal and regulatory changes relating to climate change, including those resulting from the implementation of international treaties, may in the future increase our costs to (i) operate and maintain our facilities, (ii) install new emission controls on our facilities and (iii) administer and manage any GHG emissions program. Revenue generation and strategic growth opportunities may also be adversely affected.

The effects on the oil industry relating to climate change and the resulting regulations may also include declining demand for our products in the long-term. In addition, increased regulation of GHG may create greater incentives for use of alternative energy sources. Any long-term material adverse effect on the oil industry could adversely affect the financial and operational aspects of our business, which we cannot predict with certainty at this time.

Additional factors, such as the price and availability of new technologies, including renewable energy and unconventional oil and gas extraction methods, the global geopolitical climate, ongoing trade wars between major global economies and other relevant conditions, have an indirect impact on oil demand and oil prices. There can be no assurance that these factors, in combination with others, will not result in a prolonged or further decline in oil prices, which may continue to have an adverse effect on revenues.

In addition, future international agreements may introduce restrictions on oil activities in environmentally sensitive areas, and severe climatic change may generate long periods of rain, storms and other events that may affect our operational activities and results, especially in maritime areas. Should one or more of these changes occur, our exploration, development and production goals may be affected, directly impacting our financial results

The risks associated with climate change could also make it difficult for us to access capital due to public image issues with investors; changes in the consumer profile, with reduced consumption of fossil fuels; and energy transitions in the world economy, towards a lower carbon matrix, with the insertion of substitute products for fossil fuels and the increasing use of electricity for urban mobility, which could have a material adverse effect on us.

Any interruption or destruction or loss of data in our information technology systems due to technical or operational malfunctions or cyberattacks could have a material adverse effect on us.

Our operations are highly dependent on information technology and communications systems and services. We are subject to a variety of information technology and system risks as a part of our normal course

of operations, including potential breakdown, invasion, virus, cyber-attack, cyber-fraud, security breach, and destruction or interruption of our information technology systems by third parties or our own personnel. A breach of our security measures or a loss of information could occur and result in a loss of material and confidential information, breach of privacy laws and a disruption to its business activities. This may have an adverse impact on us, including our business, our reputation, our relationship with stakeholders and external agents (government, regulatory bodies, partners, suppliers and others), our strategic positioning towards our competitors and our results.

In addition, information systems could be damaged or interrupted by natural disasters, *force majeure* events, telecommunications failures, power loss, acts of war or terrorism, computer viruses, malicious code, physical or electronic security breaches, intentional or inadvertent user misuse or error, or similar events or disruptions. Any of these or other events could cause interruptions, delays, loss of critical or sensitive data or similar effects, which could have a material adverse impact on us, including on the protection of intellectual property, confidential and proprietary information.

Our governance, risk management and compliance policies are still in the process of being implemented for the purpose of adapting to the rules of the Novo Mercado, and may fail to detect behavior contrary to the rules and may subject us to civil and administrative liability and cause material and adverse effects on our business, reputation, financial situation and operating results.

Our policies for preventing and combating corruption, as well as our internal risk management and compliance controls, are still being implemented. Once implemented, these controls may also not be sufficient to ensure that all members of our management and our employees, suppliers, business partners and third parties who act on our behalf, always act in strict compliance with our internal policies, laws and regulations, which are aimed at preventing and combating corruption, to which we are subject. Examples of these law in Brazil include, the Brazilian Criminal Code (decree law no. 2,848/1940), the Financial Crimes Law (law no. 8,137/1990), the Administrative Improbity Law (law no. 8,429/1992), the Public Procurement Laws (law no. 8,666/1993 and law no. 14,133/2021), the Money Laundering Law (law no. 9,613/1998), the Anti-Corruption Law (law no. 12,846/2013), in each case as amended and including its regulation, the Convention on Combating the Corruption of Foreign Public Officials in International Business Transactions of the Organization for Economic Cooperation and Development - OECD, the guidelines issued by the Federal Comptroller General, as well as other applicable laws and regulations.

The controls and policies for preventing and combating corruption, as well as our internal controls, may not be able to prevent or detect (i) violations of the Administrative Improbity Law, the Anti-Corruption Law or laws with a similar scope, (ii) the occurrence of fraudulent or dishonest behavior by management, employees, suppliers, business partners or third parties hired to represent the us or acting on our behalf, or (iii) other occurrences of behavior not consistent with ethical principles, which may adversely affect our reputation, business, financial conditions and operating results or the price of our Notes.

We may not be able to ensure that all of our managers, employees, representatives or suppliers always act in strict compliance with our internal policies or applicable laws and regulations aimed at preventing and fighting corruption. Accordingly, we may be subject to violations of the laws and regulations listed above, and related legislation, as a result of business conduct and instances of fraudulent and unlawful behavior on the part of our managers, employees, suppliers, business partners or third parties who act on our behalf or for our benefit.

The Anti-Corruption Law imposes strict liability on companies for acts of corruption, fraud or manipulation of public offers and government contracts, and interference with investigations or inspections by government authorities. Companies considered responsible under the Anti-Corruption Law may be fined up to 20% of their gross revenue in the year immediately prior to the filing of the administrative proceeding or, if this annual gross revenue cannot be estimated, such fines may range from R$6 million to R$60 million.

The existence, current, past or future, of any investigations, inquiries or lawsuits of an administrative or judicial nature related to the violation of any of the aforementioned laws, against us or our managers, employees, suppliers, business partners or third parties acting on our behalf may result in any or all of: (i)

administrative, civil or criminal fines and indemnities; (ii) loss of operating licenses; (iii) prohibition or suspension of our business activities; (iv) loss of the right to contract with the government, claim tax credits or benefits or any financing or resources from the government; (v) publication of the fault-finding decision; (vi) seizure of assets or benefits obtained illegally and (vii) the dissolution of the entity. All of these circumstances may have a material adverse effect on our business.

We may also be found jointly and severally liable, which would lead to the payment of fines and payment in full for any damage caused due to any practices contrary to the Anti-Corruption Law by any of our controlling, controlled, affiliated or subsidiary companies or, within the scope of any respective contracts entered into with third parties. Such outcome may materially and adversely affect our reputation, business, financial conditions and operating results or the market price of our Notes.

If we identify material weaknesses in our internal control over financial reporting in the future or otherwise fail to maintain an effective system of internal controls, we may not be able to accurately or timely report our financial condition or results of operations, which may adversely affect us.

We cannot assure you that the measures we adopt to help ensure the reliability of our financial reports, including those required under applicable Brazilian securities laws, will be sufficient to identify all material weaknesses in our internal controls or that we will maintain adequate control over financial processes and reporting. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis. Effective internal controls are necessary for us to provide reliable financial reports and to help prevent fraud. Failure to implement required new or improved controls, or difficulties encountered in their implementation, could harm us, including our results of operations or cause us to fail to comply with our reporting obligations. If we or our independent auditors discover a material weakness, the disclosure of that fact, could reduce the market's confidence in our financial statements and adversely affect the value of our securities, including the Notes.

Differing interpretations of tax laws and regulations or changes in tax policies could have an adverse effect on us.

We are subject to tax rules and regulations that may be interpreted differently over time, or that may be interpreted differently by us, Brazilian tax authorities (including the federal, state and municipal authorities) and Luxembourg tax authorities, each of which could have a financial impact on our business. In some cases, when we have exhausted all administrative appeals relating to a tax contingency, further appeals must be made in the judicial courts, which may require that, in order to appeal, we provide collateral to judicial courts, such as the deposit of amounts equal to the potential tax liability in addition to accrued interest and penalties.

In the future, we may face similar situations in which our interpretation of a tax regulation may differ from that of tax authorities, or tax authorities may dispute our interpretation and we may eventually take unanticipated provisions and charges. In addition, the eventual settlement of one tax dispute may have a broader impact on other tax disputes. Any of these occurrences could have a material adverse effect on us.

We may also face delays and difficulties related to our compliance with the Tax and Customs Special Regime for Temporary Admission of Oil and Gas Equipment, or Repetro-Sped, which is a Brazilian special customs regime which grants oil and gas companies tax benefits in relation to the import of certain equipment used in connection with the research and exploitation of oil and gas. Repetro-Sped effectively replaces the prior special customs regime, or Repetro, which expired on December 31, 2020. In general terms, for us to be able to benefit from the new fiscal regime (Repetro-Sped), we have to redomicile some of our assets abroad to Brazilian entities. Also, Repetro-Sped includes certain additional requirements, including for us to (i) provide the relevant federal tax clearance certificate; (ii) fulfill certain fiscal ancillary obligations; and (iii) issue invoices to guarantee the relevant asset's control.

The ANP may impose conditions to approve the assignment of the Wahoo and Itaipu fields, which may negatively affect our business.

We cannot guarantee that the ANP will not impose specific conditions to be met for the purpose of approving the assignment processes related to the acquisition by our subsidiary PetroRio Jaguar of 64.3% working interest of the Wahoo Field (currently operated by BP, in partnership with the non-operating concessionaires Total and IBV Brasil Petróleo) and 60% working interest of the Itaipu Field (currently operated by BP, in partnership with the non-operating concessionaire Total) or other fields that may be acquired by us in the future, including, but not limited to conditions related to the presentation of decommissioning and abandonment guarantees, which we are unable to fulfill. In addition, we cannot guarantee that the ANP will approve the objective criteria that must be observed in the asset assignment processes that are being or that will be acquired in the future by us; therefore, there is no guarantee that the ANP will approve our technical, legal and financial qualification in such assignment processes, which may negatively affect our business.

Problems in information technology systems may adversely impact our operations.

Problems with the operation or security of our systems may temporarily interrupt their full operation. If we are not able to avoid such problems or, if they occur, it is not able to carry out repairs in time and, if this possible interruption continues and causes unavailability of access to the system and/or information, our operations and its operational and financial controls may be impaired, which may adversely affect our results.

Any failure in our systems, algorithms and information technology to operate effectively or to integrate with other systems, as well as performance inadequacies or security breaches, may cause failures, interruptions or even unavailability that result in losses to our performance. Additionally, failures in security controls can also affect performance, since servers are vulnerable to virus attacks, which can cause interruptions, delays, data loss or inability to accept and complete orders.

Factors that can occur and significantly impair our operations include system failures and power outages, telecommunications failures, sabotage, vandalism, terrorist attacks, cyber-attacks, spyware, ransomware and similar situations, software errors, computer viruses, physical or electronic malfunctions in our computer systems and data centers. In addition, any interruptions that affect our website and social media and remote access may also cause damage to our reputation, demand significant capital expenditures and other resources, and expose us to risks of losses, lawsuits and liabilities.

Failures in our security system with regard to the protection of confidential information, including personal data, can damage our reputation and brand and substantially affect our business and operational results.

Any failure by us to prevent security breaches in the transmission and storage of data, electronic or otherwise, affecting the confidentiality, integrity or availability of the stored information, may damage our reputation and brand and, further, substantially affect our business and operational results.

Technological advances, new discoveries in the field of cryptography and/or other developments may result in the exposure of flaws in the technologies that we currently use to protect data. Additionally, we are susceptible to the undue, improper or illegal use of personal data, as well as bank fraud, which can result in financial losses and damage to our image and reputation.

Any compromise on our security may damage our reputation and brand and expose us to litigation situations, in which we may be required to indemnify the injured party, thus negatively affecting its business and operating and financial results. In addition, anyone capable of circumventing our security measures may take confidential information or cause interruptions in its operations.

As a result, we may incur financial losses due to impacts arising from technical difficulties in our operations. Information systems are exposed to viruses, malware and other problems, such as crimes and cyber-attacks, which can interfere with our operations. Any occurrence of this nature may result in a material adverse effect on the business and cause damage to our reputation and brand, as well as our operational and financial results.

Any breach of security or in our system that results in the loss of personal data may result in liability for us and, consequently, in legal proceedings, which may result in financial losses and damage to our image and reputation.

We are subject to risks associated with non-compliance with the General Data Protection Law and may be adversely affected by the application of fines and other types of sanctions.

Law No. 13,709/2018, as amended by Law No. 13,853/2019, General Data Protection Law or LGPD, governs the collection, use, processing and storage of personal data in all economic sectors, and provides the rights of personal data holders, the legal bases applicable to the protection of personal data, the requirements for obtaining consent, the obligations and requirements relating to incidents of security and leaks and data transfers, as well as authorization for the creation of the National Data Protection Authority, or ANDP, the government agency responsible for ensuring compliance with data protection standards and for applying sanctions in case of breach of the LGPD.

LGPD came into force on September 18, 2020, except for articles 52, 53 and 54 of the LGPD, which address administrative penalties, and which will only come into force on August 1, 2021, under Law No. 14,010/2020.

However, even prior to the entry in force of the abovementioned articles, non-compliance with any provisions in the LGPD has certain risks, including (i) potential filings of individual or collective lawsuits claiming reparations for damages arising from violations based on the LGPD or existing data protection legislation; and (ii) penalties under the Consumer Protection Code and Civil Framework of the Internet by consumer protection agencies, as these have already been applied before the LGPD and the organization of ANDP, particularly in cases of security incidents resulting in unauthorized access to personal data.

With the entry into force of the LGPD's penalties (as of August 1, 2021), in the event we are not in compliance with the LGPD, we and our subsidiaries may be subject to sanctions, in an isolated or cumulative manner, of warning, incident disclosure, a temporary blocking and/or deletion of personal data, and a fine of up to 2% of our, the group's, or Brazilian conglomerate's revenues, excluding taxes, or up to the global amount of R$50 million per infraction. In addition, we may be liable for material, moral, individual or collective damages caused and be considered jointly and severally liable for material, moral, individual or collective damages caused by us or our subsidiaries, due to non-compliance with the obligations set forth in the LGPD.

Thus, failures in the protection of personal data processed by us, as well as the breach of any obligations provided for in the applicable legislation, may result in high fines, disclosure of the incident to the market, elimination of personal data from the database, and even a suspension of operations, which may negatively affect our reputation and results, and, consequently, the value of our Notes. Unfavorable decisions on judicial or administrative proceedings related to the LGPD could result on a material adverse effect on us.

We are subject to risks associated with the inability or failure to protect our intellectual property assets or, even, the possible violation of the intellectual property rights of third parties.

Our success depends, in part, on our ability to protect and preserve our intellectual property assets, including, but not limited to, patents, trade secrets, brands and domain names, so that any problems related to such assets may affect us negatively.

Events such as the definitive rejection of our applications for registration of trademarks and patents with the National Institute of Industrial Property, or INPI, or, even, the improper or unauthorized use of our registered trademarks and patents may decrease the value of our brands or negatively impact our reputation. There is also the risk, even if by default, that we are unable to renew the registration of a trademark in a timely manner or that our competitors contest or invalidate any existing or future trademarks requested or licensed by us.

In addition, we may not be able to prevent third parties from infringing or misappropriating our intellectual property or even from independently developing equivalent or superior intellectual property rights. Additionally, it may not be possible to discover or determine the extent of any unauthorized use of our

intellectual property rights and of our subsidiaries. Any failure to adequately protect or enforce intellectual property rights, or significant costs incurred in doing so, may materially harm our business.

In addition, third parties may claim that the products or services we provide violate their intellectual property rights, and we may be required to file lawsuits to determine the validity and scope of their intellectual property rights. Regardless of the outcome, any dispute (administrative, judicial or arbitral), with or without merit, can take a long time to resolve, result in costs, take time, demand management time, restrict the sale or provision of services, delay the product development, or indemnity payments. Accordingly, copyright and trademark violations, including litigation, may affect our financial and operating results.

We may not be able to maintain licenses for the use of technology we need.

We depend on the certain software licenses. We cannot guarantee that we will be able to renew such licenses in the future or that such licenses will remain available for our use on commercially reasonable terms.

If licenses for the technology we use are not available, we may not be able to replace them with others of the same quality and performance standards, or we may incur additional costs for their replacement, which may cause a material adverse effect on our business, operating and financial results.

We may incur expenses linked to any Lease Agreements we have signed or may have to vacate the underlying properties.

We rent third party properties for our business units. Some of our Lease Agreements are not registered in the relevant real estate registry, and, in the event of a possible sale of the property by the owner without any requirement for the owner to offer us the preemptive right to acquire it, we cannot use judicial means to acquire it, having only the right to claim losses and damages arising from the need to vacate the property without the enjoyment of any preemptive rights. Similarly, several of our Lease Agreements do not have an express term in force or do not have the term publicly registered, so that in the event of sale of the property to third parties, the new owners will not be obliged to respect the lease term, even if it can be ascertained, and may demand that we vacate the property within 90 days.

In addition, if the term provided for in the Lease Agreement expires and we continue to occupy the property for more than 30 days without opposition from the lessor, the lease will be considered extended for an indefinite period, under the terms of §1 of article 46 of Law 8,245/1991, or Lease Law. For any Lease Agreements in force for an indefinite period, the lessor may terminate the contract by giving notice to the lessee within 30 days of vacancy, free of any penalties or indemnities. In addition, some of our Lease Agreements were signed with terms shorter than five years and, therefore, do not guarantee us the right to renew the lease by filing a renewal action. The Lease Law provides that the lessee will be entitled to compulsory renewal of a lease agreement provided that, cumulatively: (i) the agreement has been documented in writing with a fixed term; (ii) the agreement term is at least five uninterrupted years long, the sum of consecutive terms being admitted; (iii) the lessee has pursued its activity, in the same industry, for a minimum and uninterrupted period of three years; and (iv) the lessee files a renewal action within one year to six months prior to the expiration term of the current Lease Agreement. As some of our Lease Agreements were signed for a term shorter than five years, the renewal of these leases will depend exclusively on the negotiation with the lessor.

Unsuccessful negotiations resulting in our inability to renew our lease agreements in a timely manner or the renewal of these agreements on terms less favorable than the current ones may have an adverse impact on our operations, including the interruption of our operations and/or increasing the cost of our operations.

In addition, in the event of any breach of contract by us, penalties may apply, which can be reduced to fines or may impede our occupation of the property, depending on the breach, and may adversely impact our planning, which may negatively impact our reputation and operating results.

Some of the operational properties are occupied through assignment under the tenancy regime (regime de aforamento).

One of the properties we lease is subject to the tenancy regime. Pursuant to Law 9,636/98 and Decree-Law 9,760/46, in the tenancy regime, ownership of this property remains with the Federal Government, while the right to use is transferred to the private party, with the annual payment of a fee equivalent to 0.6% of the property value, excluding improvements. The tenancy may be revoked by the Federal Government based on public interest upon payment of prior indemnification to the tenant.

Pursuant to Law 9,636/98, non-payment of the fee for three consecutive years, or four non-consecutive years, will terminate the tenancy. Additionally, among other reasons, the tenancy may be extinguished if there is a default on the assignment agreement entered into with the Federal Government.

Therefore, if we or the owners of the leased property subject to the tenancy regime are not able to maintain the right to use of such property by means of a tenancy regime, we may be required to change the location of our property. In such case, there is no way to guarantee that we will be able to find properties in an attractive location and/or of similar costs. Additionally, in such cases, we will have to bear the costs of transition to a new property and our activities may be interrupted until new properties are leased or acquired, which may negatively impact our financial situation and operating results.

The Federal Government exercised and continues to exercise significant influence on the Brazilian economy.

Political and economic conditions directly affect our business and may adversely affect it. Macroeconomic policies imposed by the Federal Government can have significant impacts on Brazilian companies, including us, as well as on market conditions and prices of securities in Brazil. The Federal Government has frequently modified monetary, credit and fiscal policies, among others, to influence the conduct of Brazil's economy. In the past, the Federal Government's actions to control inflation have involved controlling wages and prices, restricting access to bank accounts, blocking bank accounts, controls on the flow of capital and certain limits on imports and exports of goods.

We have no control over and no way of predicting what measures or policies the Federal Government may take in the future. Our business, financial situation, operating results and prospects, as well as the market price of our securities, may be adversely affected by changes in public policy at the federal, state and municipal levels, which affect inflation; exchange rate fluctuations; exchange controls and restrictions on remittances abroad (including with regard to the payment of principal and interest on the Notes); interest rates; liquidity of national financial, credit and capital markets; expansion or contraction of the Brazilian economy, as measured by the growth rates of GDP; fiscal policies; and other political, social and economic events in Brazil or affecting Brazil.

Government measures and policies designed to combat inflation, together with public speculation about these policies and measures, have often had adverse effects on the Brazilian economy, contributing to economic uncertainty in Brazil, increasing volatility and lack of liquidity in the Brazilian stock market. The Brazilian government's measures to control inflation generally involved price and wage controls, exchange rate devaluations, capital flow controls, limits on imports and other actions. If inflation increases at a higher rate than our net sales, our costs may increase and our operating and net margins will decrease.

Other policies and measures adopted by the Brazilian government, including interest rate adjustments, intervention in foreign exchange markets or actions to adjust or peg the value of the Brazilian real, may adversely affect the Brazilian economy, our business and the price of our Notes

The development and perception of risk in other countries, particularly in emerging market economies, the United States, China and the European Union may adversely affect the Brazilian economy, our business and the market price of Brazilian securities, including the Notes.

The market value of the securities of Brazilian companies can be influenced, to varying degrees, by economic and market conditions in other countries, including the United States, China, countries in the European Union, Latin American countries and emerging markets. The reaction of investors to events in these other countries may, in light of the potential impact of such event, have an adverse effect on the market value

of the publicly traded securities issued by Brazilian issuers. Potential crises in the United States, China, the European Union or emerging markets, may, depending on the extent of their effects, reduce, to some extent, investors' interest in the securities of Brazilian issuers, including securities we issue. These trends may adversely affect the price of our securities, including the Notes, in addition to impeding or preventing us from accessing the domestic and international capital markets and financing our operations on commercially reasonable terms.

The Brazilian economy and that of other countries can be affected on a macroeconomic scale by economic conditions in the international market, and notably by the macroeconomic situation of the United States, China and the European Union. Reductions in the supply of credit and the deterioration of economic conditions in other countries, including the debt crisis that affects some countries in the European Union, can, to some extent, harm the market prices of Brazilian securities in general, including our securities, including the Notes. In addition, the default risk of countries in financial crisis, depending on the circumstances, can reduce the confidence of international investors and increase market volatility.

With regard to relevant macroeconomic facts that may impact our business, the UK's exit from the European Union, or Brexit stands out. Brexit may adversely affect economic and market conditions in Europe and worldwide, contributing to instability in global financial markets and impacting our international operations. In addition, Brexit could lead to legal uncertainties and generate potentially divergent national laws and regulations as the UK determines which EU laws it will replace or replicate. The effects of Brexit, and other such events that we cannot predict, may have an adverse effect on our business, as well as on the results of our operations or financial situation.

Additionally, we are subject to impacts resulting from political tension between the United States, Iran and Iraq, as well as other related conflicts in the Middle East. If there is an escalation in tensions and sanctions between the United States, Iran, Iraq, and possibly European countries, the price of oil could rise, thus affecting the commodities and energy markets in Brazil and worldwide, which could increase our operating costs and consumer expenses and, therefore, adversely affect our operating results and financial situation. Finally, these tensions can generate political and economic instability around the world, impacting the global economy and, as a result, the stock market.

Developments and the perception of risk in other countries, particularly in developed countries or in the United States, may negatively affect global capital markets, including the market price of our Notes.

The market for Brazilian securities is influenced, to various degrees, by global economic conditions, including in developed and emerging markets. The reaction of investors to events in other countries may have an adverse effect on the market price of securities of Brazilian companies. For instance, crises in other emerging markets or certain economic policies may reduce investor interest in Brazilian companies, including us, which could harm the market price of our Notes.

In addition, the Brazilian economy is affected by market conditions and by international economic conditions, especially in the United States. Stock prices on the B3 S.A. – Brasil, Bolsa, Balcão (the "B3"), for example, are highly affected by fluctuations in U.S. interest rates and by the behavior of the major U.S. stock exchanges. Any increase in interest rates in other countries, especially in the United States, may reduce global liquidity and investor interest in making investments in the Brazilian capital markets.

We cannot guarantee that the Brazilian capital markets will provide favorable conditions for Brazilian companies. Economic crises in emerging markets may reduce investor interest in the securities of Brazilian companies, including in our securities. This may affect the liquidity and market price of the securities we issue and may affect our future access to the Brazilian capital market and to financing on acceptable terms, which may adversely affect the market price of our Notes.

Our financing agreements include restrictive covenants, which limit our ability to incur additional debt. Compliance with these covenants may trigger an event of default.

We are subject to different covenants under our financial agreements. The failure to comply with these covenants or non-compliance with obligations under such agreements and which are not cured on a timely

manner, may trigger events of default under such agreements. Further, any event of default may also trigger cross-default or cross-acceleration provisions under existing loan and financing agreements. Our assets and cash flow may not be sufficient to fully pay the outstanding balance of these obligations in these cases, thus generating a liquidity risk for us, which may adversely affect our operating results and liquidity for the performance of our business. See "Management's Discussion and Analysis—Contractual Obligations."

Our partnerships may not be successful because of several factors.

We cannot guarantee our partnerships and joint ventures will be successful and yield the expected results. Unsuccessful partnerships may have an adverse effect on our activities, financial position and operating results.

The risks related to partnerships and joint ventures include, among others: (i) difficulty in maintaining a good relationship with current and future partners; (ii) financial difficulties of the partners, which may result in the need of additional funding by us; (iii) divergent economic and commercial interests among us and our partners; (iv) under specific circumstances, we may become liable for our partners' tax, labor, environmental and other liabilities; and (v) existence of contingent liabilities, not identified in due diligence processes. Any of those risks may affect our estimated results, or result in the loss of our partnership investments.

The development schedule for oil and natural gas projects is subject to cost overruns and delays.

Oil and natural gas projects may experience capital cost increases and overruns due to, among other factors, the unavailability or high cost of drilling rigs and other essential equipment, supplies, personnel and oil field services. The cost to execute projects may not be properly established and remains dependent upon a number of factors, including the completion of detailed cost estimates and final engineering, contracting and procurement costs.

Development of projects may be materially adversely affected by one or more of the following factors:

- shortages of equipment, materials and labor;
- fluctuations in the prices of construction materials;
- delays in delivery of equipment and materials;
- labor disputes;
- political events;
- issues related to title of hydrocarbons;
- obtaining easements and rights of way;
- blockades or embargoes;
- litigation;
- compliance with governmental laws and regulations, including environmental, health and safety laws and regulations;
- adverse weather conditions;
- unanticipated increases in costs;
- natural disasters;
- epidemics or pandemics;
- accidents;
- transportation;
- unforeseen engineering and drilling complications;
- environmental or geological uncertainties; and

- other unforeseen circumstances.

Any of these events or other unanticipated events could give rise to delays in development and completion of our projects and cost overruns. Project delays may postpone expected revenues from operations. Furthermore, significant project cost overruns could make a project uneconomic. Development plans may also change as a result of new information, events or as a result of business decisions. Any such changes could have a material effect on our expected capital expenditure and the timelines associated with the development of our assets.

We derive a significant portion of our revenues from high-volume oil sales to a few key customers.

As part of our strategy, we concentrate the oil production in the Polvo Field, Tubarão Martelo Field and Frade Field and sell higher volume cargo. Currently, our operating revenue is derived from oil sales to few key customers. Any adverse effect that impacts our customers, any reduction of the volume sold or any late payments made by the customers may affect our cash flow.

Our revenue from the sale of natural gas derives from one customer and we are in the process of divesting our participation in the exploration of the Manati Field.

Our natural gas production of the Manati Field is sold exclusively to Petrobras under a take or pay agreement that sets the gas price in *reais*, adjusted by the IGP-M Index (the "Petrobras Take-or-Pay Agreement"). The revenues deriving from this agreement may be adversely impacted by demand fluctuations, problems in the production chain or even early termination of the agreement by Petrobras without prior notice. These fluctuations may affect our contractual obligations as to sales of natural gas, and result in contractual penalties based on the volume of gas we do not deliver. On November 5, 2020, we announced the sale of our 10% working interest in the Manati Field, held through our subsidiary Petro Rio Coral Exploração Petrolífera Ltda., to Gas Bridge. When the Manati Field Sale closes, its effect will retroact to January 1, 2021 and we will no longer be entitled to the cash generated by Manati, including payments under the Petrobras Take-or-Pay Agreement, calculated as of January 1, 2021. The Manati Field Sale is subject to the satisfaction of conditions precedent, including the Petrobras Condition Precedent. See "*Business—Properties in Production and Development—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

Prices and markets for oil and natural gas are unpredictable and tend to fluctuate significantly, which could materially adversely affect our business, financial condition or results of operations.

Substantially all of our revenues are derived from the extraction and sale of oil and, to a lesser extent, natural gas. International prices for oil and natural gas are volatile and strongly influenced by conditions and expectations of global supply and demand, all of which are beyond our control.

The prices that we will receive for our production and the levels of our production depend on numerous factors, including, but not limited, to the following:

- global economic conditions;
- changes in global supply and demand for oil, natural gas and methanol;
- the actions of OPEC;
- political and economic conditions, including embargoes, in oil-producing countries or affecting other countries, and trade wars;
- the level of oil- and natural gas-producing activities, particularly in the Middle East, Africa, Russia, South America and the United States;
- the level of global oil and natural gas exploration and production activity;
- the level of global oil and natural gas inventories;
- availability of markets for natural gas;

- capacity at refinery and processing plants;
- weather conditions and other natural disasters;
- technological advances affecting energy production or consumption;
- domestic and foreign governmental laws and regulations, including environmental, health and safety laws and regulations, such as new regulations issued by the International Maritime Organization mandating a maximum sulphur content of 0.5% in marine fuels globally;
- proximity and capacity of oil and natural gas pipelines and other transportation facilities;
- the price and availability of competitors' supplies of oil and natural gas in captive market areas;
- quality discounts for oil production based, among other things, on API, sulphur and mercury content;
- taxes and royalties under relevant laws and the terms of our contracts;
- our ability to enter into oil and natural gas sales contracts at fixed prices;
- the price and availability of alternative fuels; and
- future changes to our hedging policies.

These factors and the volatility of the energy markets make it extremely difficult to predict future oil, natural gas and methanol price movements. Oil and natural gas prices have historically fluctuated significantly. From January 1, 2014 to December 31, 2020, Brent spot prices ranged from a low of U.S.$14.85 per barrel to a high of U.S.$115.19 per barrel. In July 2020, the average Brent spot price decreased to U.S.$43.24 per barrel and increased in December 2020 to U.S.$49.99 per barrel. In March 2021, the Brent oil spot price was U.S.$65.41 per barrel. Furthermore, oil and natural gas prices do not necessarily fluctuate in direct relationship to each other.

Decreases in oil and natural gas prices typically result in a reduction of our net production revenue and may change the economics of operating some wells, which could result in a reduction in the volume of our reserves. Any further substantial declines in the prices of crude oil or natural gas could also result in the delay or cancellation of existing or future drilling, development or construction programs or the curtailment of oil production. All of these factors have resulted in, and in the future could again result in, a material decrease in our net production revenue, cash flows and profitability causing a reduction in our oil and gas acquisition and development activities.

In addition, a sustained material decline in prices of oil or natural gas from historical average prices could impact our ability to maintain or increase our borrowing capacity and to obtain additional capital on attractive terms.

If commodity prices increase beyond the levels set in such agreements, the effectiveness of such hedging arrangements will be reduced or eliminated entirely. In addition, we cannot assure you that we will always be able to enter into replacement hedging agreements in order to reduce the risk or minimize the effect of any future decline in oil or natural gas prices.

Should we enter into hedge transactions, we may suffer financial losses if we are unable to start operations in a timely manner or produce sufficient quantities of oil and natural gas to meet our obligations. In addition, if we enter into hedge transactions, it may limit our earning potential due to the hedging strategy implemented (e.g. minimum and maximum price locks), not necessarily realizing changes in commodity prices in a sale. If we do not enter into hedge transactions, we may be more exposed to reductions in oil and natural gas prices than our competitors that carry out these operations.

In addition, hedge transactions may expose us to cash margin requirements, which may have a material adverse effect on our business, depending on the size of the hedge and the number of sales under the hedge.

When executing a hedge, we are exposed to the financial health of banks and intermediary brokers, which execute the purchase and sale of financial instruments on our behalf.

Any significant and continuous reductions in global oil prices may adversely affect our profitability in the future (as it has in the past), reduce our net production revenue, slow down our development programs, negatively impact the volume of our reserves and hamper our access to capital.

Further, supply-chain breakdowns, like the March 2021 Suez Canal blockage, may negatively impact our business partners, clients and the prices and markets for oil globally which could cause a negative effect to our operations. Further, political disturbances in Egypt, Iran and the Middle East in general may potentially result in a blockage of the Strait of Hormuz or a closure of the Suez Canal, potentially limiting or disrupting access to markets and adversely affecting our business.

We cannot guarantee that our recoverable reserves will not be reduced in case there is a new decrease in global oil prices, which could render the recovery and production of hydrocarbons economically unviable.

Competition in the oil and natural gas industry is intense, which makes it difficult for us to attract capital, acquire new fields, market oil and natural gas and secure trained personnel.

We compete with oil and gas companies engaged in the exploration and production sector, including state-owned exploration and production companies and international companies that possess substantially greater financial resources than we do for researching and developing exploration and production technologies and access to markets, equipment, labor and capital required to acquire, develop and operate our properties. We also compete for the acquisition of licenses and properties.

Our competitors may be able to pay more for productive oil and natural gas properties and exploratory prospects and to evaluate, bid for and purchase a greater number of oil and gas fields than our financial or personnel resources permit. Our competitors may also be able to offer better compensation packages to attract and retain qualified personnel than we are able to offer. In addition, there is substantial competition for capital available for investment in the oil and natural gas industry. The industry is also known for rapid and significant technological advances and companies must keep pace to remain competitive. As a result of each of the aforementioned, we may not be able to compete successfully in the future in acquiring prospective reserves, developing reserves, marketing hydrocarbons, attracting and retaining quality personnel or raising additional capital, which could have a material adverse effect on our business, financial condition or results of operations.

Companies in the Brazilian oil and natural gas sector depend mainly on a public bidding process promoted by the ANP to acquire rights to explore oil blocks.

ANP auctions are subject to risk of interruption and cancellation, as was the case, for example, of the eighth bidding round in 2012. There is also a risk that there will be no bidding rounds in the future, since they are organized by the Brazilian government through the CNPE in its discretion. The absence of new rounds may have a material adverse effect on our activities.

Decommissioning costs are unknown and may be substantial.

We may become responsible for costs associated with abandoning and reclaiming wells and facilities that we use for production of oil and gas reserves, particularly as our strategy centers around the acquisition and development of mature hydrocarbon fields. Abandonment of these facilities and the costs associated therewith is often referred to as “decommissioning.” The use of other funds to satisfy such decommissioning costs could impair our ability to focus capital in other areas of our business. Furthermore, we may remain liable for historical decommissioning liabilities even following sale or transfer the assets prior to end of production, which could adversely affect our financial condition, results of operations or prospects. If decommissioning is required before its economic exhaustion or economic unfeasibility of exploration or if the costs of decommissioning exceed the value of the reserves remaining at such time, we may have to draw on funds from other sources to satisfy such costs.

Costs related to decommissioning are difficult to estimate as (i) such costs are based on estimates included in documents approved by the ANP (such as the development plan, the annual work program, the annual reserve bulletin, or the installation decommissioning program), and (ii) the regulation setting standards to provide collateral to assure the decommissioning of oil and natural gas fields has not been published, and may

change over time. The estimated timing for decommissioning relies upon a number of factors and a material reduction in production levels or commodity prices or an increase in operating expenditure may accelerate this timing.

In addition, in certain cases (such as, for example, in the event of the assignment or start of production of an asset), the ANP may request that we submit guarantees related to the costs of decommissioning and abandonment. In general, the guarantees accepted by the ANP are in the form of letters of credit (issued by banks that have minimum credit ratings), corporate guarantees, provisioning funds, pledges of oil and natural gas or guarantee insurance. There are few banks able and willing to provide these letters of credit. Accordingly, we may have to provide cash collateral and may lead in turn to our reliance on other forms of guarantees acceptable to the ANP. Currently, there are no formal regulatory guidelines related to these guarantees, and there may therefore be uncertainties regarding the criteria adopted by the ANP when assessing whether a guarantee proposed by a concessionaire is acceptable or not. The ANP released, in 2020, a proposal for a resolution with the objective of regulating the procedures for the presentation of guarantees and instruments that ensure the decommissioning of production facilities, which was the subject of Consultation and Public Hearing No. 10/2020. Despite the end of the public consultation period on October 30, 2020 and the Public Hearing on November 27, 2020, the process is still pending with the ANP and there is still no final decision on the matter.

In some cases, certain of our contractual arrangements may allocate liability related to the costs of decommissioning and abandonment. Even if, by contractual agreement, a counterparty or one of our partners assumes certain decommissioning costs, we remain responsible before the ANP for the demobilization of equipment as a concessionaire.

Additionally, there is no way for us to guarantee that any costs of decommissioning our assets (or assets in the process of acquisition) will not exceed our expectations and, therefore, may cause a material adverse effect on our business and results.

Participants in the oil and natural gas sector are subject to complex legislation that can affect the cost, manner or viability of conducting the business.

The activities of oil and natural gas sector are subject to extensive municipal, state and federal regulations. There is a possibility that we may have to incur in large expenses to comply with regulation, particularly in relation to the following aspects: (i) licenses; (ii) guarantees; (iii) reports related to operations; (iv) distance from wells; and (v) taxation.

Failure to comply with the legislation may result in suspension or termination of operations, and subject us to administrative, civil and criminal sanctions. In addition, legislation can change to substantially increase costs. Any liability, sanction, suspension or regulatory change may have a material adverse effect on us.

We do not own any of the subsoil accumulations of crude oil and natural gas in Brazil.

Under Brazilian law, the Federal Government owns all reserves of crude oil and natural gas in Brazil, and the concessionaire owns the oil and gas it extracts from those reserves pursuant to applicable agreements executed with the ANP. As a concessionaire, we possess certain oil and natural gas fields in Brazil and have the exclusive right to develop the volumes of oil and natural gas included in our reserves for a certain term and pursuant to provisions of the concession contracts. If regulators and agencies, for any reason, impose restrictions on us or prevent us from exploring and developing current and future oil and natural gas reserves, our ability to generate revenue may be adversely affected.

Risks Related to Operations in Brazil

Outbreaks of communicable diseases on a local and/or global scale, such as the COVID-19 pandemic, may trigger and have triggered various measures, the effects of which may lead to greater volatility and illiquidity

in the local and/or global capital market and the potential slowing of growth in the local and/or global economy.

The outbreak of communicable diseases, such as the outbreak of COVID-19 on a global scale, which began in December 2019 and was declared a pandemic by the World Health Organization on March 11, 2020, may affect investment decisions and may result in sporadic volatility in the international and/or Brazilian markets. Such outbreaks may result and have resulted in, at different levels, the adoption of governmental and private measures, including restrictions, as a whole or in part, on the circulation and transportation of persons, goods and services (public and private, including jurisdictional, with a limitation on forensic activity and the suspension of procedural deadlines, and services relating to notarial offices for notes, titles and documents and the registration of real estate) and consequently, in the closure of private establishments and public offices, interruptions to the supply chain, reduction of consumption in general by the population and volatility in the price of raw materials and other inputs.

In addition, governments have acted on a global scale with increased intervention in their economies, including through regulations and availability of resources, in response to the economic as a result of the advance of the pandemic.

These events have a negative and significant effect on the world economy and on Brazil's economy, and include or may include:

- Reduction in the level of economic activity;
- Currency devaluation;
- Increase in the fiscal deficit and reduction in the capacity of the Federal Government to make investments and payments and to contract services or acquire goods;
- Decrease in the liquidity available in the international and/or Brazilian market; and
- Delays in judicial, arbitral and/or administrative proceedings, especially in those which are not electronic.

The occurrence of such events and the period for which they last may have a materially adverse effect on the global and/or Brazilian economy and impact the liquidity and market value of our Notes; they may also result in: long-range socioeconomic impacts, including a possible fall in revenue within Brazil and an increase in demand for public spending in fundamental sectors, a scenario in which legislative amendments may be used in order to impose, even if only temporarily, a more onerous tax treatment of our business activities, which may adversely affect our business and operating results.

As of the date of this Offering Memorandum, it is not possible to guarantee that in the future, our evaluation of the actual and potential impacts, or of the extent of such losses, of the COVID-19 pandemic will not be compromised, nor can it be guaranteed that there will be no material uncertainties regarding our ability to continue operating our business. We cannot guarantee that other regional and/or global outbreaks will not occur, and if they do occur, we cannot guarantee that we will be able to take the necessary steps to prevent a negative impact on our business. Further, our operations may be adversely impacted by the emergence of novel strains of the coronavirus and setbacks in the rollout of vaccination programs.

Certain economic risks are inherent in any investment in an emerging market country such as Brazil.

Investing in emerging market countries such as Brazil carries economic risks. Economic instability in Latin American and emerging market countries has been caused by many different factors, including high interest rates, changes in currency values, high levels of inflation, exchange controls, wage and price controls, changes in economic or tax policies, the imposition of trade barriers, and internal security issues. Any of these factors may adversely affect the value of the Notes.

Fragility in the performance of the Brazilian economy, instability in the political environment, regulatory changes and investor perception of these conditions may adversely affect the results of our operations and our financial performance and may have a material adverse effect on us.

Our operations are located entirely in Brazil. Economic policies adopted by the Federal Government may have important effects on Brazilian companies, including us, and on market conditions and prices of Brazilian securities. Our financial condition and results may be adversely affected by the following factors and the response of the Federal Government to these factors:

- exchange rate movements and volatility;
- inflation;
- financing of government fiscal deficits;
- price instability;
- interest rates;
- liquidity of domestic capital and lending markets;
- tax policy;
- regulatory policy for the oil and gas industry, including pricing policy and local content requirements;
- allegations of corruption against political parties, elected officials or other public officials, including allegations made in relation to the *Lava Jato* investigation;
- the COVID-19 pandemic; and
- other political, diplomatic, social and economic developments in or affecting Brazil.

Uncertainty over whether the Federal Government will implement changes in policy or regulations that may affect any of the factors mentioned above or other factors in the future may lead to economic uncertainty in Brazil and increase the volatility of the Brazilian securities market and securities issued abroad by Brazilian companies, which may have a material adverse effect on our results and financial condition.

Exploration may be affected in varying degrees by government regulations with respect to restrictions on future exploitation and production, price controls, export controls, foreign exchange controls, income taxes, wealth taxes, expropriation of property, environmental legislation and site safety. Any changes in Brazil's economic policy, in particular as it relates to the oil and gas industries, may have a negative impact on our business, financial condition and results of operations.

Furthermore, legislative changes may have an adverse impact on our operations and performance, including any changes to tax legislation. Changes in tax-related laws and regulations, and interpretations thereof, can affect tax burdens by increasing tax rates and fees, creating new taxes, limiting tax deductions, and eliminating tax-based incentives and non-taxed income. In addition, tax authorities or courts may interpret tax regulations differently than we do, which could result in tax litigation, associated costs and penalties. Such legislative changes may have an adverse impact on our business, financial condition and results of operations.

Brazilian governmental authorities implemented a set of measures to face the economic side effects that paralyzed world activities. Among other measures, authorities of the Brazilian government (i) postponed collections of tax revenue (PIS/Cofins and INSS contribution) from April and May to August and October 2020; (ii) postponed collections for the Brazilian severance indemnity fund for employees (FGTS) from March to May 2020 to July 2020 and authorized payment in six equal installments; (iii) allowed for a 50% reduction in rates of employer contributions to social entities that train and support employees (System S) from April to June 2020; (iv) reduced tax on credit, foreign exchange and insurance operations (IOF) from 3% to zero in certain operations carried out from April to July 2020, and (v) extended deadlines for the completion of certain obligations provided for in the concession contracts and in the ANP's regulations.

Additionally, the COVID-19 pandemic and measures taken to contain or mitigate it have had dramatic adverse consequences for the global economy, and specifically the Brazilian economy. The continued spread of COVID-19 has led to supply chain destabilization, facility closures, workforce disruption, volatility and lack of liquidity in the Brazilian economy, and its full impact is impossible to predict. Social isolation measures arising from the pandemic have affected the global economic environment, reducing the demand for oil and oil products negatively impacting the oil and gas industry. These impacts grew significantly during April and May 2020 and continue to expand in scope, type and severity.

The extent to which COVID-19 may continue to impact our operations, liquidity, financial condition and results of operations will depend on future developments, including, but not limited to, the duration and spread of the pandemic, its severity, the actions to contain the virus or treat its impact, and the duration, timing and severity of the impact on global financial markets and the condition of the Brazilian economy, all of which are highly uncertain and cannot be predicted. We will continue to closely monitor and evaluate the nature and extent of the impact of COVID-19 on our operations, liquidity, financial condition, results of operations and prospects. We may also take further actions that alter our business operations, as may be required by local authorities, or that we determine are in the best interests of our employees, suppliers and clients.

Brazil's economy remains vulnerable to external shocks, including a global economic crisis and those that could be caused by future significant economic difficulties of its major regional trading partners or by more general "contagion" effects, which could have a material adverse effect on Brazil's economic growth and its industries.

Emerging market investment generally poses a greater degree of risk than investment in more mature market economies because the economies in the developing world such as the Brazilian economy are more susceptible to destabilization resulting from domestic and international developments.

A significant decline in the economic growth of any of Brazil's major trading partners, such as the United States and China, could have a material adverse impact on the balance of trade and adversely affect economic growth in Brazil. A decline in United States or Chinese demand for imports, or an imposition of tariffs or other trade barriers, could have a material adverse effect on exports and the economic growth of these countries. In addition, because international investors' reactions to the events occurring in one emerging market country sometimes appear to demonstrate a "contagion" effect, in which an entire region or class of investment is disfavored by international investors, Brazil could be adversely affected by negative economic or financial developments in other emerging market countries. Brazil has been adversely affected by such contagion effects on several occasions, including following the 1997 Asian financial crisis, the 1998 Russian financial crisis, the 2001 Argentine financial crisis, the 2008 global economic crisis and the 2009-2012 European debt crisis. Similar developments can be expected to affect the Brazilian economy in the future. Brazil showed signs of incipient recovery from a recent prolonged economic recession at the beginning of 2020 when the severe economic consequences of the COVID-19 pandemic pushed the economy back into recession, with various factors continuing to threaten macroeconomic stability and the future prospects of the Brazilian economy. The persistence or intensification of the economic crisis in Brazil and the uncertainty over whether the Brazilian government will be willing and able to implement changes in policy or regulation in order to address the current economic challenges could adversely affect us.

The price of oil also plays an important role in the economy of Brazil. Income from commodities exports has become a significant part of the fiscal accounts of the country in the last few years, either through royalties or taxes. The recent significant decrease in global oil prices has had and continues to have an adverse effect on Brazil's economy.

There can be no assurance that any crises such as those described above or similar events will not negatively affect investor confidence in emerging markets or the economies of the principal countries in Latin America, including Brazil. In addition, there can be no assurance that these events will not adversely affect Brazil's economy and its industries.

Allegations of political corruption against members of the Brazilian government could create economic and political instability.

In the past, members of the Federal Government and the Brazilian legislative branch have faced allegations of political corruption. As a result, a number of politicians, including senior federal officials and congressmen, resigned or have been arrested. Such political crises have affected and will continue to affect the confidence of investors and the general public and have historically resulted in economic deceleration and heightened volatility and illiquidity in the securities issued by Brazilian companies.

Since 2014, Brazil has experienced amplified economic and political instability derived from various currently ongoing investigations into allegations of money laundering and corruption, including the largest such investigation, known as Lava Jato, which have negatively impacted the Brazilian economy and political environment and contributed to a decline in market confidence in Brazil.

Brazilian markets face increased volatility due to the uncertainties related to the ongoing corruption scandals, which are being investigated by the Brazilian Federal Police in Lava Jato, Zelotes, Greenfield, Estrela Cadente operations, among others, and to the impact of these scandals in the Brazilian economy and political environment. Members of the Federal Government and legislative branch, in addition to senior managers of large companies are being prosecuted for the crime of corruption. In addition, politicians and other public officials are being investigated for illegal and unethical conducts identified during the Lava Jato, Zelotes, Greenfield, Estrela Cadente operations, among others.

As a result of these investigations, a number of senior politicians, including members of Congress, and high-ranking executive officers of major corporations and state-owned companies in Brazil, have been arrested, convicted of various charges relating to corruption, entered into plea agreements with federal prosecutors and/or have resigned or been removed from their positions. The individuals involved in the Lava Jato investigations are alleged to have accepted bribes by means of kickbacks on contracts granted by the government to several infrastructure, oil and gas and construction companies. The profits of these kickbacks allegedly financed political campaigns of political parties, whose funds were unaccounted for or not publicly disclosed. These funds were also allegedly destined toward the personal enrichment of certain individuals.

The potential outcome of Lava Jato as well as other ongoing corruption-related investigations is uncertain, but there has already been an adverse impact on the image and reputation of those companies that have been implicated, as well as on the general market perception of the Brazilian economy, political environment and the Brazilian capital markets. We have no control over and cannot predict whether such investigations or allegations will lead to further political and economic instability or whether new allegations against government officials will arise in the future or will adversely affect us. In addition, we cannot assure you that investigations or the development of new investigations involving the Brazilian government, state-owned companies or other government affiliates could not have a negative impact on us, including with respect to the trading price of our securities.

As of the date of this Offering Memorandum, President Bolsonaro is being investigated by the Brazilian Supreme Court for the alleged improper acts claimed by the former Minister of Justice, Sérgio Moro. According to Sérgio Moro, the president exerted undue political pressure to appoint certain members of the Brazilian Federal Police for potential personal benefit and for the benefit of his family. Any resulting consequences of this investigation, including a potential opening of the impeachment process or trial by the Brazilian Supreme Court, could have significant adverse effects on the political and economic environment in Brazil, as well as on businesses operating in Brazil, including our business.

Mr. Bolsonaro took office on January 1, 2019. During his presidential campaign, President Bolsonaro was reported to favor the privatization of state-owned companies, economic liberalization, and social security and tax reforms. He has reshuffled his cabinet repeatedly following the exits of many ministers, including Ministers of Health and the Minister of Justice, who resigned following allegations that President Bolsonaro was interfering in anticorruption investigations. We cannot predict the policies that the Bolsonaro administration may adopt or change in relation to the economy or otherwise, or the effect that any such policies may have on our business and the Brazilian economy as a whole.

Ultimately, there is no guarantee that President Bolsonaro will be successful in executing his campaign promises or passing certain favored reforms fully or at all, nor can we predict with certainty how President Bolsonaro's administration may impact the overall stability, growth prospects and economic and political health of the country.

Any of the above factors may create additional political uncertainty, which could have a material impact on the Brazilian economy, our business, financial condition and results of operations.

Political instability has adversely affected the Brazilian economy, which could affect our business and operating results, as well as the trading price of our securities, including the Notes.

The Brazilian political environment has influenced and continues to influence the performance of the country's economy and the confidence of investors and the general public, resulting in an economic slowdown and increased volatility in the securities issued by Brazilian companies.

President Bolsonaro's response to the COVID-19 pandemic has been widely criticized in Brazil and abroad. In response to the Federal Government's management of the COVID-19 crisis, protests known as "*panelaços*" occurred in many Brazilian cities, including Rio de Janeiro, São Paulo and Brasilia. Due to public pressure, the Federal Government replaced the Minister of Health on April 17, 2020, June 2, 2020 and March 23, 2021. On April 21, 2021, the Brazilian Senate instituted a parliamentary inquiry committee (*Comissão Parlamentar de Inequérito*) to investigate the Federal Government's management of the COVID-19 pandemic.

Further, the Bolsonaro administration may be unable to form and maintain a coalition in the National Congress. Accordingly, congressional stalemate and political unrest may occur. Uncertainty regarding the adoption of previously announced structural reforms may further contribute to economic turmoil and negatively impact our business, financial condition and operating results, as well as the trading price of our securities, including the Notes.

The President of Brazil has the power to determine policies and issue governmental acts related to the conduct of the Brazilian economy and, consequently, affect the operations and financial performance of companies, including our own. We cannot predict which policies the President of Brazil will adopt, nor can we predict if such policies or changes in current policies could have an adverse effect on us or on the Brazilian economy.

Brazilian markets have recorded an increase in volatility and limited liquidity due to uncertainties resulting from ongoing investigations conducted by the Brazilian Federal Prosecutors (*Ministério Público Federal*) and the Brazilian Federal Police (*Polícia Federal*). Such investigations have impacted the country's economy and political environment.

The potential outcome of these and other investigations is uncertain, but they have already had a negative impact on the image and reputation of the companies involved, as well as on the general perception of the market on the Brazilian economy. The development of these cases of unethical conduct has affected and may continue to adversely affect our business, financial condition and operating results, as well as the trading price of our securities, including the Notes. We cannot predict whether the ongoing investigations will lead to further political and economic instability, nor whether new allegations against government officials and executives and/or private companies will emerge in the future. Nor can we predict the results of these investigations, nor the impact on the Brazilian economy or the Brazilian stock market. See "*—Allegations of political corruption against members of the Brazilian government could create economic and political instability*."

We are subject to extensive controls and regulations imposed by the Brazilian governments in respect of the oil and natural gas industry and any changes in such controls and regulations may have a material adverse effect on us.

The oil and natural gas industry in Brazil is subject to extensive controls and regulations imposed by various levels of government bodies. We may incur significant expenses and costs to comply with these regulations, including with licenses, collateral, reports related to our operations, distance among wells and taxes.

Failure to comply with the law may result in suspension or termination of our operations and the imposition of administrative, civil and criminal sanctions. Additionally, amendments to current laws, regulations and permits could have a material adverse impact on us, including causing increases in expenditures and costs. Any liability, sanction, suspension or change of the laws and regulations could result in a material adverse effect on us.

Inflation and efforts by the Brazilian government to combat inflation may contribute significantly to economic uncertainty in Brazil and could have an adverse effect on us and the price of the Notes.

Brazil has historically experienced periods with high rates of inflation. Inflation, as well as governmental measures put in place to combat inflation, have had a material adverse effect on the Brazilian economy. Actions taken in an effort to curb inflation, coupled with public speculation about possible future governmental actions, have in the past contributed to economic uncertainty in Brazil and heightened volatility in the Brazilian securities market. The inflation rate in Brazil, as reflected by the Broad Consumer Price Index (Índice Nacional de Preços ao Consumidor Amplo), or IPCA, published by the IBGE, was 6.0% for the three months ended March 31, 2021 and 4.5% in 2020 4.31% in 2019, 3.7% in 2018, 2.9% in 2017, 6.3% in 2016 and 10.7% in 2015.

As a result of inflationary pressures and macroeconomic instability, the Brazilian government has historically adopted monetary policies that have resulted in Brazil's interest rates being among the highest in the world. The Central Bank sets the base interest rates generally available to the Brazilian banking system, based on the expansion or contraction of the Brazilian economy, inflation rates and other economic indicators. During recent years there has been significant volatility in the official Brazilian base interest rate (Sistema Especial de Liquidação e Custódia, or SELIC rate, set by the Central Bank, which ranged from 14.25%, on December 31, 2015, to 4.50% on December 31, 2019. As of the date of this Offering Memorandum, the SELIC rate was 3.50%. Brazilian interest rates remain high and any increase in interest rates could negatively affect our profitability and results of operations and would increase the costs associated with financing our operations.

Inflation and government measures to combat inflation, along with speculation about possible future governmental measures, have had and are expected to continue to have significant negative effects on the Brazilian economy, including heightened volatility in the Brazilian securities market. In addition, measures to control inflation have often included maintaining a tight monetary policy with high interest rates, thereby restricting the availability of credit and limiting economic growth. On the other hand, these policies may be incapable of preventing increases in the inflation rate. Furthermore, the absence of such policies may trigger increases in the inflation rate and thereby adversely affect economic stability. In the event of an increase in inflation, we may not be able to adjust the prices we charge our customers to offset the effects of inflation on our cost structure, which may adversely affect us.

We have market risk exposure to changes in interest rates. As of March 31, 2021, 59.6% of our total loans and financings had fixed rate interest rates, 37.7% of our total loans and financing was indexed to the London Interbank Offered Rate, or LIBOR, and 2.7% of our total loans and financings were indexed to the *Taxa de Juros de Longo Prazo* ("TJLP"). Benchmarks such as LIBOR are the subject of ongoing national and international regulatory reform. Following the implementation of any such potential reforms, the manner of administration of benchmarks may change, with the result that they may perform differently than in the past, or benchmarks could be eliminated entirely, or there could be other consequences which cannot be predicted. For example, the FCA has announced that after 2021 it will no longer persuade or compel banks to submit rates for the calculation of the LIBOR benchmark and that the continuation of LIBOR on the current basis cannot and will not be guaranteed after 2021 by the FCA. As a result, it appears highly likely that LIBOR will be discontinued or modified in 2021. Additionally, ICE Benchmark Administration, or IBA, which compiles and oversees LIBOR, announced its impending consultation on what is effectively a proposed extension of most U.S. dollar LIBOR tenors until June 30, 2023. Investors should consult their own independent advisers and make their own assessment about the potential risks imposed by the any of the international or national reforms and the possible application of the benchmark replacement provisions of Notes in making any investment decision. In addition, tax liabilities payable are subject to SELIC and TJLP. There is an inherent

risk in these liabilities, as increases in interest rates would result in increases in our financial expenses and debt service obligations associated with our floating-rate borrowings and financings.

Changes in tax laws, tax incentives and benefits or differing interpretations of tax laws may adversely affect our results of operations.

The Brazilian tax authorities have frequently implemented changes to tax regimes that may affect us and ultimately the demand of our customers for the products we sell. These measures include changes in prevailing tax rates and enactment of taxes, both temporary and permanent.

Some of these changes may increase our tax burden, which may increase the prices we charge for the products we sell, restrict our ability to do business in our existing markets and, therefore, materially adversely affect our profitability. There can be no assurance that we will be able to maintain our projected cash flow and profitability following any increases in Brazilian taxes that apply to us and our operations.

In addition, we currently receive certain tax benefits. There can be no assurance that these benefits will be maintained or renewed. Also, given the current Brazilian political and economic environment, there can be no assurance that the tax benefits we receive will not be judicially challenged as unconstitutional. If we are unable to renew our tax benefits, such benefits may be modified, limited, suspended, or revoked, which may adversely affect us.

Moreover, certain tax laws may be subject to controversial interpretation by tax authorities. In the event that tax authorities interpret tax laws in a manner that is inconsistent with our interpretations, we may be adversely affected.

Currently, the Brazilian Congress is analyzing proposals for the implementation of a tax reform. These proposals include potential consumption tax, eliminating federal taxes IPI, PIS and COFINS, the state tax ICMS, and the municipal tax ISS, to create a new single tax, the Tax on Goods and Services (IBS), to be levied on consumption.

The COVID-19 pandemic and the decree of the state of calamity can result in far-reaching socioeconomic impacts, including a possible fall in tax revenues in the country and an increase in demand for public spending in key sectors. In this scenario, the federal, state and municipal governments may promote legislative changes to impose, even if temporarily, a more onerous tax treatment on our activities, which may adversely affect our business and results of operations.

We cannot guarantee that the Brazilian government will not implement a tax reform or changes in the applicable laws and regulations, changing the tax system to which we are currently subject, as well as that any tax incentives will be maintained or renewed under favorable conditions for us. If these changes, directly or indirectly, increase the tax burden owed by us, our gross margin may decrease and, consequently, adversely impact our business and results of operations.

Exchange rate fluctuations in Brazil against the U.S. dollar could adversely affect us and the price of the Notes.

Exchange rate instability may have a significant negative effect on the economies in which we operate and could adversely affect us. For example, the Brazilian currency has been historically volatile and has been devalued frequently over the past three decades. Since 1999, the Central Bank has allowed the *real*/U.S. dollar exchange rate to float freely and during this period, the *real*/U.S. dollar exchange rate has experienced frequent and substantial variations in relation to the U.S. dollar and other foreign currencies. Throughout this period, the Brazilian government has implemented various economic plans and used various exchange rate policies, including sudden devaluations, periodic mini-devaluations (during which the frequency of adjustments has ranged from daily to monthly), exchange controls, dual exchange rate markets and a floating exchange rate system.

Although long-term depreciation of the *real* is generally linked to the rate of inflation in Brazil, depreciation of the *real* occurring over shorter periods of time has resulted in significant variations in the exchange rate between the *real*, the U.S. dollar and other currencies. We cannot predict whether the Central

Bank or the Brazilian government will continue to let the *real* float freely or will intervene in the exchange rate market by returning to a currency band system or otherwise. The *real* may depreciate or appreciate substantially against the U.S. dollar and other currencies. Furthermore, Brazilian law provides that, whenever there is a serious imbalance in Brazil's balance of payments or there are substantial reasons to foresee a serious imbalance, temporary restrictions may be imposed on remittances of foreign capital abroad. We cannot assure you that such measures will not be taken by the Brazilian government in the future, or that similar measures will not be taken by the governments of other countries where we operate. There can be no assurance that there will not be further volatility of the *real* against the U.S. dollar or other currencies in the future.

We are exposed to currency risks arising from exposure to exchange rate variations between the Brazilian *real*, the functional currency for presenting our financial statements, and the currencies of the foreign countries where we operate. A depreciation of the Brazilian *real* against relevant foreign currencies, primarily the U.S. dollar, generally leads to an increase in our consolidated net revenue although it is generally followed by a similar increase in costs to acquire raw materials since they are mostly linked to prices in U.S. dollars. In addition, when the *real* depreciates, we incur gains on our monetary assets denominated in, or indexed to, the relevant foreign currency, such as the U.S. dollar.

As of March 31, 2021, 97% of our loans and financing were denominated in foreign currency, which exposes us to risks associated with exchange rate movements of the Brazilian *real* against the U.S. dollar. A significant depreciation of the Brazilian *real* in relation to the U.S. dollar or other currencies could increase our financial expenses as a result of foreign exchange losses that we must record and could reduce our ability to meet debt service requirements of our foreign currency-denominated obligations. For information on our hedging strategy.

Also, the prices of most of the raw materials used in our operations in Brazil are denominated in or linked to the U.S. dollar. When the Brazilian *real* depreciates against the U.S. dollar, the cost in Brazilian *reais* of our U.S. dollar-linked raw materials increases and if we are not able to pass on these cost increases to our customers our operating income in Brazilian *reais* may be adversely impacted.

In the course of our business, we may decide to enter into financial derivative transactions in the future to hedge our exposure to foreign currency exchange rate variations. However, we cannot assure you that these instruments will be available to us on favorable terms, if at all, or will fully hedge our exposure.

A devaluation of local currencies against the U.S. dollar might also create inflationary pressures in local economies and lead to increases in interest rates, which could adversely affect the growth of these economies as a whole, and undermine our financial situation and operating results. On the other hand, local currency appreciation in relation to the U.S. dollar may undermine the economic growth driven by exports in these countries.

Because of the degree of volatility and the uncertainty of the factors that impact the Brazilian *real's* exchange rate, it is difficult to predict future exchange rate movements. In addition, the Brazilian government may change its foreign currency policy, and any governmental interference in the exchange rate, or the implementation of exchange control mechanisms, could influence the *real's* exchange rate. In light of the foregoing, there can be no assurance we will be able to protect ourselves against the effects of adverse fluctuations of the Brazilian *real* against the U.S. dollar.

Any further downgrading of Brazil's credit rating could adversely affect the price of the Notes.

Credit ratings affect investors' perceptions of risk and, as a result, the trading value of securities and yields required on future debt issuance in the capital markets. Rating agencies regularly evaluate Brazil and its sovereign ratings, which are based on a number of factors including macroeconomic trends, fiscal and budgetary conditions, indebtedness metrics and the prospect of changes in any of these factors.

The rating agencies began to review Brazil's sovereign credit rating in September 2015. Subsequently, the three major rating agencies downgraded Brazil's investment-grade status:

- In 2015, Standard & Poor's initially downgraded Brazil's credit rating from BBB-negative to BB-positive and subsequently downgraded it again from BB-positive to BB, maintaining its negative outlook, citing a worse credit situation since the first downgrade. On January 11, 2018, Standard & Poor's further downgraded Brazil's credit rating from BB to BB-negative. The BB-negative rating was reaffirmed on February 7, 2019 with a stable outlook, which reflects the agency's expectations that the Brazilian government will be able to implement policies to gradually improve the fiscal deficit, as well as a mild economic recovery, given improvements in consumer confidence. In April 2020, Standard & Poor's revised the credit rating for Brazil to BB-negative with a stable outlook.

- In December 2015, Moody's reviewed and downgraded Brazil's issue and bond ratings from Baa3 to below investment grade, Ba2 with a negative outlook, citing the prospect of a further deterioration in Brazil's debt indicators, considering the low growth environment and the challenging political scenario. In April 2018, Moody's reaffirmed its Ba2 rating, but altered its outlook from "negative" to "stable," also supported by the projection that the Brazilian government would approve fiscal reforms and that economic growth in Brazil would resume gradually.

- In 2016, Fitch downgraded Brazil's sovereign credit rating to BB+ with a negative outlook, citing the rapid expansion of the country's budget deficit and the worse-than-expected recession. In February 2018, Fitch downgraded Brazil's sovereign credit rating again to BB-, citing, among other reasons, fiscal deficits, the increasing burden of public debt and an inability to implement reforms that would structurally improve Brazil's public finances. The BB- rating was reaffirmed in May 2019. In May 2020, Fitch affirmed Brazil's long-term foreign currency issuer default rating at BB- and revised the rating outlook to negative, citing the deterioration of the Brazilian economic and fiscal scenarios and the worsening risks for both dimensions, given the renewed political uncertainty, in addition to the uncertainties about the duration and intensity of the COVID-19 pandemic.

Brazil's sovereign credit rating is currently rated below investment grade by the three credit rating agencies. Consequently, the prices of securities offered by companies with significant operations in Brazil have been negatively affected. A prolongation or worsening of the current Brazilian recession and continued political uncertainty, among other factors, could lead to further ratings downgrades. Any further downgrade of Brazil's sovereign credit ratings could heighten investors' perception of risk and, as a result, cause the trading price of our Notes to decline.

Risks Related to the Notes, the Notes Guaranties and the Collateral

Holders of our Notes may face difficulties in serving process on or enforcing judgments against us and other persons.

We are a corporation (*sociedade por ações)* incorporated under the laws of Brazil. Most of our directors and officers are Brazilian residents and most of our assets are located outside the United States. As a result, it may not be possible (or it may be difficult) for you to effect service of process upon us or these other persons within the United States or to enforce judgments obtained in United States courts against us, our directors and officers, including those claims and judgments predicated upon the civil liability provisions of the federal securities laws of the United States.

The Issuer has limited operations of its own, and, therefore, holders of the Notes must depend on Petro Rio S.A. to provide the Issuer with sufficient funds to make payments on the Notes when due.

The Issuer, our wholly-owned financing subsidiary domiciled in Luxembourg, has no operations other than oil trading activities and the issuing and making payments on the Notes and other previously issued bonds, and using the proceeds therefrom as permitted by the documents governing these issuances. Accordingly, the ability of the Issuer to pay principal, interest and other amounts due on the Notes and other debt will depend

upon the financial condition and cash flow generation of Petro Rio S.A. and its subsidiaries. In the event of an adverse change in the financial condition or cash flow generation of Petro Rio S.A. and its operating subsidiaries, the Issuer may not have sufficient funds to repay all amounts due on or with respect to the Notes.

We are a holding company and our only material assets are our equity interests in our operating subsidiaries and our other investments; as a result, our principal source of revenue and cash flow is distributions from our subsidiaries, which may be limited by law and by contract in making distributions to us.

As a holding company, our only material assets are our cash on hand, the equity interests in our subsidiaries and other investments. Our subsidiaries conduct substantially all of our operations and own all of our consolidated assets. Our principal source of revenue and cash flow is distributions from our subsidiaries. Thus, our ability to service our debt, finance acquisitions and pay dividends to our stockholders in the future is dependent on the ability of our subsidiaries to generate sufficient net income and cash flows to make upstream cash distributions to us. Our subsidiaries are and will be separate legal entities, and although they may be wholly-owned or controlled by us, they have no obligation to make any funds available to us, whether in the form of loans, dividends, distributions or otherwise. The ability of our subsidiaries to pay dividends or make other payments or advances to us will depend upon not only their operating results, cash flow, financial condition, business and tax considerations, legal and regulatory restrictions, and economic conditions, but also on applicable law and contractual restrictions contained in instruments governing their indebtedness. Our subsidiaries may not be able to, or may not be permitted to, make distributions to enable us to make payments in respect of our indebtedness, including the Notes. Unless they are Guarantors of the Notes or our other indebtedness, our subsidiaries do not have any obligation to pay amounts due on the Notes or our other indebtedness or to make funds available for that purpose. Claims of creditors of our subsidiaries generally will have priority as to the assets of such subsidiaries over our claims and claims of our creditors and stockholders. To the extent the ability of our subsidiaries to distribute dividends or other payments to us could be limited in any way, our ability to grow, pursue business opportunities or make acquisitions that could be beneficial to our businesses, or otherwise fund and conduct our business could be materially limited.

We may not be able to fully control the operations and the assets of our joint ventures and we may not be able to make major decisions or take timely actions with respect to our joint ventures unless our joint venture partners agree. We may enter into additional agreements in the future that may contain restrictions related to the amount of dividends to be declared or returned to us, certain aspects related to the management of our businesses, respectively, the incurrence of indebtedness, liens and our ability to sell certain assets.

Our indebtedness could adversely affect our financial condition and prevent us from fulfilling our obligations, including our obligations under the Notes.

As of March 31, 2021, the Group's consolidated total indebtedness was R$2,163,775 thousand (or U.S.$379,790 thousand). As of March 31, 2021, after giving effect to the application of the net proceeds of the Notes, we would have had R$3,367,104 thousand (or U.S.$591,000 thousand) of total indebtedness. See "*Capitalization.*" Additionally, we intend to use the net proceeds from this offering toward repaying our existing indebtedness and general corporate purpose.

The level of our indebtedness could have important consequences to you, including the following:

- it may limit our ability to borrow money to fund our working capital needs and capital expenditures;
- it may limit our flexibility in planning for, or reacting to, changes in our business and future business opportunities;
- it may make us more vulnerable to a downturn in our business or in the economy of Brazil;
- a material portion of our cash flow from operations will be dedicated to the repayment of our indebtedness, and will not be available for other purposes; and
- there would be a material adverse effect on our business and financial condition if we were unable to service our indebtedness or obtain additional financing as needed.

We may incur additional debt, which could adversely impact our ability to make payments on the Notes when due.

Despite our current consolidated debt levels, we and our subsidiaries may be able to incur substantial additional debt in the future on a limited basis, subject to the restrictions contained in our debt instruments, some of which may be secured debt. The Notes will be our senior obligations, secured by a first lien on the Collateral, and will rank equally in right of payment to all of our existing and future senior debt (except those obligations preferred by operation of applicable law). Subject to the limitations contained in the Indenture and other financing documents, we are permitted to incur additional secured indebtedness. Certain types of this permitted indebtedness (such as the issuance of "Additional Notes" as such term is defined in the Indenture) may rank equally in right of payment with the Notes. Thus, the holders of the Notes will receive distributions from any foreclosure proceeds of our assets constituting Collateral for the Notes on a pro rata basis with certain other existing and future senior secured creditors.

Further, as a result of our holding company structure, claims of creditors of our subsidiaries will generally have priority as to the assets of our subsidiaries over our claims and over claims of the holders of our indebtedness, including the Notes. The creditors of our subsidiaries have direct claims on the subsidiaries and their assets and the claims of holders of the Notes are "structurally subordinated" to any existing and future liabilities of our subsidiaries. This means that the creditors of our subsidiaries have priority in their claims on the assets of the subsidiaries over our creditors, including the noteholders. All of our other consolidated liabilities, other than the Notes, are obligations of our subsidiaries and are effectively senior to the Notes.

As a result, upon any distribution to the creditors of any subsidiary in bankruptcy, liquidation, reorganization or similar proceedings, or following acceleration of our indebtedness or an event of default under such indebtedness, the lenders of the indebtedness of our subsidiaries will be entitled to be repaid in full from the proceeds of the assets securing such indebtedness, before any payment is made to holders of the Notes from such proceeds. This may have the effect of reducing the amount of liquidation or similar proceeds paid to holders of the Notes.

In addition, the Indenture will allow the Issuer to issue Additional Notes under certain circumstances which, if these were to happen, will result in the holders of Additional Notes and the Notes offered hereby sharing the Collateral that will secure the Notes and any Additional Notes. This may reduce the benefits of the Collateral to noteholders and the ability of noteholders to control certain actions taken with respect to the Collateral. Furthermore, if new indebtedness or other liabilities are added to the Issuer's debt levels, the related risks that the Issuer now has could intensify.

We are permitted under the Indenture to use the proceeds of Asset Sales in connection with a Permitted Business which may be unrelated to our current line of business.

We, or our Restricted Subsidiaries, may, subject to certain conditions and limitations, use the proceeds from one or more Asset Sales (as defined herein) to acquire all or substantially all of the assets of a Permitted Business, or a majority of the voting stock of another Person that thereupon becomes a Restricted Subsidiary engaged in a Permitted Business, or to make capital expenditures or otherwise acquire long-term assets that are to be used in a Permitted Business. See "Description of Notes—Certain Covenants—Limitation on Asset Sales." In addition, to the extent we raise additional funds from debt or equity financings we may determine to invest the proceeds thereof in Permitted Businesses on the limited basis contemplated in "Description of Notes—Certain Covenants."

For this purpose, Permitted Businesses may include activities outside of the areas of our management's expertise, our management's expertise may not be directly applicable to its evaluation or operation, and the information contained in this Offering Memorandum regarding our current activities and the areas of our management's expertise would not be relevant to an understanding of a Permitted Business. As a result, our management is not able to adequately ascertain or assess all of the significant risk factors relevant to such acquisition and such Permitted Business. If in determining to engage or invest in additional Permitted Businesses we were to become subject to risks of this kind, it is possible that despite our efforts to minimize any such risks, such risks nonetheless could have a material adverse effect on us.

Problems related to the creation or perfection of a security in the Collateral may make it difficult to enforce your security interest on the Collateral securing the Notes.

The security interest held by the Collateral Agents, as applicable, for the benefit of the holders of the Notes, in respect of the Notes may be subject to practical problems generally associated with the realization of security interests in Collateral. For example, problems related to the creation or perfection of the security interest on the Collateral may arise, and we cannot assure that all parties will have taken all actions necessary to create properly perfected security interests, which may result in the loss of priority of the security interest in favor of holders of the Notes to which they would otherwise have been entitled or otherwise limit or restrict the holders of the Notes ability to foreclose.

If the Collateral Agents, for the benefit of the holders of the Notes, do not, for any reason, have a perfected first priority security interest on the (i) Share Collateral within 60 days after the Issue Date or (ii) Vessels within 60 days after the Issue Date, the amount of interest on the Notes will increase by 2.0% until such time as certain specified conditions are satisfied. See "*Description of Notes—Interest Step-Up*." If the Collateral Agents, for the benefit of the holders of the Notes do not, for any reason, have a first priority security interest on the Collateral on or before (i) the date that is ten Business Days after the Issue Date, for Collateral relating to the Luxembourg Pledge Agreement; and (ii) the date that is 90 days after the Issue Date for Collateral relating to the Brazilian Share Pledge Agreements and (iii) the date that is ten Business Days after the Issue Date for the Collateral relating to the Vessels, it will result in an event of default under the Indenture. See "*Description of Notes—Default and Remedies—Events of Default*."

In the event of a failure to create and perfect liens on the Collateral, the Notes will not be secured by such assets, and the holders of the Notes will not be entitled to the proceeds from the sale of all or any of the proposed Collateral or any other remedies in connection therewith.

Realizing on a portion of the Collateral held by the Collateral Agents in respect of the Notes may require consent from or otherwise involve third parties.

The Collateral Agents may not be able to cause PetroRio O&G, PetroRio Luxembourg, PetroRio Jaguar, PetroRio White Shark, Petro Rio Internacional S.A., Petro Rio do Brasil Exploração Petrolífera S.A., and Petro Rio OPCO Exploração Petrolífera Ltda., as applicable, to sell their assets or distribute assets for the benefit of noteholders. In addition, the Brazilian Collateral Agent, with respect to any agreement relating to the Share Collateral governed by Brazilian law, the Luxembourg Collateral Agent, with respect to any agreement relating to the Share Collateral governed by Luxembourg law, and the Bahamian Collateral Agent, with respect to any agreement or deed relating to the Bahamian Collateral Package may not have the ability to foreclose upon and dispose of the shares of PetroRio O&G, PetroRio Luxembourg, PetroRio Jaguar, PetroRio White Shark, Petro Rio Internacional S.A., Petro Rio do Brasil Exploração Petrolífera S.A., and Petro Rio OPCO Exploração Petrolífera Ltda. and the Vessels, as applicable. Additionally, the prior consent of ANP or CADE for the foreclosure and transfer of the Share Collateral to third parties may be required, and therefore the value of this collateral may be materially adversely affected. Also, the joint operation agreement in respect of CE-M-715 exploratory block located in the Ceará Basin is subject to preemptive rights of Ecopetrol in case of a change of control of Petro Rio Jaguar Petróleo Ltda. The Collateral Agents cannot assure that the prior consent from any third parties will be given, obtained or otherwise made available when required to facilitate enforcement of the applicable Collateral.

There may be limitations on foreclosure or enforcement of rights in the Collateral and the value of the Collateral may not be sufficient to satisfy the obligations under the Notes.

The creation and perfection of the security interest by the Collateral Agents in respect of certain Collateral are governed by Brazilian law, Luxembourg law or Bahamian law, as the case may be. The laws relating to the creation and perfection of security interests in such jurisdictions differ from those in the United States and may be subject to restrictions and limitations, the effect of fraudulent conveyance and similar laws. These restrictions and limitations may have the effect of preventing, limiting and/or delaying the foreclosure and subsequent disposition of such Collateral, and may materially impair the claims of noteholders. Any such delay

in having an enforceable claim could also diminish the value of the interest of the noteholders in the Collateral due, among other things, to the existence of other potential creditors and claimants.

We cannot provide any assurance as to the market value of the Collateral at the time of any foreclosure or as of the date of this Offering Memorandum. The fair market value of the Collateral will fluctuate from time to time and such fluctuations may be based on factors that include, among others, general economic conditions, the availability of potential buyers and similar factors. The amount to be received upon a sale of the Collateral would also be dependent on numerous factors, including, but not limited to, the actual fair market value of the Collateral at such time and the timing and the manner of the sale. Also, in such case, any claim for the difference between the amount realized by noteholders from the foreclosure of the Collateral and the Issuer's remaining obligations under the Notes (or the Guarantors' obligations under the Notes Guaranties) would rank equally in right of payment with all of the Issuer's or the Guarantors' unsecured indebtedness.

The right and ability of the Collateral Agents, for the benefit of the holders of the Notes, if and as instructed by the Trustee, to realize or foreclose upon the equity subject to the Collateral upon the occurrence of an event of default is likely to be significantly impaired by applicable bankruptcy law if a bankruptcy proceeding were to be commenced by or against us or a subsidiary of ours prior or during the foreclosure of the Collateral by the Collateral Agents. Under applicable bankruptcy law, a secured creditor such as the Collateral Agents may be prohibited from foreclosing its security from a debtor in an insolvency case or from disposing of security repossessed from such debtor either because the credit is subject to the relevant insolvency proceeding as a consequence of the type of collateral or because the enforcement cannot take place during the period in which the debtor is under bankruptcy (such as fiduciary lien granted under the laws of Brazil over assets that are deemed essential to the company's restructuring).

In addition, none of our subsidiaries is publicly traded. There can be no assurance of the Collateral Agents' ability to liquidate in an orderly manner our equity interests in our directly held subsidiaries following its exercise of remedies with respect to the equity. The value of the Collateral at any time will depend on market and other economic conditions, including the availability of suitable buyers for the Collateral. The amount of proceeds that ultimately would be distributed in respect of the Notes upon any enforcement action or otherwise may not be sufficient to satisfy the Issuer's obligations under the Notes.

We have no obligation under the Notes, the Indenture or the Collateral Agreements to maintain the value of the Collateral at a minimum level.

The value of the Collateral may be materially affected upon the occurrence of events that result in partial or total loss thereof. Further, should any of the Vessels be completely or partially lost, we will not be required to repay Noteholders from the proceeds of any insurance payments received nor will we be required to replace the Vessels with any other collateral.

The Vessels are subject to risks particular to marine operations, including capsizing, grounding, collision and loss from severe weather and storms, which may result in significant damage to the vessels, injury to the crew, loss of performance loss and revenues and governmental and third-party claims against us. In addition, the Vessels are subject to risks particular to the drilling of oil and gas wells, such as blow-outs, reservoir damage, loss of production, loss of well control, fires and adverse weather. There are certain losses, such as the occurrence of disasters, accidents or other events in connection with the vessel Collateral (or any assets underlying it) that may be not be covered by insurance. Proceeds from insurance policies may not compensate us fully for our losses.

Should the Vessels be completely or partially lost, we may be able to recover certain losses pursuant to the Vessels' insurance policies. Payments received by us under the Vessel insurance policies will not be available to pay Noteholders. Further, should we receive any payments under any Vessel insurance policy, it will not be under any obligation to replace Vessel collateral by acquiring new vessels or other assets and securing them as collateral to the Noteholders.

If we were to incur further indebtedness upon the issuance of additional Notes under the Indenture, this could adversely affect the value of the Collateral and the credit support package securing the Issuer's obligations under the Notes. We may also incur additional indebtedness ranked equally with the Notes.

The Indenture will permit us and our subsidiaries, to issue additional Notes with the same terms as the Notes issued in this offering. The issuance of additional Notes under the Indenture would also be guaranteed by the Notes Guaranties to be provided by the Guarantors and secured by the Collateral that will secure the Issuer's obligations under the Notes issued in this offering. As a result, any additional debt resulting from such additional Notes will be secured by the Collateral securing the Notes issued in this offering, which will dilute the value of the Collateral securing our obligations under the Notes offered hereby. In addition, the holders of additional Notes will be entitled to share equally with the holders of the originally issued Notes in any proceeds distributed in connection with our winding up, insolvency, liquidation, reorganization or dissolution.

Further, the Indenture will permit us and our subsidiaries, to incur additional debt under certain circumstances that ranks on an equal and ratable basis with the Notes and the Notes Guaranties. If we or any of our subsidiaries incur additional debt or provide guarantees that rank on an equal and ratable basis with the Notes or the Notes Guaranties, as the case may be, and to the extent that the Collateral that will secure the Notes is insufficient to repay the Notes in full, the holders of that debt (and beneficiaries of those guarantees) would be entitled to share ratably with the holders of the Notes (with respect to any outstanding amount not satisfied after the foreclosure of the Collateral) in any proceeds that may be distributed upon our insolvency, liquidation, reorganization, dissolution or other winding up. This would likely reduce the amount of any liquidation proceeds that would be available to be paid to holders of the Notes.

Our Notes may not be a suitable investment for all investors, as an investment in Notes presents certain risks and the possibility of financial losses.

Investment in our Notes is subject to risks. Investors who wish to invest in Notes are subject to asset losses, including loss of the entire value of their investment, as well as other risks, including those related to us, our Notes, the sector in which we operate, our shareholders and the general macroeconomic environment in Brazil. Each investor in our Notes must therefore determine the suitability of that investment in light of their own circumstances. In particular, each investor should:

- have sufficient knowledge and experience to make a meaningful evaluation of the Notes, the merits and risks of investing in 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 their particular financial situation, an investment in Notes and the impact the shares may have on their overall investment portfolio;
- have sufficient financial resources and liquidity to bear all of the risks of an investment in our Notes;
- understand thoroughly the terms of 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) various possible scenarios involving changes in economic indicators, interest rates and other factors that may affect their investment and their ability to bear the applicable risks.

Enforcement of rights in the Collateral is subject to several difficulties, which may hinder the holders of the Notes from exercising their rights under the Share Collateral agreements.

Brazilian Bankruptcy Law provides for three types of insolvency proceedings: judicial reorganization (*recuperação judicial*), extrajudicial reorganization (*recuperação extrajudicial*), and bankruptcy liquidation (-*falência*).

In these cases, a creditor may be impaired to enforce its collateral in case it is subject to the proceeding, which is the case of pledges and mortgages in judicial reorganizations and may be the case in extrajudicial reorganizations as well (depending on the conditions proposed by the debtor to restructure its indebtedness).

These types of collateral are not bankruptcy-remote and the relevant creditor may be subject to the proceeding and, therefore, paid either in the terms of the reorganization plan (in a judicial or extrajudicial reorganization scenario), or in the order established by the Brazilian Bankruptcy Law (in a bankruptcy liquidation scenario).

Fiduciary liens over movable or immovable assets or fiduciary assignment of receivables or rights are bankruptcy-remote, pursuant to Brazilian Bankruptcy Law. However, in some circumstances, Brazilian courts have impaired creditors' ability to seizure and sell the collateral granted as fiduciary lien (either in a legal proceeding predicated on a default under the Notes and the Notes Guaranties or during a judicial reorganization proceeding after the expiration of the stay period), if such collateral is deemed essential to the continuation of the borrower's operations and business activities. A legal proceeding of this nature may last for several years.

If the court accepts such defense in a legal proceeding against us outside of the context of a judicial reorganization (which is less common), we will have to post a bond to secure such legal proceeding consisting on other assets. We may not have other assets in sufficient value to offer in lieu of the Collateral.

In a judicial reorganization proceeding, payment obligations under the Notes would not be included in the restructuring plan to the extent that they are secured by the Brazilian Share Collateral, as a fiduciary lien, and the holders of the Notes may not be able to enforce their rights in the Collateral governed by Brazilian law during the stay period which last, according to the Brazilian bankruptcy laws, for 180 days, from the granting of the process of the judicial reorganization, that may be extended once for an equal period, on an exceptional basis, provided that the debtor has not caused the overcoming such term (the "Stay Period").

Also, we cannot assure you that you would be successful in excluding the Collateral property subject to Share Collateral agreements from the assets affected by insolvency proceedings.

There may be limitations to enforce the Vessel mortgages outside The Bahamas.

For a Bahamian flagged vessel, a statutory Bahamian ship mortgage must be registered under the provisions of The Merchant Shipping Act (Chapter 268, Statute Laws of The Bahamas, 2009 Edition) in the Register of Bahamian Ships at the Bahamas Maritime Authority's office in London, New York or Nassau and ranks in priority according to the date on which such statutory Bahamian ship mortgage was so registered. A statutory Bahamian ship mortgage will include certain covenants subject to any agreed upon exceptions by reference to the deed of covenants collateral thereto.

Bahamian maritime law provides that the statutory Bahamian ship mortgage may be enforced by proceedings commenced at common law upon the statutory Bahamian ship mortgage and the supporting contractual documents, or within the Admiralty jurisdiction of the Court by proceedings in rem against the Bahamian flagged vessel or in personam against the owner of the Bahamian flagged vessel. By way of the common law proceedings, a judgment may be obtained for the sum due and owing under the statutory Bahamian ship mortgage, and enforcement proceedings may be taken to recover that sum by way of garnishee proceedings, writ of fieri facias, amongst other enforcement remedies generally available to creditors. By way of the Admiralty proceedings, the Bahamian flagged vessel may be peremptorily arrested if it is situate within Bahamian waters, and upon the obtaining of a judgment for the sum due and owing under the statutory Bahamian ship mortgage, the Bahamian flagged vessel may be sold by way of Admiralty Marshall sale, free and clear of all encumbrances. Where the action has been commenced at common law, application of funds will be in accordance with the usual bases for establishment of priority of claims, where there are competing interests. Where the action has been commenced by way of Admiralty proceedings, application of funds will be in accordance with Section 281 of the Merchant Shipping Act (Chapter 268, Statute Laws of The Bahamas, 2009 Edition).

There is no assurance that, if enforcement proceedings must be commenced against a Bahamian flagged vessel, such Bahamian flagged vessel will be located in a jurisdiction having the same mortgage enforcement procedures and lien priorities as The Bahamas or the United States. Other jurisdictions may provide no legal remedy at all for the enforcement of a statutory Bahamian ship mortgage, or a remedy dependent on court proceedings so expensive and time consuming as to be impractical. Furthermore, certain jurisdictions, unlike The Bahamas, or the United States, may not permit a Bahamian flagged vessel to be sold prior to entry of a judgment, entailing a long waiting time that could result in increased custodial costs, deterioration in the

condition of the Bahamian flagged vessel, and substantial reduction in her value. There also may be restrictions on the ability of a mortgagee to become a "mortgagee in possession."

The Notes Guaranties may not be enforceable if deemed fraudulent and declared void.

The Notes Guaranties may not be enforceable under Brazilian law. While Brazilian law does not prohibit the granting of Notes Guaranties, in the event that any of the Guarantors incorporated in Brazil were to become subject to a reorganization proceeding or to bankruptcy, the Note Guaranties, if granted up to two years before the declaration of bankruptcy, may be deemed to have been fraudulent and declared void, based upon the Guarantors incorporated in Brazil being deemed not to have received fair consideration in exchange for the Notes Guaranties.

Assets that are not secured to the Noteholders could be available to other creditors.

Under the Indenture and related documents executed by us in connection with the offering of the Notes, we have pledged shares of a substantial number of our Brazilian and Luxembourg subsidiaries and the Vessels. See "*Description of Notes—Collateral*."

While the Indenture contains provisions that limit our ability to incur additional debt and to pledge our properties and assets (including Capital Stock of a Restricted Subsidiary), we may under those provisions have an ability to pledge assets and properties that have not been pledged to secure the Notes to holders of other indebtedness that we would be permitted to incur. See "*Description of Notes — Certain Covenants — Debt and Disqualified or Preferred Stock*" and "*Limitation on Liens.*"

In the event we are unable to pay amounts due and owing on the Notes and any of our other assets or properties have been pledged to other creditors, these assets may not be available to address any amounts due and owing in the Notes and holders of the Notes would only have access to any liquidation value of any such assets and liabilities after claims of other creditors secured by such assets and properties have been satisfied.

We may not be able to generate sufficient cash flows to meet our debt service under the Notes.

Our ability to make scheduled payments of the principal of, to pay interest on or to refinance our indebtedness, including the Notes, will depend on our future performance and on our ability to generate cash from the operations of our subsidiaries in the future. This, to a certain extent, is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control. Our business may not generate sufficient cash flows from operations and future sources of financing under our credit facilities or otherwise may not be available to it in an amount sufficient to enable us to pay our indebtedness, including the Notes, or to fund our other liquidity needs. In addition, our cash flow from operating activities plays a significant role in funding our capital expenditures. We may need to refinance or restructure all or a portion of our indebtedness, including the Notes, at or before final maturity. We may not be able to refinance any of our indebtedness on commercially reasonable terms, or at all. If we are unable to generate cash flow and cannot service our indebtedness, we may have to take actions such as selling assets, seeking additional equity or reducing or delaying capital expenditures and investments. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to effect such actions, if necessary, on commercially reasonable terms, or at all, which could result in a default in our debt obligations.

In the three-month period ended March 31, 2021 and the years ended December 31, 2020 and 2019, cash provided by operating activities was R$723,130 thousand (or U.S.$126,925 thousand), R$1,617,546 thousand (or U.S.$283,914 thousand) and R$439,049 thousand (or U.S.$77,063 thousand), respectively.

We may be unable to repurchase the Notes upon a change of control that results in a deterioration of our credit rating.

Upon the occurrence of certain events constituting a change of control that results in a rating decline under the Indenture, we will be required to offer to repurchase all outstanding Notes at a change of control repurchase price equal to 101% of the principal amount of the Notes to be repurchased, plus accrued and

unpaid interest, if any. However, it is possible that we will not have sufficient funds at the time of the change of control that results in a rating decline event to make the required repurchase of the Notes. There can be no assurance that sufficient funds will be available at the time of any change of control to repurchase the Notes, in addition to payment or repurchase of any other indebtedness then due and payable. Moreover, using available cash to fund the potential consequences of a change of control may impair our ability to obtain additional financing in the future, which could have a negative impact on our business.

Our ability to repurchase the Notes pursuant to a change of control that results in a rating decline offer may be limited by a number of factors. The occurrence of the events constituting a change of control that results in a rating decline under the Indenture may constitute a default under the existing financing agreements and may result in an event of default in respect of our and our subsidiaries' other current or future indebtedness and, consequently, the lenders thereof may have the right to require repayment of such indebtedness in full. The source of funds for any purchase of the Notes would be our available cash or cash generated from our subsidiaries' operations or other sources, including borrowings, sales of assets or sales of equity. Moreover, the exercise by holders of Notes of their right to require us to repurchase the Notes upon a change of control could cause a default under these other agreements, even if the change of control itself does not, due to the financial effect of such repurchases on us. Our failure to repurchase the Notes would be an event of default under the Indenture. In the event a change of control offer is required to be made at a time when we are prohibited from purchasing the Notes, we could attempt to refinance the borrowings that contain such prohibitions. If we do not obtain a consent or repay those borrowings, we will remain prohibited from purchasing the Notes. In that case, our failure to purchase tendered Notes would constitute an event of default under the Indenture which could, in turn, constitute a default under our other indebtedness. Finally, our ability to pay cash to the holders of the Notes upon a repurchase may be limited by our then existing financial resources. In order to avoid the obligations to repurchase the Notes and events of default, we may have to avoid certain change of control transactions that would otherwise be beneficial to us. See "*Description of Notes—Repurchase of Notes upon a Change of Control that Results in a Rating Decline*."

Holders of the Notes may not be able to determine when a change of control giving rise to their right to have the Notes repurchased has occurred following a sale of "substantially all" of our assets.

One of the circumstances under which a change of control may occur is upon the sale or disposition of "all or substantially all" of our assets. There is no precise established definition of the phrase "substantially all" under applicable law and the interpretation of that phrase will likely depend upon particular facts and circumstances. Accordingly, the ability of a holder of the Notes to require us to repurchase its Notes as a result of a sale of less than all our assets to another person that results in a deterioration of our credit rating may be uncertain.

The Indenture governing the Notes will restrict our financial and operating flexibility.

The Indenture includes or will include a number of covenants that restrict our ability, and that of our subsidiaries, to engage in certain transactions and may limit our ability to respond to changing business and economic conditions or engage in acts that may be in our long-term best interest. These covenants will limit, among other things, our ability to:

- incur or guarantee additional indebtedness;
- pay dividends or distributions on capital stock or repurchase or redeem stock;
- prepay, redeem or repurchase certain indebtedness;
- sell or transfer assets;
- create liens on assets;
- make loans and investments;
- merge or consolidate with another company; and
- engage in a different business activity.

These covenants could limit our ability to plan for or react to market conditions or to meet our operational or capital needs. Our ability to comply with these covenants may be affected by general economic conditions, political decisions, regulations, industry conditions and other events beyond our control. As a result, we cannot assure holders of the Notes that we will be able to comply with the covenants in the Indenture.

In addition, the failure of PetroRio, the Issuer and our subsidiaries, as the case may be, to comply with these covenants, including failure as a result of events beyond of our control, could result in a default under our debt agreements, which could permit the holders to accelerate our obligation to repay the debt and may be cross-defaulted to other debt, including the Notes. Our assets or cash flow may not be sufficient to fully repay borrowings under our outstanding debt agreements if accelerated upon an event of default, and there is no guarantee that we would able to repay, refinance or restructure the payments on those debt agreements.

We cannot assure you that an active trading market for the Notes will develop.

The Notes constitute a new issue of securities and prior to this offering, there has been no trading market for the Notes. Although we intend to apply to list the Notes on the Singapore Stock Exchange, we cannot provide you with any assurances regarding the future development of a market for the Notes, the ability of holders of the Notes to sell their Notes, or the price at which such holders may be able to sell their Notes. We have been informed by the Initial Purchasers that they intend to make a market in the Notes after the offering is completed. However, the Initial Purchasers are not obligated to do so and if they do make a market they may cease their market-making at any time without notice. In addition, the liquidity of the trading market in the Notes, and the market price quoted for the Notes, may be adversely affected by changes in the overall market for this type of security and by changes in our financial performance or prospects or in the prospects for companies in our industry generally. As a result, we cannot assure you that an active trading market will develop for the Notes. If an active trading market does not develop or it not maintained, the market price and liquidity of the Notes may be adversely affected. In that case you may not be able to sell your Notes at a particular time or you may not be able to sell your Notes at a favorable price. If an active trading market were to develop, future trading prices of the Notes may be volatile and will depend on many factors, including among other things, the number of holders of Notes, prevailing interest rates, PetroRio's operating performance and financial condition, the interest of securities dealers in making a market for the Notes and the market for similar securities. Further even if an active trading market were to be maintained, there is no guarantee that it will continue. The market, if any, for the Notes may experience disruptions, and many such disruptions may adversely affect the liquidity in that market or the prices at which purchasers may sell their Notes.

Your ability to recover payments due on the Notes in the event of our bankruptcy or insolvency may be more limited than would be the case under U.S. bankruptcy laws.

The insolvency laws of Luxembourg and Brazil applicable to the Issuer and the Guarantors, particularly as they relate to the priority of creditors (secured or unsecured), the ability to obtain post-petition interest and the duration of insolvency proceedings, may be less favorable to your interests than the bankruptcy laws of the United States.

Under Brazilian Bankruptcy Law, the main Brazilian insolvency proceedings affecting creditors are (i) judicial reorganization (*recuperação judicial*), (ii) extrajudicial reorganization (*recuperação extra-judicial*) and (iii) bankruptcy liquidation (*falência*).

Among the various key provisions of Brazilian Bankruptcy Law relating to judicial reorganizations, the most significant are those providing more control over the reorganization process to the Creditor's Meeting. All existing claims prior to the filing of judicial reorganization proceeding are subject to the proceeding, even if their debts are not due at the date of filing (pursuant to article 49 of Brazilian Bankruptcy Law). Credits (a) secured by fiduciary assignment/lien (*cessão/aliencão fiduciária*); (b) arising from an advance of foreign exchange agreements (*adiantamento de contrato de câmbio*) ("ACC"); and (c) tax claims, are not subject to the judicial reorganization proceeding, in accordance with the current Brazilian Bankruptcy Law). The judicial reorganization request must be filed by the debtor (it is a voluntary proceeding) along with an analysis of the debtor's financial and economic condition and the feasibility of its business. After the judicial reorganization

proceeding is accepted by the court, the debtor must present a judicial reorganization plan to creditors within 60 days (according to article 53 of Brazilian Bankruptcy Law).

Under Brazilian Bankruptcy Law, the acceptance by the court of the judicial reorganization proceeding suspends the course of all lawsuits and filings against the debtor to claims subject to the judicial reorganization during the Stay Period. During such term, foreclosure of collateral may be subject to certain restrictions. For instance, (a) article 49, §3 restricts the foreclosure of assets that are deemed to be essential to carry out the debtor's activities and (b) article 49, §5 establishes that any credit rights and receivables pledged on behalf of creditors shall be deposited into a judicial account, while the collateral is not renewed nor replaced, and shall not be withdrawn during the Stay Period.

The judicial reorganization plan for judicial reorganization proceedings must be approved by the following classes of creditors during a creditors' meeting: (i) labor creditors (depends on majority by headcount of creditors present at the meeting); (ii) secured creditors (depends on majority by headcount and by amount of creditors present at the meeting); (iii) unsecured creditors (depends on majority by headcount and by amount of creditors present at the meeting); (iv) microenterprises, small-sized companies creditors (depends on majority by headcount of creditors present at the meeting). However, the plan may be approved in a "cramdown" proceeding (pursuant to article 58, §1 of Brazilian Bankruptcy Law) even though it was rejected by one class of creditors if it: (i) was approved by the vote of creditors that represent more than 50% of the total claims present in the creditors' meeting, regardless of the class of creditors; (ii) was approved by three classes of creditors, or, in case there are only three classes of voting creditors, two classes of creditors, or, in case there are only two classes of voting creditors, one class of creditors; and (iii) received a favorable vote of more than one-third of the creditors in the class in which it was rejected. The cramdown will only be possible if the plan does not provide differentiated treatment for creditors that belong to the class that has rejected the plan in the general creditors meeting. After its approval by the general creditors' meeting, the court shall confirm the judicial reorganization plan. Also, if the judicial reorganization plan is not approved during the creditors' meeting and the cramdown requirements is not achieved, according to recent amendments to the Brazilian Bankruptcy Law, the creditors are entitled to present an "alternative" judicial reorganization plan, within 30 days after the date of the general creditors' meeting that rejected the judicial reorganization plan.

The approval of a judicial reorganization plan novates all obligations subject to the proceeding and it is mandatory for the debtor and all creditors subject to it. The parties are free to negotiate how the judicial reorganization is implemented, including, for instance, the reduction of liability and priority of repayment provided that, as a general rule, debtors have to treat creditors in the same class in an equitable fashion, as the Brazilian Bankruptcy Law is grounded on the *par conditio creditorum* principle. Debtors may carry out corporate actions to facilitate recovery. Examples include spin-offs, mergers, transfers or leases, conclusion of collective labor agreements, sale of assets, issue of debentures, replacement of guarantees, conversion of outstanding debt to equity and other analogous measures (according to article 50 of Brazilian Bankruptcy Law). In addition, under the Brazilian Bankruptcy Law, the acquirer of assets of the debtor will not be held liable for any liabilities (including tax and labor liabilities) of the debtor selling the assets. This rule is applicable in a case of (i) the sale of branches or isolated production units under the judicial reorganization plan; or (ii) the sale of any permanent assets under court authorization, providing that the debtor carries out the sale under a bidding process to obtain the best acquisition proposal (according to articles 60, sole paragraph, and 66 of Brazilian Bankruptcy Law).

The extrajudicial reorganization may affect participating or non-participating creditors if the claims of the non-participating creditors are dealt within the extrajudicial reorganization plan and the reorganization plan is duly signed by creditors representing more than half of each class of claims treated therein or the group of creditors of the same nature and similar payment conditions (pursuant to article 163 and its 1st paragraph of the Brazilian Bankruptcy Law). Claims arising from tax matters cannot be restructured through extrajudicial reorganization plans. Once approved by the majority and brought before court for confirmation, the plan will apply to all creditors who adhered to it and will be binding on all creditors included within its scope, whether or not such creditors executed the extrajudicial reorganization plan.

Bankruptcy liquidation (*falência*) is a procedure carried out in the collective interest of the creditors of a certain debtor and culminates with a court liquidation (*falência*), in which the main purpose is to wind up and sell the assets of the debtor in order to satisfy the credits held by each creditor.

In the event of bankruptcy liquidation of PetroRio, all of its debt obligations denominated in foreign currency will be converted into Brazilian reais at the prevailing exchange rate on the date of declaration of the bankruptcy liquidation by the court. In addition, companies in Brazil may only remit funds out of Brazil and/or convert such funds into hard currency in strict compliance with foreign exchange rules, and there can be no assurance that such companies would have the ability to convert Brazilian real into dollars or euro, nor that such companies would be able to remit such funds out of Brazil.

In addition, if the value of PetroRio's assets is insufficient to pay its creditors, no interest accrues on claims. Furthermore, except in case of assets granted in fiduciary lien/assignment (in which the relevant creditor will have the right to file a restitution claim), the product arising out from the sale of assets granted in pledge and mortgage will not be used to pay the relevant credit, and will be distributed pursuant to the payment order established by the Brazilian Bankruptcy Law.

Moreover, if PetroRio is declared bankrupt, its obligations under the Notes will be subordinated to the statutory preferences established by the Brazilian Bankruptcy Law. Pursuant to Brazilian Bankruptcy Law, in case of bankruptcy, payments of any amounts due by the debtor shall follow the following priority ranking, according to article 83 of the Brazilian Bankruptcy Law:

(i) Labor claims up to 150 (one hundred and fifty) Brazilian minimum wages per creditor (the remaining amount will be listed as unsecured credit) plus claims for damages arising from labor-related accidents;

(ii) Secured credits up to the limit of the value of the collateral (the remaining amount will be listed as unsecured credit);

(iii) Tax claim arising prior to liquidation, except for tax fines);

(iv) Unsecured credits;

(v) Contractual fines and pecuniary penalties from criminal or administrative laws, including tax fines);

(vi) Subordinated credits as (i) the ones provided for by law or in contract and (ii) the credits held by shareholders and managers; and

(vii) Interest accrued from liquidation decree.

The foregoing priority ranking is established by law and may not be modified by court.

There are certain credits that are senior to or excluded from the priority order above, such as:

(i) costs of the proceedings;

(ii) labor claims due on the three months before the bankruptcy liquidation declaration by the court;

(iii) amounts provided by creditors, investors or third parties to the debtor during the judicial reorganization proceeding (DIP Financing);

(iv) cash restitution related to the fiduciary assignment/lien (*cessão*/*alienação fiduciária*), as described above;

(v) judicial administrator's fees;

(vi) obligations resulting from valid legal acts performed during the judicial reorganization, or after the decree of liquidation;

(vii) sums provided to the estate by the creditors;

(viii) expenses with collection, management, asset realization and distribution of the proceeds, as well as court costs of the bankruptcy liquidation proceeding;

(ix) court costs with respect to lawsuits and enforcement proceedings in which the estate is defeated; and

(x) taxes relating to generating facts occurring after the decree of the liquidation, with due regard for the order established in Article 83 of the Brazilian Bankruptcy Law and will be paid with preference before the creditors listed above.

Pursuant to Article 85 of the Brazilian Bankruptcy Law, creditors secured by fiduciary assignment/lien (*cessão*/*alienação fiduciária*) may claim for restitution of the asset over which the security has been constituted, and such restitution claim is also available to owners of assets in possession of the debtor, as well as to sellers of goods to the debtor, where the sale occurred within 15 days prior to the bankruptcy liquidation request and the assets have not been transferred to a third party; cash restitution is additionally available with respect to debts arising from an advance against foreign exchange contracts (ACC) pursuant to Article 86, II of the aforementioned law.

In addition, obligations assumed before any clearings systems pursuant to Article 193 of Brazilian Bankruptcy Law, amongst other specific cases established in Brazilian Bankruptcy Law, are not affected by the bankruptcy liquidation.

It is impossible to predict how long payments under the Notes could be delayed following commencement of judicial reorganization or bankruptcy liquidation proceeding, whether or when the Collateral Agents, acting on the instructions of the Trustee, could repossess or dispose of the collateral, the value of the Collateral at the time of the filing or commencement of liquidation proceeding, or whether or to what extent holders of the Notes would be compensated for any delay in payment or diminution in the value of the Collateral. The holders of the Notes may receive in exchange for their claims a recovery that could be substantially less than the amount of their claims (potentially even nothing) and any such recovery could be in the form of cash, new debt instruments or some other security. Furthermore, in the event the bankruptcy or other applicable court determines that the value of the Collateral is not sufficient to repay all amounts due on the Notes, the holders of the Notes would have an "undersecured claim," which means that they would have a secured claim to the extent of the value of the Collateral and an unsecured claim for the difference.

In addition, the bankruptcy, insolvency, administrative and other laws of Luxembourg, Brazil and the Bahamas may be materially different from, or in conflict with, each other, including in the areas of rights of creditors, priority of government entities and other third-party and related-party creditors, ability to obtain post-bankruptcy filing loans or to pay interest and the duration of proceedings. The laws of Luxembourg, Brazil and the Bahamas may not be as favorable to your interests as the laws of jurisdictions with which you are familiar. The application of these laws, or any conflict among them, could call into question what and how such laws should apply. Such issues may adversely affect your ability to foreclose on, or enforce your rights against the Issuer in respect of, its obligations under the Indenture in Luxembourg, Brazil and the Bahamas.

Our obligations with respect to the Notes will be structurally subordinated to all liabilities of our subsidiaries that do not guarantee the Notes, including liens granted to secure other indebtedness.

As of March 31, 2021, PetroRio had no debt on an individual basis, and our subsidiaries had R$1,393,863 thousand (or U.S.$244,653 thousand) of secured debt and R$769,912 thousand (or U.S.$135,136 thousand) of unsecured debt. As of March 31, 2021, the Issuer had R$578,653 thousand (or U.S.$101,566 thousand) of debt, PetroRio Luxembourg Holding had R$815,210 thousand (or U.S.$143,087 thousand) of debt, PetroRio Jaguar had R$631,196 (or U.S.$110,789 thousand) of debt, PetroRio White Shark had no debt and PetroRio O&G had R$145,554 thousand (or U.S.$25,548 thousand) of debt. These amounts do not include funding costs. All of this indebtedness would be structurally senior to the Notes. For more information, see "*Capitalization*" below.

Our non-guarantor subsidiaries are separate and distinct legal entities and have no obligation, contingent or otherwise, to pay any amounts due pursuant to the Notes, or to make any funds available therefore, whether by dividends, loans, distributions or other payments. Any right that we have to receive any assets of any of such subsidiaries upon the liquidation or reorganization of such subsidiaries, and the consequent rights of holders of Notes to realize proceeds from the same of any of those subsidiaries' assets, will be effectively

subordinated to the claims of that subsidiary's creditors, including trade creditors and holders of debt of that subsidiary.

Certain restrictive covenants in the instruments governing our indebtedness will not apply during any time that the securities issued thereunder achieve investment grade ratings.

Most of the restrictive covenants in the Indenture will not apply during any time that the Notes achieve investment grade ratings and no default or event of default has occurred. If these restrictive covenants cease to apply, we may take actions, such as incurring additional debt or making certain dividends or distributions, which would otherwise be prohibited under the Indenture. Ratings are given by rating agencies based upon analyses that include many subjective factors. The investment grade ratings, if granted, may not reflect all of the factors that would be important to holders of the Notes.

The credit ratings on the Notes may be lowered, suspended or withdrawn for any reason.

Credit rating agencies continually review their ratings for the companies that they follow, including us, and the credit ratings of the Notes may change after issuance. The credit rating agencies also evaluate the industries in which we operate as a whole and may change their rating for us based on their overall view of such industries. The credit ratings of the Notes may be lowered, suspended or withdrawn by the rating agencies. We cannot assure you that such credit ratings will remain in effect for any given period of time or that such ratings will not be lowered, suspended or withdrawn entirely by the rating agencies, if, in the judgment of such rating agencies, circumstances so warrant. Any lowering, suspension or withdrawal of the ratings of the Notes may have an adverse effect on the market price and marketability of the Note or make it more difficult or more expensive for us to obtain additional debt financing. In addition, real or anticipated changes in our credit ratings, the sovereign credit rating of Brazil or the credit ratings of the Notes will generally affect the market value of the Notes. Thus, even though the Issuer is making interest payments when due, the price of the Notes in the secondary market that may develop may be considerably less than the price you paid for your Notes.

The ratings on the Notes are limited in scope and may not address all material risks related to an investment in the Notes, including the likelihood of payment of principal on any scheduled principal payment date. A rating is not a recommendation to purchase, hold or sell the Notes, and a rating does not comment as to the marketability of the Notes, any market price or suitability for a particular investor.

We have not registered the Notes or qualified them pursuant to a prospectus and the Notes will be subject to transfer restrictions which could limit your ability to resell them.

The Notes have not been, and will not be, registered under the Securities Act or any state securities laws. Unless the Notes have been registered, the Notes may not be transferred or resold except in a transaction exempt from or not subject to the registration requirements of the Securities Act and applicable state securities laws. PetroRio does not intend to file a registration statement for the resale of the Notes. The Notes will, at all times, bear a restrictive legend, unless the Notes have been sold pursuant to an effective registration statement, or sold pursuant to the exemption from registration provided by Rule 144 under the Securities Act or any similar provision then in force under the Securities Act. The Notes may not be offered, transferred or sold except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act, and applicable state securities laws. Prospective investors should be aware that investors may be required to bear the financial risks of this investment for an indefinite period of time. See "*Transfer Restrictions*" for a full explanation of such restrictions.

The ability of the Guarantors to guarantee the Notes may be restricted by local law, which may limit your potential recovery.

It is possible that creditors or liquidators of the guarantors may challenge, in an insolvency proceeding, the guarantees as a fraudulent transfer or conveyance. If such a challenge were to be successful, a court could avoid or invalidate a portion or all of the obligations of any future guarantors, direct that holders of the Notes return any amounts paid under the future guarantee and take other action that may be detrimental to you. The

measures of insolvency for purposes of this fraudulent transfer in the relevant jurisdictions of any future guarantors may differ in a less favorable manner from those measures applicable under U.S. law, and there can be no assurance as to how the insolvency laws of the various jurisdictions in which we operate will be applied in relation to one another. If we cannot satisfy our obligations under the Notes and any future guarantee is found to be a fraudulent transfer or conveyance, we cannot assure you that you will ever be paid in full any amounts outstanding under the Notes. In addition, the liability of any future guarantors will be limited to the amount that will result in its guarantee not constituting a fraudulent conveyance or improper corporate distribution, and there can be no assurance as to what standard a court would apply in making a determination of the maximum liability of the Guarantors. Should any of the foregoing events occur, we cannot assure you that any future guarantors would have sufficient assets to pay amounts due under a guarantee.

It may be difficult for you to enforce judgments against us or against our directors and executive officers in Luxembourg.

The Issuer is incorporated as a *Société à responsibilité limitée* under the laws of Luxembourg, substantially all of its assets are located in Luxembourg, and substantially all of the Group's assets are located in Brazil. In addition, most of our directors and executive officers reside outside the United States and all or a substantial portion of the assets of such persons are located outside the United States. As a result, it may be difficult or impossible to effect service of process within the United States upon us, or to recover against us on judgments of U.S. courts, including judgments predicated upon the civil liability provisions of the U.S. federal securities laws. Further, no claim may be brought in Luxembourg against us or our directors and officers in the first instance for violation of U.S. federal securities laws because these laws do not have force of law in Luxembourg. However, a Luxembourg court may impose civil liability, including the possibility of monetary damages, on us or our directors and officers if the facts alleged in a complaint constitute or give rise to a cause of action under Luxembourg law.

There is no treaty in force between the United States and Luxembourg providing for the reciprocal recognition and enforcement of judgments in civil and commercial matters. As a result, whether a United States judgment would be enforceable in Luxembourg against us or our directors and officers depends on whether the U.S. court that entered the judgment is recognized by the court in Luxembourg as having jurisdiction over us or our directors and officers, as determined by reference to Luxembourg conflict of law rules. A judgment debt from a U.S. court that is final and for a sum certain based on U.S. federal securities laws will not be enforceable in Luxembourg unless the judgment debtor had submitted to the jurisdiction of the U.S. court, and the issue of submission and jurisdiction is a matter of Luxembourg (not U.S.) law.

In addition, and irrespective of jurisdictional issues, the Luxembourg courts will not enforce a U.S. federal securities law that is either penal or contrary to Luxembourg public policy. An action brought pursuant to a public or penal law, the purpose of which is the enforcement of a sanction, power or right at the instance of the state in its sovereign capacity, will not be entertained by a Luxembourg court. Certain remedies available under the laws of U.S. jurisdictions, including certain remedies under U.S. federal securities laws, would not be available under Luxembourg law or enforceable in a Luxembourg court, as they would be contrary to Luxembourg public policy.

It may be difficult for you to enforce judgments against us or against our directors and executive officers in Brazil.

Pursuant to Brazilian Law, judgments of non-Brazilian courts for the payment of money, including for civil liabilities predicated upon the laws of countries other than Brazil, including the U.S. securities laws, subject to certain requirements described below, may be enforced in Brazil. A judgment against either us or any other person described above obtained outside Brazil would be enforceable in Brazil against us or any such person without reconsideration of the merits, upon confirmation of that judgment by the Brazilian Superior Court of Justice (*Superior Tribunal de Justiça*), or STJ. That confirmation, generally, will occur if the foreign judgment: (i) fulfills all formalities required for its enforceability under the laws of the jurisdiction where the foreign judgment is granted; (ii) is issued by a competent jurisdiction court after proper service of process is made on the parties, which service must comply with Brazilian law if made in Brazil or after sufficient evidence of the parties' absence has been given, as established pursuant to applicable law; (iii) is

final and therefore not subject to any appeal; (iv) is for a fixed sum; (v) is authenticated by a Brazilian consular office with jurisdiction over the location of the court that issued the foreign judgment and is accompanied by a sworn translation into Portuguese; and (vi) is not contrary to Brazilian national sovereignty, public policy, good morals or public morality (as set forth in Brazilian law).

This confirmation process may be time-consuming and may also give rise to difficulties in enforcing the foreign judgment in Brazil. Accordingly, we cannot assure you that confirmation would be obtained, that the confirmation process would be conducted in a timely manner or that a Brazilian court would enforce a monetary judgment for violation of the laws of countries other than Brazil, including the U.S. securities laws.

Additionally, (i) civil lawsuits may be brought before Brazilian courts in connection with this Offering Memorandum based solely on the federal securities laws of the United States and that, subject to applicable law, Brazilian courts may enforce such liabilities in such lawsuits against us (provided that provisions of the federal securities laws of the United States do not contravene Brazilian public policy, good morals or national sovereignty), and provided further that, under Brazilian law, Brazilian courts may assert jurisdiction whenever the defendant is domiciled in Brazil, the obligation has to be performed in Brazil or the subject matter under dispute originates in Brazil, considering that Brazilian courts may exercise jurisdiction over such matters or disputes pursuant to article 88 of the Brazilian Civil Procedure Code; and (ii) the ability of a judgment creditor or the other persons named above to satisfy a judgment by attaching certain assets of tours is limited by provisions of Brazilian bankruptcy, insolvency, liquidation, reorganization or similar laws, given that assets are located in Brazil.

A plaintiff (whether Brazilian or non-Brazilian) who resides outside Brazil or is abroad during the course of litigation in Brazil must provide a bond to guarantee the payment of court expenses and defendant's legal fees, if the plaintiff owns no real property in Brazil, that may ensure such payment, except in case of collection claims based on an instrument (which do not include the Notes issued hereunder), that may be enforced in Brazilian courts without the previous review of its merits (*título executivo extrajudicial*) or counterclaims, as established under article 836 of the Brazilian Code of Civil Procedure (Law No. 5,869/1,973). The Notes must have a value sufficient to satisfy the payment of court fees and defendant's attorneys' fees, as determined by the Brazilian judge.

Furthermore, if proceedings were brought in Brazil seeking to enforce our obligations in respect of the Collateral relating to the Notes, we would be required to discharge our obligations only in *reais*. Under Brazilian exchange controls, an obligation to pay amounts denominated in a currency other than *reais*, which is payable in Brazil pursuant to a decision of a Brazilian court, will be satisfied in reais at the rate of exchange in effect on the date of payment, as determined by the Central Bank of Brazil. In addition, companies in Brazil may only remit funds out of Brazil and/or convert such funds into hard currency in strict compliance with foreign exchange rules, and there can be no assurance that such companies would have the ability to convert Brazilian *real* into dollars or euro, nor that such companies would be able to remit such funds out of Brazil.

Enforcement of a foreign judgment in Brazil will likely be required for the holders of the Notes to enforce rights in the Collateral under the Collateral Agreements.

If a default occurs under the Notes and the Notes Guaranties, the Brazilian Collateral Agent, for the benefit of the holders of the Notes, if and as instructed by the Trustee, may initiate a legal proceeding in a Brazilian court against us authorizing the seizure of the Share Collateral based on the Share Collateral agreements. If there is a dispute as to whether a default has occurred under the Indenture according to the laws of the State of New York, it is likely that the Brazilian court will require evidence (such as a legal opinion) that, from a New York law perspective, the default has occurred or a New York court ruling confirming that a default under the Notes or guarantees has occurred under the Indenture and given rise to the Brazilian Collateral Agent's right to enforce the rights of the holders of the Notes in the Share Collateral under the Share Collateral agreements. The New York court ruling will need to be confirmed in Brazil. In this case, it is necessary to file a formal recognition proceeding before the STJ to demonstrate that the legal requirements for the recognition (confirmation) of such foreign decision are met. The Brazilian party may file a defense and the prosecutor's office will provide an opinion on the case. After such points, the court will issue a decision on the merits of such recognition.

We cannot assure you that confirmation would be obtained, that the confirmation process would be conducted in a timely manner or that a Brazilian court would enforce the New York law judgment related to the default under the Notes and Collateral governed by Brazilian law.

You may not be able to influence our actions with respect to the Notes.

You may be unable to influence or otherwise control our actions with respect to the Notes, and, as a result, you may be unable to stop actions that are adverse to you. You may need the approval or consent of other persons to take or direct various actions relating to us. Further, the interests of such other persons may not coincide with your interests, making it more difficult (or impossible) for you to achieve your desired results in a situation requiring the consent or approval of other persons.

In addition, we and the Trustee may amend the Indenture without your consent in the circumstances described in this Offering Memorandum. Any of the foregoing could result in a delay or reduction in payments on the Notes.

USE OF PROCEEDS

We expect to receive total net proceeds of this offering of U.S.$591.0 million, after deducting the Initial Purchasers' fees but before deducting offering expenses, and we intend to use the net proceeds from this offering primarily to repay existing indebtedness on the Issue Date, as well for general corporate purposes.

The following table sets forth our financing arrangements that will be repaid. For further information on financing arrangements, please see "*Management's Discussion and Analysis of Financial Condition and Results of Operations— Loans and Financing—Short-term financings.*"

Lender	Outstanding Amount as of the date of this Offering Memorandum [(1)]
	(U.S.$ million)
Prisma Capital (PSS Oil and Gas LLC)	104.0
Credit Facilities[(2)]	270.0
General Corporate Purposes.	217.0
Total	**591.0**

(1) Outstanding amount corresponds to principal and interest.

(2) Includes the prepayment of short-term credit facilities, including credit facilities entered into with affiliates of certain of the initial purchasers. See "*Management's Discussion and Analysis of Financial Condition and Results of Operations—Loans and Financing—Short-term financings*" and "*Plan of Distribution—Other Relationships.*"

CAPITALIZATION

The following table sets forth the capitalization of PetroRio as of March 31, 2021, derived from our Unaudited and Consolidated Interim Financial Information, on an actual and as adjusted basis giving effect to the offering of the Notes and the application of the proceeds therefrom to repay our existing financing arrangements as described in "*Use of Proceeds*."

This table should be read in conjunction with, and is qualified in its entirety by reference to, "*Presentation of Financial and Other Information*," "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" and the Consolidated Financial Statements and the accompanying notes thereto included elsewhere in this Offering Memorandum.

After giving effect to the use of proceeds, actual amounts may vary from the estimated amounts as adjusted depending on several factors, including exchange rate fluctuations.

	As of March 31, 2021			
	Actual		As Adjusted	
	(U.S.$ thousands)[(1)]	*(R$ thousands)*	*(U.S.$ thousands)*[(1)]	*(R$ thousands)*
Short-term debt[(2)]				
Loans and financing	330,424	1,882,524	—	—
Long-term debt[(3)]				
Loans and financing	49,366	281,251	591,000	3,367,104
Total debt[(4)]	**379,790**	**2,163,775**	**591,000**	**3,367,104**
Total shareholders' equity	936,448	5,335,225	936,448	5,335,225
Total capitalization[(5)]	**1,316,238**	**7,499,000**	**1,527,448**	**8,702,329**

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

(2) Short-term debt are the current portion of loans and financing.

(3) Long-term debt are the non-current portion of loans and financing.

(4) Total debt represents the total indebtedness that will be repaid at closing. See "*Use of Proceeds*."

(5) Total capitalization includes total debt plus total shareholders' equity.

SELECTED HISTORICAL FINANCIAL INFORMATION

The following tables present PetroRio's selected historical financial data, prepared in accordance with IFRS, on a consolidated basis, as of and for the periods indicated below. The financial information as of and for the years ended December 31, 2020, 2019, and 2018 has been derived from and should be read in conjunction with the Audited Consolidated Financial Statements and the accompanying notes thereto included elsewhere in this offering memorandum. The financial information as of March 31, 2021 and for the three-month periods ended March 31, 2021 and 2020 has been derived from and should be read in conjunction with the Unaudited Individual and Consolidated Interim Financial Information and the accompanying notes thereto included elsewhere in this Offering Memorandum.

The Audited Consolidated Financial Statements have been prepared in accordance with IFRS and the Unaudited Individual and Consolidated Interim Financial Information have been prepared in accordance with IAS 34. The columns in U.S. dollars are free translations of the corresponding figures, converted directly from the original statements in Brazilian *reais* at an exchange rate of R$5.6973 to U.S.$1.00 as of March 31, 2021. See "*Presentation of Financial and Other Information.*"

The following selected historical financial data should also be read in conjunction with "*Management's Discussion and Analysis of Financial Condition and Results of Operations*."

Income Statement Data

	Three-month period ended March 31,			Year ended December 31,			
	2021	2021	2020	2020	2020	2019	2018
	(U.S.$ thousands) (unaudited) [1]	*(R$ thousands) (unaudited)* [1]		*(U.S.$ thousands) (unaudited)* [1]		*(R$ thousands) (audited)*	
Net revenue	**115,025**	**655,334**	**223,162**	**334,226**	**1,904,185**	**1,644,346**	**848,920**
Costs of products/services	(41,516)	(236,531)	(206,826)	(225,883)	(1,286,926)	(940,379)	(524,489)
Gross revenue	**73,509**	**418,803**	**16,336**	**108,342**	**617,259**	**703,967**	**324,431**
Operating revenues (expenses)							
Geology and geophysics expenses	(1,211)	(6,900)	(151)	(83)	(471)	(595)	(2,560)
Personnel expenses	(4,148)	(23,634)	(10,554)	(6,644)	(37,853)	(48,245)	(54,478)
General and administrative expenses	(590)	(3,364)	(9,495)	(7,633)	(43,487)	(25,147)	(19,305)
Expenses with outsourced services	(2,129)	(12,131)	(16,461)	(8,116)	(46,242)	(34,519)	(33,751)
Taxes and rates	(1,011)	(5,759)	(2,296)	(2,875)	(16,378)	(11,130)	(5,547)
Depreciation and amortization expenses	(5,264)	(29,992)	(41,571)	(33,966)	(193,516)	(126,080)	(2,330)
Other operating revenues (expenses), net	(3,554)	(20,250)	115,104	116,448	663,437	420,005	(19,845)
Operating income (loss) before financial income (loss)	**55,601**	**316,773**	**50,912**	**165,473**	**942,749**	**878,256**	**186,615**
Financial revenues	9,505	54,154	654,267	257,868	1,469,151	377,142	316,685
Financial expenses	(73,052)	(416,202)	(757,750)	(338,374)	(1,927,820)	(714,396)	(265,815)
Income (loss) before income tax and social contribution	**(7,947)**	**(45,275)**	**(52,571)**	**84,967**	**484,080**	**541,002**	**237,485**
Current income tax and social contribution	(13,967)	(79,573)	(12,142)	(13,540)	(77,140)	(55,658)	(42,969)

	Three-month period ended March 31,			Year ended December 31,			
	2021	2021	2020	2020	2020	2019	2018
	(U.S.$ thousands) (unaudited) [(1)]	*(R$ thousands) (unaudited)* [(1)]		*(U.S.$ thousands) (unaudited)* [(1)]		*(R$ thousands) (audited)*	
Deferred income tax and social contribution	10,366	59,056	3,252	8,069	45,973	357,002	11,780
Income (loss) for the period/year	**(11,548)**	**(65,792)**	**(61,461)**	**79,496**	**452,913**	**842,346**	**206,296**

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

Balance Sheet Data

	As of March 31,		As of December 31,			
	2021	2021	2020	2020	2019	2018
	(U.S.$ thousands) [(1)] *(unaudited)*	*(R$ thousands) (unaudited)*	*(U.S.$ thousands) (unaudited)* [(1)]		*(R$ thousands) (audited)*	
Assets						
Current assets						
Cash and cash equivalents	559,042	3,185,031	142,045	809,273	459,396	186,993
Securities	13,659	77,820	4,001	22,793	226,301	607,441
Restricted cash	19,443	110,770	8,775	49,996	52,223	11,628
Accounts receivable	3,961	22,568	67,780	386,165	374,598	34,932
Oil inventories	65,977	375,890	32,675	186,160	120,101	56,214
Inventory of consumables	3,491	19,891	1,493	8,506	5,373	2,084
Financial instruments	1,930	10,994	2,620	14,926	9,354	—
Recoverable taxes	18,455	105,144	22,821	124,321	116,773	67,011
Advances to suppliers	10,996	62,647	10,223	58,245	52,171	37,949
Advances to partners	4,941	28,153	15,270	86,997	86,278	2,922
Prepaid expenses	4,078	23,233	4,492	25,594	10,333	1,659
Other receivables	108	613	—	—	189	202
	706,081	**4,022,754**	**311,196**	**1,772,976**	**1,513,090**	**1,009,035**
Non-current assets classified available for sale	13,082	74,533	12,013	68,439	—	26,581
	719,163	**4,097,287**	**323,208**	**1,841,415**	**1,513,090**	**1,035,616**
Non-current assets						
Advances to suppliers	2,211	12,596	2,211	12,596	12,596	12,596
Deposits and pledges	2,675	15,243	3,566	20,317	27,249	19,621
Recoverable taxes	5,652	32,203	5,766	32,848	32,384	25,711
Deferred taxes	45,460	258,998	35,094	199,942	160,313	11,340
Right-of-use (Lease CPC 06.R2 IFRS 16)	72,584	413,532	64,914	369,836	452,067	—
Property, plant and equipment	594,012	3,384,265	589,580	3,359,013	2,602,523	270,347

	As of March 31,		As of December 31,			
	2021	2021	2020	2020	2019	2018
	(U.S.$ thousands)[1] (unaudited)	*(R$ thousands) (unaudited)*	*(U.S.$ thousands) (unaudited)[1]*		*(R$ thousands) (audited)*	
Intangible assets	197,923	1,127,624	167,951	956,866	689,529	140,949
	920,517	**5,244,461**	**869,082**	**4,951,418**	**3,909,119**	**480,564**
Total assets	**1,639,680**	**9,341,748**	**1,192,290**	**6,792,833**	**5,489,751**	**1,516,180**
Liabilities and shareholders' equity						
Current liabilities						
Suppliers	20,979	119,524	41,579	236,889	87,232	73,258
Labor obligations	7,214	41,101	9,629	54,857	39,359	14,923
Taxes and social contributions	21,168	120,602	15,400	87,741	83,441	37,010
Loans and financing	330,424	1,882,524	266,787	1,519,966	1,224,306	222,437
Debentures	—	—	—	—	—	306
Advances from partners	—	—	—	—	40	6,792
Contractual Charges (Lease IFRS 16)	33,322	189,846	44,345	252,645	223,049	—
Other liabilities	—	—	—	—	12,356	16,260
	413,108	**2,353,597**	**377,740**	**2,152,098**	**1,669,783**	**370,986**
Liabilities directly linked to non-current assets classified as held for sale	81	462	(465)	(2,649)	—	—
	413,189	**2,354,059**	**377,275**	**2,149,449**	**1,669,783**	**370,986**
Non-current liabilities						
Suppliers	2,360	13,448	2,394	13,640	13,233	13,413
Loans and financing	49,366	281,251	68,410	389,753	421,270	25,718
Debentures	149,783	853,359	—	—	—	69,366
Provision for abandonment of facilities (ARO)	16,024	91,295	112,071	638,504	763,633	36,438
Provision for contingencies	—	—	13,306	75,809	65,613	17,441
Contractual Charges (Lease IFRS 16)	72,341	412,151	65,549	373,455	389,433	—
Other liabilities	169	960	169	960	1,685	644
	290,043	**1,652,464**	**261,890**	**1,492,121**	**1,654,867**	**163,020**
Shareholders' equity						
Realized Capital	931,278	5,305,772	583,943	3,326,900	3,316,411	3,273,114
Capital reserves	56,427	321,483	56,405	321,359	228,027	67,094
Accumulated translation adjustment	149,444	851,426	101,771	579,820	150,335	94,057
Equity valuation adjustments	—	—	—	—	—	(79,314)
Accumulated losses	(189,153)	(1,077,664)	(268,624)	(1,530,431)	(2,372,777)	(2,579,073)
Income (loss) for the year/period	(11,548)	(65,792)	79,470	452,766	842,346	206,296
Non-controlling interest	—	—	149	849	759	—
	936,448	**5,335,225**	**553,115**	**3,151,263**	**2,165,101**	**982,174**

	As of March 31,		As of December 31,			
	2021	2021	2020	2020	2019	2018
	(U.S.$ thousands)[1] (unaudited)	*(R$ thousands) (unaudited)*	*(U.S.$ thousands) (unaudited)[1]*		*(R$ thousands) (audited)*	
Total liabilities and shareholders' equity	**1,639,680**	**9,341,748**	**1,192,290**	**6,792,833**	**5,489,751**	**1,516,180**

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

Other Financial and Operating Data

The following table sets forth certain key financial information as of and for the periods indicated.

	Three-month period ended March 31,			Year ended December 31,			
	2021	2021	2020	2020	2020	2019	2018
	(U.S.$ thousands, except %)[1] (unaudited)	*(R$ thousands, except %) (unaudited)*		*(U.S.$ thousands)[1] (unaudited)*		*(R$ thousands) (audited)*	
Net revenue	115,025	655,334	223,162	334,226	1,904,185	1,644,346	848,920
Income (loss) for the period/year	(11,548)	(65,792)	(61,461)	79,496	452,913	842,346	206,296
EBITDA[2]	78,761	448,723	182,567	313,578	1,786,549	1,387,214	259,077
Adjusted EBITDA[3]	262,529	1,495,705	981,742	153,878	876,689	803,533	278,922
EBITDA margin[4]	68.5%	68.5%	81.8%	93.8%	93.8%	84.4%	30.5%
Adjusted EBITDA margin[5]	65.3%	65.3%	14.7%	46.0%	46.0%	48.9%	32.9%
Net debt (cash)[6]	(212,354)	(1,209,846)	1,836,871	180,376	1,027,657	907,656	(488,235)
Net debt (cash)/adjusted EBITDA	(0.8)x	(0.8)x	1.9x	1.2x	1.2x	1.1x	(1.7)x

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

(2) EBITDA, adjusted EBITDA, EBITDA margin and adjusted EBITDA margin are non-IFRS financial measures. We define EBITDA as income (loss) for the period before depreciation and amortization expenses, financial revenues and expenses, and current and deferred income tax and social contribution. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*."

(3) We define adjusted EBITDA as EBITDA less other operating revenues (expenses), depreciation expense – FPSO Bravo, and the effects of the adoption of IFRS 16. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*." For the three-month periods ended March 31, 2021 and 2020, Adjusted EBITDA is computed on a last-twelve-month basis.

(4) We define EBITDA margin as EBITDA divided by net revenue. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*."

(5) We define adjusted EBITDA margin as adjusted EBITDA divided by net revenue. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*."

(6) We define net debt (cash) as the sum of current and non-current loans and financing and debentures (gross debt), less cash and cash equivalents, securities and restricted cash. See "*Presentation of Financial and Other Information—Non-IFRS Financial Measures*."

The following table sets forth certain key operating data as of and for the periods indicated.

	Three-month period ended March 31, 2021	Year ended December 31,		
		2020	2019	2018
Production (Mboepd)	32.7[1]	31.8	22.5[2]	11.9[3]
Frade Field	16.1	13.8	11.7	—
Polvo Field	8.3	9.4	8.5	8.8
Tubarão Martelo Field	6.2	7.1	—[5]	—[5]
Manati Field	2.1	1.5	2.3	3.1
Lifting cost (U.S.$ per barrel)	14.3	14.5	22.9	32.6
Reserve replacement ratio	3,914%	460%	581%	89%
Remaining 2P reserve life (years)[6]	25	25	—	9
Frade Field	22	20	—	—
Polvo Field	25	25	—	9
Tubarão Martelo Field	25	25	—	—
Manati Field[7]	5	7	—	6

(1) This production figure reflects production at the Polvo Field, the Frade Field (attributable to our 100% working interest) and the Manati Field (attributable to our 10% working interest) in the year ended December 31, 2020. As such, this production figure gives effect to the Frade Field Petrobras Acquisition since February 5, 2021, the date that the Frade Field Petrobras Acquisition closed. See "*Oil and Gas Reserves and Production Information—Production Information.*"

(2) This production figure reflects production at the Polvo Field, the Frade Field (attributable to our 100% working interest) and the Manati Field (attributable to our 10% working interest) for the period indicated. See "*Oil and Gas Reserves and Production Information—Production Information.*"

(3) This production figure reflects production at the Polvo Field and the Manati Field (attributable to our 10% working interest) for the period indicated. See "*Oil and Gas Reserves and Production Information—Production Information.*"

(4) This production figure reflects production at the Tubarão Martelo Field for the period attributable to the 80% working interest that we acquired following completion of the Tubarão Martelo Field Acquisition on August 3, 2020.

(5) We announced the Tubarão Martelo Field Acquisition in February 2020, therefore we have not included production information for the Tubarão Martelo Field in respect of periods prior to the year ended December 31, 2020.

(6) Remaining 2P reserve life is derived from the 2021 D&M Reserves Report and presents reserves data as of January 1, 2021.

(7) We are in the process of selling our working interest in the Manati Field pursuant to the Manati Field Sale. See "*Business—Properties in Production and Development—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

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

The following discussion contains forward-looking statements that involve risks and uncertainties. Our actual results may differ materially from those discussed in the forward-looking statements as a result of various factors, including, without limitation, those set forth in "Forward-looking Statements," "Risk Factors" and the other matters set forth in this offering memorandum. The following discussion is intended to facilitate an understanding and assessment of significant changes and trends in our consolidated results of operations and financial condition and factors affecting our financial resources. It should be read in conjunction with the Audited Consolidated Financial Statements and the related notes thereto which appear elsewhere in this offering memorandum.

Overview

According to the ANP's monthly production bulletin issued in May 2021, relating to production for March 31, 2021, we have established ourselves as one of the main oil and gas companies operating currently in Brazil and the leading company among the independent oil and gas companies in Brazil based on production volume of oil and gas products, with a focus on operating and developing producing assets and a core portfolio consisting of four operating fields, three located in the Campos Basin and one located in the Camamu-Almada Basin in offshore Brazil.

Our strategy is centered around the acquisition and development of producing hydrocarbon fields, since our acquisition of a controlling working interest in the Polvo Field in 2014. By reducing operating costs, investing in targeted redevelopment initiatives and implementing enhanced oil recovery ("EOR") techniques, we have been able to increase our assets' reserves and production, as well as extend their economic life, while at the same time maintaining leading health, safety and environmental ("HSE") standards. At the Polvo Field, we were able to reduce lifting and other operational costs by 65% from R$1,250,000 thousand (or U.S.$240,000 thousand) in 2013 to R$434,408 thousand (or U.S.$85,855 thousand) in 2020 and extend its economic life by approximately 18 years to 2035 through extensive well interventions, drilling and maintenance work, and the expected synergies with the neighboring Tubarão Martelo Field.

Our strategy has been bolstered by Petrobras' strategy to divest its mature fields in Brazil in favor of pre-salt exploration areas, which has allowed us to make key acquisitions in recent years. Following our acquisition of the remainder of the working interest in the Polvo Field in 2015, we diversified our asset portfolio in 2016 and 2017 by acquiring non-operating interests in the Manati Field, a gas producing field. On November 5, 2020, we announced the sale of our 10% working interest in the Manati Field, held through our subsidiary Petro Rio Coral Exploração Petrolífera Ltda., to Gas Bridge. The Manati Field Sale is subject to the satisfaction of conditions precedent, including the Petrobras Condition Precedent. See "*Business—Properties in Production and Development —Manati Field —Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

In 2019, 2020 and 2021, we announced acquisitions of controlling working interests in the Frade Field, in which we have had a 100% working interest since February 5, 2021, and the Tubarão Martelo Field, in which we have an 80% interest. As of March 31, 2021, we hold a 100% working interest in the Frade Field and an 80% interest in the Tuburão Martelo Field, which are located near the Polvo Field in the Campos Basin and present immediate opportunities for operational synergy, including through shared logistics and potential tie-back developments.

On November 18, 2020, PetroRio Jaguar and BP Energy do Brasil Ltda. ("BP Brazil") entered into an agreement pursuant to which PetroRio Jaguar will acquire a 37.5% working interest in the BM-C-30 Block (the "Wahoo Field") and a 60% working interest in the BM-C-32 Block (the "Itaipu Field"), each owned by BP Brazil, subject to the satisfaction of conditions precedent, including regulatory approvals (the "Wahoo Itaipu BP Acquisition"). On March 4, 2021 we announced the signing of an agreement with Total Brasil for the acquisition of a 28.6% working interest in the Wahoo Field (the "Wahoo Total Acquisition" and together with the Wahoo-Itaipu BP Acquisition, the "Wahoo-Itaipu Acquisitions"). The Wahoo-Itaipu Acquisitions,

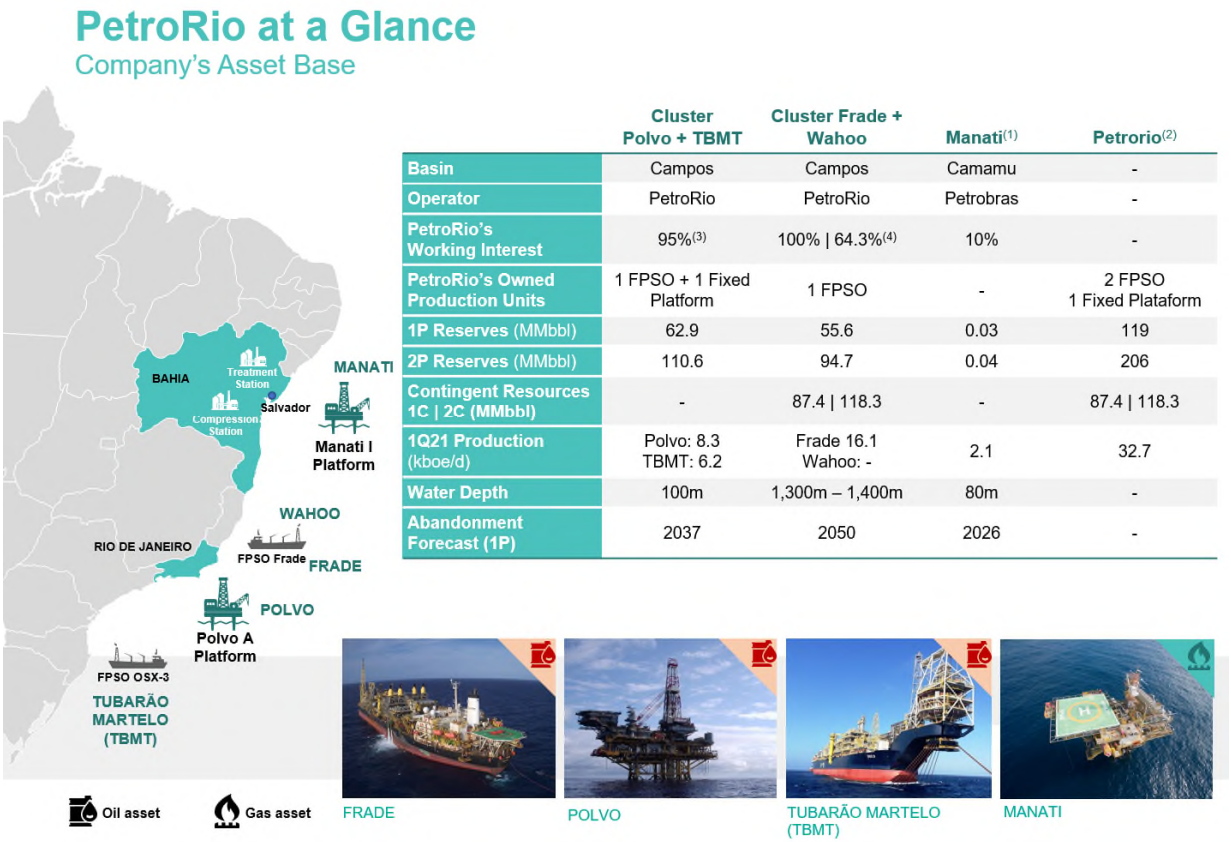
which remain subject to conditions precedent, will entitle us to a 64.3% working interest in the Wahoo Field. These transactions are consistent with our strategy of inorganic growth.

We are classified as an Operator A by the ANP, which allows us to operate offshore (including shallow, deep and ultra-deep waters) and onshore blocks in Brazil.

As described below, we have experienced significant growth during the last few years. According to our internal data, our production increased from 23.4 Mboepd in the three-month period ended March 31, 2020 to 31.3 Mboepd in the three-month period ended March 31, 2021. See "*Oil and Gas Reserves and Production Information.*"

Furthermore, our certified net proved and probable reserves increased from 192.6 MMboe as of April 30, 2020 to 209.3 MMboe as of January 1, 2021, and our certified 2C contingent resources totaled 141 MMboe as of January 1, 2021, according to the 2021 D&M Reserves Reports. See "*Oil and Gas Reserves and Production Information.*"

The following graph shows our current assets, assets being acquired or sold, and other main information.



	Cluster Polvo + TBMT	Cluster Frade + Wahoo	Manati[1]	Petrorio[2]
Basin	Campos	Campos	Camamu	-
Operator	PetroRio	PetroRio	Petrobras	-
PetroRio's Working Interest	95%[3]	100% | 64.3%[4]	10%	-
PetroRio's Owned Production Units	1 FPSO + 1 Fixed Platform	1 FPSO	-	2 FPSO 1 Fixed Plataform
1P Reserves (MMbbl)	62.9	55.6	0.03	119
2P Reserves (MMbbl)	110.6	94.7	0.04	206
Contingent Resources 1C | 2C (MMbbl)	-	87.4 | 118.3	-	87.4 | 118.3
1Q21 Production (kboe/d)	Polvo: 8.3 TBMT: 6.2	Frade 16.1 Wahoo: -	2.1	32.7
Water Depth	100m	1,300m – 1,400m	80m	-
Abandonment Forecast (1P)	2037	2050	2026	-

Source: D&M Reserves Reports for reserves data; and PetroRio management information for all other data.

(1) We are in the process of selling our working interest in the Manati Field pursuant to the Manati Field Sale. See "*Business—Properties in Production and Delevopment—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

(2) Production volume proportional to our participation in the following assets: 70% in the Frade Field through February 4, 2021 and 100% in the Frade Field since February 5, 2021; 100% in the Polvo Field; 80% in the Tubarão Martelo Field and 10% in the Manati Field.

(3) Pre-tieback: 100% of the Polvo Field and 80% of the Tubarão Martelo Field. Post-tieback: 95% of the Polvo Field and the Tubarão Martelo Field.

(4) As adjusted to give effect to the acquisition of an additional 28.6% working interest in Wahoo as announced in March 2021. The Wahoo-Itaipu Acquisitions are subject to the satisfaction of conditions precedent. See "*Business—Material Contracts—The Wahoo Field and Itaipu Field*."

Details on the Acquisition of Fields

The Frade Field Petrobras Acquisition

On November 28, 2019, we entered into a stock purchase agreement with Petrobras for the acquisition of Petrobras' (1) rights and obligations in connection with the exploration, development and production of oil and natural gas, corresponding to a 30% working interest in the Frade Field, which is located in the Campos Basin, north shore of the state of Rio de Janeiro, and (2) 30% of the share capital of Frade B.V., entity that holds the offshore assets used to develop the Frade Field. The Frade Field Petrobras Acquisition closed on February 5, 2021. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field.

This transaction was carried out by one of our subsidiaries, and we now hold 100% of the Frade Field and the totality of the field production. We plan to initiate the revitalization plan of the Frade Field. The Frade Field Petrobras Acquisition also grants us the totality of the benefits deriving from our initiatives to reduce costs and to increase the production since the effective date of its acquisition.

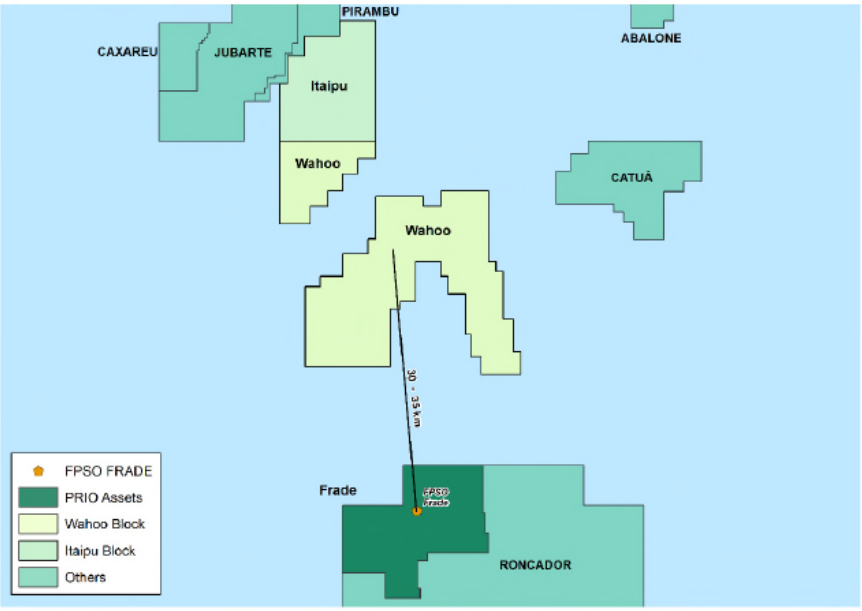
The Wahoo-Itaipu Acquisition

On November 19, 2020, we announced that we entered into an agreement with BP Brazil to acquire a 35.7% working interest in the Wahoo Field, and a 60% working interest in the Itaipu Field for the total amount of U.S.$100 million. The remaining member of the Wahoo Field consortium is IBV, which holds a working interests of 36% in this field. Total owns the remaining 40% working interest in the Itaipu Field.

On March 4, 2021 we announced the Wahoo Total Acquisition. The Wahoo-Itaipu Acquisitions, which remain subject to the satisfaction of conditions precedent, will entitle us to a 64.3% working interest in the Wahoo Field.

The Wahoo Field is located about 30-35 km from the Frade Field. It has a water depth of 1,400 meters and a carbonate reservoir in the pre-salt layer of 5 to 7 thousand meters. Oil was first discovered in the Wahoo Field in 2008 and formation tests were carried out in 2010. The Wahoo Field has production potential of over 140 million barrels (considering an interest of 100% in the Wahoo field) and its acquisition is consistent with our value generation strategy.

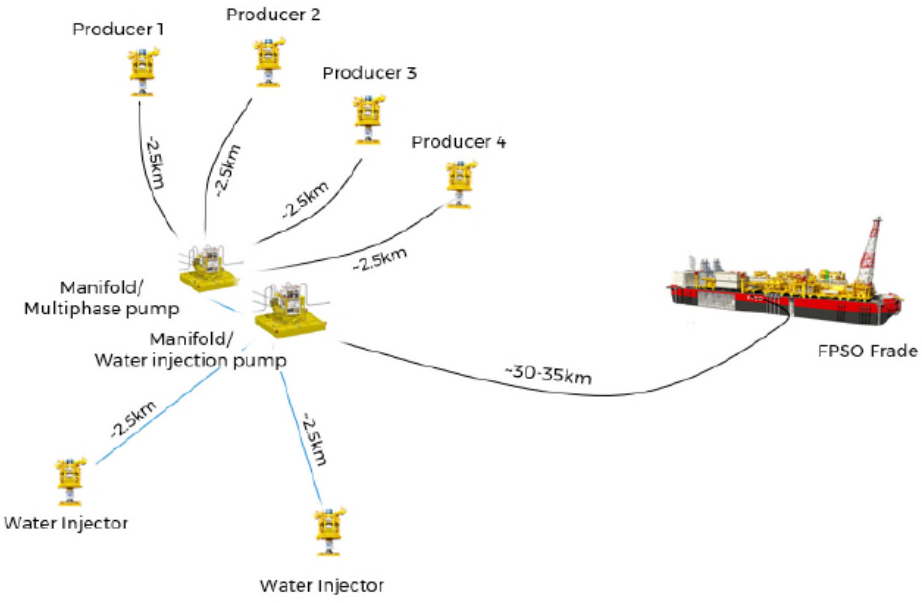
The Itaipu Field, discovered in 2009, has three pilot wells drilled and is close to the Parque das Baleias cluster. The graph below sets forth the geographic location of the Wahoo Field and the Itaipu Field.



Source: PetroRio's geology and geophysics department.

The Wahoo-Itaipu Acquisitions are aligned with the strategy of our business model, of forming production clusters through tiebacks, field redevelopment and operational optimization. During the investment analysis period, we identified that it would be possible to make the interconnection between the Wahoo Field and the Frade Field, taking advantage of the existing infrastructure. This project includes the drilling of four producing wells, two injection wells, the installation of a submarine manifold with multiphase pumps for the flow of produced oil and injected water, and the tieback between the manifold and the FPSO Frade.

The graph below shows the planned tieback between the Frade Field and the Wahoo Field.



Source: PetroRio's management data.

The Wahoo-Itaipu Acquisitions reflect our capabilities to carry out strategic M&A acquisitions in the Brazilian oil and gas market.

Factors and Trends Affecting Our Results of Operations

Development and exploitation of reserves

Our results of operations depend on our ability to successfully develop and exploit the oil and natural gas reserves in our existing blocks, as well as acquire (including through bidding rounds) or gain access to new oil and natural gas reserves. While we have geological reports evaluating certain proved, probable and possible resources in our blocks, there is no assurance that we will continue to be successful in the exploration, appraisal, development and commercial production of oil and natural gas. The calculation of our geological and petrophysical estimates is complex and imprecise, and it is possible that our current development activities at our properties, including the Frade Field Redevelopment Plan, the Polvo Field Redevelopment Plan and the planned tieback of the Tubarão Martelo Field to the Polvo Field, will result in production levels that are lower than those currently projected. It is also possible that future exploration at our current properties or properties we acquire in the future will not result in additional discoveries, and, even if we are able to successfully make such discoveries, there is no certainty that the discoveries will be commercially viable to produce.

We budgeted R$448,920 thousand (or U.S.$87,000 thousand) for total capital expenditures during 2021. The final figure will depend primarily on the extent of our expenditures in connection with the TBMT-Polvo Tieback Project and certain drilling activities at the Tubarão Martelo Field. In the year ended December 31, 2020, our total capital expenditures were R$929,142 thousand (or U.S.$185,196 thousand), consisting of R$179,248 thousand (or U.S.$35,217 thousand) related to development and maintenance primarily in connection with the Polvo Field Redevelopment Plan and the Frade Field Redevelopment Plan and R$749,894 thousand (or U.S.$149,979 thousand) attributable to our acquisition of OSX-3, the dedicated FPSO of the Tubarão Martelo Field.

In the three-month period ended March 31, 2021, our total capital expenditures were R$272,219 thousand (or U.S.$47,780 thousand), consisting of R$70,234 thousand (or U.S.$12,328 thousand) related to development and maintenance primarily in connection with the Polvo Field Redevelopment Plan and R$201,985 thousand (or U.S.$35,453 thousand) related to the Frade Field Chevron Acquisition and to the Frade Field INPEX Acquisition.

Funding for our capital expenditures relies in part on oil prices remaining close to our estimates or higher and other factors to generate sufficient cash flow. Low oil prices affect our revenues, which in turn affect our debt capacity and the covenants in our financing agreements. If we are not able to generate the sales which, together with our current cash resources, are sufficient to fund our capital expenditures, we will not be able to efficiently execute our development programs, including the Polvo Field Redevelopment Plan and the Frade Field Redevelopment Plan.

If oil prices average higher than the base budget price, we have the ability to allocate additional capital to more projects and increase our work and investment program, thereby further increasing our oil and gas production. See "*—Oil and gas revenue and international prices*" and "*—Production and operating costs.*"

Our results of operations will be adversely affected in the event that our estimated oil and natural gas asset base does not result in additional reserves that may eventually be commercially developed. In addition, there can be no assurance that we will acquire new producing or exploration blocks or gain access to exploration blocks that contain commercially viable reserves. Unless we succeed in our development and exploration activities, or acquire properties that contain new reserves, our anticipated reserves will continually decrease.

Oil and gas revenue and international prices

Our revenues are derived from the sale of our oil and natural gas production. The price realized for the oil we produce is generally affected by the market price for Brent oil. The market price for oil and natural gas is subject to significant volatility and has historically fluctuated widely in response to relatively minor changes in the global supply and demand for oil and natural gas, market uncertainty, economic conditions and a variety of additional factors. See "*Risk Factors—Risks Related to the Group, its Business and the Oil and Gas Industry—Prices and markets for oil and natural gas are unpredictable and tend to fluctuate significantly, which could materially adversely affect our business, financial condition or results of operations.*"

From January 1, 2014 to March 31, 2021, Brent spot prices ranged from a low of U.S.$19.33 per barrel to a high of U.S.$115.06 per barrel. As of March 31, 2021, Brent spot prices were U.S.$63.52 per barrel.

The following table sets forth oil prices, exchange rates and our production and reserves as of and for the periods indicated.

	As of and for the three-month period ended March 31, 2021		As of and for the year ended December 31,		
			2020		2019
Average Brent crude oil price (U.S.$ per barrel)	63.52		43.21		64.16
Average exchange rate of *reais* against U.S.$1.00	5.48		5.16		3.95
Production (kboepd)	32.7	(1)	31.8	(2)	22.5	(3)
2P reserves (MMboe)	206	(4)	192.7	(5)	—	(6)

(1) This production figure reflects production at the Polvo Field, the Frade Field (attributable to our 70% working interest therein January 1, 2021 through February 4, 2021 and 100% working interest since February 5, 2021, following the Frade Field Petrobras Acquisition) and the Manati Field (attributable to our 10% working interest) for the period indicated. As such, this production figure gives effect to the Frade Field Petrobras Acquisition since February 5, 2021, the date that the Frade Field Petrobras Acquisition closed. See "*Oil and Gas Reserves and Production Information—Production Information*" and note 12(c) to the Unaudited Individual and Consolidated Interim Financial Information.

(2) This production figure reflects production at the Polvo Field, the Frade Field (attributable to our 70% working interest), the Tubarão Martelo Field (attributable to our 80% working interest) and the Manati Field (attributable to our 10% working interest) for the period indicated. As such, this production figure does not give effect to the Frade Field Petrobras Acquisition. See "*Oil and Gas Reserves and Production Information—Production Information*" and note 12(c) to the Unaudited Individual and Consolidated Interim Financial Information.

(3) This production figure reflects production at the Polvo Field, the Frade Field (attributable to our 51.74% working interest therein from March 25, 2019 to October 1, 2019 following the Frade Field Chevron Acquisition and our 70% working interest therein from October 1, 2019 to December 31, 2019 following the Frade Field INPEX Acquisition) and the Manati Field (attributable to our 10% working interest) for the period indicated. See "*Oil and Gas Reserves and Production Information—Production Information.*"

(4) Figure as of January 1, 2021. See "*Oil and Gas Reserves and Production Information.*"

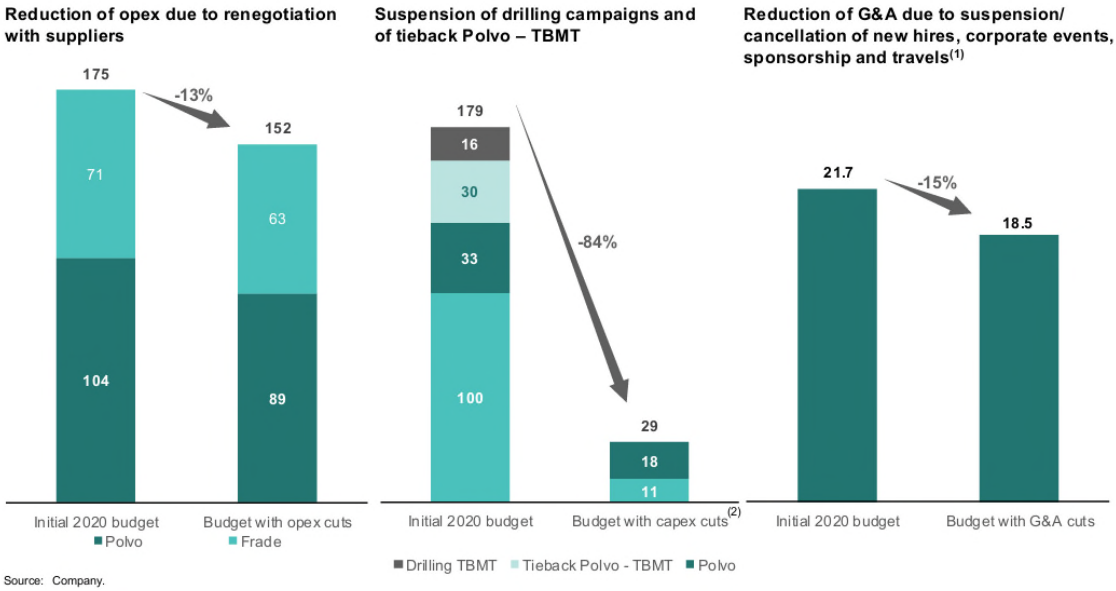
(5) Figure as of April 30, 2020. See "*Oil and Gas Reserves and Production Information.*"

(6) There are no certified reserves report available in respect of our properties as of December 31, 2019. See "*Oil and Gas Reserves and Production Information.*"

As a result of the COVID-19 outbreak, and the resulting global containment measures as well as actions taken by OPEC, we are currently facing oil market conditions marked by increased supply, mainly provided by Saudi Arabia, along with a significant reduction in demand. These two main factors led to an oil surplus build up, resulting in a sharp drop in oil prices in the three-month period ended March 31, 2020 (Brent price fell over 55% between December 2019 and March 2020, according to our management). Following OPEC's agreement in April 2020 to cut production in response to reduced demand and sustained low oil prices, as well as the gradual reopening of economies and reduction in social distancing measures during this period, Brent oil prices had reached U.S.$51.80 per barrel as of December 31, 2020.

As a consequence of the volatility in oil prices, we have taken measures, such as postponing our capital expenditures, including ongoing drilling campaigns in connection with the Frade Field Redevelopment Plan. We also adopted a number of measures to reduce our operating and administrative expenses, for example we renegotiated with suppliers, reduced onshore employee compensation by 25% and reduced the compensation of executive officers by 50%. We are continuously monitoring the situation to adjust and adopt additional measures as needed.

The graph below summarizes certain measures that were adopted in response to the COVID-19 pandemic. The operating and capital expenditure figures below are for the year ended December 31, 2020 and have not been adjusted to reflect our respective working interests in the relevant properties**.**



(1) Does not include bonus payments to executives. See "*Management—Compensation*."

(2) Considers expected capital expenditures from April to December 2020. Additional U.S.$25 million were deployed during the three-month period ended March 31, 2020.

Gas produced in the Manati Field is sold to market through a long-term offtake agreement with Petrobras. The price of gas sold under this contract is denominated in Brazilian *reais* and is adjusted annually for inflation pursuant to the Brazilian General Market Price Index (*Índice Geral de Preços – Mercado* or the "IGP-M").

Oil produced in the Polvo Field is sold either in spot transactions through our trading unit, which is based at PetroRio Luxembourg, pursuant to the Polvo Field Spot Marketing Agreement, or to PetroChina on a right-to-match basis pursuant to the PetroChina Marketing Agreement. See "*Business—Material Contracts—The Polvo Field—PetroChina Marketing Agreement*."

Oil produced in the Frade Field is sold in spot transactions mainly through our trading unit, which is based at PetroRio Luxembourg.

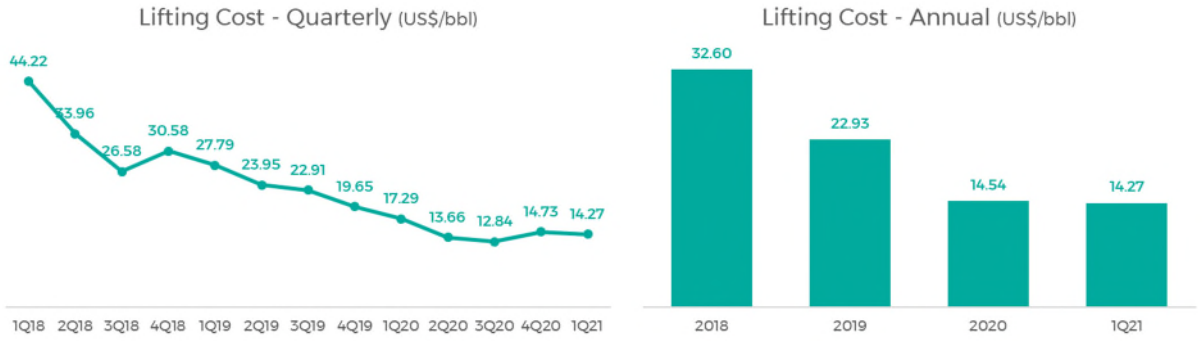
Lifting costs

Our lifting costs consist primarily of expenses associated with the operation and maintenance of wells and related equipment and facilities, including labor costs, contractor and consultant fees, logistics, fuel costs and leasing expenses. Lifting costs are measured per barrel equivalent of oil and gas produced at our properties. Our strategy aims to reduce lifting costs at our existing and future properties, particularly in an environment of volatile and reduced oil prices.

Lifting costs are influenced by a number of factors, including our ability to implement successful cost reduction measures and development programs at our existing properties, fluctuations in the foreign exchange rate between the U.S. dollars (in which most of our sales are denominated) and the Brazilian *real* (in which a significant part of our operating expenses are denominated) and our ability to acquire new properties with cost

reduction potential along with our existing properties. Our lifting costs have historically remained lower than oil prices per barrel of oil equivalent, and have decreased from an average of U.S.$17.3 per barrel for the three month period ended March 31, 2020 to U.S.$14.3 per barrel for the three month period ended March 31, 2021 and U.S.$22.9 per barrel in the year ended December 31, 2019 to U.S.$14.5 per barrel in the year ended December 31, 2020.

The graphs below set forth our average lifting costs for the periods indicated.



The table below sets forth our breakeven costs for the three-month period ended March 31, 2021:

Breakeven Costs	**U.S.$ per boe**
Lifting Costs	14.27
General and administrative expenses	3.60
Royalties	2.31
Discounts	3.25
Total	**23.43**

The table below sets forth the evolution of our discount in U.S.$ per barrel for the periods below (where the discount is negative, oil was sold at a premium to the market price):

	Three-month period ended											
	June 30, 2018	**September 30, 2018**	**December 31, 2018**	**March 31, 2019**	**June 30, 2019**	**September 30, 2019**	**December 31, 2019**	**March 31, 2020**	**June 30, 2020**	**September 30, 2020**	**December 31, 2020**	**March 31, 2021**
Frade Field	—	—	—	—	(1.1)	0.5	2.3	3.1	4.1	3.4	2.4	2.3
Polvo Field	5.4	5.9	6.1	6.0	4.6	4.6	4.3	6.5	8.2	7.3	4.8	4.8
Tubarão Martelo Field	—	—	—	—	—	—	—	—	—	6.0	4.2	3.8
Total	**5.4**	**5.9**	**6.1**	**6.0**	**1.8**	**1.9**	**3.1**	**4.2**	**5.4**	**6.0**	**3.4**	**3.2**

The cost per added barrel in the three-month period ended March 31, 2021 for the TBMT-Polvo Cluster, the Polvo Field (following the 2018 Polvo Field Drilling Campaign), the Polvo Field (following the 2020 Polvo Field Drilling Campaign) and the Frade Field was U.S.$4.80, U.S.$6.46, U.S.$6.67 and U.S.$8.72, respectively.

Availability and reliability of infrastructure

Our business depends on the availability and reliability of operating and transportation infrastructure in the areas in which we operate. Prices and availability for equipment and infrastructure, and the maintenance

thereof, affect our ability to make the investments necessary to operate our business, and thus our results of operations and financial condition. See "*Risk Factors—Risks Related to the Group, its Business and the Oil and Gas Industry—Our inability to access equipment and infrastructure in a timely manner may hinder our access to oil and natural gas markets and generate significant incremental costs or delays in our oil and natural gas production.*"

Regulatory obligations

In order to protect our exploration and production rights in our licensed areas, we must comply with a variety of regulatory requirements imposed by different governmental authorities. We must comply with ANP regulations related to matters including, but not limited to, operational safety, registry and fulfillment of development plans (*Plano de Desenvolvimento* or "PD"), production measurement (*medição volumétrica fiscal*) and research and development commitments. In addition, we must comply with authorities such as IBAMA in matters related to environmental requirements and the Brazilian Navy with respect to certain other requirements and inspections. Failure to meet these obligations may result in monetary fines and ultimately in the loss of our interests in our concessions and licenses.

Acquisitions

Our strategy centers around the acquisition and development of producing hydrocarbon fields, increasing the production levels and extending the economic lives thereof through implementing cost reduction initiatives and other operational efficiencies. We intend to continue to selectively acquire companies, producing properties and concessions. As with our historical acquisitions, any future acquisitions could make year-to-year comparisons of our results of operations difficult. We may also incur additional debt, issue equity securities or use other funding sources to fund future acquisitions. We generally incorporate our acquired business into our results of operations at or around the date of closing.

Critical Accounting Policies

The Consolidated Financial Statements have been prepared in accordance with IFRS, as issued by the IASB. The preparation of our financial statements requires us to make judgments, estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. We continually evaluate these estimates and assumptions based on the most recently available information, our own historical experience and various other assumptions that we believe to be reasonable under the circumstances. Since the use of estimates is an integral component of the financial reporting process, actual results could differ from those estimates.

An accounting policy is considered critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time such estimate is made, and if different accounting estimates that reasonably could have been used, or changes in the accounting estimates that are reasonably likely to occur periodically, could materially impact the financial statements. We believe that the following accounting policies represent critical accounting policies as they involve a higher degree of judgment and complexity in their application and require us to make significant accounting estimates. The following descriptions of critical accounting policies and estimates should be read in conjunction with the Consolidated Financial Statements and the accompanying notes and other disclosures.

Non-Current Assets Held for Sale

Our non-current assets held for sale are measured at fair value, less costs to sell. Property, plant and equipment and intangible assets are not depreciated or amortized when classified as held for sale.

In December 2019, we carried out a market study to assess the value of the remaining rigs in our assets, which showed a market value of U.S.$2,351 thousand per rig. Due to difficulties on selling those assets, our management decided include a provision for the entire balances. Nonetheless, we will continue to make efforts to dispose of these assets.

Immobilized

Property, plant and equipment are recorded at acquisition cost *less* accumulated depreciation of the straight-line method or the units of production method for oil and gas assets (when in operation) and the provision for impairment, when applicable. Improvements to third-party properties are amortized based on the term of the rental agreement or the expected life of the property, whichever is the lower.

Expenses with exploration, evaluation and development of production are accounted for using the successful efforts method. Costs incurred before obtaining concessions and expenses with geological and geophysical studies and research are charged to income.

Exploration and evaluation expenses associated directly with a certain exploratory well are capitalized as exploration and evaluation assets, until the drilling of the well is completed and its results are evaluated. These costs include salaries, materials and fuels used, rig rental costs and other costs incurred with third parties.

In case commercial reserves are not found, the exploratory well will be written off. When reserves are found, the cost will be maintained in the asset until further assessments of the hydrocarbon reserve's commerciality, which may include drilling other wells, are completed.

Exploratory assets are subject to technical, commercial and financial reviews at least annually to confirm management's intention to develop and produce hydrocarbons in the area. If this intention is not confirmed, these costs will be written off as a result. When proved reserves are identified and development is authorized, exploratory expenditures in the area will be transferred to "oil and gas assets."

In the development phase, investments for construction, installation and infrastructure (such as pipelines and drilling of development wells, including boundary wells or unsuccessful development wells) will be capitalized as "oil and gas assets."

The costs for future abandonment and dismantling of the production areas will be estimated and recorded as part of the costs of these assets against the provision that will support such expenses, as soon as there is a legal or constructive obligation to dismantle the area. This provision will be presented as fixed assets against the long-term liabilities. Estimates of abandonment costs will be accounted for by taking into account the present value of these obligations, discounted at a risk-free interest rate. The abandonment cost estimates will be reviewed at least annually or when there is an indication of relevant changes, with the consequent revision of the calculation of the present value, adjusting the values of assets and liabilities. The provision will be updated monthly on a pro-rata basis, taking into account the risk-free discount rate with which it will have been discounted against a financial expense.

Oil and gas assets, including costs for future abandonment and dismantling of the areas, will be depreciated using the produced units method, based on the ratio between the production of oil and gas in each field in the period and their respective proved reserves developed. For assets that will benefit the entire economic useful life of the field, such as gas and oil pipelines, depreciation will be calculated considering the production for the period and the total proved reserves.

Installations and infrastructure, whose economic useful life is less than the economic life of field reserves, will be depreciated using the straight-line method.

Business combination

Business combinations are accounted for using the acquisition method. The cost of an acquisition is measured by the sum of the consideration transferred, assessed based on the fair value on the acquisition date, and the value of any non-controlling interest in the acquired company. For each business combination, the purchaser must measure the non-controlling interest in the acquiree at fair value or based on its interest in the net assets identified in the acquiree. Costs directly attributable to the acquisition should be accounted for as an expense when incurred, as well as any contingent consideration to be transferred will be recognized at their fair value on the acquisition date.

Premium is measured by the excess of the total consideration in relation to the net assets acquired (acquired, net identifiable assets and assumed liabilities). If the consideration is less than the fair value of the net assets acquired, the difference is recognized as a gain in the income statement.

For the purpose of testing the recoverable amount, the premium acquired in a business combination is, as of the acquisition date, allocated to each of the Group's cash-generating units that are expected to benefit from the synergies of the combination, regardless of other assets or liabilities of the acquiree being attributed to these units.

Income tax and social contribution

These taxes are calculated and recorded based on the effective rates in effect on the date of preparation of the financial statements. Deferred taxes are recognized according to intertemporal differences, tax loss and negative social contribution base, when applicable, only when and up to the amount the realization of which can be considered as probable by management (according to the business model approved by our management and governance committees).

Provision for recovery of assets

Our management annually reviews the net book value of the assets with the purpose of evaluating events or changes in economic, operational or technological circumstances that may indicate deterioration or loss of their recoverable value. If such evidence is identified and the net accounting value exceeds the recoverable value, a provision for devaluation is recorded, adjusting the net accounting value to the recoverable value. These losses will be classified under a specific item ("asset impairment losses") in the income statement.

The recoverable value of a non-financial asset in a particular cash-generating unit is defined to be the largest between the value in use and the net selling value. In both cases, estimates and assumptions considered reasonable by management will be used. It is possible that the price of oil on the international market will change negatively, which may impact the economy of a given concession. Our management periodically monitors internal and external indicators that may result in a reduction in the recoverable value of our assets.

On December 31, 2020, we made calculations to verify the recoverable value of our assets, against the recorded values, and did not identify the need for recognition of provision.

On December 31, 2019, we performed an impairment test of our assets and made a provision in the amount of R$27,651 thousand corresponding to the balance of the helitransportable rigs that are for sale.

Transactions involving payment in shares

Share-based compensation plans for employees, to be settled with equity instruments, are measured at fair value on the grant date. The fair value of the options granted determined on the grant date is recorded using the accelerated method as an expense in the income for the year during the period in which the right is acquired, based on our estimates of which options granted will eventually be acquired, with a corresponding increase in the net equity.

We review our estimates on the number of equity instruments that will be acquired from time to time. The impact of the revision in relation to the original estimates, if any, is recognized in the income for the year against a net equity adjustment in the capital reserve account.

For the three-month period ended on March 31, 2021, we had a balance recorded in net equity (income with share-based compensation) in the amount of R$253,366 thousand, with the corresponding entry in the income statement as personnel costs since the grant. Of the options granted, 1,281 million options were exercised on January 1, 2021, with the payment of R$13,622 thousand in our capital stock.

For the year ended on December 31, 2020, we had a balance recorded in net equity (income with share-based compensation) in the amount of R$108,991 thousand, with the corresponding entry in the income statement as personnel costs since the grant. Of the options granted, 1,499 million options were exercised on January 1, 2020, with the payment of R$10,587 thousand in our capital stock.

For the year ended on December 31, 2019, we had a balance recorded in net equity (income with share-based compensation) in the amount of R$31,793 thousand, with the corresponding entry in the income statement as personnel costs since the grant. Of the options granted, 221,062 options were exercised on January 1, 2019, with the payment of R$12,055 thousand in our capital stock.

Contingencies

The recognition, measurement and disclosure of contingent liabilities and legal obligations are carried out in accordance with the criteria defined in Technical Pronouncement CPC 25 (Provisions, Contingent Liabilities and Contingent Assets). The provisions for tax, civil and labor lawsuits are made for risks with the expectation of "probable loss," based on the opinion of our management and internal and external legal advisors, the amounts being recorded based on the estimated cost of the outcomes of these lawsuits. Risks with the expectation of "possible loss" are disclosed by our management, but not recorded in the balance sheet.

On March 31, 2021, we presented a provision for contingencies in the amount of R$95,1295 thousand, relating to lawsuits with probable risk divided between labor (R$12,189 thousand), tax (R$4,578 thousand), civil (R$59,590 thousand) and the 2011-2012 Frade Field Oil Spills (R$14,938 thousand). Pursuant to accounting practices adopted in Brazil and IFRS, we decided not to form a provision for contingencies for these lawsuits with likelihood of possible and remote loss.

On December 31, 2020, we presented a provision for contingencies in the amount of R$75,809 thousand, relating to lawsuits with probable risk divided between labor (R$6,284 thousand), tax (R$4,461 thousand), civil (R$55,282 thousand) and the 2011-2012 Frade Field Oil Spills (R$9,782 thousand). As for the cases with possible risk, we disclosed a total of R$1,296,736 thousand. On December 31, 2019, we presented a provision for contingencies in the amount of R$65,613 thousand, referring to lawsuits with probable risk divided between labor (R$18,191 thousand), tax (R$13,974 thousand), civil (R$24,268 thousand) and the 2011-2012 Frade Field Oil Spills (R$9,180 thousand). As for the cases with possible risk, we disclosed a total of R$795,405 thousand.

Impairment Indicators

We monitor internal and external indicators of impairment relating to our plant and equipment, oil and gas properties, and exploration and evaluation assets. External sources of information include changes in the economic and legal environment in which we operate.

Internal sources include the economic performance of our properties and other asset-specific indicators. In assessing impairment for exploration and evaluation assets, we apply judgment in considering various factors that determine technical feasibility and commercial viability.

Functional Currency

The determination of our functional currency requires analyzing facts that are considered primary factors, and if the result is not conclusive, the secondary factors. The analysis requires us to apply significant judgment, since primary and secondary factors may be mixed. In determining our functional currency, we analyzed both the primary and secondary factors, including the currency of our revenues, operating costs in the countries in which we operate, and sources of debt and equity financing.

Estimates of Oil and Gas Properties

Oil and gas properties are depleted using the unit of production method. In applying the unit of production method, oil and gas properties were depleted over proved and probable reserves except for 2016, when we depleted over proved reserves only. Our decision to revert back to depletion over proved and probable reserves in 2017 is a result of our ability to finance our capital expenditure programs, which are included in the updated reserve estimates. The calculation of the unit of production rate of amortization could be impacted to the extent that actual production in the future is different from current forecasted production based on proved and probable reserves. This would generally result from any of the following factors:

- changes in reserves;

- the effect on reserves of differences between actual commodity prices and commodity price assumptions; and/or
- unforeseen operational issues.

Reserves estimates can have a significant impact on net income and the carrying value of capital assets. The process of estimating reserves requires significant judgment based on available geological, geophysical, engineering, and economic data, projected rate of production, estimated commodity price forecast and the timing of future expenditures, all of which are subject to interpretation and uncertainty. Reserves estimates impact net income through depletion expense and the application of impairment tests. Revisions or changes in reserves estimates can have either a positive or a negative impact on net income and can impact the carrying amount of capital assets.

Oil and Gas Properties – Recoverable Amounts

The recoverable amounts of oil and gas at our properties have been determined based on the higher of (i) value-in-use calculations and (ii) fair values less cost to sell. These calculations require the use of estimates and assumptions. Estimates include, but are not limited to, estimates of the discounted future after-tax cash flows expected to be derived from our oil and gas properties and the discount rate. Changes in oil price forecasts, reserves, estimated future costs of production, future capital costs, decommissioning costs and income taxes can result in changes in recoverable amounts. It is possible that the oil price assumption may change, which may then impact the estimated life of the field and require a material adjustment to the carrying value of goodwill, tangible assets and exploration and evaluation assets.

Asset Retirement Obligations – Decommissioning Costs

We incur decommissioning costs at the end of the operating life of certain facilities and properties. The ultimate decommissioning costs are uncertain and cost estimates can vary in response to many factors including changes to relevant legal requirements, the emergence of new restoration techniques or experience at other production sites. The expected timing and amount of expenditure can also change, for example in response to changes in reserves or changes in laws and regulations or their interpretation. As a result, there could be significant adjustments to the asset retirement obligation established, which may affect future financial results.

Contingencies

By their nature, contingencies will only be resolved when one or more future events occur or fail to occur. The assessment of contingencies inherently involves the exercise of significant judgment and estimates of the outcome of future events.

Fair Value Measurement

The fair values of financial instruments are estimated based on market and third-party inputs. These estimates are subject to changes in the underlying commodity prices, interest rates, foreign exchange rates, and non-performance risk.

Acquisitions that meet the definition of a business combination require us to recognize the assets acquired and liabilities assumed at their fair value on the date of the acquisition. The calculation of fair value of the assets and liabilities may require the use of estimates and assumptions, such as oil and gas reserves and forecasted cash flows.

Deferred Income Taxes

We recognize a deferred income tax liability based on estimates of temporary differences between the book and tax value of our assets. An estimate is also used for both the timing and tax rate upon reversal of the temporary differences. Actual differences and the timing of reversals may differ from estimates, impacting the deferred income tax balance and net income.

Results of Operations

Three-Month Period Ended March 31, 2021 Compared to Three-Month Period Ended March 31, 2020

The following table sets forth our results of operations for the three-month periods ended March 31, 2021 and 2020.

	Three-Month Period Ended March 31,	
	2021	**2020**
	(R$ thousands) (unaudited)	
Net revenue	655,334	223,162
Costs of products/services	(236,531)	(206,826)
Gross revenue	418,803	16,336
Operating revenues (expenses)		
Geology and geophysics expenses	(6,900)	(151)
Personnel expenses	(23,634)	(10,554)
General and administrative expenses	(3,364)	(9,495)
Expenses with Outsourced Services	(12,131)	(16,461)
Taxes and rates	(5,759)	(2,296)
Depreciation and amortization expenses	(29,992)	(41,571)
Other operating revenues (expenses), net	(20,250)	115,104
Operating income (loss) before financial income (loss)	316,773	50,912
Financial revenues	54,154	654,267
Financial expenses	(416,202)	(757,750)
Income (loss) before income tax and social contribution	(45,275)	(52,571)
Current income tax and social contribution	(79,573)	(12,142)
Deferred income tax and social contribution	59,056	3,252
Income (loss) for the period	(65,792)	(61,461)

Net Revenue

Net revenue increased by R$432,172 thousand, or 193.7%, from R$223,162 thousand in the three-month period ended March 31, 2020 to R$655,334 thousand in the three-month period ended March 31, 2021. This increase was primarily attributable to an increase in sales volume resulting from increased production as a result of the closing of the Tubarão Martelo Field Acquisition on August 3, 2020 and incorporation of production from the Tubarão Martelo Field as of this date. Further, this increase was also driven by an increase in the price of Brent oil.

The following table presents a breakdown of our net revenue by property for the three-month period ended March 31, 2021 and 2020:

	Three-month period ended March 31,								
	2021					2020			
	Polvo Field	Manati Field	Frade Field	TBMT Field	Total	Polvo Field	Manati Field	Frade Field[1]	Total
	(R$ thousands) (unaudited)								
Gross revenue	163,211	33,225	338,387	126,471	661,294	77,389	16,034	132,785	226,208
Deductions	—	(5,906)	—	—	(5,960)	—	(2,907)	(139)	(3,046)
Net revenue	163,211	27,265	338,387	126,471	655,334	77,389	13,127	132,646	223,162

(1) Net revenue attributable to the Frade Field in the three-month period ended March 31, 2021 reflects the acquisition of the remaining 30% stake of the Frade Field.

Net revenue attributable to the Polvo Field increased by R$85,822 thousand, or 110.9% from R$77,389 thousand to R$163,211 thousand in the three-month period ended March 31, 2020 and 2021, respectively, primarily as a result of higher oil prices during the three-month period ended March 31, 2021 and an increase in number of barrels sold.

Net revenue attributable to the Frade Field increased by R$205,741 thousand, or 155.1% from R$132,646 thousand to R$338,387 thousand in the three-month period ended March 31, 2020 and 2021, respectively, primarily as a result of higher oil prices during the three-month period ended March 31, 2021 and an increase in number of barrels sold.

Net revenue attributable to the Manati Field increased by R$14,1388 thousand, or 107.7% from R$13,127 thousand to R$27,265 thousand in the three-month period ended March 31, 2020 and 2021, respectively, primarily as a result of an increase in gas sales in the three-month period ended December 31, 2021 compared to the three-month period ended March 31, 2020. This increase in sales is due to a higher volume generated in the Manati Field during the three-month period ended March 31, 2021.

There was no net revenue attributable to the Tubarão Martelo Field in the three-month period ended March 31, 2020 as we had not yet acquired a working interest in the Tubarão Martelo Field. In the three-month period ended March 31, 2021, net revenue attributable to the Tubarão Martelo Filed was R$126,471 thousand, primarily as a result of the Tubarão Martelo Field Acquisition, for an 80% working interest in the Tubarão Martelo Field as of August 3, 2020.

Costs of Products/Services

The following table presents a breakdown of our costs of products/services in the three-month period ended March 31, 2021 and 2020:

	Three-month period ended March 31,	
	2021	2020
	(R$ thousands)(unaudited)	
FPSO/Platform	(3,095)	(11,453)
Logistics	(10,055)	(10,740)
Consumables	(24,090)	(18,080)
Operation and maintenance	(24,508)	(22,994)
Personnel	(13,671)	(13,297)
SMS	(2,053)	(1,194)
Purchase of oil for resale	(21,451)	—

	Three-month period ended March 31,	
	2021	2020
Other costs	(2,406)	(6,756)
Royalties and special interest	(33,244)	(32,228)
Amortization – CPC 06 (R2)	(24,853)	(25,375)
Depreciation and amortization	(77,105)	(64,709)
Total	(236,531)	(206,826)

Costs of products/services increased by R$29,705 thousand, or 14.4%, from R$206,826 thousand in the three-month period ended March 31, 2020 to R$236,531 thousand in the three-month period ended March 31, 2021. This increase was primarily due to costs related to the purchase of oil owned by Petrobras for resale amounting to R$21,451 thousand, as a result of the acquisition of 30% of the Frade Field.

Geology and geophysics expenses

Geology and geophysics expenses increased by R$6,749 thousand, from R$151 thousand in the three-month period ended March 31, 2020 to R$6,900 thousand in the three-month period ended March 31, 2021. This increase was primarily due to Wahoo seismic studies.

Personnel expenses

Personnel expenses increased by R$13,080 thousand, or 123.9%, from R$10,554 thousand in the three-month period ended March 31, 2020 to R$23,634 thousand in the three-month period ended March 31, 2021. This increase was primarily due to the fact that bonuses accrued in the year ended December 31, 2020 were paid in the three-month period ended March 31, 2021. Further, the difference between such accruals and payments was recognized in this period.

General and administrative expenses

General and administrative expenses decreased by R$6,131 thousand, or 64.6%, from R$9,495 thousand in the three-month period ended March 31, 2020 to R$3,364 thousand in the three-month period ended March 31, 2021. This decrease was primarily due to the adjustments of expenses from the Frade Consortium, that was concentrated in this line item in 2020.

Expenses with outsourced services

Expenses with outsourced services decreased by R$4,330 thousand, or 26.3%, from R$16,461 thousand in the three-month period ended March 31, 2020 to R$12,131 thousand in the three-month period ended March 31, 2021. This decreased was primarily due to expenses incurred in 2020 in connection with funding activities.

Taxes and rates

Taxes and rates increased by R$3,463 thousand, or 150.8%, from R$2,296 thousand in the three-month period ended March 31, 2020 to R$5,759 thousand in the three-month period ended March 31, 2021. This increase was primarily due to a higher net wealth tax rate levied on companies incorporated in Luxembourg.

Depreciation and amortization expenses

Depreciation and amortization expenses decreased by R$11,579 thousand, or 27.9%, from R$41,571 thousand in the three-month period ended March 31, 2020 to R$29,992 thousand in the three-month period ended March 31, 2021. This decrease was primarily due the sale of the FPSO Frade and subsea equipment to Jaguar. The capital gain that used to be depreciated to expenses, after this sale, start to be included in the cost of products.

Other operating revenues (expenses), net

Other operating revenues (expenses), net includes non-operational income and expenses, such as claim contingency reserves, and expenses incurred from activities not related to core operations. These revenues decreased by R$135,354 thousand, or 117.6%, from a revenue of R$115,104 thousand in the three-month period ended March 31, 2020 to an expense of R$20,250 thousand in the three-month period ended March 31, 2021. This decreased was primarily due to the reduction of the abandonment provisions in 2020.

Financial revenues

Financial revenues include interest income, hedging income and foreign exchange rate variations on cash and cash equivalents. These revenues decreased by R$600,113 thousand, or 91.7%, from R$654,267 thousand in the three-month period ended March 31, 2020 to R$54,154 thousand in the three-month period ended March 31, 2021. This decrease was primarily due to a result of non-current gains recognized in 2020 as R$353,644 thousand of 2020 hedging operations and R$292,020 thousand of 2020 exchange rate fluctuations in the three-month period ended March 31, 2021.

Financial expenses

Financial expenses include interest on our bank loans, working capital loans and finance leases, fees on letters of credit, foreign exchange rate variations on debt, abandonment provisions and leasing obligations. These expenses decreased by R$341,548 thousand, or 45.1%, from R$757,750 thousand in the three-month period ended March 31, 2020 to R$416,202 thousand in the three-month period ended March 31, 2021. This decrease was primarily due to expenses of R$683,899 thousand in respect of exchange rate fluctuations in the three-month period ended March 31, 2021.

Current and deferred income tax and social contribution

Our tax liabilities due to current and deferred income tax and social contribution taxes increased by R$11,627 thousand, from an expense of R$8,890 thousand in the three-month period ended March 31, 2020 to an expense of R$20,517 thousand in the three-month period ended March 31, 2021. This increase was primarily due to higher taxable profits in the three-month period ended March 31, 2021.

Income (loss) for the period

Loss for the period increased by R$4,331 thousand, or 7.0%, from R$61,461 thousand in the three-month period ended March 31, 2020 to R$65,792 thousand in the three-month period ended March 31, 2021 for the reasons described above.

Year Ended December 31, 2020 Compared to Year Ended December 31, 2019

The following table sets forth our results of operations for the years ended December 31, 2020 and 2019.

	Year Ended December 31,	
	2020	**2019**
	(R$ thousands)(audited)	
Net revenue	1,904,185	1,644,346
Costs of products/services	(1,286,926)	(940,379)
Gross revenue	617,259	703,967
Operating revenues (expenses)		
Geology and geophysics expenses	(471)	(595)
Personnel expenses	(37,853)	(48,245)
General and administrative expenses	(43,487)	(25,147)
Expenses with Outsourced Services	(46,242)	(34,519)

Taxes and rates	(16,378)	(11,130)
Depreciation and amortization expenses	(193,516)	(126,080)
Other operating revenues (expenses), net	663,437	420,005
Operating income (loss) before financial income (loss)	**942,749**	**878,256**
Financial revenues	1,469,151	377,142
Financial expenses	(1,927,820)	(714,396)
Income (loss) before income tax and social contribution	**484,080**	**541,002**
Current income tax and social contribution	(77,140)	(55,658)
Deferred income tax and social contribution	45,973	357,002
Income (loss) for the period	**452,913**	**842,346**

Net Revenue

Net revenue increased by R$259,839 thousand, or 15.8%, from R$1,644,346 thousand in the year ended December 31, 2019 to R$1,904,185 thousand in the year ended December 31, 2020. This increase was primarily attributable to an increase in sales volume a result of the closing of the Tubarão Martelo Field Acquisition on August 3, 2020 and incorporation of production from the Tubarão Martelo Field as of this date. Further, this increase was also driven by a greater production as a result of the 2020 Drilling Campaign.

The following table presents a breakdown of our net revenue by property for the years ended December 31, 2020 and 2019:

	Year ended December 31,								
	2020					2019			
	Polvo Field	Manati Field	Frade Field	TBMT Field	Total	Polvo Field	Manati Field	Frade Field[(1)]	Total
	(R$ thousands) (unaudited)								
Gross revenue	565,676	76,567	1,019,549	256,005	1,917,797	690,686	109,246	865,816	1,665,748
Deductions	—	(13,612)	—	—	(13,612)	—	(20,747)	(655)	(21,402)
Net revenue	565,676	62,955	1,019,549	256,005	1,904,185	690,686	88,499	865,161	1,644,346

(1) Net revenue attributable to the Frade Field in the year ended December 31, 2019 reflects the consolidation of the results of operations of the Frade Field attributable to our 51.74% working interest therein from March 25, 2019 to December 31, 2019, following the Frade Field Chevron Acquisition.

Net revenue attributable to the Polvo Field decreased by R$125,010 thousand, or 18.1% from R$690,686 thousand in the year ended December 31, 2019 to R$565,676 thousand in the year ended December 31, 2020, respectively, primarily as a result of lower oil prices during the year ended December 31, 2020 and a decrease in number of barrels sold.

Net revenue attributable to the Frade Field increased by R$154,388 thousand, or 17.8% from R$865,161 thousand in the year ended December 31, 2019 to R$1,019,549 thousand in the year ended December 31, 2020, primarily due to the fact that the results of operations of the Frade Field were included in our consolidated results of operations as from March 25, 2019, the date of completion of the Frade Field Chevron Acquisition. In addition, we acquired an additional 18.26% working interest in the Frade Field in October 2019, which increased our net revenue attributable to the Frade Field in the year ended December 31, 2020 compared to the year ended December 31, 2019. The increase in net revenue was further supported by consistent production levels, as a result of the workovers of several wells pursuant to the Frade Field Redevelopment Program.

Net revenue attributable to the Manati Field decreased by R$25,544 thousand, or 28.9% from R$88,499 thousand in the year ended December 31, 2019 to R$62,955 thousand in the year ended December 31, 2020, primarily as a result of a decrease in gas sales in the year ended December 31, 2020 compared to the year ended December 31, 2019. This decrease in sales is due to a lower volume generated in the Manati Field, as a consequence of reduced demand resulting from the COVID-19 pandemic.

Costs of Products/Services

The following table presents a breakdown of our costs of products/services in the year ended December 31, 2020 and 2019:

	Year ended December 31,	
	2020	**2019**
	(R$ thousands) (audited)	
FPSO/Platform	(28,742)	(33,512)
Logistics	(63,225)	(73,362)
Consumables	(115,056)	(101,799)
Operation and maintenance	(108,078)	(105,088)
Personnel	(69,815)	(55,983)
SMS	(7,344)	(10,133)
Purchase of oil for resale	(72,165)	—
Other costs	(48,581)	(33,844)
Royalties and special interest	(152,555)	(143,780)
Amortization – CPC 06 (R2)	(137,774)	(134,253)
Depreciation and amortization	(483,591)	(248,625)
Total	**(1,286,926)**	**(940,379)**

Costs of products/services increased by R$346,547 thousand, or 36.9%, from R$940,379 thousand in the year ended December 31, 2019 to R$1,286,926 thousand in the year ended December 31, 2020. This increase was primarily due to the increase of depreciation and amortization expenses related to the acquisitions of Frade Field in 2019, in addition to costs related to the purchase of oil owned by Dommo (former operator of the Tubarão Martelo Field) for resale amounting to R$72,165 thousand, as a consequence of the acquisition of 80% of the Tubarão Martelo Field.

Geology and geophysics expenses

Geology and geophysics expenses decreased by R$124 thousand, or 20.8%, from R$595 thousand in the year ended December 31, 2019 to R$471 thousand in the year ended December 31, 2020. This decrease was primarily due to the 2019 Polvo Field drilling campaign, which was recorded as an expense for the year ended December 31, 2019.

Personnel expenses

Personnel expenses decreased by R$10,392 thousand, or 21.5%, from R$48,245 thousand in the year ended December 31, 2019 to R$37,853 thousand in the year ended December 31, 2020. This decrease was primarily due to costs related to dismissals in 2019 as a result of the Frade Field Acquisition and the employee compensation plans being converted into shares at a higher rate in 2019.

General and administrative expenses

General and administrative expenses increased by R$18,340 thousand, or 72.9%, from R$25,147 thousand in the year ended December 31, 2019 to R$43,487 thousand in the year ended December 31, 2020. This increase was primarily due to costs incurred in connection with the Tubarão Martelo Field Acquisition.

Expenses with outsourced services

Expenses with outsourced services increased by R$11,723 thousand, or 34.0%, from R$34,519 thousand in the year ended December 31, 2019 to R$46,242 thousand in the year ended December 31, 2020. This increase was primarily due to costs incurred in connection with the Tubarão Martelo Field Acquisition, which include expenses related to the acquisition advisors, administrative costs and software costs, among others.

Taxes and rates

Taxes and rates increased by R$5,248 thousand, or 47.2%, from R$11,130 thousand in the year ended December 31, 2019 to R$16,378 thousand in the year ended December 31, 2020. This increase was primarily due to the remittance taxes related to insurances contracted abroad and renewed in 2020 to include the Tubarão Martelo Field and the FPSO Bravo.

Depreciation and amortization expenses

Depreciation and amortization expenses increased by R$67,436 thousand, or 53.5%, from R$126,080 thousand in the year ended December 31, 2019 to R$ 193,516 thousand in the year ended December 31, 2020. This increase was primarily due to the full amortization of the Frade Field (as PetroRio Jaguar was acquired on March 25, 2019 and PetroRio White Shark on October 1, 2019, the amortization for the period ended December 31, 2019 was lower when compared to 2020) as well as the amortization of the OSX-3, which was acquired on February 3, 2020.

Other operating revenues (expenses), net

Other operating revenues (expenses), net includes non-operational income and expenses, such as claim contingency reserves, and expenses incurred from activities not related to core operations. These revenues increased by R$243,432 thousand, or 58.0%, from R$420,005 thousand in the year ended December 31, 2019 to R$663,437 thousand in the year ended December 31, 2020. This increase was primarily due to the income from renting OSX-3 and the reduction of the decommissioning costs following a review of the estimated respective decommissioning dates and discount rates used in the present value calculations.

Financial revenues

Financial revenues include interest income, hedging income and foreign exchange rate variations on cash and cash equivalents. These revenues increased by R$1,092,009 thousand, or 289.5%, from R$377,142 thousand in the year ended December 31, 2019 to R$1,469,151 thousand in the year ended December 31, 2020. This increase was primarily due to exchange rate fluctuations and hedging transactions intended to protect the Company's revenue.

Financial expenses

Financial expenses include interest on our bank loans, working capital loans and finance leases, fees on letters of credit, foreign exchange rate variations on debt, abandonment provisions and leasing obligations. These expenses increased by R$1,213,424 thousand, or 169.9%, from R$714,396 thousand in the year ended December 31, 2019 to R$1,927,820 thousand in the year ended December 31, 2020. This increase was primarily due to the depreciation of the Brazilian *real* against the U.S. dollar during this period, liabilities related to leases, decommissioning provisions and financial expenses related to the debt from the Frade Field Acquisition.

Current and deferred income tax and social contribution

Our tax liabilities due to current and deferred income tax and social contribution taxes increased by R$332,511 thousand, from a credit of R$301,344 thousand in the year ended December 31, 2019 to a liability of R$31,167 thousand in the year ended December 31, 2020. This increase was primarily due to an accounting change to recognize deferred tax losses on temporary differences and profit projections of some companies.

Income (loss) for the period

Income for the period decreased by R$389,433 thousand, or 46.2%, from R$842,346 thousand in the year ended December 31, 2019 to R$452,913 thousand in the year ended December 31, 2020 for the reasons described above.

Year Ended December 31, 2019 Compared to Year Ended December 31, 2018

The following table sets forth our results of operations for the year ended December 31, 2019 and 2018.

	Year ended December 31,	
	2019	**2018**
	(R$ thousands) (audited)	
Net revenue	1,644,346	848,920
Costs of products/services	(940,379)	(524,489)
Gross revenue	703,967	324,431
Operating revenues (expenses)		
Geology and geophysics expenses	(595)	(2,560)
Personnel expenses	(48,245)	(54,478)
General and administrative expenses	(25,147)	(19,305)
Expenses with outsourced services	(34,519)	(33,751)
Taxes and rates	(11,130)	(5,547)
Depreciation and amortization expenses	(126,080)	(2,330)
Other operating revenues (expenses), net	420,005	(19,845)
Operating income (loss) before financial income (loss)	878,256	186,615
Financial revenues	377,142	316,685
Financial expenses	(714,396)	(265,815)
Income before income tax and social contribution	541,002	237,485
Current income tax and social contribution	(55,658)	(42,969)
Deferred income tax and social contribution	357,002	11,780
Income (loss) for the period	842,346	206,296

Net Revenue

Net revenue increased by R$795,426 thousand, or 93.7%, from R$848,920 thousand in the year ended December 31, 2018 to R$1,644,346 thousand in the year ended December 31, 2019. This increase was primarily due to the higher volume of barrels sold during the year, attributed to the Frade Field Acquisition, for a 70% working interest in the Frade Field, concluded in two parts during 2019.

The following table presents a breakdown of our net revenue by property for the years ended December 31, 2019 and 2018:

	Year ended December 31,						
	2019				2018		
	Polvo Field	Manati Field	Frade Field	Total	Polvo Field	Manati Field	Total
	(R$ thousands)						
Gross revenue	690,686	109,246	865,816	1,665,748	738,333	139,366	877,699
Deductions	—	(20,747)	(655)	(21,402)	—	(28,779)	(28,779)
Net revenue	**690,686**	**88,499**	**865,161**	**1,644,346**	**738,333**	**110,587**	**848,920**

Net revenue attributable to the Polvo Field decreased from R$738,333 thousand to R$690,686 thousand in the years ended December 31, 2018 and 2019, respectively, primarily as a result of the Polvo Field's natural decline during 2019, after a period of increased production during 2018 as a result of the 2018 Polvo Field Drilling Campaign, in addition to downtime due to the stoppage of the FPSO Polvo and the exchange of pumps not included in the scope of the 2018 Polvo Field Drilling Campaign. These interventions impacted the production of some wells, which were shut down during the procedures, resulting in a drop in the average daily production of the Polvo Field.

There was no net revenue attributable to the Frade Field in the year ended December 31, 2018 as we had not yet acquired a working interest in the Frade Field. In the year ended December 31, 2019, net revenue attributable to the Frade Field was R$865,161 thousand, primarily as a result of the Frade Field Acquisition, for a 70% working interest in the Frade Field, concluded in two transactions during 2019.

Net revenue attributable to the Manati Field decreased from R$110,587 thousand to R$88,499 thousand in the years ended December 31, 2018 and 2019, respectively, primarily as a result of the lower level of gas demand in the take-or-pay agreement with Petrobras. The volume of gas sold in 2019 was 2,273 boepd, representing a decrease of 26% from 2018, mainly due to the demand above the estimates in the take-or-pay contract during the 2018.

Costs of Products/Services

The following table presents a breakdown of our costs of products/services in the years ended December 31, 2019 and 2018:

	Year ended December 31,	
	2019	2018
	(R$ thousands) (audited)	
FPSO/Platform	(33,512)	(146,117)
Logistics	(73,362)	(51,502)
Consumables	(101,799)	(77,241)
Operation and maintenance	(105,088)	(56,692)
Personnel	(55,983)	(14,026)
SMS	(10,133)	(12,566)
Other costs	(33,844)	(19,553)
Royalties and special interest	(143,780)	(76,660)
Amortization – CPC 06 (R2)	(134,253)	—
Depreciation and amortization	(248,625)	(70,132)
Total	**(940,379)**	**(524,489)**

Costs of products/services increased by R$415,890 thousand, or 79.3%, from R$524,489 thousand in the year ended December 31, 2018 to R$940,379 thousand in the year ended December 31, 2019. This increase was primarily due to the Frade Field Acquisition, for a 70% working interest in the Frade Field, concluded in two parts during 2019, which was partially offset by cost reductions carried out at the Frade Field after we became its operator in March 2019, such as the reduction of the number of supply vessels, the consolidation of helicopter travel schedules to and from the Frade Field and port-side support areas, among others.

Geology and geophysics expenses

Geology and geophysics expenses decreased by R$1,965 thousand, or 76.8%, from R$2,560 thousand in the year ended December 31, 2018 to R$595 thousand in the year ended December 31, 2019. This decrease was primarily due to the 2018 Polvo Field Drilling Campaign.

Personnel expenses

Personnel expenses decreased slightly by R$6,233 thousand, or 11.4%, from R$54,478 thousand in the year ended December 31, 2018 to R$48,245 thousand in the year ended December 31, 2019. This slight decrease was primarily due to a review of corporate headcount following the Chevron Frade Field Acquisition, which resulted in a headcount decrease.

General and administrative expenses

General and administrative expenses increased by R$5,842 thousand, or 30.3%, from R$19,305 thousand in the year ended December 31, 2018 to R$25,147 thousand in the year ended December 31, 2019. This increase was primarily due to costs incurred in connection with the Frade Field Acquisition, which include expenses with the acquisition advisors, administrative costs and software costs, among others.

Expenses with outsourced services

Expenses with outsourced services increased by R$768 thousand, or 2.3%, from R$33,751 thousand in the year ended December 31, 2018 to R$34,519 thousand in the year ended December 31, 2019. This increase was primarily due to costs incurred in connection with the Frade Field Acquisition, partially offset by cost reductions during the year.

Taxes and rates

Taxes and rates increased by R$5,583 thousand, or 100.6%, from R$5,547 thousand in the year ended December 31, 2018 to R$11,130 thousand in the year ended December 31, 2019. This increase was primarily due to withholding taxes paid on PetroRio Jaguar's leasing agreement.

Depreciation and amortization expenses

Depreciation and amortization expenses increased by R$123,750 thousand from R$2,330 thousand in the year ended December 31, 2018 to R$126,080 thousand in the year ended December 31, 2019. This increase was primarily due to the implementation of IFRS 16 in 2019.

Other operating revenues (expenses), net

Other operating revenues (expenses), net includes non-operational income and expenses, such as claim contingency reserves, and expenses incurred from activities not related to core operations. These revenues increased by R$439,850 thousand from an expense of R$19,845 thousand in the year ended December 31, 2018 to revenue of R$420,005 thousand in the year ended December 31, 2019. This increase was primarily due to the effects of the acquisition of Frade Field, as the fair market value calculated was higher than the total amount paid, generating a bargain gain. The effects of the acquisition was partially offset by the effect of the annual review of provisions related to tax contingencies, the partial loss of the arbitration with Tuscany and the loss on non-current assets attributed to two rigs helitransportables available for sale.

Financial revenues

Financial revenues include interest income, hedging income and foreign exchange rate variations on cash and cash equivalents. These revenues increased by R$60,457 thousand, or 19.1%, from R$316,685 thousand

in the year ended December 31, 2018 to R$377,142 thousand in the year ended December 31, 2019. This increase was primarily due to foreign exchange rate variation impact on cash and cash equivalents.

Financial expenses

Financial expenses include interest on our bank loans, working capital loans and finance leases, fees on letters of credit, foreign exchange rate variations on debt, abandonment provisions and leasing obligations. These expenses increased by R$448,581 thousand, or 168.8%, from R$265,815 thousand in the year ended December 31, 2018 to R$714,396 thousand in the year ended December 31, 2019. This increase was primarily due to foreign exchange rate variation on debt, leasing liabilities and decommissioning provisions, interest expenses on debt from the Frade Field Acquisition and leasing expenses due to the implementation of IFRS 16 in 2019.

Current and deferred income tax and social contribution

Our current and deferred income tax and social contribution increased by R$332,533 thousand, from an expense of R$31,189 thousand in the year ended December 31, 2018 to a revenue of R$301,344 thousand in the year ended December 31, 2019. This increase was primarily due to the recognition of deferred tax losses resulting from the Frade Field Acquisition.

Income (loss) for the period

Income for the period increased by R$636,050 thousand, or 308.3%, from R$206,296 thousand in the year ended December 31, 2018 to R$842,346 thousand in the year ended December 31, 2019 for the reasons described above.

Liquidity and Capital Resources

Overview

Our financial condition and liquidity are and will continue to be influenced by a variety of factors, including:

- changes in oil and natural gas prices and our ability to generate cash flows from our operations;
- our capital expenditure requirements for our development and production operations; and
- the level of our outstanding indebtedness and the interest we are obligated to pay on this indebtedness.

Our principal sources of liquidity have historically been contributed shareholder equity, debt financings, including long-term bank borrowings, and cash generated by our operations. We have also in the past entered into offtake and prepayment agreements.

We intend to fund our cash requirements through the end of 2021 through cash flow from existing operations and cash on hand. Should our operating cash flow decline due to unforeseen events, including delivery restrictions or a protracted downturn in oil and gas prices, we would examine measures such as further capital expenditure program reductions, oil prepayment agreements, disposition of assets, or issuance of equity, among others.

Sources of Funds

In the three-month period ended March 31, 2021 and in the years ended December 31, 2020 , 2019 and 2018, we have used resources from our shareholders through capital increases with issuance of shares, generation of own cash and, mainly, loans contracted with first-tier financial institutions to finance our operating capital needs, such as ICBC, China Construction Bank ("CCB"), Banco BTG Pactual S.A., Banco Santander (Brasil) S.A., Banco Fibra, among others. See "*—Loans and Financing—Financing Arrangements*."

In the year ended December 31, 2020 and in the years ended on December 31, 2019, and 2018, our operations provided a net cash generation of R$1,617,546 thousand, R$439,049 thousand, and R$243,304 thousand respectively, while our financing activities were responsible for investing net cash in the amount of

R$713,295 thousand, and generated R$1,192,303 thousand, and R$121,303 thousand, respectively, in the same periods.

We intend to keep using working capital financing initiatives with national and international banks, as well as issuing lines such as debt prepayment and loan rollovers, in order to cover any liquidity deficiencies. We also intend to continue funding our activities through cash generation from our operational activities.

Liquidity

We incurred in new indebtedness, optimizing our capital structure, to ensure the payment of the assets acquired in 2019 and 2020, as well as to finance the development of the Field Polvo and the TBMT-Polvo Tieback Project.

Our general liquidity and debt ratios as of March 31, 2021 and December 31, 2020, 2019 and 2018 are presented below:

	Equity Structure Ratio		**Liquidity Ratio**	
	Third Party Capital / Own Capital[(1)]	**Total Indebtedness[(2)]**	**General Liquidity[(3)]**	**Current Liquidity[(4)]**
March 31, 2021	0.75x	0.43x	1.00x	1.71x
December 31, 2020	1.16x	0.54x	0.49x	0.82x
December 31, 2019	1.54x	0.61x	0.46x	0.91x
December 31, 2018	0.54x	0.36x	1.89x	2.72x

(1) We calculate third party capital to own capital ratio as (current liabilities + non-current liabilities)/shareholders' equity.

(2) We calculate total indebtedness ratio as (current liabilities + non-current liabilities)/total assets.

(3) We calculate general liquidity ratio as (current assets)/(current liabilities + non-current liabilities).

(4) We calculate current liquidity ratio as current assets/current liabilities.

Our management understand we have satisfactory liquidity and financial health to meet obligations with third parties and working capital taking into consideration the amounts presented above.

For the three-month period ended March 31, 2021 our net working capital which is calculated by taking the difference between our current assets and current liabilities, was calculated as a net current asset of R$1,668,695 thousand. In the years ended December 31, 2020 and 2019 our net working capital was a net current liability of R$376,473 thousand and R$156,693 thousand, respectively.

On February 2, 2021 we completed a follow-on transaction. Pursuant to this transaction we issued 29,700,000 common shares at R$69.00 per share and raised approximately R$2.0 billion.

Capital Structure

Our capital structure is presented below:

	As of March 31, 2021		**As of December 31, 2020**		**As of December 31, 2019**		**As of December 31, 2018**	
	R$ (thousands)							
Equity	5,335,225	57.11%	3,151,263	46.39%	2,165,101	39.44%	982,174	64.78%
Third party capital	4,006,523	43.89%	3,641,570	53.61%	3,324,650	60.56%	534,006	35.22%
Total liabilities and shareholders' equity	**9,341,748**	**100.00%**	**6,792,833**	**100.00%**	**5,489,751**	**100.00%**	**1,516,180**	**100.00%**

Our management understands that our current capital structure, measured mainly by the ratio of our total liabilities and our shareholders' equity, presents adequate levels of leverage.

Consolidated Cash Flows

Three-Month Period Ended March 31, 2021 Compared to Three-Month Period Ended March 31, 2020

The following table sets forth our cash flows for the three-month period ended March 31, 2021 and 2020.

	Three-month period ended March 31,	
	2021	**2020**
	(R$ thousands) *(unaudited)*	
Net cash from operating activities	723,130	236,752
Net cash invested in investment activities	(376,098)	(693,448)
Net cash from financing activities	1,940,661	295,929
Translation adjustment	88,065	16,549
Net increase (decrease) in cash and cash equivalents	2,375,758	(144,218)

Operating Activities

Net cash from operating activities in the three-month period ended March 31, 2021 was R$723,130 thousand compared to R$236,752 thousand in the three-month period ended March 31, 2020. This increase was primarily due to addition of revenues from Tubarão Martelo Field and revenues from the oil acquired from Petrobras in the 30% Frade Field acquisition.

Investing Activities

Net cash invested in investment activities in the three-month period ended March 31, 2021 was R$376,098 thousand compared to R$693,448 thousand in the three-month period ended March 31, 2020. This variation was driven by the acquisition of 80% of Tubarão Martelo field and FPSO Bravo, in the three-month period ended March 31, 2020.

Financing Activities

Net cash from financing activities in the three-month period ended March 31, 2021 was R$1,940,661 thousand compared to a net cash generated of R$295,929 thousand in the three-month period ended March 31, 2020, which was driven by the February 2021 follow-on offering transaction, which raised approximately R$2.0 billion.

Year Ended December 31, 2020 Compared to Year Ended December 31, 2019

The following table sets forth our cash flows for the year ended December 31, 2020 and 2019.

	Year ended December 31,	
	2020	**2019**
	(R$ thousands)	
Net cash from operating activities	1,617,546	439,049
Net cash invested in investment activities	(585,142)	(1,377,686)
Net cash (invested in) from financing activities	(713,295)	1,192,303
Translation adjustment	30,767	18,738
Net increase in cash and cash equivalents	349,876	272,404

Operating Activities

Net cash from operating activities in the year ended December 31, 2020 was R$1,617,546 thousand compared to R$439,049 thousand in the year ended December 31, 2019. This increase was primarily due to the cash generated by PetroRio Jaguar (acquired in March 2019), the acquisition of PetroRio White Shark (which did not have an significant effect on the cash flow of the year ended December 31, 2019 as the acquisition was concluded in October 2019), and the Tubarão Martelo Field Acquisition, concluded in August 2020, in addition to the income from renting OSX-3 and the increase in commitments.

Investing Activities

Net cash invested in investment activities in the year ended December 31, 2020 was R$585,142 thousand compared to R$1,377,686 thousand in the year ended December 31, 2019. This variation was driven by the completion of the Frade Field Chevron Acquisition on March 25, 2019 (including the payment of the price), which was partially offset by the increase of investments in securities to due to the increased need for cash to pay for the acquisitions concluded in 2019.

Financing Activities

Net cash invested in financing activities in the year ended December 31, 2020 was R$713,295 thousand compared to a net cash generated of R$1,192,303 thousand in the year ended December 31, 2019, which was driven by the payment of indebtedness during the period in 2020.

Year Ended December 31, 2019 Compared to Year Ended December 31, 2018

The following table sets forth our cash flows for the years ended December 31, 2019 and 2018.

	Year ended December 31,	
	2019	**2018**
	(R$ thousands)	*(audited)*
Net cash from operating activities	439,049	243,304
Net cash (invested in) investment activities	(1,377,686)	(278,309)
Net cash from financing activities	1,192,303	121,033
Translation adjustment	18,738	8,520
Net increase in cash and cash equivalents	272,404	94,548

Operating Activities

Net cash from operating activities in the year ended December 31, 2019 was R$439,049 thousand, compared to R$243,304 thousand in year ended December 31, 2018. This increase primarily due to the higher volume of barrels sold and lower cost per barrel in 2019, due to the Frade Field Acquisition.

Investing Activities

Net cash invested in investment activities in the year ended December 31, 2019 was R$1,377,686 thousand, compared to R$278,309 thousand in year ended December 31, 2018. This decrease was primarily due to the Frade Field Acquisition which was partially offset by the increase of investments in securities to due to the increased need for cash to pay for the acquisitions concluded in 2019.

Financing Activities

Net cash generated by financing activities in the year ended December 31, 2019 was R$1,192,303 thousand, compared to R$121,033 thousand in the year ended December 31, 2018. This increase was primarily due to the vendor finance with Chevron for the Chevron Frade Field Acquisition.

Loans and Financing

As of March 31, 2021, and December 31, 2020, we had total outstanding indebtedness of R$2,163,775 thousand (or U.S.$379,790 thousand) and R$1,909,719 thousand (or U.S.$335,197 thousand), respectively, as set forth in the table below.

	As of March 31, 2021		As of December 31, 2020	
	(U.S.$ thousands)	*(R$ thousands)*[(1)]	*(U.S.$ thousands)*	*(R$ thousands)*[(1)]
Chevron vendor financing[(2)]	143,087	815,210	128,680	733,129
Prisma long-term financing (PSS Oil and Gas LLC)[(3)]	101,566	578,653	94,683	539,437
Other financings[(4)]	135,137	769,912	111,834	637,153
Total	379,790	2,163,775	335,197	1,909,719

(1) Solely for the convenience of the reader, amounts in *reais* as of have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank.

(2) As of the date of this Offering Memorandum, amounts due to Chevron pursuant to the Frade Field Chevron Acquisition SPA have been paid in full.

(3) See "*Financing Arrangements—Prisma (PSS Oil and Gas LLC) Long-term Financing*."

(4) Other financings include financing arrangements we have entered into with Banco Citibank S.A, CCB, Banco Bradesco S.A., Banco Santander (Brasil) S.A., Banco Daycoval S.A., Banco Safra S.A., Banco do Brasil S.A. and Banco BTG Pactual S.A. See "*Financing Arrangements.*"

Approximately 97% of our indebtedness is denominated in U.S. dollars, with the remainder denominated in Brazilian *reais*.

As of March 31, 2021, we had total outstanding indebtedness under the financing arrangements set forth above of U.S.$379,790 thousand (or R$2,163,775 thousand). See "*Use of Proceeds.*"

Financing Arrangements

The following table sets forth our primary financing arrangements outstanding by lender as of March 31, 2021, December 31, 2020, 2019 and 2018. See "*Loans and Financing*" in the attached Audited Consolidated Financial Statements.

Creditor	Currency	Interest Rate (.p.a.)	Maturity year	Outstanding Amount as of			
				March 31,	December 31,[(1)]		
				2021	2020	2019	2018
					(R$ thousands)		
ICBC facilities	U.S.$	Libor + 3%	2020	—	—	230,829	—
Citibank	U.S.$	3.27%	2022	188,787	41,808	200,123	—
Trafigura	U.S.$	—	2021	—	182,202	189,634	—
CCB	U.S.$	4%	2022	108,477	108,215	94,802	—
FINEP [(2)]	R$	TJLP + 1.5%	2028	57,918	57,738	54,313	25,767
Banco Fibra	U.S.$	0%	2021	—	20,075	40,224	—
Bradesco	U.S.$	3.30%	2021	57,010	26,669	8,172	—
Daycoval	U.S.$	—	2021	—	36,705	—	—
Santander	U.S.$	—	2021	—	65,126	—	—
ABC	R$	0%	2021	—	—	—	—

Creditor	Currency	Interest Rate (.p.a.)	Maturity year	Outstanding Amount as of			
				March 31,	December 31,[1]		
				2021	2020	2019	2018
					(R$ thousands)		
C.E.F	U.S.$	5.7%	2021	1,845	30,961	—	—
Chevron vendor financing [3]	U.S.$	7%	2021	815,210	733,129	767,018	—
INPEX/Sojitz	U.S.$	0%	—	—	—	60,461	—
Prisma Capital [4]	U.S.$	8.95%	2023	578,653	539,437	—	—
Safra	U.S.$	3.8%	2021	28,781	23,637	—	—
Banco do Brasil	U.S.$	4.26%	2021	48,771	44,017	—	—
BTG	U.S.$	4.15%	2022	285,161	—	—	—
Credit Suisse	R$		2018	—	—	—	222,388
Total				**2,163,775**	**1,909,719**	**1,645,576**	**248,155**

(1) The amounts included in this table reflect the cumulative amounts in respect of all financing arrangements with each respective lender listed herein.

(2) As of the date of this Offering Memorandum, amounts due to FINEP have been paid in full. See note 3.1 to the Unaudited Individual and Consolidated Interim Financial Information.

(3) As of the date of this Offering Memorandum, amounts due to Chevron under the Frade Field Chevron Acquisition SPA have been paid in full.

(4) See "*—Prisma (PSS Oil and Gas LLC)Long-term Financing*."

Prisma (PSS Oil and Gas LLC) Long-term financing

On January 27, 2020, we entered into a U.S.$100,000 thousand bridge loan with Prisma with a term of six months, to partially finance the U.S.$140,000 thousand acquisition of the FPSO Bravo, the dedicated FPSO of the Tubarão Martelo Field. The borrowing entity is PetroRio Luxembourg. The Prisma bridge loan accrued interest at a rate of 8.95% per annum, contains certain restrictive covenants such as limits on our financial indebtedness.

Following the maturity of the Prisma bridge loan, we entered into a new long-term project finance loan extended by Prisma at the same rate (8.95% per annum), with a term of three years, semi-annual interest payments, principal amortization, and a principal grace period of 18 months. The Prisma long-term financing is secured by the FPSO Bravo and shares of PetroRio O&G, PetroRio White Shark, PetroRio Jaguar, PetroRio OPCO, PetroRio International and Brasoil. The FPSO Bravo is secured pursuant to a vessel mortgage and related deed of covenants and the shares of the subsidiaries listed above are secured pursuant to a Brazilian share pledge agreement (*contrato de alienação fiduciária*). The shares and FPSO Bravo currently pledged to Prisma will be pledged to the Noteholders once released upon repayment of such debt with the proceedings from this offering. As of March 31, 2021, R$578,653 thousand (or U.S.$101,566 thousand) remained outstanding under the Prisma long-term financing.

Banco Citibank S.A. ACCs

On October 2020, we entered into a U.S.$8,000 thousand short-term loan with Banco Citibank S.A. with a term of three months. In January, 2021, we extend the maturity for more six months. The borrowing entity is Petro Rio Jaguar. This loan, which is fully drawn, accrues interest at a rate of 3.28% per annum.

On March 2021, we entered into a U.S.$25,000 thousand short-term loan with Banco Citibank S.A. with a term of one year. The borrowing entity is Petro Rio Jaguar. This loan, which is fully drawn, accrues interest at a rate of 2.63% per annum.

We are not subject to any material restrictive covenants under these loans, and there are no repayments required prior to the maturity thereof. These loans benefit from a promissory note issued by PetroRio Jaguar and a parent company guarantee issued by PetroRio S.A.

As of March 31, 2021, R$188,787 thousand (or U.S.$33,136 thousand) remains outstanding under the ACCs entered into with Banco Citibank S.A..

CCB ACCs

On March 2021, we entered into a U.S.$19,000 thousand short-term loan with China Construction Bank (Brasil) Banco Múltiplo S.A. ("CCB") with a term of one year. The borrowing entity is Petro Rio Jaguar. This loan, which is fully drawn, accrues interest at a rate of 4.0% per annum. We are not subject to any material restrictive covenants under the loan, and there are no repayments required prior to the maturity thereof. This loan benefits from a promissory note issued by PetroRio Jaguar and a parent company guarantee issued by PetroRio S.A.

As of March 31, 2021, R$108,477 thousand (or U.S.$19,040 thousand) remains outstanding under the ACCs entered into with CCB.

Banco Bradesco S.A. ACCs

On March 2021, we entered into a U.S.$10,000 thousand short-term loan with Banco Bradesco S.A. with a term of six months. The borrowing entity is Petro Rio O&G. We are not subject to any material restrictive covenants under the loan, and there are no repayments required prior to the maturity thereof. This loan benefits from a promissory note issued by PetroRio O&G and a parent company guarantee issued by PetroRio White Shark.

As of March 31, 2021, R$ 57,010 thousand (or U.S.$10,006 thousand) remains outstanding under ACCs entered into with Banco Bradesco S.A.

Banco Safra S.A. ACC

On December 2020, we entered into a U.S.$5,000 thousand short-term loan with Safra with a term of six months. The borrowing entity is Petro Rio O&G. This loan, which is fully drawn, accrues interest at a rate of 3.8% per annum. We are not subject to any material restrictive covenants under the loan, and there are no repayments required prior to the maturity thereof.

As of March 31, 2021, R$28,781 thousand (or U.S.$5,052 thousand) remains outstanding under the Banco Safra S.A. ACC.

Banco do Brasil S.A. ACCs

On November, 2020, we entered into a U.S.$2,750 thousand short-term loan with Banco do Brasil with a term of six months. The borrowing entity is Petro Rio Jaguar. This loan, which is fully drawn, accrues interest at a rate of 4.5% per annum.

On December 2020, we entered into a U.S.$5,700 thousand short-term loan with Banco do Brasil, with a term of six months. The borrowing entity is Petro Rio Jaguar. This loan, which is fully drawn, accrues interest at a rate of 4.15% per annum.

We are not subject to any material restrictive covenants under these loans, and there are no repayments required prior to the maturity thereof. These loans benefit from a promissory note issued by PetroRio Jaguar and a parent company guarantee issued by PetroRio S.A.

As of March 31, 2021, R$48,771 thousand (or U.S.$8,560 thousand) remains outstanding under the ACCs entered into with Banco do Brasil S.A.

Banco BTG Pactual S.A. ACC

On March 2021, we entered into a U.S.$50,000 thousand short-term loan with Banco BTG Pactual S.A. with a term of one year. The borrowing entity is Petro Rio Jaguar. This loan, which is fully drawn, accrues

interest at a rate of 4.15% per annum. We are not subject to any material restrictive covenants under the loan, and there are no repayments required prior to the maturity thereof. This loan has the benefit from promissory note issued by PetroRio Jaguar and a parent company guarantee issued by PetroRio S.A.

As of March 31, 2021, R$285,161 thousand (or U.S.$50,052 thousand) remains outstanding under the ACC entered into with Banco BTG Pactual S.A.

Short-term financings

After March 31, 2021, we entered into the unsecured short-term credit facilities described below. We intend to prepay these loans with the proceeds of the notes offered hereby.

Creditor	Currency	Interest Rate (p.a.)	Maturity	Outstanding Amount [1]
				(U.S.$ thousands)
CCB	U.S.$	4.00%	April 1, 2022	8,000
Banco ABC	U.S.$	3.98%	April 9, 2022	8,914
Santander	U.S.$	3.92%	April 11, 2022	50,000
Safra	U.S.$	3.00%	April 21, 2022	2,500
Itaú	U.S.$	3.65%	April 24, 2022	20,000
Citibank	U.S.$	2.62%	May 11, 2022	7,000
Banco Daycoval	U.S.$	4.00%	November 21, 2021	5,000
Total				**101,414**

(1) Amounts outstanding are as of the date of this Offering Memorandum.

Dividend Policy

Our board of directors has not adopted a formal dividend policy. The payment of dividends is not guaranteed and depends on our general financial condition, our financial requirements for future growth and other factors which our board of directors may consider appropriate.

We did not declare or pay dividends for the years ended December 31, 2020, 2019 and 2018.

Contractual Obligations

As part of our normal course of business, we enter into arrangements that will impact our future operations and liquidity, some of which are already reflected as liabilities in the Audited Consolidated Financial Statements. Our principal commitments relate to (i) loans and financing and (iii) contractual charges under IFRS 16 relating to operating leases for the FPSO Polvo and other logistics and infrastructure.

The following table sets forth the outstanding balance of our contractual obligations as of March 31, 2021 (only for capital obligations and not the interest falling due in future periods).

	Maturity by period							
	2021	2022	2023	2024	2025	2026	2027 and Later	Total
				(R$ thousands)				
Loans and financing[1]	1,740,092	281,251	142,432	—	—	—	—	2,163,775
Contractual charges (Lease IFRS 16)[2]	134,339	62,200	62,200	62,341	62,200	62,200	156,518	601,997
Total contractual obligations	1,874,431	343,451	204,632	62,341	62,200	62,200	156,518	2,765,772

(1) Loans and financing include our short-term and long-term loans and financing as of March 31, 2021.

(2) Contractual charges (Lease IFRS 16) include our short-term and long-term contractual charges (Lease IFRS 16) as of March 31, 2021.

Hedging Arrangements

Our hedging strategy aims to secure our liquidity when faced with volatile oil and gas prices. We are significantly vulnerable when crude oil and natural gas prices decline below the levels necessary to fund our operating costs and general and administrative expenses, planned non-discretionary capital programs, taxes and debt services. We enter into derivative financial instruments to manage our exposure to commodity price risks, namely put options.

Our strategy is to carry out part of its investments in fixed and variable income assets, transactions involving foreign exchange, interest, swaps, derivatives, various commodities and other financial instruments, for speculative purposes, in different sectors in Brazil and abroad, in the short, medium and / or long term, in order to maximize profitability and seek greater return to our shareholders. In adopting this strategy, we are exposed to the risks inherent to such investments, and to fluctuations in the prices of these assets, which can negatively impact our cash.

We maintain our investments in liquid, floating rates securities issued by leading financial institutions, subject to certain concentration limits.

In the three-month period ended March 31, 2021, we did not enter into derivative contracts.

In 2020, we entered into hedge transactions to obtain a minimum sale price between U.S.$40 and U.S.$65 per barrel. We recorded a gain of U.S.$48,366 thousand in respect of derivate contracts settled in 2020, which was recorded in our result for that year.

In 2019, we entered into hedge transactions to obtain a minimum sale price between U.S.$59.50 and U.S.$90.00 per barrel. We recorded a loss of U.S.$991 thousand in respect of derivate contracts settled in 2019, which was recorded in our result for that year.

In 2018, we entered into hedge transactions to obtain a minimum sale price between U.S.$70.00 and U.S.$90.00 per barrel. We recorded a loss of U.S.$2,357 thousand in respect of derivate contracts settled in 2018, which was recorded in our result for that year.

See note 29 to the Unaudited Individual and Consolidated Interim Financial Information.

Off-Balance Sheet Arrangements

As of March 31, 2021, we had no off-balance sheet arrangements

Quantitative and Qualitative Disclosure about Market Risk

Commodity Price Risk

Our earnings and cash flow are sensitive to changes in the price of crude oil and natural gas. We estimate that a hypothetical decrease of 10.0% in the average price per barrel of oil would result in a decrease of U.S.$17 million in our oil and gas sales over a quarter period (based of the volume of crude sales of the fourth quarter recorded in 2020). This hypothetical assumes that we have not entered into any hedging arrangements. See "*—Off-Balance Sheet Arrangements—Hedging Transactions*."

Market Risk

Market risk is the possibility of losses arising from the effect of fluctuating market values for financial instruments and commodities.

Oil Price Variation Risk

We are subject to the risk of, its main commercial product, based on the Brent price discounted by a variable amount negotiated on each shipment.

Interest Rate Risk

We are exposed to the interest rate risk on our financial investments. The table below sets forth our sensitivity to possible changes in interest rates, income and shareholders' equity, before taxation.

Operation	Risk	Probable scenario	Scenario (I) 25%	Scenario (II) 50%
Impact on the securities	Decrease in CDI rate	201	93	(15)

The calculation of the amounts in the table above scenario is based on the projected CDI rate disclosed by B3 for the three-month period ended March 31, 2021, taking into account a probable scenario of a CDI rate of 2.18 %. Under scenario I, the projected change in the exchange rate was increased by 25 % and under scenario II, the projected change in the exchange rate was increased by 50%.

Foreign Exchange Risk

Our exposure to fluctuations in foreign exchange rates is attributable to our operating activities and net investments in foreign subsidiaries. The table below sets forth the hypothetical impact of certain changes in the exchange rate of U.S. dollars relative to Brazilian *reais* on our shareholders' equity, before taxation.

Operation	Risk	Probable scenario	Scenario I 25%	Scenario II 50%
Impact on financial investments	U.S.$ decrease	1,459	(321,967)	(643,934)
Provision for abandonment (ARO)	U.S.$ increase	(1,240)	(273,809)	(547,617)
Loans	U.S.$ increase	(2,450)	(540,944)	(1,081,888)

The calculation of the amounts in the table above scenarios is based on the average exchange rate projection disclosed by B3 for the three months period from March 31, 2021 (R$5.7038 to U.S.$1.00). Under scenario I, the projected change in the exchange rate was increased by 25% and under scenario II, the projected change in the exchange rate was increased by 50%.

Credit Risk

The Group is exposed to credit risk in its operating activities and bank and/or financial institution deposits, foreign exchange transactions and other financial instruments.

Liquidity Risk

Our liquidity risk management policy requires us to maintain sufficient cash to cover our obligations as they come due. Our ability to fund existing and future debt servicing requirements is also managed by maintaining available funding through an adequate amount of committed credit facilities.

The following table sets forth the maturity profile of our liabilities as of March 31, 2021.

	As of March 31, 2021		
	up to 12 months	More than 1 year	Total
	(R$ thousands) (unaudited)		
Liabilities			
Loans and financing	(1,882,524)	(281,251)	(2,163,775)
Suppliers	(119,524)	(13,448)	(132,972)
Labor obligations	(41,101)	—	(41,101)
Taxes and social contributions	(120,602)	—	(120,602)

	As of March 31, 2021		
	up to 12 months	**More than 1 year**	**Total**
	(R$ thousands) (unaudited)		
Provisions for abandonment	—	(853,359)	(853,359)
Provisions for contingencies	—	(91,295)	(91,295)
Contractual Charges (Lease IFRS 16)	(189,846)	(412,151)	(601,997)
Other liabilities	—	(960)	(960)
Total	(2,353,597)	(1,652,464)	(4,006,061)

BUSINESS

Overview

According to the ANP's monthly production bulletin issued in May 2021, relating to production for March 31, 2021, we have established ourselves as one of the main oil and gas companies operating currently in Brazil and the leading company among the independent oil and gas companies in Brazil based on production volume of oil and gas products, with a focus on operating and developing producing assets and a core portfolio consisting of four operating fields, three located in the Campos Basin and one located in the Camamu-Almada Basin in offshore Brazil.

Our strategy is centered around the acquisition and development of producing hydrocarbon fields, since our acquisition of a controlling working interest in the Polvo Field in 2014. By reducing operating costs, investing in targeted redevelopment initiatives and implementing enhanced oil recovery ("EOR") techniques, we have been able to increase our assets' reserves and production, as well as extend their economic life, while at the same time maintaining leading health, safety and environmental ("HSE") standards. At the Polvo Field, we were able to reduce lifting and other operational costs by 65% from R$1,250,000 thousand (or U.S.$240,000 thousand) in 2013 to R$434,408 thousand (or U.S.$85,855 thousand) in 2020 and extend its economic life by approximately 18 years to 2035 through extensive well interventions, drilling and maintenance work, and the expected synergies with the neighboring Tubarão Martelo Field.

Our strategy has been bolstered by Petrobras' strategy to divest its mature fields in Brazil in favor of pre-salt exploration areas, which has allowed us to make key acquisitions in recent years. Following our acquisition of the remainder of the working interest in the Polvo Field in 2015, we diversified our asset portfolio in 2016 and 2017 by acquiring non-operating interests in the Manati Field, a gas producing field. On November 5, 2020, we announced the sale of our 10% working interest in the Manati Field, held through our subsidiary Petro Rio Coral Exploração Petrolífera Ltda., to Gas Bridge. The Manati Field Sale is subject to the satisfaction of conditions precedent, including the Petrobras Condition Precedent. See "*Properties in Production and Development —Manati Field —Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

In 2019, 2020 and 2021, we announced acquisitions of controlling working interests in the Frade Field, in which we have had a 100% working interest since February 5, 2021, and the Tubarão Martelo Field, in which we have an 80% interest. As of March 31, 2021, we hold a 100% working interest in the Frade Field and an 80% interest in the Tuburão Martelo Field, which are located near the Polvo Field in the Campos Basin and present immediate opportunities for operational synergy, including through shared logistics and potential tie-back developments.

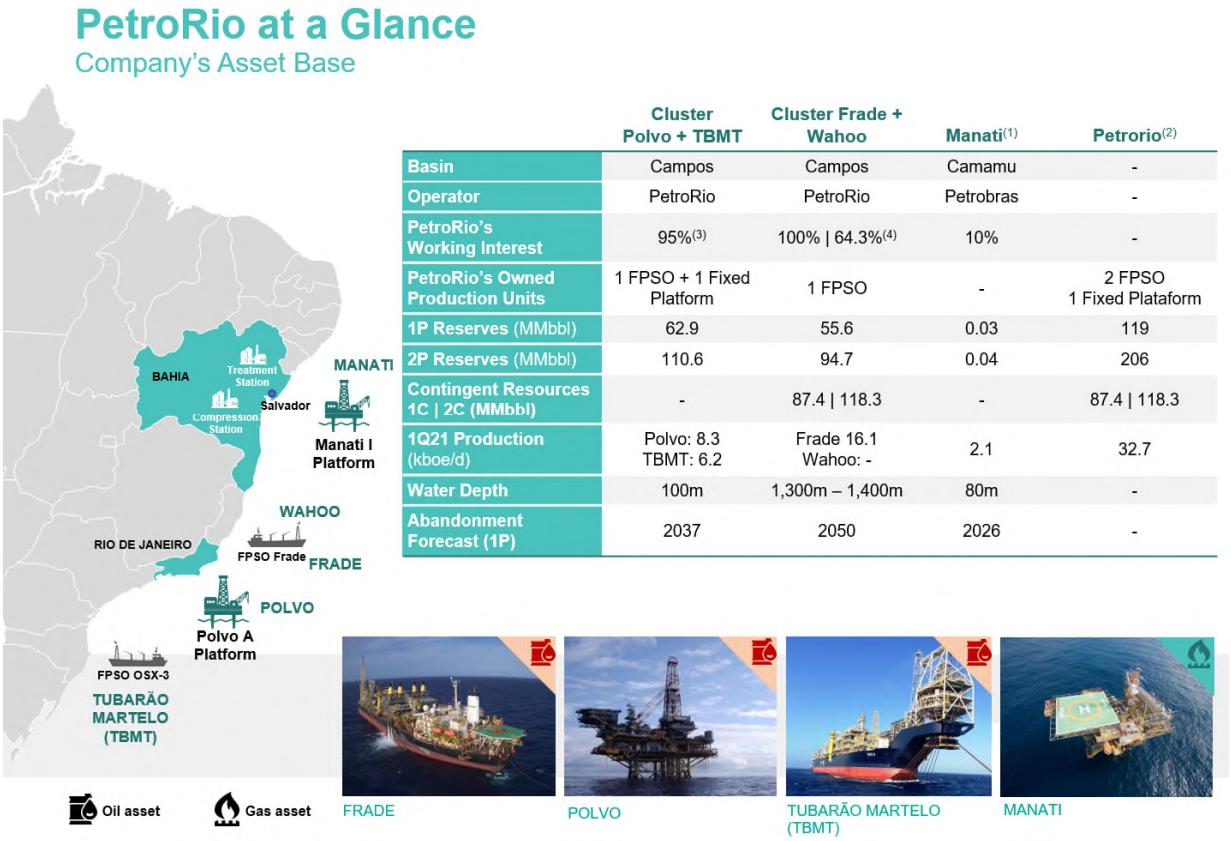
On November 18, 2020, PetroRio Jaguar and BP Energy do Brasil Ltda. ("BP Brazil") entered into an agreement pursuant to which PetroRio Jaguar will acquire a 37.5% working interest in the BM-C-30 Block (the "Wahoo Field") and a 60% working interest in the BM-C-32 Block (the "Itaipu Field"), each owned by BP Brazil, subject to the satisfaction of conditions precedent, including regulatory approvals (the "Wahoo Itaipu BP Acquisition"). On March 4, 2021 we announced the signing of an agreement with Total Brasil for the acquisition of a 28.6% working interest in the Wahoo Field (the "Wahoo Total Acquisition" and together with the Wahoo-Itaipu BP Acquisition, the "Wahoo-Itaipu Acquisitions"). The Wahoo-Itaipu Acquisitions, which remain subject to conditions precedent, will entitle us to a 64.3% working interest in the Wahoo Field. These transactions are consistent with our strategy of inorganic growth.

We are classified as an Operator A by the ANP, which allows us to operate offshore (including shallow, deep and ultra-deep waters) and onshore blocks in Brazil.

As described below, we have experienced significant growth during the last few years. According to our internal data, our production increased from 23.4 Mboepd in the three-month period ended March 31, 2020 to 31.3 Mboepd in the three-month period ended March 31, 2021. See "*Oil and Gas Reserves and Production Information.*"

Furthermore, our certified net proved and probable reserves increased from 192.6 MMboe as of April 30, 2020 to 209.3 MMboe as of January 1, 2021, and our certified 2C contingent resources totaled 141 MMboe as of January 1, 2021, according to the 2021 D&M Reserves Reports. See "*Oil and Gas Reserves and Production Information.*"

The following graph shows our current assets, assets being acquired or sold, and other main information



	Cluster Polvo + TBMT	Cluster Frade + Wahoo	Manati[1]	Petrorio[2]
Basin	Campos	Campos	Camamu	-
Operator	PetroRio	PetroRio	Petrobras	-
PetroRio's Working Interest	95%[3]	100% | 64.3%[4]	10%	-
PetroRio's Owned Production Units	1 FPSO + 1 Fixed Platform	1 FPSO	-	2 FPSO 1 Fixed Plataform
1P Reserves (MMbbl)	62.9	55.6	0.03	119
2P Reserves (MMbbl)	110.6	94.7	0.04	206
Contingent Resources 1C | 2C (MMbbl)	-	87.4 | 118.3	-	87.4 | 118.3
1Q21 Production (kboe/d)	Polvo: 8.3 TBMT: 6.2	Frade 16.1 Wahoo: -	2.1	32.7
Water Depth	100m	1,300m – 1,400m	80m	-
Abandonment Forecast (1P)	2037	2050	2026	-

Source: D&M Reserves Reports for reserves data; and PetroRio management information for all other data.

(1) We are in the process of selling our working interest in the Manati Field pursuant to the Manati Field Sale. See "*Business—Properties in Production and Delevopment—The Manati Field—Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

(2) Production volume proportional to our participation in the following assets: 70% in the Frade Field through February 4, 2021 and 100% in the Frade Field since February 5, 2021; 100% in the Polvo Field; 80% in the Tubarão Martelo Field and 10% in the Manati Field.

(3) Pre-tieback: 100% of the Polvo Field and 80% of the Tubarão Martelo Field. Post-tieback: 95% of the Polvo Field and the Tubarão Martelo Field.

(4) As adjusted to give effect to the acquisition of an additional 28.6% working interest in Wahoo as announced in March 2021. The Wahoo-Itaipu Acquisitions are subject to the satisfaction of conditions precedent. See "*Material Contracts—The Wahoo Field and Itaipu Field*."

Details on the Acquisition of Fields

The Frade Field Petrobras Acquisition

On November 28, 2019, we entered into a stock purchase agreement with Petrobras for the acquisition of Petrobras' (1) rights and obligations in connection with the exploration, development and production of oil and natural gas, corresponding to a 30% working interest in the Frade Field, which is located in the Campos Basin, north shore of the state of Rio de Janeiro, and (2) 30% of the share capital of Frade B.V., entity that holds the offshore assets used to develop the Frade Field. The Frade Field Petrobras Acquisition closed on

February 5, 2021. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field.

This transaction was carried out by one of our subsidiaries, and we now hold 100% of the Frade Field and the totality of the field production. We plan to initiate the revitalization plan of the Frade Field. The Frade Field Petrobras Acquisition also grants us the totality of the benefits deriving from our initiatives to reduce costs and to increase the production since the effective date of its acquisition. See note 12(c) to the Unaudited Individual and Consolidated Interim Financial Information.

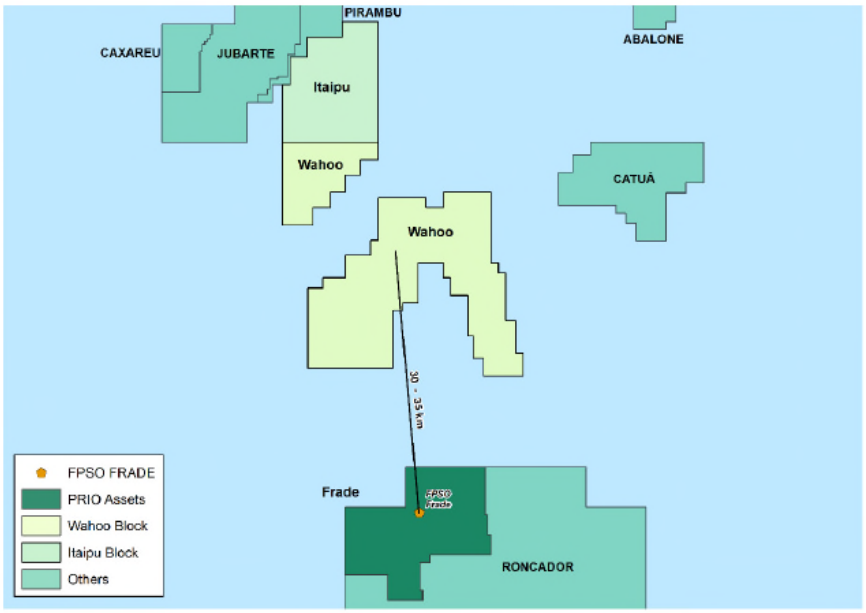
The Wahoo-Itaipu Acquisitions

On November 19, 2020, we announced that the Wahoo-Itaipu BP Acquisition. The remaining member of the Wahoo Field consortium is IBV, which holds a working interests of 36% in this field. Total owns the remaining 40% working interest in the Itaipu Field.

On March 4, 2021 we announced the Wahoo Total Acquisition. The Wahoo-Itaipu Acquisitions, which remain subject to the satisfaction of conditions precedent, will entitle us to a 64.3% working interest in the Wahoo Field.

The Wahoo Field is located about 30-35 km from the Frade Field. It has a water depth of 1,400 meters and a carbonate reservoir in the pre-salt layer of 5 to 7 thousand meters. Oil was first discovered in the Wahoo Field in 2008 and formation tests were carried out in 2010. The Wahoo Field has production potential of over 140 million barrels (considering an interest of 100% in the Wahoo field) and its acquisition is consistent with our value generation strategy.

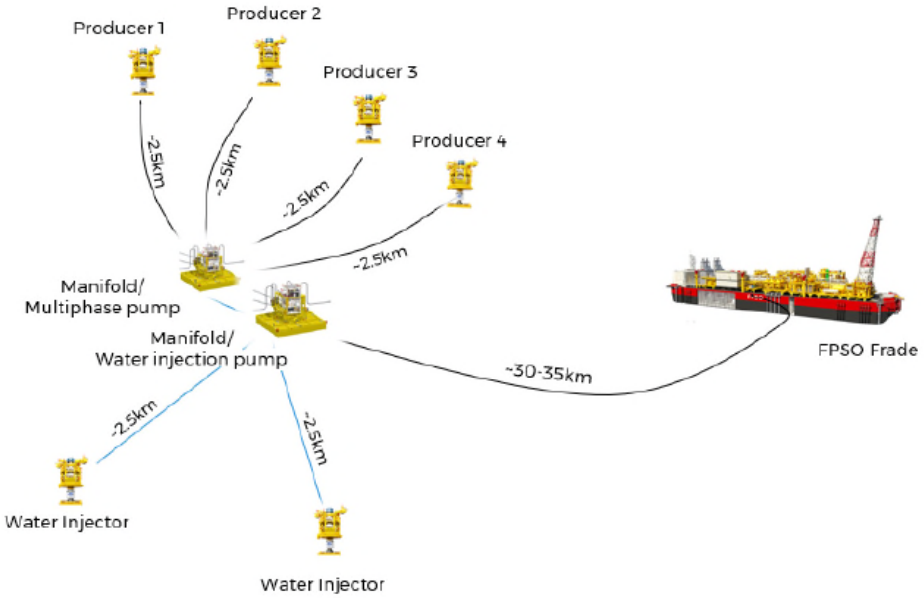
The Itaipu Field, discovered in 2009, has three pilot wells drilled and is close to the Parque das Baleias cluster. The graph below sets forth the geographic location of the Wahoo Field and the Itaipu Field.



Source: PetroRio's geology and geophysics department.

The Wahoo-Itaipu Acquisitions are aligned with the strategy of our business model, of forming production clusters through tiebacks, field redevelopment and operational optimization. During the investment analysis period, we identified that it would be possible to make the interconnection between the Wahoo Field and the Frade Field, taking advantage of the existing infrastructure. This project includes the drilling of four producing wells, two injection wells, the installation of a submarine manifold with multiphase pumps for the flow of produced oil and injected water, and the tieback between the manifold and the FPSO Frade.

The graph below shows the planned tieback between the Frade Field and the Wahoo Field.



Source: PetroRio's management data.

The Wahoo-Itaipu Acquisitions reflect our capabilities to carry out strategic M&A acquisitions in the Brazilian oil and gas market.

History and Development

PetroRio's current operations were launched in 2014, following a turnaround of its predecessor, HRT Participações em Petróleo S.A. ("HRT"), an oil and gas company founded in October 2008 that focused primarily on the exploration of oil and gas assets in Brazil and Namibia. After a complete reorganization of HRT's original key shareholders and leadership, we have radically shifted the Group's strategic focus to the acquisition and redevelopment of brownfields.

2008 to 2014: HRT's History

PetroRio, formerly named BN 16 Participações Ltda., was incorporated on October 13, 2008, with the corporate purpose of participating in other companies as a partner or shareholder. BN 16 Participações Ltda. was transformed into a privately held corporation on July 17, 2009, changing its legal name to HRT Participações em Petróleo S.A., or HRT. Initially founded as a limited liability company, HRT was transformed in a corporation on the same year. Between October and December of 2009, HRT carried out two private placements totaling R$478.9 million.

In 2010, HRT completed its initial public offering, comprised by a primary and secondary offerings of 2,067,500 common shares, raising U.S.$2.5 billion in the process. The proceeds were primarily raised to finance the exploration of further concession areas in the Solimões Basin.

On April 19, 2011, aiming to acquire exploratory assets in Namibia, HRT shareholders held an extraordinary shareholders meeting to approve the acquisition of UNX Energy Corporation, or UNX. That same month, HRT and UNX finalized the Plan of Arrangement, through which HRT acquired the shares of UNX giving, in return, Global Depositary Shares, or GDSs of its issue, which were listed on the stock exchange. Toronto, Canada values (TSX.V Venture or TSX-V).

In 2012, HRT continued its exploration efforts in the Solimões Basin, drilling six wells and making discoveries of gas and condensate in five of them. HRT also entered into a farm-out agreement with TNK Brasil, whereby the latter committed to carrying out exploration activities in the Solimões Basin in exchange

for a 45% working interest. In Namibia, HRT conducted a 3D seismic survey of over 9,000 km² and began to farm out portions of its Namibian blocks to GALP Energia. During this time, HRT reached a peak of 600 employees across Brazil, Namibia, Canada, the United States and the Netherlands.

Given the operational difficulties in the Solimões Basin, HRT divested two of its exploratory blocks to ANP.

In summary, between 2010 and 2013, HRT conducted significant, but ultimately unsuccessful, exploratory activities in Brazil's Solimões Basin and in offshore Namibia.

2014: Emergence of PetroRio

Due to the setbacks in its exploration campaigns, increasing operational administrative costs and a lack of cash generating assets, HRT underwent a restructuring beginning in 2014, when a group of international and local investors, including many of the current shareholders of PetroRio, invested in HRT and subsequently initiated an internal review of HRT's strategy. In 2014, Nelson Queiroz Tanure, Roberto Monteiro and Emiliano Fernandes joined HRT as external consultants representing these investors and led the strategic review, as a result of which HRT ultimately abandoned its exploration-centric strategy and shifted its focus to the acquisition and optimization of producing assets.

As part of its new strategy, in the first half of 2014, HRT O&G Exploração e Produção de Petróleo Ltda. (currently PetroRio O&G Exploração e Produção de Petróleo Ltda.), an affiliate closed the acquisition of a 60% working interest in the Polvo Field and 100% of BP Energy America LLC, the entity owning Polvo A, the wellhead platform and drilling rig used in the Polvo Field. At this point, BP envisaged the field as highly mature and prepared for its abandonment in 2016. See "*Business—Properties in Production and Development—The Polvo Field*." HRT then entered into an agreement to acquire the remaining 40% working interest in the Polvo Field from Maersk Energia Ltda. ("Maersk"). In October 2014, HRT issued convertible debentures in the amount of R$90 million to finance the development of oil reserves through investments to be made in current and future fields and to acquire new assets related to the oil and natural gas production. All debentures were converted into common shares or redeemed, pursuant to approval by our board of directors on October 31, 2019 of a capital increase, within our authorized capital stock.

2015

To further reflect its transformation, HRT changed its name to Petro Rio S.A. and implemented a new corporate culture focused on results, meritocracy, financial discipline and HSE excellence. Following this cultural shift, we continued to work on improving our management system and aligning our long-term strategy with our internal evaluation control metrics. This culture is our identity today and applies throughout our organization, from senior management down to each employee through a system of performance measurement and incentive-driven compensation.

In 2015, PetroRio continued to implement its refreshed strategy, by appointing a new management team, which included Nelson Tanure as Business Development Officer, Roberto Monteiro as COO and Emiliano Fernandes as Legal Counsel. PetroRio also adjusted its approach to personnel and employed cost optimization programs, resulting in a reduction in staff headcount by approximately 80%. While PetroRio's employee base previously consisted primarily of geologists, PetroRio took actions to diversify its employees base by hiring engineers, economists and business administrators. Leveraging the decline in oil prices and decreasing demand for oilfield services, PetroRio also renegotiated and revised the scope of its suppliers' contracts, reducing the Polvo Field's operating costs, including the renegotiation of the charter agreement for the FPSO Polvo with BW Offshore.

An additional pillar of the refreshed strategy was to divest its legacy exploration assets. In May 2015, HRT entered into a second farm-out agreement with the Rosneft Oil Company, selling the remaining 55% working interest in the Solimões Basin exploratory blocks for a total value of U.S.$55 million (R$301.6 million).

As of June 26, 2015, PetroRio's shares started to be publicly listed on the B3 under the Novo Mercado listing segment (ticker PRIO3). As of July 09, 2015, PetroRio's GDSs started to be publicly listed on the TSX-V (ticker PRJ).

In October 2015, we were qualified by the ANP as an Operator A, which allows us to operate offshore (including shallow, deep and ultra-deep waters) and onshore blocks in Brazil. This qualification is circumstantial and the requirements are changed in each new bidding round, notably the requirement for economic and financial capacity. Despite this information, we were duly qualified as Operator A again in 2020 for the process of transferring Petrobras' stake in the Frade Field.

2016

In 2016, as part of our refreshed strategy, we initiated and completed the first phase of the Polvo Field Redevelopment Plan, performing a successful well intervention campaign in three wells located in the Polvo Field, one of which was abandoned since 2008. See "*Business—Properties in Production and Development—The Polvo Field—The Polvo Field Redevelopment Plan*." As a result, we increased production at the Polvo Field by approximately 20%. We carried out the interventions using EOR techniques, including the injection of polymers aimed at reducing water production.

We also successfully increased our operational efficiency and achieved an overall efficiency (measured as a given field's uptime during a given period divided by such period minus the field's forecasted downtime, e.g., for planned maintenance) of over 93.0% in the year ended December 31, 2016, as compared to the Campos Basin average of approximately 80%, in accordance with PetroRio's calculations. We also established our own marketing and trading team and terminated a marketing agreement with Glencore, which reduced the commercial discounts on the sale of our crude oil.

On December 21, 2016, our subsidiary Petro Rio O&G Exploração e Produção de Petróleo Ltda. entered into a share purchase agreement for the acquisition of an indirect interest equivalent to 23.19% held by Goldman Sachs & Co. in the formerly Brasoil do Brasil Exploração Petrolífera SA ("Brasoil") and currently PetroRio do Brasil Exploração Petrolífera SA, holder of 10% of the rights and obligations of the concession contract of the Manati Field (currently subject to assignment to Gas Bridge S.A., with the transaction subject to effectiveness and closing upon satisfaction of certain precedent conditions, as described below) and indirect 100% stake in the Pirapema Field (FZA-M-539) concessions - gas asset currently under development - and Block FZA-M-254, which are located in the Foz de Amazonas Basin. See "*Business—Properties in Production and Development—The Manati Field*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

2017

In January 2017, PetroRio announced it has entered into a share purchase and sale agreement to acquire an additional stake of 29.21% at Brasoil held by Brascan Petroleum, Gas and Energy Fund – Investment Fund in Participations ("FIP Brascan"). After the closing of this transaction and the acquisition of an indirect stake held by Goldman Sachs & Co. at Brasoil, PetroRio stake in Brasoil increased to 52.40%.

In February 2017, all remaining investors of Brasoil exercised their tag-along rights and adhered to the terms and conditions of the acquisition. Brasoil's acquisition operations were approved by our shareholders at a meeting held on March 7, 2017, and were concluded on March 20, 2017. As of that date, the subsidiary PetroRio O&G became the single shareholder Brasoil and started to influence the Manati Field's operations through our emphasis on cost efficiency, providing cost benchmark data and incentivizing discussions on reducing operating and decommissioning costs.

We divested further HRT's legacy assets throughout 2017, including two drilling rigs, to further consolidate our cash position, leaving us with only two remaining onshore drilling rigs as of the end of 2017. We also evaluated the financial and technical feasibility of a drilling campaign in the Polvo Field, in which no drilling had been performed since 2010.

2018

In 2018, we initiated and completed the second phase of the Polvo Field Redevelopment Plan (the "2018 Polvo Field Drilling Campaign"). Three new wells were successfully drilled using the drilling rig on the Polvo A platform, resulting in commercial discoveries and production starting in 2018. The 2018 Polvo Field Drilling Campaign set a new technical record in Brazil as the longest distance drilled by a single drill of Baker Hughes. The data gathered during the successful 2018 Polvo Field Drilling Campaign at the Polvo Field informed the targets we set for ongoing and planned drilling campaigns.

In May 2018, Mr. Nelson Queiroz Tanure Filho was appointed CEO of PetroRio.

In October 2018, we announced the acquisition of 18.26% working interest in the Frade Field from INPEX through the acquisition of Frade Japão Petróleo Ltda. (which we re-named Petro Rio White Shark Petróleo Ltda.). The acquisition included INPEX's 18.26% share of Frade B.V., the entity owning the FPSO vessel and subsea equipment employed at the Frade Field. The acquisition closed in October 2019. See "*Business—Properties in Production and Development—The Frade Field*."

As a result of our growth during this period, we were included in the B3 equity indexes SMLL (Small Caps), IbrA (Brazilian Broad) and IGCT (Corporate Governance Trade).

In December 2018, we entered into a financing facility in the amount of R$90.5 million with Financiadora de Estudos e Projetos ("FINEP"), a Brazilian governmental funding agency operated by the Ministry of Science and Technology with the objective of incentivizing domestic innovation.

2019

In 2019, we further developed our relationships with local and global banks through various transactions. We signed a U.S.$60 million (R$312 million) export pre-payment agreement with the Industrial and Commercial Bank of China ("ICBC"), along with a corresponding marketing agreement with PetroChina that allows PetroChina to access crude oil produced at the Polvo Field on a right-to-match basis for the duration of the loan. The ICBC Facility was repaid in full on December 29, 2020 and the PetroChina Marketing Agreement will remain in effect through June 29, 2021. See "*Business—Properties in Production and Development—The Polvo Field—Marketing and Offtake Arrangements*," and "*Business—Material Contracts—The Polvo Field—PetroChina Marketing Agreement*."

We also entered into a U.S.$48 million pre-export financing facility with Citibank, which has since been repaid in full, and obtained more than U.S.$95 million (R$386 million) in credit through working capital credit lines with several banks.

On March 25, 2019, PetroRio Luxembourg Holding completed the Frade Field Chevron Acquisition, whereby we acquired Chevron's 51.74% working interest in, and operatorship of, the Frade Field, as well as its 51.74% share in the Frade Field FPSO and related subsea equipment. The acquisition included all of Chevron's proprietary data related to the Frade Field, including seismic and field studies. We also hired Chevron's employees staffed at the Frade Field as part of the acquisition. The acquired entity also holds a 50% working interest in and operatorship of the CE-M-715 exploratory block. The total consideration for this acquisition was approximately U.S.$450 million (R$2,340 million), of which approximately U.S.$190 million (R$1,014 million) was payable on a deferred basis. As of the date of this Offering Memorandum, amounts due to Chevron pursuant to the Frade Field Chevron Acquisition SPA have been paid in full.

On October 1, 2019, we completed the Frade Field INPEX Acquisition, whereby we acquired an additional 18.26% working interest in the Frade Field from INPEX, which we originally announced in October 2018. Following this acquisition, and combined with the Frade Field Chevron Acquisition, we held a 70% working interest in the Frade Field. As the new operator of the Frade Field, we implemented a balanced and efficient transition of field operations, and on-boarded the former Chevron employees. We also integrated the tax, accounting, IT and other digital interfaces and systems of the prior operator of the Frade Field into our own. We also implemented a cost reduction strategy at the Frade Field by renegotiating contracts with suppliers, capturing synergies with our logistics base at the nearby Polvo Field and entered into negotiations with potential drilling suppliers in connection with the Frade Field Redevelopment Plan. The total

consideration for this acquisition was approximately U.S.$38 million (R$156 million), with an additional U.S.$30 million earn-out, which has been paid in full as of the date of this Offering Memorandum. After post-signing adjustments, our total cash outlay in connection with this acquisition amounted to approximately U.S.$14 million.

As part of the third phase of the Polvo Field Redevelopment Plan, we devoted internal resources over the course of 2019 to the preparation of a new drilling campaign in the Polvo Field and invested in Polvo A, its wholly-owned fixed platform, to perform the contemplated drilling program. See "*—Properties in Production and Development—The Polvo Field*."

2020

In January 2020, our shares were included in B3's IBrX-100 index, which includes the 100 most liquid stocks on the exchange. In September 2020, our shares were included in the Bovespa Index of B3, as a result of our growth and increased volume of trading of our shares.

On February 3, 2020, we entered into agreements for: (i) the acquisition of the FPSO Bravo; and (ii) the farm in of Tubarão Martelo Field, whereby we agreed to acquire an 80% working interest in the Tubarão Martelo Field from Dommo, where the FPSO Bravo is currently chartered. The acquisitions of: (i) the FPSO Bravo and (ii) the farm-in of the Tubarão Martelo Field both closed in 2020. Our acquisition of the FPSO Bravo was completed on April 20, 2020 through PetroRio Luxembourg. The total consideration for this acquisition was U.S.$140 million, which was financed using cash on hand and a U.S.$100 million bridge loan provided by Prisma. We have since agreed with Prisma to convert the bridge loan into a long-term project financing. See "*Business—Properties in Production and Development—The Tubarão Martelo Field*" and "*Management's Discussion and Analysis of Financial Condition and Results of Operations—Loans and Financing—Financing Arrangements—Prisma Long-term Financing*."

In February 2020, following its petition to the ANP regarding the Polvo Field Redevelopment Plan, PetroRio received a royalty rate reduction from 10% to 5% on incremental production above the ANP's reference curve (submitted in April 2019) pursuant to ANP's Board of Directors' Resolution No. 96/2020. This was the first time in the ANP's history that it granted such a reduction, which is now applicable to other fields in the Campos Basin.

In March 2020, we announced the first oil produced from the Eocene Well, as a result of our successful completion of the third phase of the Polvo Field Redevelopment Plan (the "2020 Polvo Field Drilling Campaign"). The well's initial production was over 2,500 boepd, increasing production at the Polvo Field by approximately 30% and reducing the field's standalone lifting cost to under $26 per barrel. See "*Business—Properties in Production and Development—The Polvo Field—The Polvo Field Redevelopment Plan*."

On July 2, 2020, the ANP approved the Tubarão Martelo Field Acquisition subject to certain conditions, which have since been satisfied. On August 3, 2020, we completed the Tubarão Martelo Field Acquisition. See "*Business—Properties in Production and Development—The Tubarão Martelo Field*."

Following completion of the Tubarão Martelo Field Acquisition, we plan to complete the TBMT-Polvo Tieback Project, a tie back connecting the Tubarão Martelo Field, through the FPSO Bravo, to the Polvo Field. In parallel, we plan to terminate the existing charter of the FPSO currently dedicated to the Polvo Field, allowing us to create an oil field cluster, thereby enabling significant synergies due to the existing facilities at the Polvo Field, including the Polvo A platform. The TBMT-Polvo Tieback Project is expected to be completed in 2021, after which we will have a 95% working interest in the combined cluster for the first 30 MMboe of production, and 96% thereafter. See "*Business—Properties in Production and Development—The TBMT-Polvo Cluster*."

On November 5, 2020, we announced the sale of our 10% working interest in the Manati Field, held through our subsidiary Petro Rio Coral Exploração Petrolífera Ltda., to Gas Bridge. The Manati Field Sale is subject to the satisfaction of conditions precedent, including the Petrobras Condition Precedent. See "*—Properties in Production and Development —Manati Field —Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

On November 19, 2020, through our subsidiary PetroRio Jaguar, we signed a contract with BP related to the Wahoo-Itaipu BP Acquisition. With the development of the field, we will form another production cluster, and will share the entire infrastructure with the Frade Field (including the FPSO), thus enabling the capture of synergies resulting in another strong and sustainable lifting cost reduction, always maintaining the highest standards of safety and efficiency. The closing of the Wahoo-Itaipu BP Acquisition is subject to the satisfaction of conditions precedents, including regulatory approvals. See "*The Wahoo Field and the Itaipu Field*."

We signed an agreement with Ventura for the acquisition, for U.S.$1.00, of the Atlantic Zephyr anchored semi-submersible rig, suitable for workovers and completions in water depth wells up to 300m. This acquisition aims to reduce operating costs and increase the efficiency of the Tubarão Martelo Field by significantly reducing the response time to eventual well shutdowns.

Recent Developments

Polvo Field Drilling Result

On May 10, 2021, we announced drilling in the Polvo Field's Eocene reservoir, which resulted in a well with initial production of 2,500 boepd. This well is still in the assessment period and is recorded in the 2021 D&M Reserves Report.

The well's estimated recoverable production is of approximately 4 MMboe. Polvo Field's production will increase to 12,000 boepd and is expected to contribute to reduce our lifting costs.

Chevron Repayment

On May 5, 2021 we paid Chevron in respect of the Frade Field Chevron Acquisition SPA. See "*Business—Material Contracts—The Frade Field—The Frade Field Acquisition SPA.*"

Stock Split

On April 30, 2021, PetroRio's Board of Directors approved a stock split of PetroRio's outstanding shares of common stock at a ratio of one-to-five. Accordingly, every share was split into five shares. PetroRio's shares began trading on a split adjusted basis on May 6, 2021. As a result of the share split, PetroRio issued 702,664,676 common shares and the total number of outstanding common shares increased to 878,330,845 common shares. The purpose of the stock split was to increase liquidity of PetroRio's common shares.

Appointment of Chief Financial Officer

On April 9, 2021, PetroRio's Board of Directors appointed Mr. Milton Salgado Rangel Neto as Chief Financial Officer of PetroRio. Mr. Roberto Bernardes Monteiro will continue to serve as Chief Executive Officer and Investor Relations Officer. See "*Management—Executive Officers.*"

Impacts of the COVID-19 Pandemic

As a result of the COVID-19 outbreak, and the resulting global containment measures as well as actions taken by the OPEC, we are currently facing oil market conditions marked by increased supply, along with a significant reduction in demand. These two main factors led to an oil surplus build up, resulting in a sharp drop in oil prices in the three-month period ended March 31, 2020 (Brent price fell by more than 55% between December 2019 and March 2020, according to our management). Following OPEC's agreement in April 2020 to cut production in response to reduced demand and sustained low oil prices, as well as the gradual reopening of economies and reduction in social distancing measures during this period, Brent oil prices had reached U.S.$63.54 per barrel as of March 31, 2021 and U.S.$51.80 per barrel as of December 31, 2020.

As a consequence of the recent volatility in oil prices, we have taken decisive measures, such as postponing our capital expenditures, including ongoing drilling campaigns in connection with the Frade Field Redevelopment Plan. We have also reduced our operating and administrative expenses through, among other measures, renegotiations with suppliers and temporarily reducing the compensation of all onshore employees and officers.

We have also implemented a number of safety measures designed to protect the health of our personnel at our onshore and offshore facilities, such as:

- reduction in the number of non-essential personnel located at our facilities and implementation of screening procedures (with support from medical professionals) for all personnel entering our offshore facilities;
- restriction of personnel movement to the minimum required to operate our facilities in a safe and efficient manner (with no international travel allowed and domestic travel allowed only for out-of-state employees critical to the operation of offshore facilities);
- increase in availability of protective, sanitation and hygiene products at our facilities;
- remote working arrangements for personnel based at our onshore facilities and suspension of all social events; and
- increased and consistent communication with our personnel regarding measures in place.

We are continuously monitoring the situation to adjust our response if necessary.

As a result of the measures we have implemented in response to the COVID-19 pandemic we have achieved certain cost reductions, as set out below. We compared the budget approved in December 2019 for the year 2020, and the budgeted amounts after taking into consideration the impact of COVID-19 in April 2020:

- reduction of our budget operational and administrative expenses by 13%, from U.S.$175 million (U.S.$104 million for the Polvo Field, and U.S.$71 million for the Frade Field) to U.S.$152 million (U.S.$89 million for the Polvo Field, and U.S.$63 million for the Frade Field) as the result of renegotiations with suppliers;
- reduction of our budget general and administrative expenses by 15%, from U.S.$21.7 million to U.S.$18.5 million as the result of payroll reductions, people on board/extension of on board periods, and suspension of corporate activities, sponsorships, travels and new hires; and
- reduction on our budget capital expenditures by 84%, from U.S.$179 million (U.S.$33 million for the Polvo Field, U.S.$100 million for the Frade Field, U.S.$16 million for ongoing drilling campaigns at the Tubarão Martelo Field, and U.S.$30 million for the TBMT-Polvo Tieback Project), to U.S.$29 million (U.S.$18 million for the Polvo Field, and U.S.$11 million for the Frade Field).

Review of Business Plan and Further Measures Adopted

Taking into consideration the uncertainty and volatility related to the spread of COVID-19 and the decrease in Brent oil prices during the first half of 2020, in addition of the several monitoring and prevention measures we adopted, we also reviewed our business plan and decided to postpone all investments (capital expenditures) in our assets and reduce expenses (operating expenditures, and general and administrative expenses) to readjust to this new scenario, such as:

- immediate reduction of people on board (POB) and extension of onboard periods for all assets we operate, keeping personnel movement at a minimum necessary in order to operate safely and efficiently;
- increased availability of protective, sanitation and hygiene products in onshore and offshore facilities directly related to our production, particularly in locations with higher exposure;
- increased frequency of communication and awareness to all employees and service providers stationed in onshore and offshore locations;
- adoption of screening procedures at the airport – with support from registered nurses – of personnel boarding the platforms. This includes 48-hour monitoring before embarking to identify potential cases;
- reduction of operating expenditures to U.S.$12.5 million per month (100% for the Polvo Field, and 100% for the Frade Field), compared to U.S.$16 million per month in 2019 (100% for the Polvo Field, and 100% for the Frade Field);

- steps to the re-commission the tanks in the FPSOs dedicated to the Tubarão Martelo Field and the Polvo Field, which increased our nominal oil storage capacity to 3.5 million barrels, resulting in more flexibility to offtakes dependent on the market conditions;
- suspension of all international travel, and limitation of domestic travel solely to employees critical to offshore facilities who reside in other states (preference to travel by car); and
- all in-person events have been suspended.

In addition to the measures above, (i) employees located at the corporate headquarters and onshore units started to work remotely (home office); (ii) we postponed 100% of our capital expenditures scheduled for the period from March to December, with the exception of approximately U.S.$10 million related to maintaining the security of current operations; and (iii) we reduced the salaries of onshore employees and officers was determined.

As the impacts resulting from the COVID-19 outbreak are continuous and still developing, we will continue to assess the evolution of the effects on our revenues, costs and expenses, investment, maintenance and/or divestment in assets, results, business and prospects, including any possible changes in our ability to continue operating our business.

Unaudited Operational Data for the Three-Month Period Ended March 31, 2021 and Year Ended December 31, 2020

The tables below contain our preliminary and unaudited operating data for the year ended December 31, 2020 and the three-month period ended March 31, 2021:

	Daily Production (boepd)				
Month	**Polvo Field**	**Frade Field[(1)]**	**TBMT Field[(2)]**	**Manati Field[(3)]**	**Total**
January 2020	8,290	13,438	—	2,226	23,954
February 2020	8,103	13,403	—	1,552	23,058
March 2020	9,434	13,837	—	3	23,274
First quarter 2020	8,620	13,563	—	1,254	23,437
April 2020	10,629	13,833	—	3	24,464
May 2020	9,949	13,294	—	413	23,657
June 2020	7,759	13,013	—	1,705	22,477
Second quarter 2020	9,446	13,380	—	707	23,533
July 2020	8,920	12,835	—	1,455	23,211
August 2020	10,681	12,908	6,682	1,569	31,840
September 2020	10,293	12,770	7,679	2,196	32,938
Third quarter 2020	9,965	12,838	4,787	1,740	29,330
October 2020	9,049	12,331	7,369	2,193	30,942
November 2020	6,391	11,654	6,919	2,330	27,293
December 2020	10,800	11,800	6,802	2,332	31,734
Fourth quarter 2020	8,747	11,928	7,030	7,030	29,990
2020	9,191	12,926	2,954	2,954	26,570
January 2021	9,498	12,005	6,701	2,157	30,362
February 2021	5,904	16,247	5,934	1,806	29,391
March 2021	8,655	17,005	5,748	2,289	33,698
First quarter 2021	8,019	15,086	6,128	2,084	31,317

Source: PetroRio operational data.

(1) Figures for the Frade Field account for a 70% working interest in the field. The production attributable to the remaining 30% working interest pursuant to the Frade Field Petrobras Acquisition, which received final ANP

approval on February 5, 2021, will be integrated into our future monthly report and results. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field. See note 12(c) to the Unaudited Individual and Consolidated Interim Financial Information.

(2) Figures for the Tubarão Martelo Field account for an 80% working interest in the field.

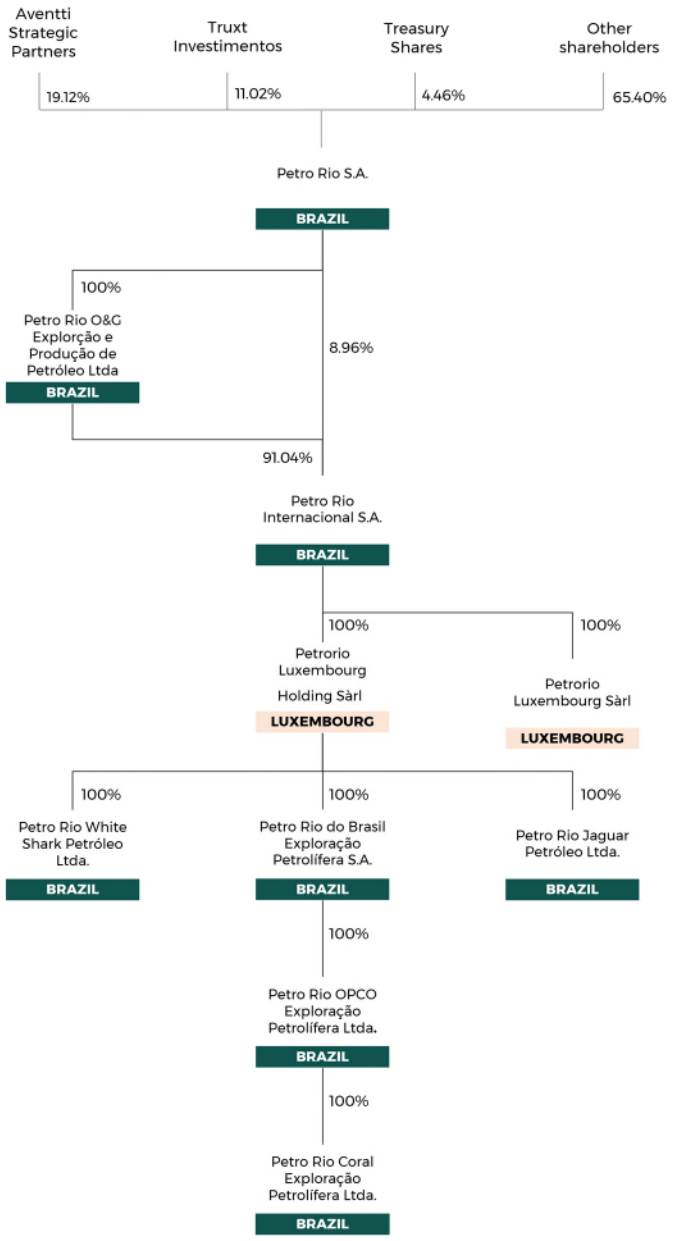
(3) Figures for the Manati Field account for a 10% working interest in the field. We are in the process of selling our working interest in this field pursuant to the Manati Field Sale. See "*—Properties in Production and Development —Manati Field —Overview*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

	Oil Offtakes (bbl)			
Month	**Polvo Field**	**Frade Field**	**TBMT Field**	**Manati Field**
January 2020	—	—	—	—
February 2020	—	—	—	—
March 2020	470,181	982,159	—	1,452,340
First quarter 2020	470,181	982,159	—	1,452,340
April 2020	—	—	—	—
May 2020	—	949,561	—	949,561
June 2020	446,852	—	—	446,852
Second quarter 2020	446,852	949,561	—	1,396,413
July 2020	497,664	992,636	—	1,490,300
August 2020	—	—	—	—
September 2020	504,231	—	402,610	906,841
Third quarter 2020	1,001,895	992,636	402,610	2,397,141
October 2020	—	993,619	—	993,619
November 2020	510,030	—	396,345	906,375
December 2020	477,725	949,096	397,515	1,824,337
Fourth quarter 2020	987,755	1,942,715	793,861	3,724,331
2020	2,906,683	4,867,072	1,196,471	8,970,225
January 2021	—	—	—	—
February 2021	514,794	1,020,846	392,072	1,927,712
March 2021	—	—	—	—
First quarter 2021	514,794	1,020,846	392,072	1,927,712

Group Organization

We conduct our business directly and indirectly through a number of subsidiaries. Our organizational structure allows us to operate our business as a company whose operations and investments are located primarily in Brazil. The following diagram illustrates our principal direct and indirect subsidiaries including ownership interest and jurisdiction of organization, as well as the key working interests held by such subsidiaries.

The chart below presents our corporate structure as of the date of this Offering Memorandum.



Entity	Domicile	Comment
Petro Rio S.A.	Brazil	Parent company of the Group. Listed on the B3 under the *Novo Mercado* listing segment.
Petro Rio O&G Exploração e Produção de Petróleo Ltda. ("PetroRio O&G")	Brazil	Holds our 100% working interest in the Polvo Field and our 80% working interest in the Tubarão Martelo Field (subject to completion of the Tubarão Martelo Field Acquisition). Indirect holding company of our working interests in the Frade Field and the Manati Field, which used to

Entity	Domicile	Comment
		hold interest in the FPSO Frade (and related subsea equipment). Qualified as Operator A by the ANP.
Petro Rio Internacional S.A.	Brazil	Non-operating subsidiary and indirect holding company of (i) our working interests in the Frade Field and the Manati Field and (ii) our interest in the Frade and OSX 3 FPSOs (and related subsea equipment).
Petrorio Luxembourg Holding S.à r.l. ("PetroRio Luxembourg Holding")	Luxembourg	Non-operating subsidiary and indirect holding company of our working interests in the Frade Field and the Manati Field, which used to hold interest in the FPSO Frade (and related subsea equipment). Also holds our interests in certain non-operating HRT legacy companies, including HRT Canada Inc. See "*Legal and Regulatory—Legal Proceedings—HRT Legacy Disputes.*"
Petrorio Luxembourg S.à r.l.	Luxembourg	PetroRio's trading unit and holds our interest in the OSX 3 FPSO. Also holds our interests in certain non-operating HRT legacy companies that are in the process of being liquidated.
Petro Rio do Brasil Exploração Petrolífera S.A.	Brazil	Indirect holding company of our working interest in the Manati Field.
Petro Rio OPCO Exploração Petrolífera Ltda.	Brazil	Indirect holding company of our working interest in the Manati Field.
Petro Rio Coral Exploração Petrolífera Ltda.	Brazil	Holds our 10% working interest in the Manati Field.
Frade B.V.	Netherlands	Used to hold 70% interest in the FPSO Frade (and related subsea equipment) and leases it to the operating companies of the Frade Field. Acted as a "pass-through" entity pursuant to a tax ruling in the Netherlands, and economic ownership of the FPSO Frade (and related subsea equipment) is held by its shareholders, PetroRio Luxembourg Holding (70%) and, until the completion of the Frade Field Petrobras Acquisition, Petrobras (30%). To maintain certain tax incentives under Repetro-Sped, we concluded the process of transferring the ownership of the FPSO Frade (and related subsea equipment) from Frade B.V. to PetroRio Jaguar in December 2020. After this transfer is complete, we intend to liquidate Frade B.V.
Petro Rio Jaguar Petróleo Ltda. ("PetroRio Jaguar")	Brazil	Holds 51.74% of our working interest in the Frade Field and is the operating entity of the Frade Field. Qualified as an Operator A by the ANP. Holds our interest in the FPSO Frade (and related subsea equipment) following the transfer thereof from Frade B.V.

Entity	Domicile	Comment
Petro Rio White Shark Petróleo Ltda. ("PetroRio White Shark")	Brazil	Holds 18.26% of our working interest in the Frade Field.

Properties in Production and Development

Our portfolio of producing assets currently consists of four fields located primarily in the Campos Basin. Unless noted otherwise, the following table sets forth certain information relating these assets as of and for the three-month period ended March 31, 2021.

Field	Basin	Type	Working Interest	Area (km^2)	Status	Production (Mboepd)[1]	Net 2P Reserves[2] (MMbbl)	Concession Expiry
Frade[3]	Campos	Oil	100%	154	Operator	16.1[2]	95	December 31, 2041
Polvo	Campos	Oil	100%	134	Operator	8.3	58	July 1, 2032
Tubarão Martelo[4] [5]	Campos	Oil	80%[4]	31	Operator	6.2[3]	53	April 19, 2039
Manati	Camamu-Almada	Natural Gas	10%	75	Non-operator	2.1	n.m.	November 26, 2029
Total	—	—	—	394	—	32.7	206	—

(1) Production and reserve life data include periods after the termination of the concession agreements related to the Frade Field, the Polvo Field and the Tubarão Martelo Field, assuming the extension of the term of the relevant concessions before the ANP.

(2) The reserves data used in this table is as of January 1, 2021. See "*Oil and Gas Reserves and Production Information.*"

(3) In November 2019, we announced the Frade Field Petrobras Acquisition. The Frade Field Petrobras Acquisition closed on February 5, 2021. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field. The production figure provided in respect of the Frade Field in this table reflects our 100% working interest therein upon completion of the acquisition. See note 12(c) to the Unaudited Individual and Consolidated Interim Financial Information.

(4) In February 2020, we announced the Tubarão Martelo Field Acquisition. On July 2, 2020, the ANP approved the Tubarão Martelo Field Acquisition subject to certain conditions, which have since been satisfied. On August 3, 2020, we completed the Tubarão Martelo Field Acquisition. The production figure provided in respect of the Tubarão Martelo Field in this table reflects our 80% working interest therein upon completion of the acquisition.

(5) Following completion of the TBMT-Polvo Tieback Project, we will have a 95% working interest in the TBMT-Polvo Cluster, which will comprise both the Polvo Field and the Tubarão Martelo Field, for the first 30 MMboe of production, and 96% thereafter. See "*Business—Properties in Production and Development—The TBMT-Polvo Cluster.*"

As adjusted to take into account the Frade Field Petrobras Acquisition and the Tubarão Martelo Field Acquisition as if they had closed on January 1, 2019, our production was 34.8 Mboepd, 37.6 Mboepd and 27.2 Mboepd and 11.7 Mboepd in the three-month period ended March 31, 2021, and the years ended December 31, 2020 and 2019, respectively. See "*Oil and Gas Reserves and Production Information.*"

Our certified net proved and probable reserves, also adjusted to take into account the Frade Field Petrobras Acquisition and the Tubarão Martelo Field Acquisition as if they had been consummated on January 1, 2019, were 209.3 MMboe, and 192.6 MMboe as of January 1, 2021 and April 30, 2020, respectively, according to the D&M Reserves Reports. See "*Oil and Gas Reserves and Production Information.*"

The following map shows the location of the assets in which we have working interests as of March 31, 2021.

Source: PetroRio's geology and geophysics department.

The Frade Field

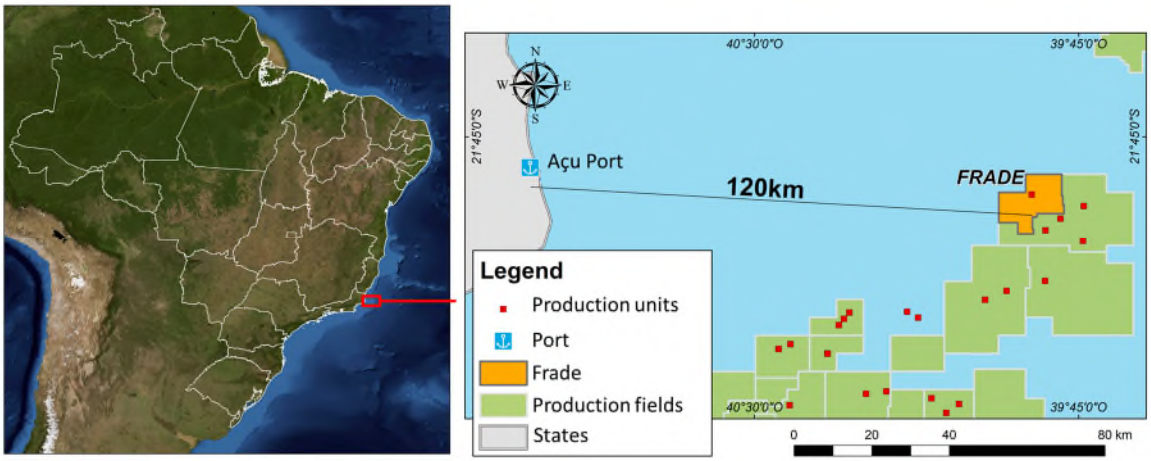
Overview

The Frade Field is a hydrocarbon field located in deep waters in the Campos Basin, approximately 120 km off the coast of Cabo Frio, Rio de Janeiro State, and has a total area of approximately 154 km^2. We hold a 100% working interest in the Frade Field. The concession, originally granted in 1998, is currently held by PetroRio Jaguar (81.74%) and PetroRio White Shark (18.26%), indirect wholly-owned subsidiaries of PetroRio, and Petrobras and expires on December 31, 2041, subject to completion of a redevelopment plan. See "*—Future Plans.*"

Production at the Frade Field was 18.5 Mboepd, 19.7 Mboepd and 20.5 Mboepd in the three-month period ended March 31, 2021 and the years ended December 31, 2020 and 2019, respectively. Cumulative production over the life of the Frade Field was 117.5 MMboe as of March 31, 2021.

Certified gross proved and probable reserves at the Frade Field were 96 MMboe as of January 1, 2021, according to the D&M Reserves Reports.

The following map shows the location of the Frade Field.



Source: PetroRio's geology and geophysics department.

Our acquisition of the Frade Field was driven by the goal of replicating the cost reduction and operational efficiency measures implemented at the Polvo Field. We have sought to realize opportunities for synergy due to the Frade Field's proximity to the Polvo Field's existing logistics platform. We have implemented additional cost reduction initiatives while maintaining an efficient transition of field operations and personnel. We have also reduced costs by renegotiating contracts with suppliers and are in the process of reducing unnecessary materials and inventory. See "*—Cost Reduction Initiatives.*" Finally, we have entered into negotiations with potential drilling suppliers in connection with the Frade Field Redevelopment Plan, which we believe will increase its production. See "*—Future Plans.*"

The FPSO Valente operates in the Frade Field. In November 2020, the FPSO Valente was independently appraised for a market value of U.S.$327,349.8 thousand.

History

The Frade Field was discovered in 1986 by Petrobras with the drilling of exploration well 1-RJS-366. In 1998, following the privatization of Brazil's oil and gas sector, the Frade Field was made available by the ANP to the private sector. In 1999, an international consortium was formed between Petrobras, Texaco, Frade Japão Petróleo Ltda. and Odebrecht, with the role of operator assumed by Texaco (the "Original Frade Field Consortium"). The concession was awarded in 1998 by the ANP as part of its so-called "Round Zero." The original concession had a duration of 27 years and was renewed on July 19, 2017 until December 31, 2041, subject to the execution of a redevelopment plan. See "*—Future Plans.*" Field development began in 2006 and commercial production commenced in 2009.

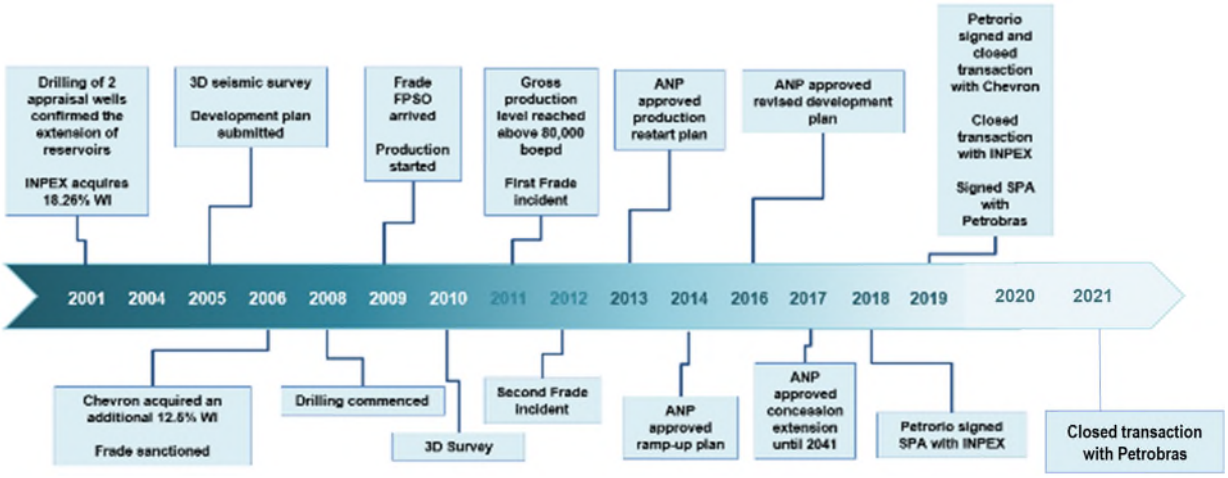
As part of our strategy beginning in 2014, we completed the Frade Field Chevron Acquisition, whereby we acquired a 51.74% working interest in the Frade Field (as well as a 50% working interest in the CE-M-715 exploratory block and a 51.74% share in the FPSO Frade, the field's dedicated FPSO vessel and related subsea equipment) from certain subsidiaries of Chevron in March 2019. At this point, we hired Chevron's employees staffed at the Frade Field as part of this acquisition. The total consideration for this acquisition was approximately U.S.$450 million, of which approximately U.S.$195 million was payable on a deferred basis. As of the date of this Offering Memorandum, amounts due to Chevron pursuant to the Frade Field Chevron Acquisition SPA have been paid in full.

In October 2019, we completed the Frade Field INPEX Acquisition, whereby we acquired a further 18.26% working interest in the Frade Field from INPEX (originally announced in October 2019, following negotiations in 2018). The total consideration for this acquisition was approximately U.S.$30 million, which has been paid in full as of the date of this Offering Memorandum. After post-signing adjustments, our total

cash outlay in connection with this acquisition amounted to U.S.$14 million. The acquisitions of the working interests from Chevron and INPEX were enterprise-based and therefore did not require ANP approval.

In November 2019, we announced the Frade Field Petrobras Acquisition, whereby we acquired the remaining 30% working interest in the Frade Field from Petrobras, for a total consideration of approximately U.S.$100 million.

The timeline below sets forth key milestones in the history and development of the Frade Field.



Date	Event
1986	Discovered by Petrobras
1998	The Frade Field opened to the private sector and commercial viability declared
1999	Consortium of Petrobras, Texaco (operator), Frade Japão Petróleo Ltda. and Odebrecht formed
2001	Two appraisal wells drilled confirming the extension of reservoirs to the down-thrown fault block of the Frade structure. INPEX acquired 18.26% working interest from Odebrecht
2005	Petrobras and Petroleum Geo-Services do Brasil ("PGS") entered into a contract to acquire a 283km² 3D seismic survey over the Roncador and Frade Field areas. The original Frade Field development plan was submitted
2006	Field development started. Petrobras farmed out 12.5% of its interest to Chevron. The Frade project was sanctioned
2008	Started the drilling of the development wells to complete 12 horizontal producers and seven vertical water injectors
2009	FPSO Frade arrived in Brazil from Dubai where the VLCC was converted. Production from the field started in June 2009
2010	Chevron contracted WesternGeco to acquire a 122km² Multi-Azimuth (MAZ) 3D survey over the Frade Field
2011	Gross production level reached above 80,000 boepd. First oil spill incident. See "—The Frade Field Monitoring Plan."

Date	Event
2012	Second oil spill incident. See "—The Frade Field Monitoring Plan."
2013	ANP approved the production re-start plan and limited oil production was restarted
2014	ANP approved the ramp-up plan
2016	ANP approved the Frade revised development plan
2017	ANP approved the extension of the concession contract until December 31, 2041
2018	PetroRio signed SPA with INPEX to acquire 18.26% working interest
2019	PetroRio signed and closed transaction with Chevron to acquire 51.74% working interest, closed transaction with INPEX to acquire 18.26% working interest, and signed transaction with Petrobras to acquire the remaining 30% working interest
2020	PetroRio Jaguar signed an agreement with BP Brazil to acquire 35.7% working interest in Wahoo Field, and 60% working interest in Itaipu Field
2021	The acquisition by PetroRio Jaguar of Petrobras' remaining interest in Frade Field was approved by ANP and concluded on February 5, 2021

Certified Reserves Data

The reserves estimates and related data below are derived from the 2021 D&M Reserves Report. See "*Oil and Gas Reserves and Production Information*" and "*Summary Historical Reserves and Contingent Resources Data.*"

The certified 1P (proved), 2P (proved and probable) and 3P (proved, probable and possible) reserves at the Frade Field are set forth in the table below. The 1P reserves reflect a P90 value, or a 90% probability that the reserves actually recovered will match or exceed the estimated reserves, the 2P reserves reflect a P50 value, or a 50% probability that the reserves actually recovered will match or exceed the estimated reserves, and the 3P reserves reflect a P10 value, or a 10% probability that the reserves actually recovered will match or exceed the estimated reserves.

	Gross			Net (Working Interest)		
	1P	2P	3P	1P	2P	3P
			(MMboe)			
Total	56	96	142	56	96	142

Source: 2021 D&M Reserves Report utilizing the conversion factors set forth in "Oil and Gas Reserves and Production Information."

The following table sets forth a breakdown of the Frade Field reserves by hydrocarbon type.

	Gross			Net (Working Interest)		
	Liquids	Gas	Total	Liquids	Gas	Total
	(MMbbl)	*(bcf)*	*(MMboe)*	*(MMbbl)*	*(bcf)*	*(MMboe)*
1P	55.6	2.6	56.1	55.6	2.6	56.1

	Gross			Net (Working Interest)		
	Liquids	Gas	Total	Liquids	Gas	Total
	(MMbbl)	*(bcf)*	*(MMboe)*	*(MMbbl)*	*(bcf)*	*(MMboe)*
2P	94.7	7.8	96.1	94.7	7.8	96.1
3P	140.3	12.4	142.6	140.3	12.4	142.6

Source: 2021 D&M Reserves Report utilizing the conversion factors set forth in "Oil and Gas Reserves and Production Information."

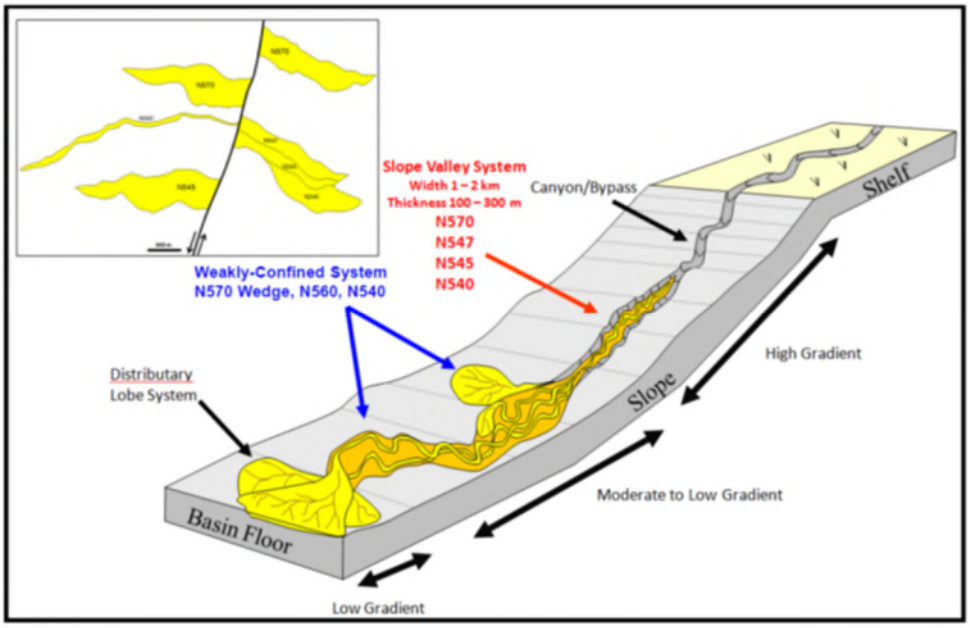
Geological Background

The Frade Field is located in the north-eastern section of the Campos Basin, near the bottom of a slope in a region where salt movements create structural traps in the overlying post-salt layer. Windows between the salt and the faults provide pathways for pre-salt oil to migrate into shallower traps. The Frade Field consists of tertiary age turbidite sands ranging from 65 million to 2.6 million ago.

The Frade Field is a four-way dipping anticline, with a combined structural and stratigraphic trap. It is underlain by a low-relief, salt cored, and anticlinal ridge. Post depositional normal faulting divides the field into two isolated main fault blocks (up-thrown and down-thrown), and this fault acts as the pressure barrier. The field has vertically stacked, but isolated, Upper Oligocene-Lower Miocene commercial reservoirs (N540, N545, N547, N560 and N570) deposited in a slope valley setting. The water depth around the Frade Field ranges from 700 to 1,700 meters and the reservoir depths are range from 1,950 meters to 2,500 meters TVDSS. The individual reservoirs are generally composed of multiple channel complexes which tend to be amalgamated through repeated episodes of cut and fill at the base of the channel complex, and become more gradational in the upper section, deposited during the abandonment phase. These reservoirs have different oil water contact and are not connected to each other, except for N545U and N547U which are in pressure communication.

The crude oil from the Frade Field has an average gravity of 16° to 23.9° API, moderate viscosity (4.1-22.7cP) and low GOR (200-433scf/bo).

The illustration below sets forth a cross-section of the Frade Field.

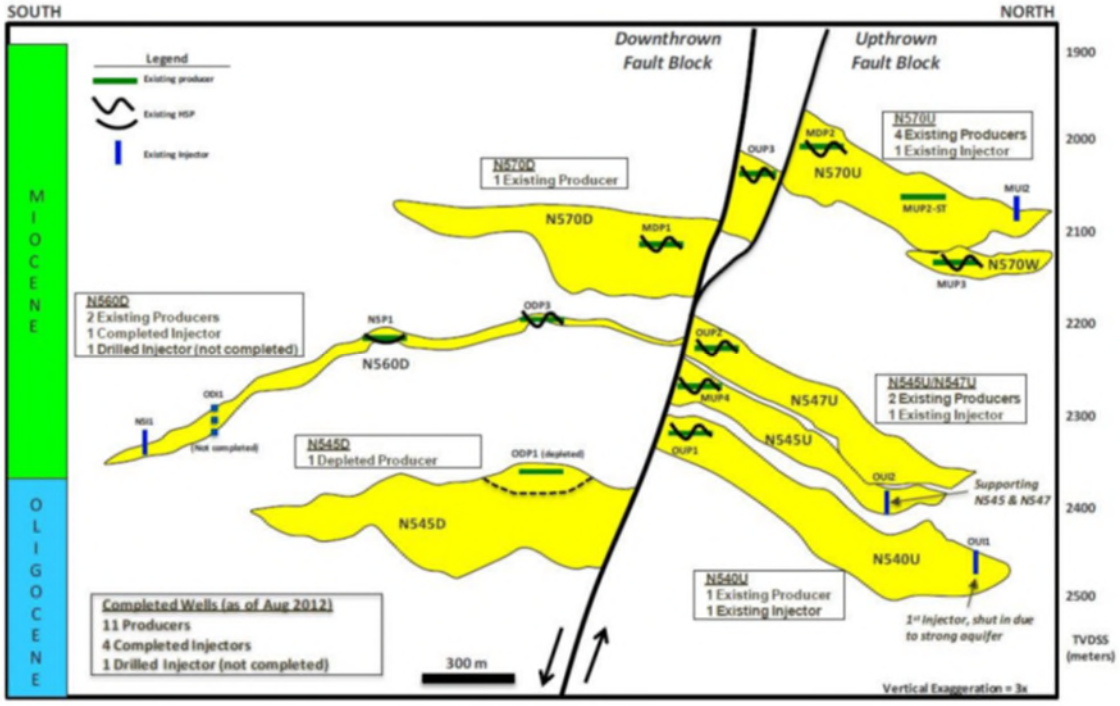


Source: PetroRio's geology and geophysics department.

Production and Development

Production at the Frade Field commenced in June 2009. Currently, the field produces from the Upper Oligocene-Lower Miocene reservoirs and has 11 production wells that operate with gas lift and are connected to the FPSO Frade, as well as 5 injection wells (currently inactive). The Frade Field was originally developed by the Original Frade Field Consortium through a subsea well and gathering system connected to the FPSO Frade. The installed subsea layout for the Frade Field includes horizontal subsea trees, production flow lines, a water injection loop, gas lift lines and umbilical service. The subsea production and injection trees are rated to a minimum of 5,000 psi. Each producer has a dedicated, insulated 6" wide production flow line to the FPSO Frade. The flow lines are connected in piggable loops. The Frade Field also produces gas, which is used either as fuel for the FPSO Frade or partly exported via the Roncador pipeline.

The map below illustrates the production areas located in the Frade Field.



Source: PetroRio's geology and geophysics department.

Water for the peripheral water injection wells is provided via an 8" water injection flow loop, though current injector wells are not being used due to operational reasons. Three independent 6" gas lines provide gas lift to the productive well heads. Three control and chemical injection umbilical lines serve the field.

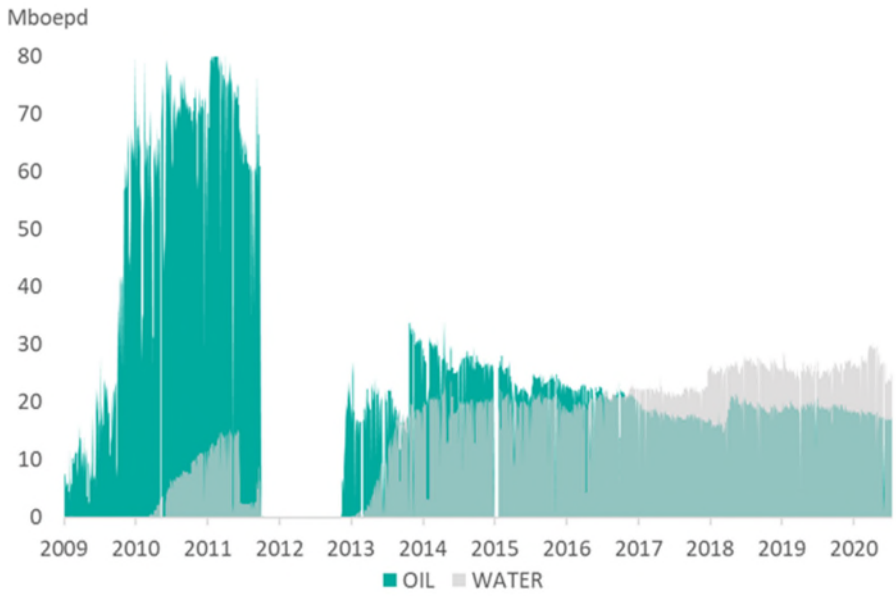
The FPSO Frade, which we own and operate, is a converted VLCC oil tanker with 1.5 million barrels of storage capacity. It was constructed in 1976 and has been operating on the Frade Field since production began in 2009. It has the capacity to process 150 thousand barrels of liquids, 100 thousand barrels of oil and 3 million cubic meter of gas per day. The FPSO Frade has 32 slots of which 10 are currently available for new wells. The FPSO Frade is classified by the American Bureau of Shipping. The classification was renewed on April 10, 2019 and is valid until January 15, 2024.

Through the FPSO Frade, the Frade Field currently has ten producing wells. Certain exploratory and pilot wells are permanently deactivated.

The Frade Field reached peak production of over 80 Mboepd and 0.96 Mscmpd in July 2011, though production decreased substantially in 2011 and 2012 due to two oil spills. See "*—The Frade Field Monitoring Plan.*" In 2013, production at the Frade Field resumed with operations. However, production rates decreased during this period as water injection remained suspended. Since 2014, the Frade Field followed a natural

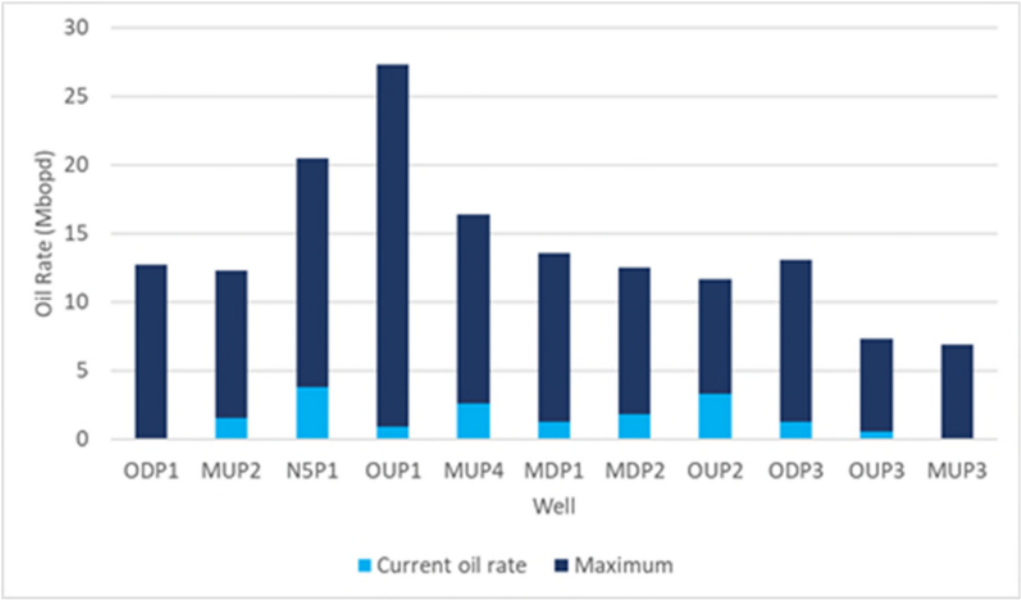
decline until the fourth quarter of 2018, when production was slightly increased and remained stable through 2019 at a production level of approximately 19 Mboepd, which was accomplished through adjusting operational parameters, stimulation through the increase of gas lift in selected wells and increasing operational efficiency.

The graph below illustrates historical daily production rates at the Frade Field for the periods indicated. The data in the chart below reflects the three-month period ended March 31, 2021. Production at the Frade Field was 18.3 Mboepd, 19.7 Mboepd, 20.5 Mboepd and 19.2 Mboepd in the three-month period ended March 31, 2021 and the years ended December 31, 2020, 2019 and 2018, respectively, according to ANP.



Source: ANP.

The graph below illustrates current daily production rates at the Frade Field by well specified as of March 31, 2021.

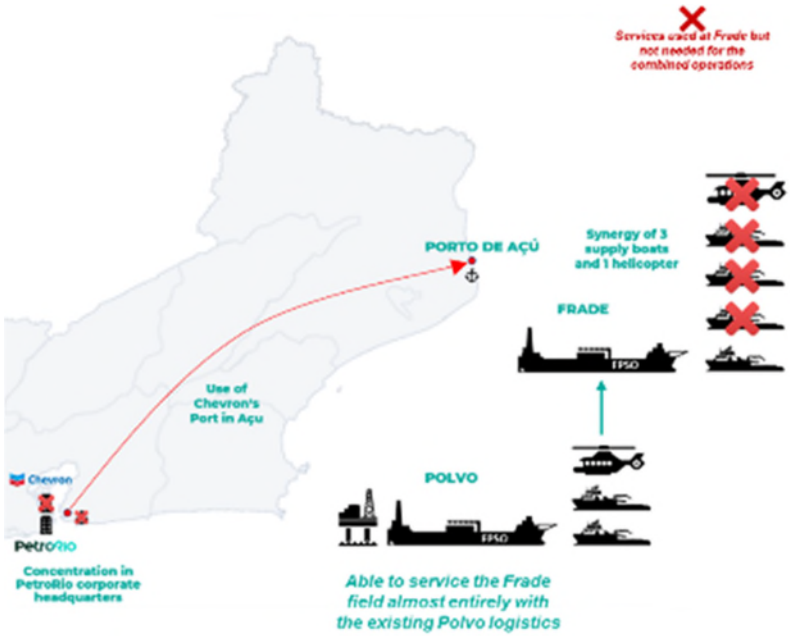


Cost Reduction Initiatives

As part of our strategy of increasing operational efficiency at our assets, we have implemented various cost reduction initiatives at the Frade Field. These include capturing synergies with our existing logistical platform at the Polvo Field and reducing operating and overhead costs.

We service both the Frade Field and the Polvo Field through a single logistics platform rather than require them to operate two independent facilities. Due to the Frade Field's proximity to the Polvo Field, we are able to service the former almost entirely with the latter's existing logistics platform, particularly with respect to air and sea transportation. The Frade Field was originally serviced by four supply vessels and one helicopter, while Polvo has used two supply vessels and one helicopter. Following discussions with all relevant stakeholders (including logistics, supply chain, subsea, HSE and production teams) to ensure there would be no impact on our operations, we were able to reduce the combined transportation operations to three supply vessels and one helicopter, resulting in a fleet reduction of approximately 50%. In addition, the combined operation uses a single onshore base.

The map below illustrates the logistical synergies achieved as a result of the combination of operations at the Frade Field and the Polvo Field.



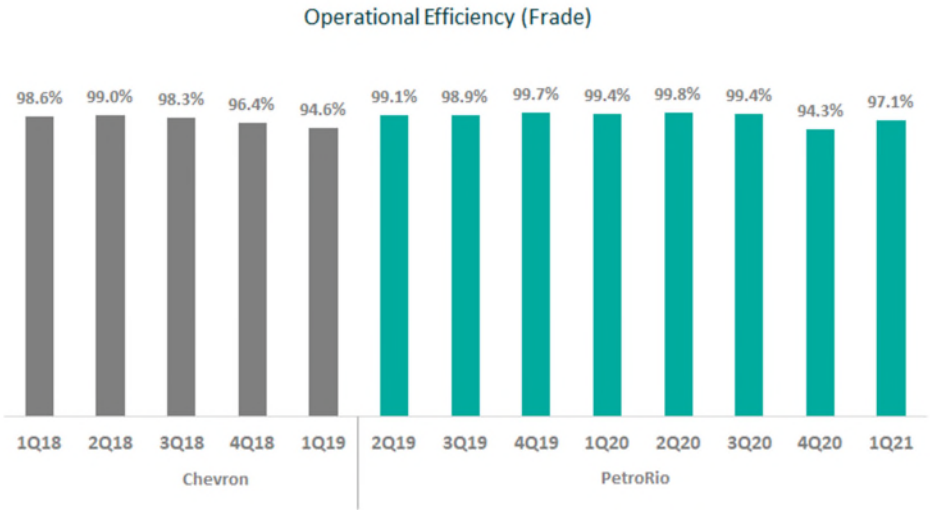
Source: PetroRio.

We have also reduced operating and overhead costs, while maintaining an efficient transition of field operations and personnel. For instance, we on-boarded the former Chevron employees who were hired as part of our acquisition to PetroRio's payroll systems and pay scale. We also eliminated overhead costs associated with Chevron's former operatorship, and have transitioned Chevron's tax, accounting, IT and other digital interfaces and systems to our own. We also reduced costs by renegotiating contracts with suppliers and are in the process of reducing the procurement of materials and inventory rendered unnecessary as a result of the Frade Field's integration into our operation.

As a result of our cost reduction initiatives, we reduced operating costs at the Frade Field from U.S.$167 million budgeted for the year ended December 31, 2018, prior to our acquisition, to U.S.$58 million budgeted for the year ended December 31, 2021.

The graph below sets forth historical quarterly operational efficiency rates at the Frade Field with Chevron and PetroRio as operator, respectively, for the periods indicated. We calculate operational efficiency

as a given field's uptime during a given period minus the field's or well's forecasted downtime, (e.g., for planned maintenance or any production interruption) divided by the total amount of time in such period.



The Frade Field Monitoring Plan

Before the acquisition of our working interest in, and operatorship of, the Frade Field, it experienced two incidents that significantly impacted its production. In November 2011, development drilling and water injection were suspended due to the Frade incident and oil spill (the "2011 Frade Field Oil Spill"). During the drilling of the third pilot hole at the MUP1-P-ST2 location by the Sedco 706 rig operated by Transocean, there was an incident involving loss of control of the well, known as a kick (i.e., an unwanted influx of formation fluid into the wellbore), followed by a underground blowout (i.e., an uncontrolled exit of invading fluid to the surface, seabed or other formation). Later, there was migration of hydrocarbons through the formation, causing the exudation of oil in the seabed at about 120km off the coast of the State of Rio de Janeiro. Immediately after discovering the incident, Chevron's engineering team developed a residual oil containment and recovery system to capture residual oil seeping from the seabed and to respond as necessary to any further oil seepage. The first capture tank was launched on December 1, 2011. Capture tanks were placed on the exudating faults on the seabed to prevent oil from spreading into the sea and daily remotely operated vehicle ("ROV") surveys and overflights with helicopters were established to monitor the development. The regulatory agencies (the ANP and IBAMA) and the Brazilian Navy were immediately notified about the incident and information relating to the emergency response was provided thereto on a daily basis pursuant to the Frade Field Monitoring Plan, as discussed further below.

In March 2012, production at the Frade Field was suspended due to a second oil spill incident (the "2012 Frade Field Oil Spill" and, together with the 2011 Frade Field Oil Spill, the "2011-2012 Frade Field Oil Spills"). Between March 4, 2012 and March 13, 2012, ROV surveys identified the location of the oil spill as well as the deformation that caused it. Seismic data confirmed the presence of a feature extending from the N570 reservoir to the seafloor, interpreted to be a fracture possibly caused by pressuring of the N570 reservoir via water injection. A containment system equipment similar to the one used in connection with the 2011 Frade Field Oil Spill was made immediately available for installation in connection with the 2012 Frade Field Oil Spill. In addition, an oil recovery system was installed to safely recover the oil from the containment system. As with the 2011 Frade Field Oil Spill, the ANP, IBAMA and the Brazilian Navy were provided with reports setting out information relating to the emergency response on a daily basis and the areas affected by 2012 Frade Field Oil Spill were incorporated into the Frade Field Monitoring Plan.

A second-generation containment system was developed and installed in the area impacted by the 2011 Frade Field Oil Spill in July 2014. This system was developed with the goal of ensuring long-term usage and storage, thereby minimizing the need for future interventions and oil retrieval operations. The first-generation containment system was deemed sufficient for continued use in the area impacted by the 2012 Frade Field Oil

Spill. Since the instalment of the containment systems, rates of captured oil have decreased continuously, due to the reservoir's decreasing pressure.

Following the 2011-2012 Frade Field Oil Spills, Chevron conducted numerous geomechanical and geological studies, including 3D seismic surveys, to investigate the root cause of the spills and to establish safe operating conditions for the future operation of the Frade Field. Chevron also adjusted the well design program, improving overall well integrity to avoid any similar problems in the future. In particular, the Original Frade Field Consortium, led by Chevron, established a monitoring plan that was approved by the ANP, IBAMA and the Brazilian Navy in May 2014 (the "Frade Field Monitoring Plan"). The Frade Field Monitoring Plan set forth monitoring and reporting requirements, as set out in the table below.

Action	1st phase immediately after	2nd phase until Dec-16	3rd phase Jan-19 to decom.
Containment system	Installation of the oil containment system	Monitoring and recovery of oil in tanks	Monitoring and recovery of oil in tanks
Monitoring with ROV	Daily	2 times per month	Semi-annual
Inspection flights	Daily	Weekly	Not applicable
Reports for ANP	Weekly	Monthly	Annually
Status	✓	✓	↻

Phase 1: The emergency phase required the allocation of all available resources to contain the relevant spill, including through the installation of a containment system, as well as daily monitoring. Phase 1 was completed on November 30, 2015

Phase 2: The transition phase involved the gradual demobilization of resources dedicated to managing the initial response to the relevant spill and a reduction in monitoring frequency ahead of full operational status. Phase 2 was completed on December 31, 2016

Phase 3: The operational phase involved a further reduction in monitoring frequency starting on January 1, 2017. This phase is and will continue to be in effect until the decommissioning of the Frade Field.

At the time of our acquisition of the Frade Field in March 2019, the operational phase of the Frade Field Monitoring Plan was fully in place. We reviewed all studies undertaken by Chevron in connection with the preparation of the plan and discussed them with Chevron's technical teams as well as the ANP, giving us, as the current operator, a thorough understanding of the Frade Field and the knowhow necessary to maintain operations at the Frade Field as well as execute additional drilling campaigns.

Data collected from our semi-annual ROV inspections and presented to the ANP shows that the oil volume from seabed seeps is decreasing significantly. Currently, the oil seepage rate from the Frade Field is less than 8 liters per month confirmed in the last inspection in August 2020. The subsea team at PetroRio in charge of the continued implementation of Phase 3 measures has maintained a successful track record as no interruptions have been reported in connection with operations to date.

We have also taken additional steps to avoid similar incidents at the Frade Field in the future. For instance, we altered the design of future wells to add additional casing to isolate shallow formation. In addition, as water injection currently is suspended at the Frade Field, reservoirs are currently underpressurized and it is highly unlikely that fracture pressure limits could be breached. As a result, kick events, such as the ones that resulted in the 2011-2012 Frade Field Oil Spills can be easily avoided.

In addition, the vast amount of historical production data from the Frade Field at our disposal enables us to have a deep understanding of the reservoir and thereby avoid any future drilling activities that could be problematic. For instance, for the new injection wells to be drilled pursuant to the Frade Field Redevelopment Plan, we expect to drill horizontal open-hole gravel pack wells with approximately 1,000 meters of extension in order to maximize reservoir contact. This will allow high water rates with significantly lower downhole pressure. See "*—Future Plans.*"

Future Plans

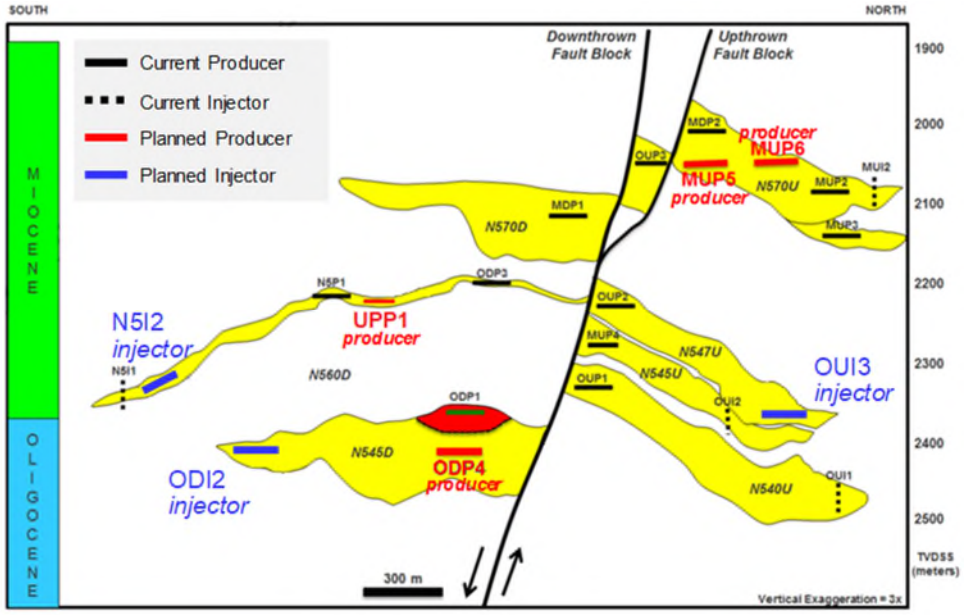
Between 2014 and 2017, Chevron conducted extensive studies on and formulated a plan for the further development of the Frade Field which was approved by the Original Frade Field Consortium. This plan was presented to, and approved by, the ANP, which conditioned the extension of the field's concession from 2025 to 2041 on the drilling of five new producer and injector wells.

The drilling of new wells is subject to environmental licensing by IBAMA. Chevron had started the licensing process, which remained dormant until August 2019, when we resume this process. Since then, we meet and have frequent discussions with IBAMA regarding the termination of the existing drilling license and the issuance of a new license. Both administrative processes are running in parallel as mandated by IBAMA. The operation license for drilling is a priority for the HSE team.

Following our acquisition of the Frade Field, we leveraged the studies conducted and plan developed by Chevron to formulate a new redevelopment plan that seeks to further increase the recovery rates of the field while still satisfying the ANP's conditions for the extension of the concession (the "Frade Field Redevelopment Plan"). This plan contemplates the drilling of one production well (the 12th production well) and two injection wells (the 6th and 7th injection wells), as well as the resumption in the short-term of water injection through existing injection wells. The latter would be done in a manner which ensures that operations do not breach fracture pressure limits, but maintain enough reservoir pressure to improve production.

We believe that the new production wells are to be located in the reservoirs N570U, N560D and N545D. These reservoirs were chosen based on their expected low recovery rates (i.e., less than 10%). All four production wells were classified by DeGolyer as proved reserves. PetroRio further intends to drill three horizontal injector wells in the reservoirs N560D, N547U and N545D to maintain reservoir pressure. The three injector wells were classified by DeGolyer as probable reserves. In addition, we are planning to revamp the filtering unit on the FPSO Frade to a system that allows the removal of solids.

The Frade Field Redevelopment Plan also contemplates the installation of a new subsea architecture to connect the new wells to the existing infrastructure. Leveraging the existing loops, the longest tieback is expected to be 500 meters in length. We intend to use the wellheads and subsea equipment already acquired for this purpose by Chevron in 2017, which are currently located at the Açu supply base and which we acquired from Chevron as part of our acquisition of the Frade Field in 2019.



Source: PetroRio's geology and geophysics department.

The Frade Field Redevelopment Plan was submitted for ANP's approval in September 2020.

Further, the Frade Field will be interconnected to the Wahoo Field, creating a production cluster in the area. See "*Overview—Details on the Acquisition of Fields—The Wahoo-Itaipu Acquisitions.*"

The table below sets forth the estimated future production, operating costs and capital expenditures based on DeGolyer's 2P (proved and probable) estimates in respect of the Frade Field for the periods indicated.

Period	Net Oil Production	Net Sales Gas Production	Operating Expenses	Capital Costs
	(10^3bbl)	*(10^6ft^3)*	*(U.S.$ thousands)*	
2021	6,150	10	59,909	126,700
2022	7,266	1,384	59,909	152,700
2023	6,680	999	59,909	280,200
2024	6,024	530	59,909	17,000
2025	7,446	1,407	59,909	0
2026	7,951	1,720	59,909	5,000
2027	6,922	1,076	60,261	0
2028	6,074	553	62,472	0
2029	5,329	102	64,625	10,000
2030	4,711	0	66,471	0
2031	4,180	0	68,056	0
2032	3,730	0	69,454	5,000
2033	3,332	0	70,618	0
2034	2,995	0	71,652	0
2035	2,702	0	72,557	10,000
2036	2,452	0	73,389	0
2037	2,219	0	73,389	0
2038	2,020	0	73,389	5,000

Period	Net Oil Production	Net Sales Gas Production	Operating Expenses	Capital Costs
	(10^3bbl)	*(10^6ft^3)*	*(U.S.$ thousands)*	
2039	1,843	0	73,389	
2040	1,691	0	73,389	
2041	1,545	0	73,389	
2042	1,420	0	73,389	
Total	94,682	7,781	1,479,343	611,600

Source: 2021 D&M Reserves Report utilizing the conversion factors set forth in "Oil and Gas Reserves and Production Information."

Marketing and Offtake Arrangements

We sell oil produced at the Frade Field in spot transactions either directly with offtakers or with offtakers through PetroRio's trading unit, which is based at PetroRio Luxembourg. Sales conducted through the PetroRio Luxembourg's trading unit constitute the majority of the sales of oil produced at the Frade Field. For such sales, once an appropriate offtaker is identified by PetroRio Luxembourg's trading team, PetroRio Luxembourg enters into intra-group sale agreements for the relevant quantity of oil with PetroRio Jaguar and/or PetroRio White Shark (the entities which hold our working interests in the Frade Field), as the case may be, using the ANP reference price for oil. PetroRio Luxembourg then enters into a corresponding sale agreement with the relevant offtaker, using the applicable market price at the time. The cash received from the offtaker is used by PetroRio Luxembourg to pay the amounts owed to PetroRio Jaguar and/or PetroRio White Shark, as the case may be. Any excess amount retained by PetroRio Luxembourg due to differences between the market price of oil and the ANP reference price is taxed in accordance with the applicable rate, but due to the significant tax loss carryforwards held by PetroRio Luxembourg, our overall tax liability is minimized as a result of this structure.

As set forth in the Frade JOA, the joint operations agreement between the holders of working interests in the Frade Field, which, pending the completion of the Frade Field Petrobras Acquisition, includes PetroRio and Petrobras, the daily production of the Frade Field is divided proportionally among the consortium members according to their working interest. Approximately two months before the date on which the FPSO Frade will reaches a total stock of 975 thousand exportable barrels, the consortium member with the largest balance of oil in its individual stock is awarded the lifting entitlement. If this consortium partner has not yet produced the total amount of inventory to be sold on its own (i.e., 975 thousand barrels), it will borrow the outstanding portion of inventory belonging to the other partners. The partner to the Frade JOA that is entitled to lift the cargo will have a negative oil balance in the same amount used as a loan and the balance of oil inventory of participants that did not perform this offtake will remain unchanged. Following completion of the Frade Field Petrobras Acquisition, Petrobras will no longer be a party to the Frade JOA, and the partners thereto will be PetroRio Jaguar and PetroRio White Shark. See "*Business—Material Contracts—The Frade Field—The Frade JOA.*"

Decommissioning

Following the completion of the acquisition of Petrobras' 30% stake, we are the sole owner and operator the Frade Field. Accordingly, we are liable for all of the Frade Field decommissioning costs, which according to the estimate approved by ANP, are U.S.$178.5 million.

Until ten years before the expected decommissioning of the Frade Field, we are required to provide the ANP with a parent company guarantee (or corporate guarantee, as per the ANP models) for the Frade Field decommissioning costs, as per the approved progressive contribution model (or "Modelo de Aporte Progressivo"). Accordingly, we have issued the said corporate guarantee to ANP in the amount equivalent to U.S.$2.6 million, regarding the amount required for 2020. Therefore, the corporate guarantee is expected to

be progressively complemented on the following years according to the abandonment model approved by the ANP.

In the final ten years of the operation of the Frade Field, we will contribute to an escrow account to fund the decommissioning guarantee of the Frade Field (the "Frade Field Decommissioning Escrow Account"). As of the date of this Offering Memorandum, the Frade Field is expected to be decommissioned in 2041. Accordingly, we do not expect to have any cash expenses related to the Frade Field decommissioning until 2031.

The Polvo Field

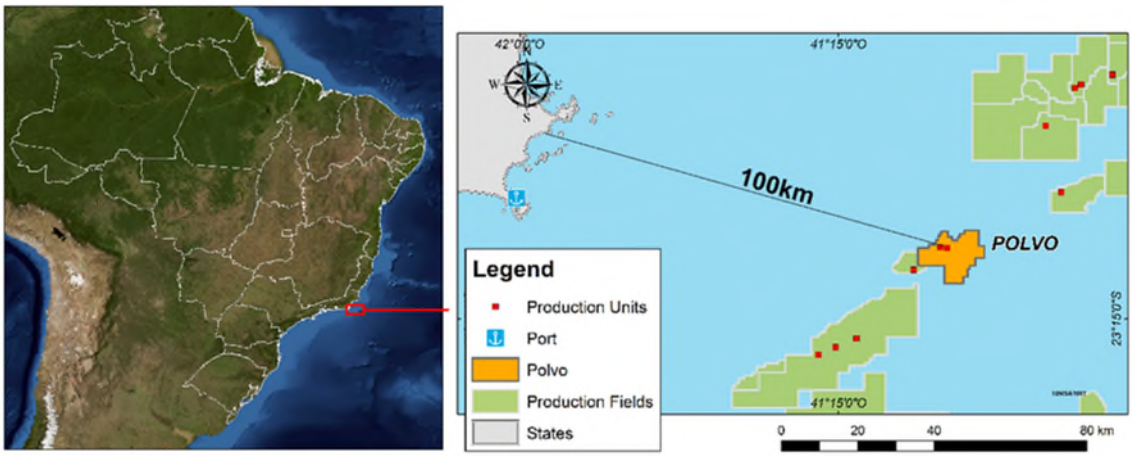
Overview

The Polvo Field is a hydrocarbon field located in shallow waters in the Campos Basin, approximately 100 km off the coast of Cabo Frio, Rio de Janeiro State, and has a total area of approximately 134 km^2. We hold a 100% working interest in the Polvo Field and the concession, originally granted in 2000, is held by PetroRio O&G (the "Polvo Field Concessionaire"), an indirect wholly-owned subsidiary of PetroRio, and expires on July 1, 2032.

Production at the Polvo Field was 8.2 Mboepd, 9.4 Mboepd and 8.5 Mboepd, and 8.8 Mboepd in the three-month period ended March 31, 2021 and in the years ended December 31, 2020, 2019 and 2018, respectively. Cumulative production over the life of the Polvo Field was 55.3 MMboe as of March 31, 2021.

Certified net proved and probable reserves at the Polvo Field were 57 MMboe and 48 MMboe as of January 1, 2021 and April 30, 2020, respectively, according to the D&M Reserves Reports.

The following map shows the location of the Polvo Field.



Source: PetroRio's geology and geophysics department.

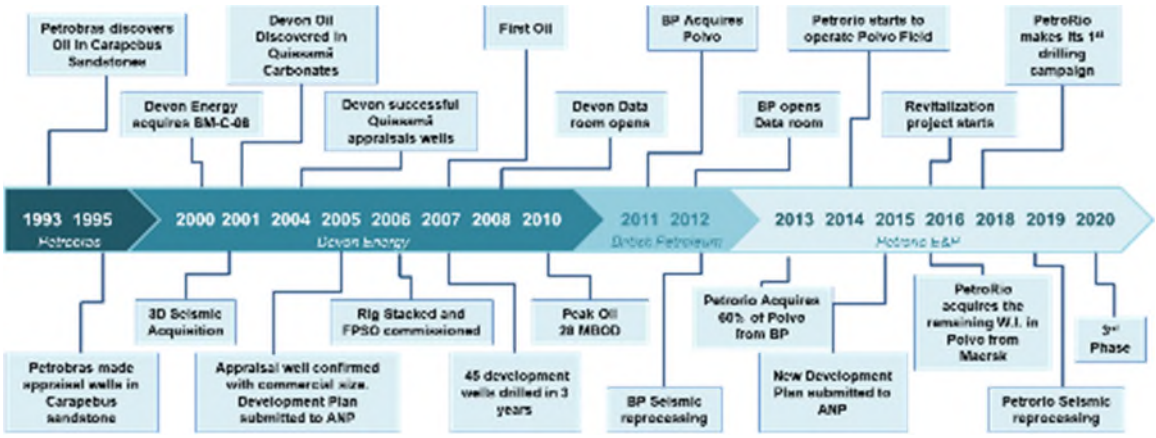
History

The Polvo Field was discovered in 1993 by Petrobras with the drilling of the 1-RJS-486A well. In 2000, during the second licensing round conducted by the ANP, the BM-C-8 block containing the Polvo Field was created and the concession awarded to Devon Energy. In 2011, BP Brazil acquired Devon Energy's interest in the Polvo Field.

As part of our strategy refresh, we acquired a controlling working interest in the Polvo Field in 2014 and completed our acquisition of the entire working interest therein in 2015. The Polvo Field Concessionaire, a wholly-owned indirect subsidiary of PetroRio, entered into a sale and purchase agreement with BP Brazil to acquire a 60% working interest in the Polvo Field in January 2013. In January 2014, the acquisition from BP was completed, at which point we became the operator of the field. We entered into a sale and purchase agreement with Maersk to acquire the remaining 40% working interest in the Polvo Field in July 2014.

Following our acquisition, we implemented a multi-phase revitalization plan to increase operational efficiency, reduce operating costs and increase production at the Polvo Field (the "Polvo Field Redevelopment Plan"). The Polvo Field Redevelopment Plan, has involved, extensive maintenance work, well interventions and drilling. As a result of the Polvo Field Redevelopment Plan to date, we have been able to reduce operating costs at the Polvo Field by 65% from R$1.25 billion (or U.S.$240 million) in 2013 to R$435 million (or U.S.$85 million) in 2020 and extended its economic life by approximately eighteen years to 2035, assuming the completion of the TBMT-Polvo Tieback Project. See "*Business—Properties in Production and Development—The Polvo Field—The Polvo Field Redevelopment Plan*" and "*Business—Properties in Production and Development—The TBMT-Polvo Cluster*."

The timeline below sets forth key milestones in the history and development of the Polvo Field.



Date	Event
1993	Petrobras discovered oil with the drilling of the 1-RJS-486A exploration well
1995	Petrobras drilled appraisal wells in Carapebus sandstone
2000	Devon Energy awarded BM-C-008 by the ANP
2001	Devon Energy drills successful 1-DEV-003-RJS appraisal well; Oil discovered in Quissamã
2004	Devon Energy drills successful 1-DEV-004-RJS and 3-DEV-005DP-RJS appraisal wells
2005	Devon Energy drills successful 3-DEV-007-RJS appraisal well; commercial size confirmed
2005	Field development plan submitted to ANP
2007	45 development wells were drilled in 3 years
2007	First oil from Polvo
2008	Devon Energy opens data room for potential buyers
2010	Polvo reaches plateau production with 28 MMboepd
2011	BP acquires Devon Energy's 60% working interest in Polvo
2012	BP reprocesses Polvo's seismic

Date	Event
2012	BP opens data room for potential buyers
2014	PetroRio completes acquisition of BP's working interest in Polvo (60%) and takes over operatorship
2015	PetroRio submits the Polvo Field Redevelopment Plan to the ANP
2016	PetroRio acquires the remaining working interest in Polvo (40%) from Maersk
2016	PetroRio conducts renewed seismic survey and initiates and completes first phase of the Polvo Field Redevelopment Plan
2018	PetroRio initiates and completes second phase of the Polvo Field Redevelopment Plan and executes a highly successful 2018 Polvo Field Drilling Campaign
2019	PetroRio conducts renewed seismic survey of the Polvo Field and initiated third phase of the Polvo Field Redevelopment Plan
2020	PetroRio completes third phase of the Polvo Field Redevelopment Plan, successfully initiating production from the Eocene Well

Geological Background

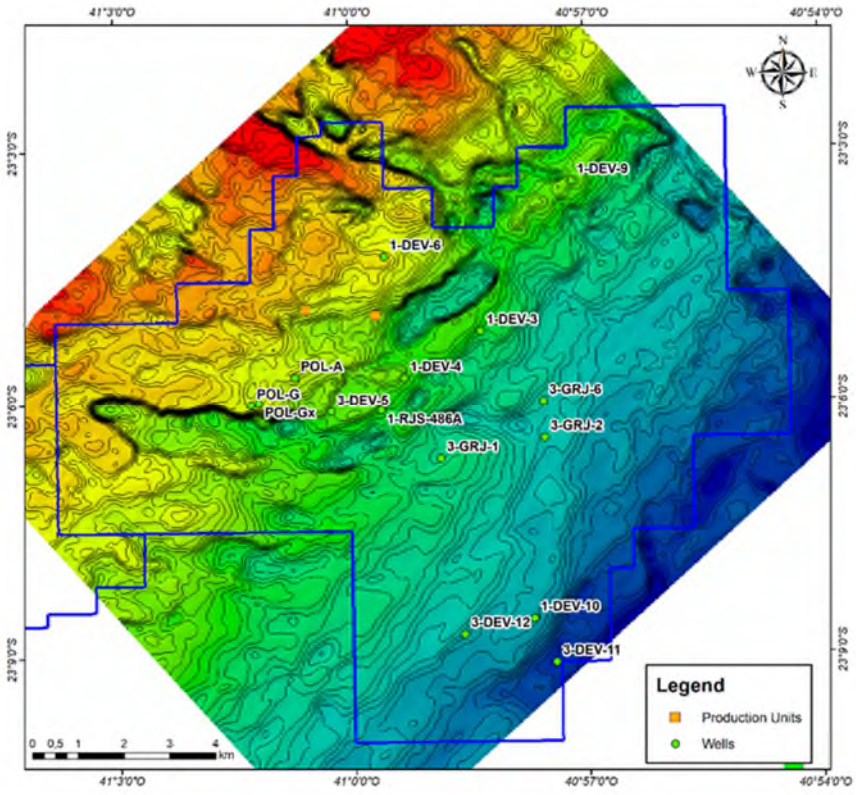
The Polvo Field is located in the Campos Basin, a sedimentary basin on the east margin of Brazilian basins. The regional basin-ward dip to the southeast reflects the lithosphere distension mechanism in response of the Gondwana breakup and the subsequent formation of the South Atlantic Ocean during the early Cretaceous.

The geotectonic evolution allied with basin sedimentary history is observed in the main features of the Polvo Field. Basement rocks in the Campos Basin are Precambrian gneiss. As the basin began to open and fill, basalts of the Cabiúnas Formation flowed onto basement. The earliest sediments in the basin are lacustrine shales and carbonates of the Lagoa Feia Formation, which is the primary hydrocarbon source formation for the basin.

After the original rifting period, a massive sequence of continental and marine sediments accumulated in the basin. The lower part of this sequence is made up of conglomerates and carbonates, which were subsequently covered by a thick evaporite section, composed predominantly of salt and anhydrite. Above the evaporites are grainstones, packstones, wackestones and mudstones accumulated during Albian time when a broad marine carbonate platform developed in the region. In the Polvo Field, the Albian carbonates are the Quissamã members Formation of the Macaé Group. The grain-dominated carbonates accumulated in shallow water on northeast-southwest trending local structural highs atop basement or salt uplifts.

As basin subsidence continued, coastal rivers flooded sands into the basin. These sands were deposited in environments ranging from deep-water turbidites to shallow-water deltaic and bay-lagoon settings. This style of sedimentation continued from the Cenomanian until the Miocene. In the Polvo Field, the sandstones were deposited on coastal plain, lagoon, and bay-deltaic environments.

A geological map of the Campos Basin is set forth below.



Source: PetroRio's geology and geophysics department.

Exploration and appraisal wells at the Polvo Field identified six oil-producing reservoir intervals located in separate areas. From deepest to shallowest, these are the Quissamã carbonates, Turonian-age sandstones, Campanian-age sandstones and Maastrichtian-age sandstones. The Turonian, Campanian and Maastrichtian sandstones were found to be well-developed and productive in separate accumulations east of the Quissamã wells.

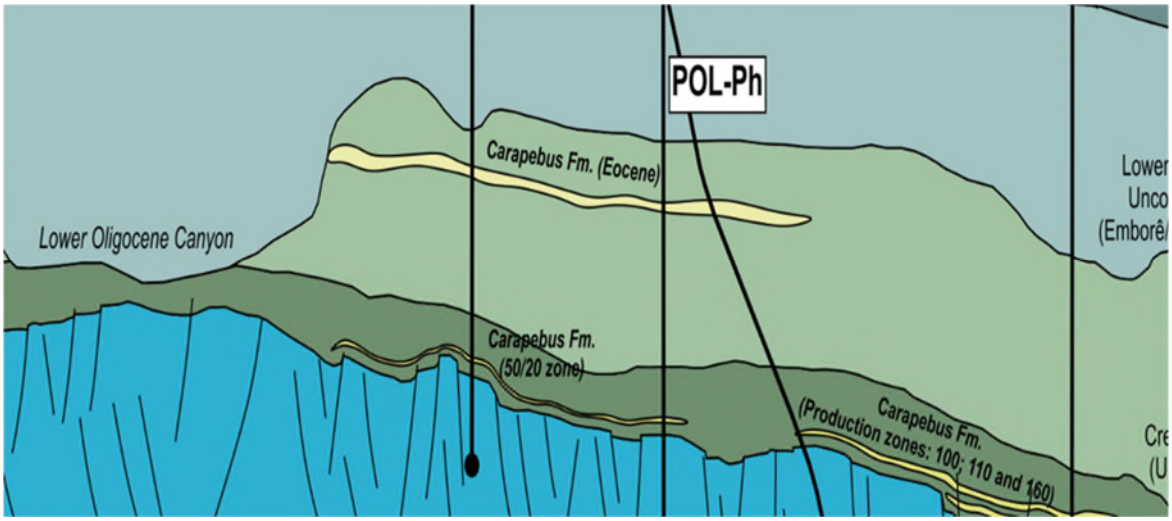
Quissamã reservoirs were identified in seismic data as structure-related to a shallow carbonate platform. Isopach maps of the Quissamã reservoirs display them to be formed by a shoal complex. The shoals follow the preferential trends on the platform controlled by structure high. The reservoir quality is assigned by grain-dominated facies with good petrophysics properties and contributed also by fractures. The reservoir is bounded by faulting, stratigraphy pinch-out, and oil/water contact limits.

In the western part of the Polvo Field, the stacking pattern of Quissamã reservoirs indicates development of youngest shallow carbonate that will be investigated by new wells. The structural framework is formed by faults, contributing to the isolated production compartments without communication, as evidenced by different OWC depths.

In the eastern part of the Polvo Field, the Quissamã reservoir area is identified on seismic data as extension to the deepest carbonate platform. These reservoirs will be investigated in the future development program with new wells. Small quantities of oil were recovered from wireline sampling of Quissamã intervals.

Based on pressure measurements and historical water production data, most of the reservoirs in the Polvo Field produce with moderate to active aquifer support.

The illustration below sets forth a cross-section of the Polvo Field.



Source: PetroRio's geology and geophysics department.

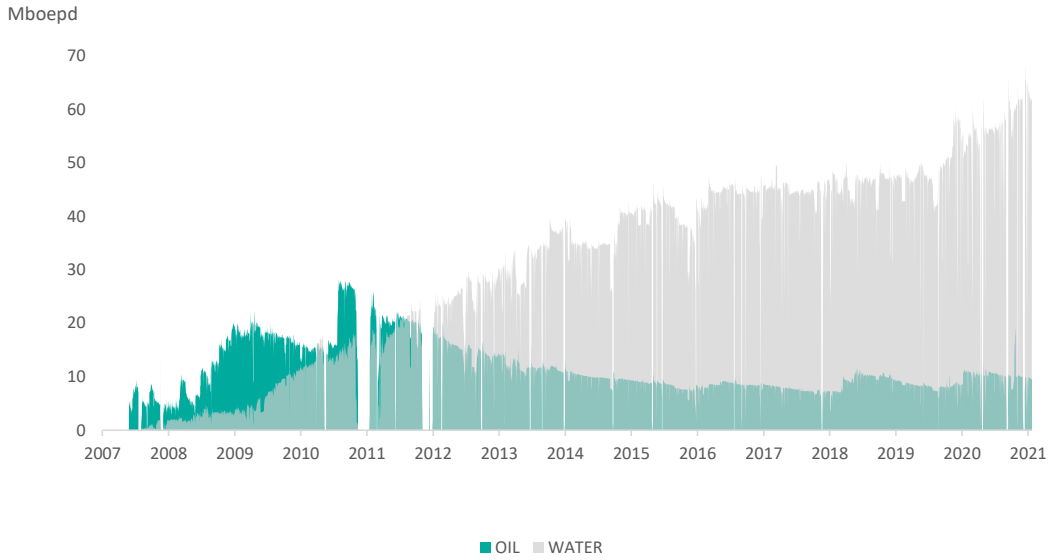
Production and Development

Production at the Polvo Field commenced in August 2007. Currently, the field produces from the Albian, Cretaceous and Eocene reservoirs and its producing wells are connected to a fixed production platform with drilling capabilities ("Polvo A") and FPSO Polvo. A multiphase pipeline transports the produced fluids from the Polvo A platform to the FPSO vessel. The primary processing facilities are located on the FPSO vessel, which has a production capacity of 150,000 barrels of fluid per day, and 800,000 barrels storage capacity. All producing wells are horizontal and are completed with ESPs. A single water-injection well has been completed in the Maastrichtian reservoir. The average gravity of the crude is 21° API and the Polvo Field also produces a small amount of associated gas which is either used as fuel or flared. The water depth around the Polvo Field ranges from 90 to 250 meters.

Through the Polvo A platform, the Polvo Field currently has 14 producing wells connected to the slots available. Additionally, another four wells are connected but temporarily closed. The Polvo A platform also has empty slots ready to be connected to wells arising from future drilling campaigns. An additional four wells are permanently deactivated (i.e., due primarily to the fact that such wells were originally drilled as exploratory or pilot wells). Early wells in the Polvo Field identified several areas of Quissamã Fm. (Albian carbonates) accumulation. After further evaluation, three of these areas were targeted for additional development: The Dev 7 and Dev-4&5 shoal areas, in the western part of the field, and the Dev-3 shoal area, referred to as the East Quissamã. To date, six wells have been drilled and produce from the Quissamã accumulation, and seven wells in Carapebus sandstone.

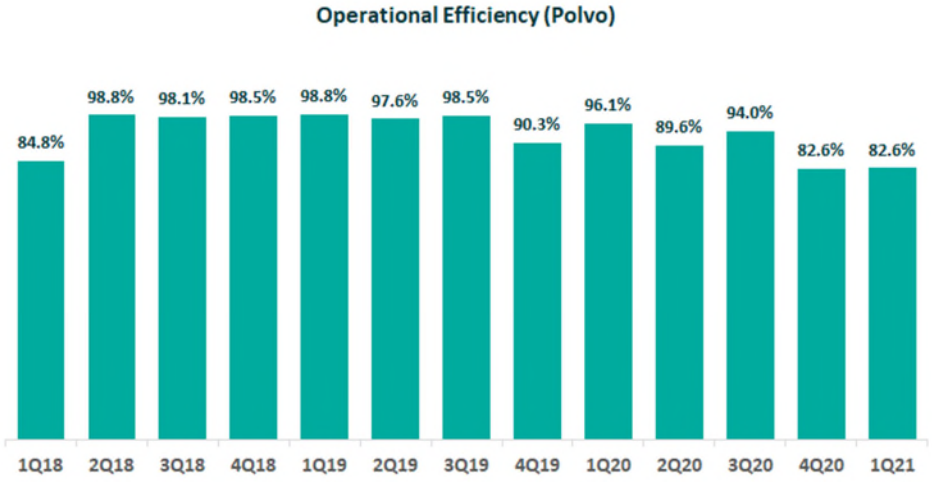
The Polvo Field has produced at stable rates and with high availability for the majority of the life of the field. The field achieved first oil in August 2007. Production peaked at approximately 26.8 Mboepd in December 2010. The field experienced a relatively mild production decline in the following years, as set forth in the graph below. The field's water production has, as expected, continuously increased in parallel with oil production. However, the FPSO vessel has sufficient capacity to process the expected production of liquids with a production capacity of 100,000 barrels of oil per day.

The graph below illustrates historical daily production rates at the Polvo Field for the periods indicated. The data in the chart below reflects the three-month period ended March 31, 2021.



Source: ANP

The graph below sets forth historical quarterly operational efficiency rates at the Polvo Field for the periods indicated. We calculate operational efficiency as a given field's uptime during a given period minus the field's or well's forecasted downtime, (e.g., for planned maintenance or any production interruption) divided by the total amount of time in such period.



Source: PetroRio management data.

The Polvo Field Redevelopment Plan

Beginning in 2016, we have carried out multi-phase Polvo Field Redevelopment Plan to increase operational efficiency, reduce operating costs and increase production at the Polvo Field. The Polvo Field Redevelopment Plan consists of three phases:

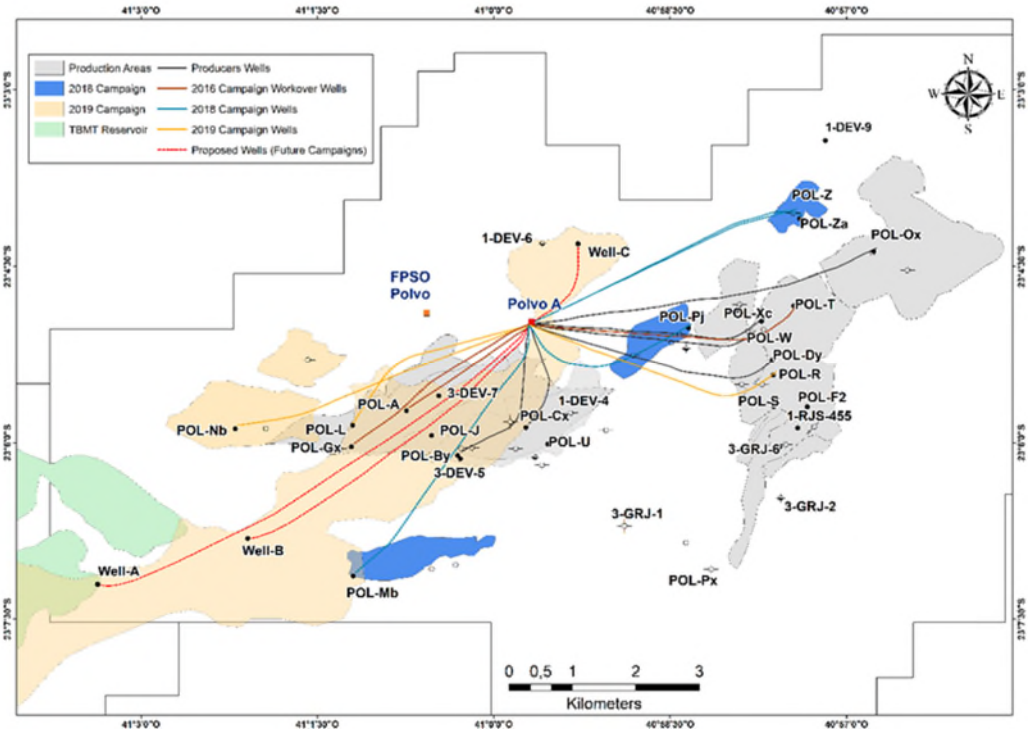
Phase 1: The first phase, which was completed in 2016, involved a workover campaign of three wells. This phase resulted in an approximately 20% increase in both the production and reserves through recompletions of three wells.

Phase 2: The second phase, which was completed in 2018, comprised the 2018 Polvo Field Drilling Campaign. In particular, three new wells were successfully drilled using the Polvo A platform's drilling rig, resulting in commercial discoveries and new production capacity. This phase resulted in an extension of the economic life of the Polvo Field to 2024 (compared to 2016 at the time of our acquisition) and an approximately 60% increase in production, at a total cost of U.S.$42.7 million.

Phase 3: The third phase, which commenced in 2019 and was completed in March 2020, was intended to further increase recovery rates at the Polvo Field and extend its economic life beyond 2024. First, we conducted extensive maintenance work on the Polvo A platform's drilling rig to increase its reliability, performance and safety. Second, following completion of maintenance on the Polvo A platform, we began the 2020 Polvo Field Drilling Campaign, using information gathered during our drilling campaign from the second phase of the Polvo Field Redevelopment Plan to map and rank 22 reservoirs.

Pursuant to the third phase of the Polvo Field Redevelopment Plan, we have performed a workover on the POL-BY well (the "POL-By Well"), and drilled four wells, three of which were drilled on the Albian carbonates (POL-N/Na/NB) to test new accumulations. Even though we discovered oil, its exploration is not economically feasible. The fourth well, POL-L well (the "Eocene Well"), which was drilled on the São Tome reservoir, has begun production, with an initial production value of 2.5 Mboepd, which has increased production at the Polvo Field by 30%. The workover at the POL-By Well has involved the installation of an electric submersible pump ("ESP"), as well as certain drilling operations, which have allowed us to access a new sandstone reservoir. The production at the POL-By Well increased more than 50% as a result of the workover. We invested R$182 million (or U.S.$35 million) in capital expenditures in connection with the third phase of the Polvo Field Redevelopment Plan.

The map below sets forth the development areas conducted at the Polvo Field pursuant to the Polvo Field Redevelopment Plan.



Source: PetroRio's geology and geophysics department.

Future Plans

Our future plans with respect to the Polvo Field involve further drilling activity, as well as the completion of the TBMT-Polvo Tieback Project, the tie back of the Tubarão Martelo Field to the Polvo Field, which is

expected to create an oil field cluster with enhanced operational synergies. See "*Business—Properties in Production and Development—The TBMT-Polvo Cluster*."

Using the results and data we gathered in connection with the third phase of the Polvo Field Redevelopment Plan, we identified three additional wells in the reservoir surrounding the Eocene Well with high potential for future hydrocarbon production. Two of the wells were classified containing proved reserves and one as containing probable reserves by DeGolyer. We expect that the future drilling campaign in connection with these wells will require capital expenditures of approximately R$247 million (or U.S.$47.5 million), of which R$18.2 million (or U.S.$3.5 million) will be provisioned for the upgrade of the Polvo A platform's drilling rig and R$52 million (or U.S.$10 million) to R$104 million (or U.S.$20 million) will be required for each well.

Marketing and Offtake Arrangements

We sell oil produced at the Polvo Field in spot transactions through (i) a marketing agreement between the Polvo Field Concessionaire and PetroRio Luxembourg, in which PetroRio's trading unit is based (the "Polvo Field Spot Marketing Agreement"), and (ii) a separate marketing agreement with PetroChina (the "PetroChina Marketing Agreement").

Pursuant to the Polvo Field Spot Marketing Agreement, our trading team monitors the crude market, including allocations of vessels, international demand and logistics of nearby fields, and works with our operational and finance teams to determine optimal lifting and cargo size. The trading team then communicates the opportunity to market, collects quotes and selects the preferred bidder. Typical cargos vary between 400-500 Mboe, and often leverage co-loadings with neighboring fields.

After the selection and communication of the preferred bidder, our trading team at PetroRio Luxembourg enters into a sales contract therewith (and a corresponding intra-group arrangement is entered into between PetroRio Luxembourg and PetroRio O&G). Typically, receivables are payable within 30 days with a 30-day pricing period (based on the average price of Brent crude oil during this period). Some of the common buyers of crude oil produced at the Polvo Field are PetroChina, Repsol, Shell, Trafigura and Enap.

In February 2019, we signed a R$312 million (or U.S.$60 million) ICBC Facility, alongside the PetroChina Marketing Agreement, a marketing agreement with PetroChina that allows PetroChina to purchase crude oil produced at the Polvo Field on a right-to-match basis for the duration of the ICBC Facility. The proceeds were used to improve our cash availability, with application mainly in the operation and development campaign of the Polvo Field. The ICBC Facility was repaid in full on December 29, 2020 and the PetroChina Marketing Agreement will remain in effect through June 29, 2021.

Pursuant to the PetroChina Marketing Agreement, we have the right to market the first out of every three cargos in a batch, while the second and third cargos can be bought by PetroChina at the price used for the first cargo of the batch (potentially at a discount). Alternatively, PetroChina may propose a discount less competitive than the one obtained by PetroRio for the first cargo of the batch. We have the right to market the cargo elsewhere if we can obtain a quote that is identical to or more competitive than the one proposed by PetroChina. In the event that we decide to redeem the ICBC Facility before its maturity date, the PetroChina Marketing Agreement will survive for six months from the date of redemption.

Decommissioning

We are the sole owner and operator the Polvo Field. Accordingly, we are liable for all of the Polvo Field decommissioning costs.

Regarding the original provision for the Polvo's abandonment costs, PetroRio was able to approve a review of methodology, grounded on studies carried by TSB Offshore, reducing abandonment costs to approximately U.S.$51.7 million.

In 2016, Maersk, a prior owner of the Polvo Field, provided a U.S. dollar denominated letter of credit to guarantee the decommission costs. In 2020, the Maersk letter of credit was substituted by the corresponding funds in Brazilian *reais* and transferred to an escrow account at Citibank S.A. (the "Polvo Field

Decommissioning Escrow Account"). As agreed with the ANP, the Polvo Field Decommissioning Escrow Accounts holds funds in U.S. dollar denominated assets to mitigate exchange rate risks. Therefore, now the Polvo Field's decommissioning guarantee consists of a provision fund of U.S.$34.2 million as well as a parent company guarantee in the amount of approximately U.S.$17.4 million.

The Tubarão Martelo Field

Overview

In February 2020, we agreed to acquire the OSX-3, the dedicated FPSO vessel of the Tubarão Martelo Field, for a total consideration of R$728 million (or U.S.$140 million). The acquisition of the FPSO Bravo was completed on April 20, 2020.

Subsequently, also in February 2020, we announced the Tubarão Martelo Field Acquisition, whereby we signed an agreement for the acquisition of an 80% working interest in the Tubarão Martelo Field from Dommo Energia. On July 2, 2020, the ANP approved the Tubarão Martelo Field Acquisition subject to certain conditions, which have since been satisfied. On August 3, 2020, we completed the Tubarão Martelo Field Acquisition.

Following completion of the Tubarão Martelo Field Acquisition, we plan to undertake the TBMT-Polvo Tieback Project, a 9 km tie back of the FPSO Bravo at the Tubarão Martelo Field to the Polvo A platform at the Polvo Field, which will create the TBMT-Polvo Cluster, an oil field cluster, thereby enabling significant synergies due to the existing facilities at the Polvo Field and the processing capacity of the OSX 3 FPSO. We expect to complete the TBMT-Polvo Tieback Project in the first half of 2021. See "*Business—Properties in Production and Development—The TBMT-Polvo Cluster*."

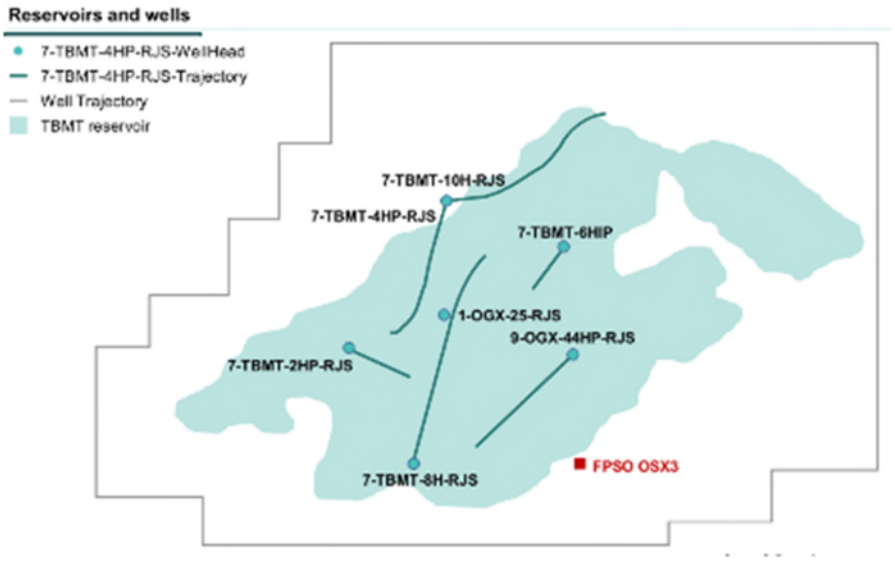
Pursuant to the terms of the relevant acquisition agreement, following closing and until the completion of the TBMT-Polvo Tieback Project, we will own rights to 80% of oil produced at the Tubarão Martelo Field and will be responsible for 100% of the charter of the FPSO Bravo as well as the operating costs, capital expenditures and abandonment costs of the Tubarão Martelo Field. In exchange, Dommo Energia will reimburse us at a rate of R$4.4 million (or U.S.$840 thousand) per month, which represents 20% of the Tubarão Martelo Field's pre-acquisition operating costs (excluding costs associated with the charter of the FPSO Bravo).

Following completion of the TBMT-Polvo Tieback Project, Dommo Energia will no longer be required to pay the monthly fee, and we will own rights to 95% of the oil produced at the TBMT-Polvo Cluster up to 30 MMboe, and 96% of the oil produced thereafter.

Asset Details

The Tubarão Martelo Field is located in the Campos Basin, approximately 10 km from the Polvo Field. Its production takes place through the FPSO Bravo, which is a state-of-the-art FPSO that was built in 2012 by converting a 1989 tanker in a FPSO, and has a storage capacity of 1.3 million barrels, as well as the capacity to process 100 thousand barrels of oil per day. The Tubarão Martelo Field has undergone a redevelopment plan implemented by Dommo Energia that increased the field's production by approximately 4 Mboepd. The Tubarão Martelo Field currently has five satellite wells which produce oil through the FPSO Bravo.

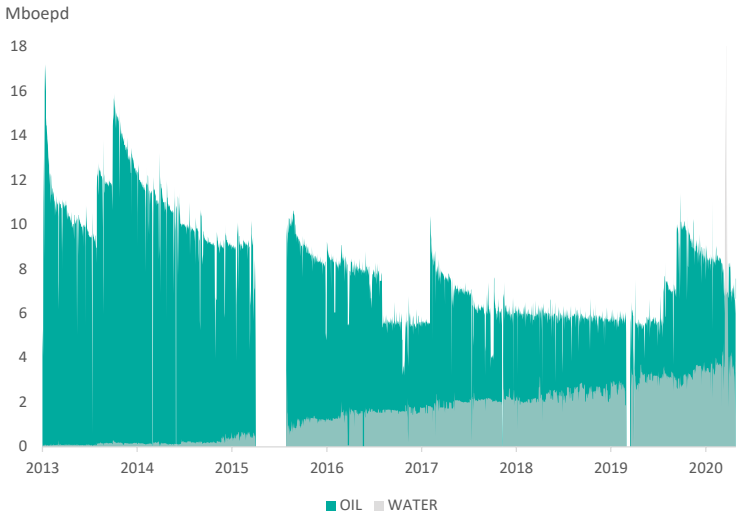
The following map illustrates the reservoirs and wells located at the Tubarão Martelo Field.



Source: PetroRio management data.

After the conclusion of the farm-in, we acquired the right to operate the Tubarão Martelo Field with our 80% working interest. During the three-month period ended March 31, 2021, the average daily production of the Tubarão Martelo Field was 7,767 boepd. Cumulative production over the life of the Tubarão Martelo Field as of March 31, 2021 was 21.7 MMboe, according to ANP.

The graph below illustrates historical daily production rates at the Tubarão Martelo Field for the periods indicated.



Source: ANP.

(1) Due to financial issues, Dommo Energia, the previous operator of the Tubarão Martelo Field, suspended production for four months in mid-2016.

The Polvo-TBMT Cluster

Overview

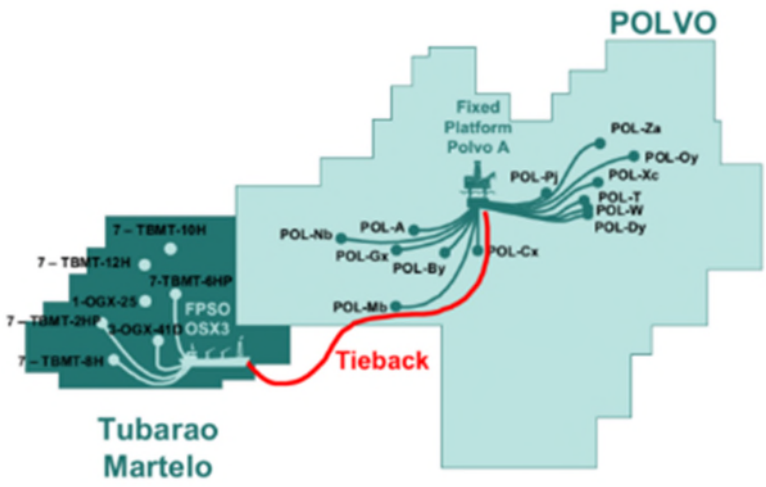
Following completion of the Tubarão Martelo Field Acquisition, we plan to undertake the TBMT-Polvo Tieback Project, a 9 km tie back of the FPSO Bravo at the Tubarão Martelo Field to the Polvo A platform at the Polvo Field. We expect to complete the TBMT-Polvo Tieback Project in the first half of 2021, thereby creating the TBMT-Polvo Cluster.

Pursuant to the terms of the Tubarão Martelo Field Acquisition, following closing and until the completion of the TBMT-Polvo Tieback Project, we will own rights to 80% of oil produced at the Tubarão Martelo Field and will be responsible for 100% of the charter of the FPSO Bravo as well as the operating costs, capital expenditures and abandonment costs of the Tubarão Martelo Field. In exchange, Dommo Energia will reimburse us at a rate of R$4.4 million (or U.S.$840 thousand) per month, which represents 20% of the Tubarão Martelo Field's pre-acquisition operating costs (excluding costs associated with the charter of the FPSO Bravo).

Following completion of the TBMT-Polvo Tieback Project, Dommo Energia will no longer be required to pay the monthly fee, and we will own rights to 95% of the oil produced at the TBMT-Polvo Cluster up to 30 MMboe, and 96% of the oil produced thereafter.

Completion of this project is expected to involve a capital expenditure of approximately R$229 million (or U.S.$44 million). We believe the tie back will allow us to capture operational synergies, as the production system will be simplified, lifting costs and emissions will decrease and the economic life of both fields will be extended. In particular, we estimate that the tie back will reduce combined operating costs by approximately R$676 million (or U.S.$130 million), reduce our lifting costs to under U.S.$16 per barrel, extend the fields' economic life to at least 2034, add 40 MMboe to the Polvo Field's current reserves and reduce combined emissions by 35%.

The following map sets forth the location of the Tubarão Martelo Field relative to the Polvo Field, as well as each of their producing wells and the TBMT-Polvo Tieback Project.



Source: PetroRio geology and geophysics department.

Future Plans

The table below sets forth the estimated joint future production, operating costs and capital expenditures based on DeGolyer's 2P (proved and probable) estimates for both the Polvo Field and the Tubarão Martelo Fields for the period indicated (i.e., giving effect to the completion of the TBMT-Polvo Tieback Project). While we believe these figures more accurately present the future production, operating costs and capital expenditures at both fields in light of the tie back, the fields have independent histories and geological

characteristics. See "*Business—Properties in Production and Development—The Tubarão Martelo Field" and "Business—Properties in Production and Development—The Polvo Field.*"

Period	Net Oil Production	Net Sales Gas Production	Operating Expenses	Capital Costs
	(10^3bbl)	*(10^6ft^3)*	*(U.S.$ thousands)*	
2021	7,864	-	102,600	87,700
2022	8,828	-	69,930	65,300
2023	9,359	-	69,930	15,500
2024	8,565	-	69,930	15,500
2025	7,730	-	69,930	15,500
2026	7,009	-	69,930	15,500
2027	6,367	-	69,930	15,500
2028	5,808	-	69,930	15,500
2029	5,278	-	69,930	15,500
2030	4,817	-	69,930	15,500
2031	4,402	-	69,930	15,500
2032	4,038	-	69,930	15,500
2033	3,690	-	69,930	15,500
2034	3,384	-	69,930	15,500
2035	3,104	-	69,930	15,500
2036	2,855	-	69,930	15,500
2037	2,621	-	69,930	15,500
2038	2,414	-	69,930	15,500
2039	2,227	-	69,930	15,500
2040	2,061	-	69,930	15,500
2041	1,899	-	69,930	15,500
2042	1,753	-	69,930	15,500
2043	1,617	-	69,930	0
2044	1,502	-	69,930	0
2045	1,387	-	69,930	0
Total	**110,579**	**-**	**1,780,920**	**463,000**

Source: 2021 D&M Reserves Report

Certified Reserves Data

The reserves estimates and related data below are derived from the 2021 D&M Reserves Report. See "*Oil and Gas Reserves and Production Information*" and "*Summary Historical Reserves and Contingent Resources Data.*"

The certified 1P (proved), 2P (proved and probable) and 3P (proved, probable and possible) reserves at the Polvo-TBMT Cluster are set forth in the table below. The 1P reserves reflect a P90 value, or a 90% probability that the reserves actually recovered will match or exceed the estimated reserves, the 2P reserves reflect a P50 value, or a 50% probability that the reserves actually recovered will match or exceed the estimated reserves, and the 3P reserves reflect a P10 value, or a 10% probability that the reserves actually recovered will match or exceed the estimated reserves.

	Gross			Net (Working Interest)		
	1P	2P	3P	1P	2P	3P
			(MMboe)			
Total	66	115	186	63	110	178

Source: 2021 D&M Reserves Report

The following table sets forth a breakdown of the Polvo-TBMT Cluster reserves by hydrocarbon type.

	Gross			Net (Working Interest)		
	Liquids	Gas	Total	Liquids	Gas	Total
	(MMboe)	*(bcf)*	*(MMboe)*	*(MMboe)*	*(bcf)*	*(MMboe)*
1P	66	0	66	63	0	63
2P	115	0	115	110	0	110
3P	186	0	186	178	0	178

Source: 2021 D&M Reserves Report

The Manati Field

Overview

The Manati Field is a gas field located in the Camamu-Almada Basin, approximately 65 kilometers southwest of the city of Salvador, Bahia State, and has a total area of approximately 75 km^2. It is one of the largest producing dry gas fields in Brazil based on production volume, meeting approximately 30% of the demand for gas in north-eastern Brazil.

We hold a 10% working interest in the Manati Field through our holding Brasoil, with the remainder held by Petrobras (35% working interest), Enauta (formerly Queiroz Galvão Exploração e Produção S.A. ("QGEP"); 45% working interest), which announced the sale of its 45% working interest to Gas Bridge, subject to the satisfaction of conditions precedent, Geopark (10% working interest) (together, the "Manati Field Consortium").

On November 5, 2020, we announced the sale of our 10% working interest in the Manati Field, held through our subsidiary Petro Rio Coral Exploração Petrolífera Ltda., to Gas Bridge. When the Manati Field Sale closes, its effect will retroact to January 1, 2021 and we will no longer be entitled to the cash generated by Manati, including payments under the Petrobras Take-or-Pay Agreement, calculated as of January 1, 2021. The Manati Field Sale is subject to the satisfaction of conditions precedent, including the acquisition of the Manati operation from Petrobras by Gas Bridge (the "Petrobras Condition Precedent"). The total value of the transaction is R$144.4 million and includes the transfer of all of our liabilities in the Manati Field, including our participation in its abandonment. The transaction consists of a fixed portion of R$124.4 million and an earn-out of R$20 million, subject to certain subsequent regulatory approvals related to the Manati Field. This transaction is part of our value generation strategy through the dynamic management of our asset portfolio, and reinforces our focus on operational assets that make up the core of our business. For more information see notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

The Manati Field is operated by Petrobras and 100% of its production output is sold to Petrobras pursuant to the Petrobras Take-or-Pay Agreement. Our interest in the concession, originally granted in 1997, is held by Petro Rio Coral Exploração Petrolífera Ltda. (the "Manati Field Concessionaire"), an indirect wholly-owned subsidiary of PetroRio, and expires on November 26, 2029.

Production at the Manati Field attributable to our 10% working interest was 331 Mscmpd (equivalent to 2.1 Mboepd), in the three-month period ended March 31, 2021 and 238 Mscmpd, 459 Mscmpd and 249 Mscmpd (equivalent to 1.5 Mboepd, 2.9 Mboepd and 1.6 Mboepd, respectively) in the years ended December 31, 2020, 2019 and 2018, respectively. Cumulative production over the life of the Manati Field was 2,537 Mscm (equivalent to 16 MMboe) as of March 31, 2021.

Certified net proved and probable condensate reserves at the Manati Field were 3 MMboe as of January 1, 2021, according to the 2021 D&M Reserves Report.

Certified net proved and probable gas reserves at the Manati Field were 414 Mscm and 484 Mscm (equivalent to 2.6 MMboe and 3 MMboe, respectively) as of January 1, 2021 and April 30, 2020, respectively.

The following map shows the location of the Manati Field.

Source: PetroRio geology and geophysics department.

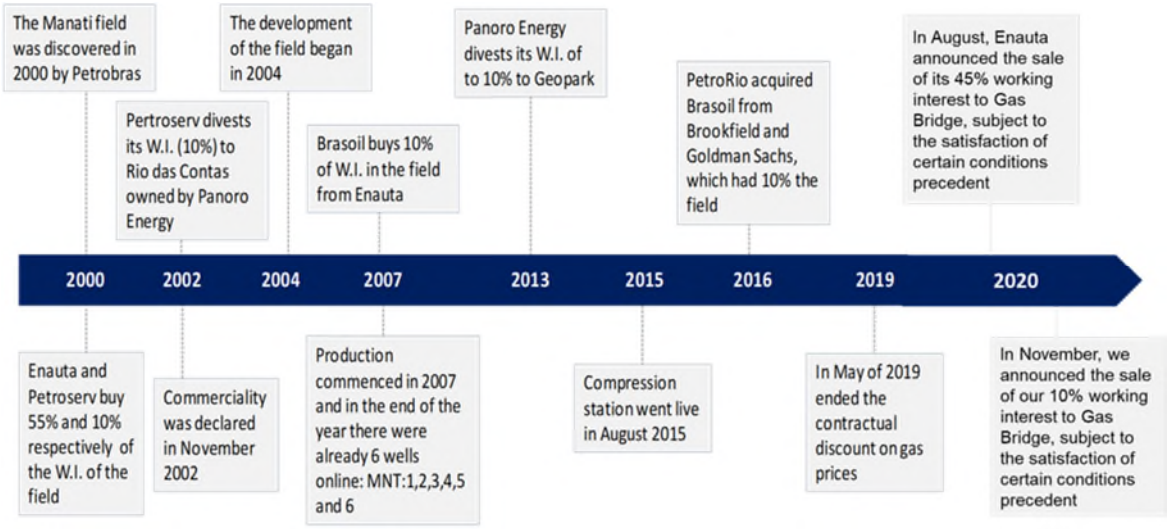
History

The Manati Field was discovered in October 2000 by Petrobras with the drilling the wildcat well 1-BRSA-14-BAS (1BAS-128). Commercial viability was declared in November 2002 by the initial Manati Field consortium, which consisted of Petrobras (35% working interest), Enauta (formerly QGEP; 45% working interest), which has recently announced the sale of its 45% working interest to Gas Bridge, subject to the satisfaction of conditions precedent, Panoro Energy (10% working interest) and Brasoil (10% working interest). Field development began in 2004 and production commenced in 2007.

On December 21, 2016, PetroRio announced the acquisition of an initial 23.19% interest in Brasoil do Brasil Exploração Petrolífera S. A ("Brasoil"), the holder of a 10% working interest in the Manati Field and other exploratory assets, from Goldman Sachs & Co. Subsequently, minority shareholders in Brasoil exercised their tag-along rights. On January 2, 2017, we acquired an additional 29.21% stake in Brasoil from Fundo Brascan de Petróleo, Gás e Energia – Fundo de Investimento em Participações. We announced the acquisition the remaining interest in Brasoil from various other minority shareholders on February 10, 2017. Our acquisition of a 100% interest in Brasoil was completed on March 20, 2017, for a total acquisition value of approximately R$192.4 million (or U.S.$37 million). Through Brasoil, which we renamed Petro Rio do Brasil Exploração Petrolífera S.A. following our acquisition thereof, we also hold 100% working interests in each of the exploratory assets FZA-M-254 and FZA-M-539. See "*Business—Properties in Exploration.*"

Our acquisition of our working interest in the Manati Field was driven primarily by a desire to diversify our portfolio of assets. In addition, we believe the acquisition was underpriced and presented an opportunity for enhanced returns on an abbreviated timetable. In addition, the working interest also provides us with exposure to the Brazilian *real* as a natural hedge for our selling, general and administrative expenses, which are also denominated in Brazilian *reais*.

The timeline below sets forth key milestones in the history and development of the Manati Field.



Date	Event
2000	The Manati Field was discovered in 2000 by Petrobras
2000	Enauta and Petroserv buys 55% and 10%, respectively, of the working interest in the field
2002	Petroserv divests its WI (10%) to Rio das Contas owned by Panoro Energy
2002	Commerciality was declared in November 2002
2004	The development of the field began in 2004
2007	Production commenced in 2007 and by the end of the year six wells were online
2007	Field development plan submitted to the ANP
2013	Panoro Energy divests its 10% working interest to Geopark
2015	Compression Station went live in August 2015
2016	PetroRio acquired Brasoil from Brookfield and Goldman Sachs, thereby holding a 10% working interest in the field
2019	In May, the contractual discount on gas prices expired
2020	In August, Enauta announced the sale of its 45% working interest to Gas Bridge, subject to the satisfaction of conditions precedent
	In November, we announced the sale of our 10% working interest to Gas Bridge, subject to the satisfaction of conditions precedent

Certified Reserves Data

The reserves estimates and related data below are derived from the 2021 D&M Reserves Report. See "*Oil and Gas Reserves and Production Information*" and "*Summary Historical Reserves and Contingent Resources Data.*"

The certified 1P (proved), 2P (proved and probable) and 3P (proved, probable and possible) reserves at the Manati Field are set forth in the table below. The 1P reserves reflect a P90 value, or a 90% probability that the reserves actually recovered will match or exceed the estimated reserves, the 2P reserves reflect a P50 value, or a 50% probability that the reserves actually recovered will match or exceed the estimated reserves, and the 3P reserves reflect a P10 value, or a 10% probability that the reserves actually recovered will match or exceed the estimated reserves.

	Gross			Net (Working Interest)		
	1P	**2P**	**3P**	**1P**	**2P**	**3P**
			(MMboe)			
Total	25	26	30	2	3	3

Source: 2021 D&M Reserves Report utilizing the conversion factors set forth in "Oil and Gas Reserves and Production Information."

The following table sets forth a breakdown of the Manati Field reserves by hydrocarbon type.

	Gross			Net (Working Interest)		
	Liquids	**Gas**	**Total**	**Liquids**	**Gas**	**Total**
	(MMboe)	***(bcf)***	***(MMboe)***	***(MMboe)***	***(bcf)***	***(MMboe)***
1P	0	139	25	0	14	2
2P	0	146	26	0	15	3
3P	0	167	30	0	17	3

Source: 2021 D&M Reserves Report utilizing the conversion factors set forth in "Oil and Gas Reserves and Production Information."

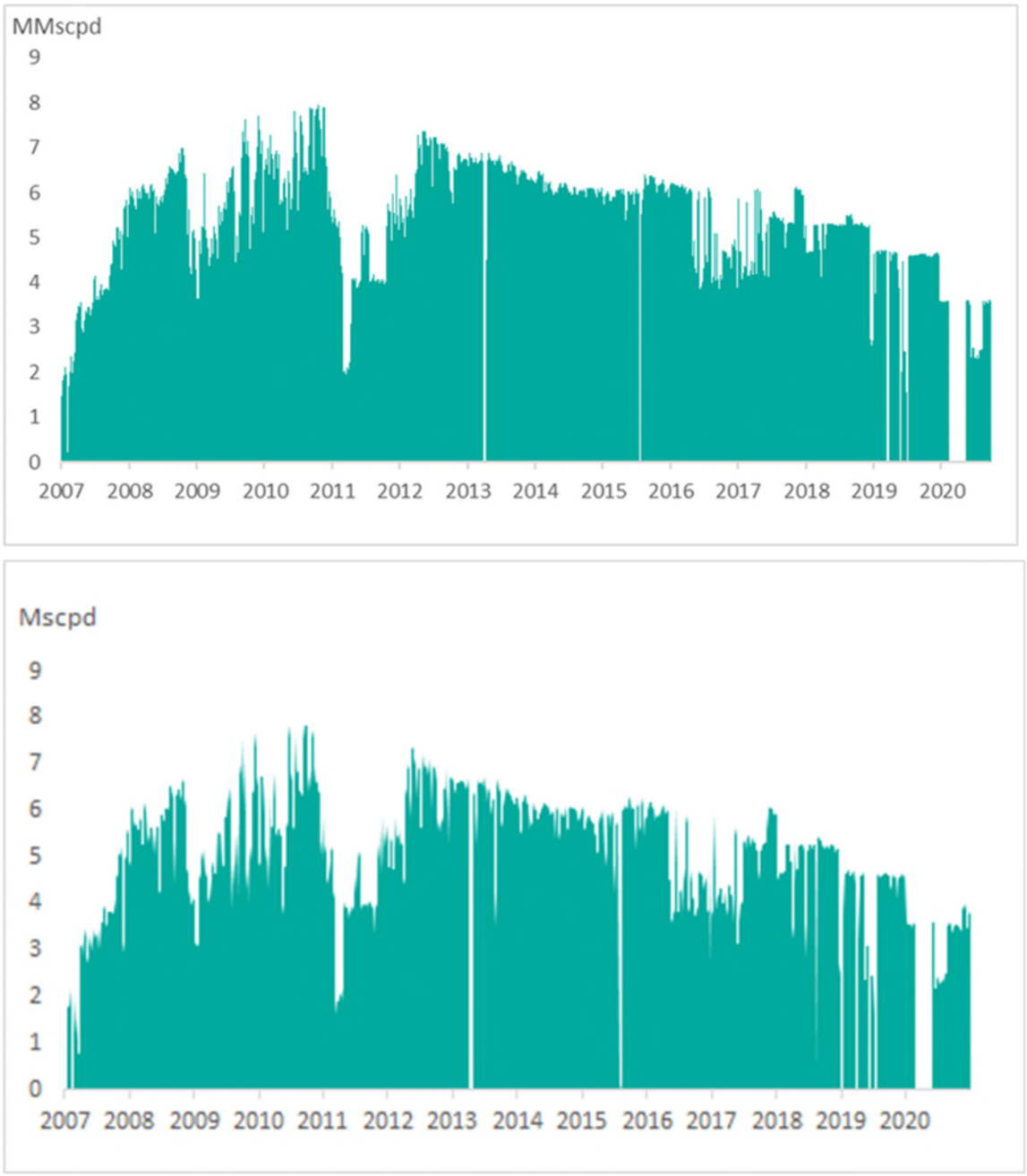
Production and Development

The Manati Field was discovered in 2000 by Petrobras with the drilling of well 1-BAS-128 at a water depth of approximately 40 meters. Production commenced in 2007 from a fixed production platform that is connected to an onshore gas processing facility through a 125 km subsea pipeline. A total of nine wells have been drilled in the Manati Field, three of which were exploratory wells. As of March 31, 2021, five wells are producing gas from the multiple formation sandstones in the Manati Field.

The Manati Field has been developed through wells installed with subsea wellheads. These produce from a fixed production rig (PMNT-1) with capacity for up to seven wells that pump gas through a 24" wide, approximately 125 km pipeline to a compression station. The gas is then transported via the same pipeline to the processing facility where it is later distributed to fertilizer factories, thermal powers plants and refineries.

The Manati Field's production is largely influenced by the local gas demand. Brazil's electrical energy matrix is based on hydropower during the rainy season and thermal power during the dry season. As gas produced at the Manati Field is used widely in thermal power generation and the field's production is highly scalable, demanded quantities vary seasonally.

The graph below illustrates historical daily production rates at the Manati Field for the periods indicated. The data in the chart below reflects the three-month period ended March 31, 2021.



Source: ANP.

Marketing and Offtake Arrangements

100% of the Manati Field's production output is sold to Petrobras through a take-or-pay contract, which was originally entered into in April 2007 (the "Manati Field Offtake Agreement"). The Manati Field Offtake Agreement originally reflected a total stock tank oil-initially-in-place ("STOIIP") of 23,000 Mscm. In 2015, following the construction and installation of the gas compression plant, the Manati Field consortium at the time amended the Manati Field Offtake Agreement to reflect a revised contemplated STOIIP of 30,000 Mscm. The most recent amendment, entered into on January 4, 2019, has a STOIIP of 28,000 Mscm.

Pursuant to the latest amendment to the Manati Field Offtake Agreement, Manati Field Consortium members are entitled to a minimum monthly and annual take by Petrobras (as exclusive purchaser) for the natural gas produced in the field. At the end of each month and year, any verified undertakings by Petrobras, as purchaser, are invoiced and paid for (in Brazilian *reais*) by the billing date and subsequently delivered by the Manati Field Consortium, i.e., the volumes paid for and not taken will constitute a credit for Petrobras. Similarly, an undersupply of gas will be charged to the Manati Field Consortium members, subject to evaluation of responsibility for the cause of undersupply, in which case the penalty will be paid by either the relevant member or members of the Manati Field Consortium or Petrobras (as operator).

In April 2020, Petrobras invoked the *force majeure* clause of the Manati Field Offtake Agreement, and suspended its performance of its obligations thereunder, citing the COVID-19 outbreak. We and our partners in the Manati Field resolved this contractual dispute with Petrobras by amending the Manati Field Offtake Agreement to reduce the take or pay volume in 2020 and increase, in the same quantity, the volume for 2021. See "*Risk Factors—Risks Related to the Group, its Business and the Oil and Gas Industry—We are not, and may not be in the future, the sole owner or operator of all of our licensed areas and do not, and may not in the future, hold all of the working interests in certain of our licensed areas. Therefore, we may not be able to control the timing of exploration or development efforts, associated costs, or the rate of production of any non-operated and, to an extent, any non-wholly owned, assets*."

Future Plans

The Manati Field Consortium does not currently have any plans for the further development of the Manati Field given we are in the process of selling our working interest in the field.

The table below sets forth the estimated future reserves, operating costs and capital expenditures based on DeGolyer's 2P (proved and probable) estimates in respect of the Manati Field for the periods indicated.

Period	Net Condensate	Net Sales Gas	Operating Expenses	Capital Costs
	(10^3bbl)	*(10^6ft^3)*	*(U.S.$ thousands)*	
2021	10	3,982	6,413	252
2022	9	3,774	6,526	80
2023	7	3,001	6,057	43
2024	5	2,250	6,020	0
2025	4	1,615	5,988	0
Total	**35**	**14,622**	**31,004**	**375**

Source: 2021 D&M Reserves Report utilizing the conversion factors set forth in "Oil and Gas Reserves and Production Information."

Decommissioning

The Manati Field's abandonment costs are included as an annual accrual to an abandonment fund which, to this date, is fully funded. The Manati consortium members reimburse the third-party operator of the compression facility through annual tariff payments until the contractual amount has been reached. As of March 31, 2021, the field's total abandonment costs are estimated to be approximately U.S.$127.2 million and PetroRio is liable for 10% of this cost.

Properties in Exploration

Our portfolio of exploration assets currently consists of three blocks located in the Foz do Amazonas and Ceará basins, which we consider to be non-core and were acquired in connection with the acquisitions of our operating assets. The following table sets forth certain information relating to these assets as of March 31, 2021.

Block	Basin	Type	Working Interest	Area (km^2)	Status	Expiry of Exploratory Period
FZA-M-254	Foz do Amazonas	Oil	100%	192	Operator	August 2024
FZA-M-539	Foz do Amazonas	Natural Gas	100%	192	Operator	October 2024
CE-M-715	Ceará	Oil	50%	326	Operator	September 2023
Total	—	—	—	**710**	—	—

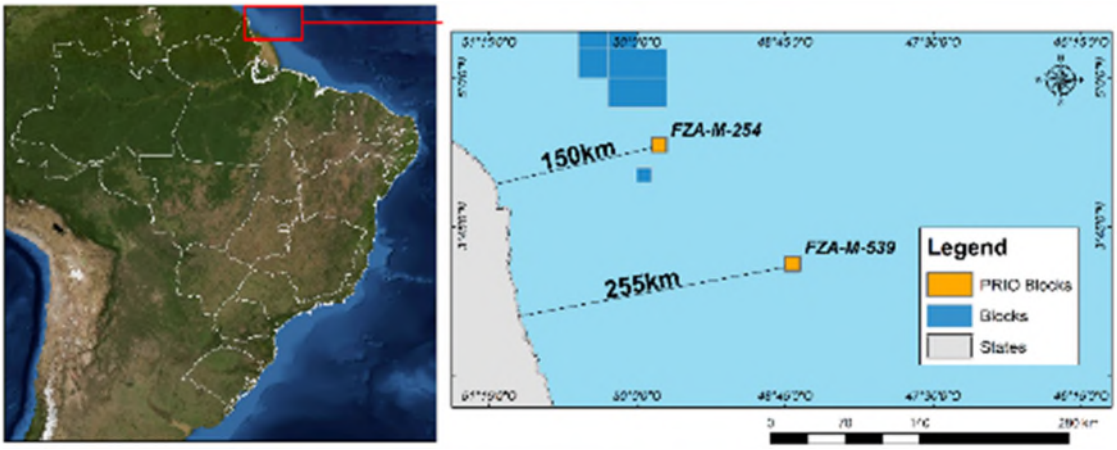
FZA-M-254

Overview

The FZA-M-254 exploratory block is located in deep waters in the Foz do Amazonas Basin, approximately 150 km off the coast of the state of Amapá, and has a total area of approximately 192 km^2. We acquired a 100% working interest in the block in 2017 as part of our acquisition of Brasoil and our working interests in the Manati Field and the FZA-M-539 block. In July 2018, we requested environmental licenses from IBAMA to conduct mandatory exploratory activities in the block. In 2019, IBAMA issued an opinion identifying synergies between the FZA-M-254 and the FZA-M-539 blocks and requesting a dispersion model for each block. This process was dormant until 2020, when we hired an expert to prepare the requested models. We expect to file the requested documentation by the beginning of the second quarter in 2021.

In recent years, IBAMA has been reluctant to permit any drilling in the Foz do Amazonas Basin due to environmental concerns related to regional corals. In addition, the ANP has cited the risk of potential oil spills and their impact on neighboring French Guinea in denying drilling licenses to Total, which has sought to conduct drilling activities in a nearby block.

The following map shows the location of the FZA-M-254 block.



Source: PetroRio geology and geophysics department.

Geological Background

The Foz do Amazonas Basin is an offshore sedimentary basin that borders the north-western limits of the Pará-Maranhão Basin. This basin is considered to be a new frontier for potential oil and gas discovery, though it presents several logistical challenges, such as the absence of nearby ports and airports on the coastline, with the closest port in Macapá located approximately 450km away. Furthermore, the nearest coastline is sparsely populated and is difficult to access due to its geography mainly consisting of rainforest. The main source rocks are the Cassiporé and Codó shale formations, which are in the rift stage and which we expect to have high potential for oil generation. The Limoeiro formation is also a significant potential source for gas and oil

generation from the upper Cretaceus. Other possible reservoir rocks in the Foz do Amazonas include aeolian, fluvial-deltaic, turbidites and deltaic sandstones from the Jurassic up to Paleocene ages.

3D seismic surveys conducted in 2015 of the FZA-M-254 block, which ranges from 400 to 1,500 meters in depth, further support the potential accumulation of oil in the area.

Status and Future Plans

The FZA-M-254 block is located approximately 50 km south of a cluster of exploratory blocks owned by Total. On several occasions, Total has publicly indicated its interest in the exploration of the Foz de Amazonas Basin and has undertaken various efforts to obtain environmental licenses to commence drilling activities there, which, to our knowledge, have not yet been granted.

Our strategy for the FZA-M-254 block is to monitor developments in the area and determine whether to conduct exploratory activities in the block based on whether environmental permits for drilling are obtained in respect of the neighboring blocks. In the event that the relevant licenses are obtained, and the neighboring blocks begin producing oil, we would seek to farm out our working interest in the FZA-M-254 block, either in part or in whole.

If we are not successful in entering into an appropriate farm-out arrangement, we could divest the exploratory block to the ANP, which could result in the enforcement of the remaining PEM guarantee (updated amount of R$722.7 thousand in 2021) and the application of penalties for breach of the agreement, should the ANP deem it appropriate to apply them. Alternatively, we may choose to carry out the minimum exploratory program. In the latter scenario, we would then determine, based on the results of the survey, whether or not to proceed with further exploration of the block.

If the environmental licenses for which we applied in July 2018 are not granted, we would expect to divest the block to the ANP. We do not expect the ANP to levy any fines for non-compliance with the obligatory exploration plan if IBAMA does not grant us the relevant environmental licenses.

FZA-M-539

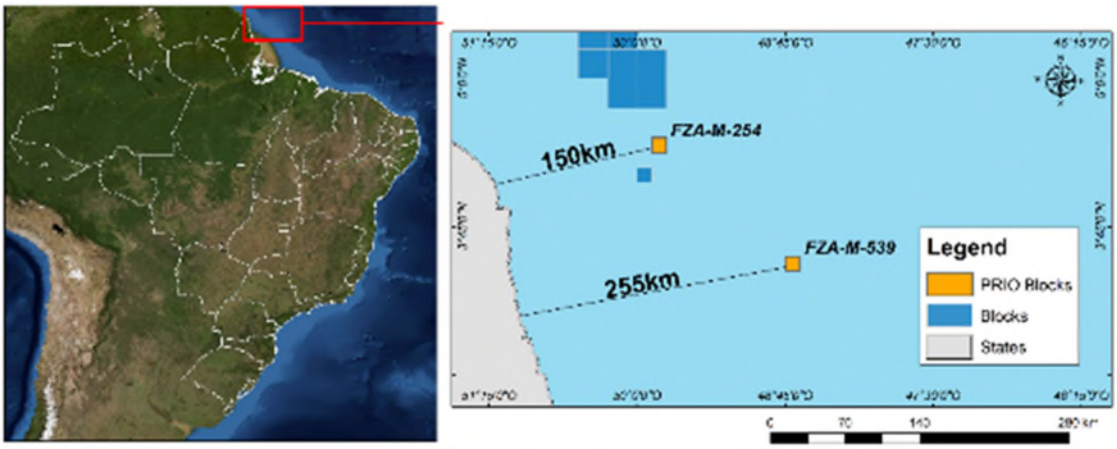
Overview

The FZA-M-539 exploratory block is located in shallow waters in the Foz do Amazonas Basin, approximately 255 km off the coast of the state of Amapá, and has a total area of approximately 192 km^2. We acquired a 100% working interest in the block in 2017 as part of our acquisition of Brasoil and our working interests in the Manati Field and the FZA-M-254 block. In July 2018, we requested environmental licenses from IBAMA to conduct mandatory exploratory activities in the block. In 2019, IBAMA issued an opinion identifying synergies between the FZA-M-254 and the FZA-M-539 blocks and requesting a dispersion model for each block. This process was dormant until 2020, when we hired an expert to prepare the requested models. We expect to file the requested documentation by the beginning of the second quarter in 2021.

In 2013, Brasoil acquired the full working interest in the block from the ANP for approximately R$8 million (or U.S.$2.5 million) through a bidding process. In 2014, a 2D seismic survey was conducted.

In recent years, IBAMA has been reluctant to permit any drilling in the Foz da Amazonas Basin due to environmental concerns related to regional corals. In addition, IBAMA has cited the risk of potential oil spills and their impact on neighboring French Guinea in denying drilling licenses to Total, which has sought to conduct drilling activities in a nearby block north of the FZA-M-539 block.

The following map shows the location of the FZA-M-539 block.



Source: PetroRio geology and geophysics department.

Geological Background

As it is located in the Foz do Amazonas Basin, the FZA-M-539 block has similar general geological characteristics to the FZA-M-254. See "*Business—Properties in Exploration—FZA-M-254—Geological Background*."

The FZA-M-539 block is located in shallow waters at an approximate depth of 130 meters. The primary reservoir of the block consists of deltaic sandstones with an average porosity of 18% and net pay of between 10 to 50 meters. 2D seismic surveys of the block were conducted in the 1970s, and we believe a seismic reprocessing as well as an amplitude variation with offset ("AVO") analysis would enable us to map further potential reservoirs within the concession area.

Status and Future Plans

If the environmental licenses for which we applied in July 2018 are granted, we would seek to farm out our working interest in the FZA-M-254 block, either in part or in whole, given that gas has already been discovered in the block.

If we are not successful in entering into an appropriate farm-out arrangement, we could divest the exploratory block to the ANP, which could result in the execution of the remaining PEM guarantee (updated amount of R$13.0 million in 2021) and the application of sanctions for breach of the agreement, should the ANP deem it appropriate to apply them. Alternatively, we may choose to carry out the minimum exploratory program. In the latter scenario, depending on the results of the survey, we will decide whether to continue with the exploration of the block. In the latter scenario, we would then determine, based on the results of the survey, whether or not to proceed with further exploration of the block.

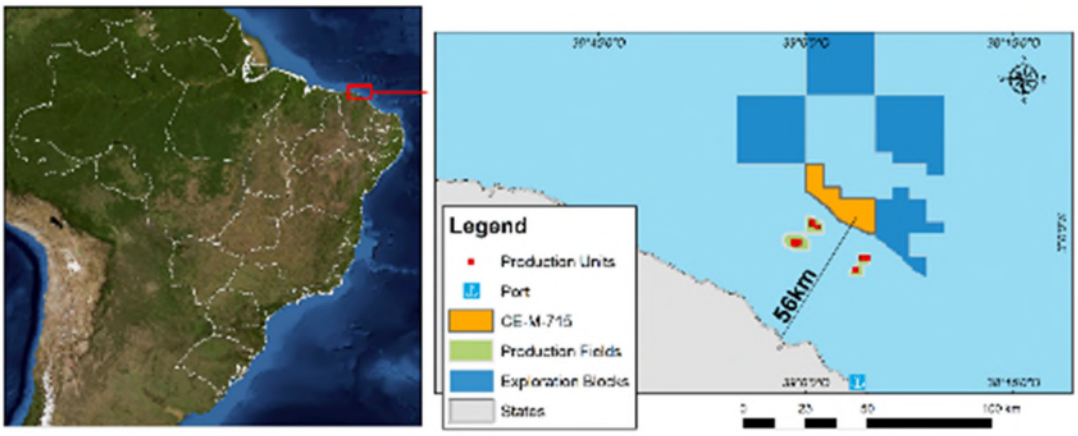
If the environmental licenses for which we applied in July 2018 are not granted, we would expect to divest the block to the ANP. We do not expect the ANP to levy any fines for non-compliance with the obligatory exploration plan if IBAMA does not grant us the relevant environmental licenses.

CE-M-715

Overview

The CE-M-715 exploratory block is located in deep waters in the Ceará Basin, approximately 56 km off the coast of the state of Ceará and has a total area of approximately 326 km^2. We acquired a 50% working interest in the block in 2019 as part of our acquisition of a 51.74% working interest in the Frade Field (as well as the FPSO Frade and related subsea equipment) from Chevron. The remaining 50% working interest is held by Ecopetrol.

The following map shows the location of the CE-M-715 block.



Source: PetroRio geology and geophysics department.

Geological Background

The Ceará Basin is located in the Brazilian Equatorial Margin with an offshore area of 50,000 km² and water depths of up to 3,000 meters. Currently, there are four oil producing fields in the basin, all in shallow water. The oil produced in the Ceará Basin is considered to be of excellent quality, with an average gravity ranging from 27° to 39° API. In addition, there are two deep water oil discoveries, both of which have been deemed non-commercial.

The depth of the CE-M-715 block ranges between 150 and 1,100 meters. The primary source rock consists of post-rift Aptian evaporitic marine shales, distributed throughout the basin, containing type I and II organic matter with high total organic carbon ("TOC") levels and, we believe, high potential for oil generation. The primary reservoir rocks consist of rift and post-rift Aptian/Early Albian fluvial and deltaic sandstones with an average porosity of over 20% and permeability of up to 2,000 mD, drift phase Late Cretaceous turbidites sandstones with an average porosity of up to 20% and carbonates holding considerable hydrocarbon volumes in the shallow water fields.

The primary deep waters exploratory plays in the CE-M-715 block is located are Aptian/Early Albian fluvial deltaic sandstones in structural and combination traps and Late Cretaceous turbidite sandstones in stratigraphic traps.

Status and Future Plans

We are currently in the process of analyzing the pre-existing seismic and technical data in relation to the CE-M-715 block to further assess its potential. We are also considering the steps necessary for us to comply with the terms of the concession contracts with the ANP, which require the drilling of an exploratory well, along with our partner Ecopetrol. Consistent with current ANP regulations, we are also considering requesting an extension from the ANP of the deadline for the exploratory drilling program due to the COVID-19 outbreak.

Depending on the results of these studies, we will decide whether to apply for the environmental licenses necessary to conduct an exploratory drilling program. Depending on whether we decide to apply for such licenses and whether those licenses are granted, we could eventually either farm out the block or divest it to the ANP, in which case could result in the execution of the remaining PEM guarantee (R$59.9 million as PetroRio's proportion) and the ANP may apply penalties for breach of the agreement.

Material Contracts

Our material agreements and contracts for each of our properties, as well as our material financing and insurance arrangements, are described below.

The Frade Field

Over the course of 2018 and 2019, we entered into sales and purchase agreements ("SPAs") with Chevron, INPEX and Petrobras in connection with the Frade Field Acquisition. Following the completion of the Frade Field Chevron Acquisition and the Frade Field INPEX Acquisition, we acquired a 70% working interest in, and operatorship of, the Frade Field. Following the closing of the Frade Field Petrobras Acquisition, we now hold a 100% working interest in the Frade Field. The total consideration for these acquisitions, including adjustments and deferred payments, is approximately U.S.$533 million, of which a certain amount is payable on a deferred basis. As of March 31, 2021, the total amount of deferred principal outstanding in connection with these acquisitions was R$815 million (or U.S.$143 million) (in connection with the Frade Field Chevron Acquisition), excluding payments due on closing of the Frade Field Petrobras Acquisition. As of the date of this Offering Memorandum, amounts due to Chevron pursuant to the Frade Field Chevron Acquisition SPA have been paid in full.

The Frade Field Chevron Acquisition SPA

In connection with the Frade Field Chevron Acquisition, on January 29, 2019, PetroRio Luxembourg, as buyer, and PetroRio, as guarantor, entered into:

- a SPA with Chevron Latin America Marketing LLC and Chevron Amazonas LLC, as sellers, for the entire share capital of Chevron Brasil Upstream Frade Ltda. (which we renamed Petro Rio Jaguar Petróleo Ltda. following the acquisition); and
- a SPA with Chevron Latin America Holdings Ltd., as seller, for the entire share capital of Chevron Frade LLC (which we renamed PetroRio Frade LLC following the acquisition) (collectively, the "Frade Field Chevron Acquisition SPA").

The Frade Field Chevron Acquisition closed on March 25, 2019 without the need for ANP approval. Pursuant to the terms of the Frade Field Chevron Acquisition SPA, we acquired a 51.74% working interest in the Frade Field and in the FPSO Frade (as well as certain subsea equipment), for a total consideration of approximately U.S.$450 million, of which approximately U.S.$195 million was payable on a deferred basis within 24 months of closing.

As of the date of this Offering Memorandum, amounts due to Chevron pursuant to the Frade Field Chevron Acquisition SPA have been paid in full.

Under the Frade Field Chevron Acquisition SPA, Chevron agreed to indemnify PetroRio in certain situations, including for losses arising from (i) certain excluded liabilities (ii) any breach of the representations and warranties made by Chevron, (iii) any breach of the covenants made by the sellers and (iv) any taxes incurred or payable by PetroRio Jaguar before December 31, 2017. Losses arising from certain ongoing legal disputes qualify as excluded liabilities for which we may seek indemnification from Chevron. See "*Business—Legal and Regulatory—Legal Proceedings—Disputes related to the 2011-2012 Frade Field Oil Spills.*"

Chevron's liability under the Frade Field Chevron Acquisition SPA is capped at 10% of the purchase price thereunder, except for (i) certain excluded liabilities, to which no cap applies, (ii) breaches of fundamental warranties, which are capped at 100% of the purchase price and (iii) indemnification related to taxes due in connection with the special customs regime of Repetro, which is also capped at 100% of the purchase price. The basket for Chevron's liability is 5% of the purchase price, except for (i) excluded liabilities, which have no basket and (ii) tax claims, for which the basket is U.S.$5,000,000. The *de minimis* threshold for liability is 1% of the purchase price, except for tax claims, for which the *de minimis* threshold is U.S.$250,000.

The time limit for Chevron's liability under the Frade Field Chevron Acquisition SPA is 24 months after closing, except for (i) excluded liabilities, which will survive until the expiration of the applicable statute of

limitations plus thirty days (30) days, subject to certain exceptions and (ii) tax claims, for which the time limit is six years after closing. Market standard limitations to liabilities arising from disclosed matters applies to the sellers' liability.

The Frade Field INPEX Acquisition SPA

In connection with the Frade Field INPEX Acquisition, the following transactions were entered into on October 26, 2018:

- INPEX, Sojitz and INPEX Offshore North Campos Ltd. ("IONC"), as sellers, and PetroRio Luxembourg, as buyer, entered into a SPA for sale of the entire share capital of Frade Japão Petróleo Ltda. (which we renamed Petro Rio White Shark Petróleo Ltda. following the acquisition); and
- IONC, as seller, and PetroRio Luxembourg, as buyer, entered into a SPA for the sale of 18.26% of the share capital of Frade B.V. and the seller's legal and beneficial interest in the offshore joint venture agreement and offshore participation agreement relating to the Frade Field (collectively, the "Original Frade Field INPEX Acquisition SPA").

Following a restructuring of the transaction, the parties terminated the Original Frade Field INPEX Acquisition SPA and entered into the following transactions:

- INPEX, Sojitz and IONC, as sellers, and PetroRio Luxembourg, as buyer, entered into a new onshore SPA for the sale of the entire share capital of Frade Japão Petróleo Ltda. (which we re-named Petro Rio White Shark Petróleo Ltda. following the acquisition); and
- INPEX and Sojitz, as sellers, and PetroRio Luxembourg, as buyer, entered into a new offshore SPA for the sale of the entire share capital of IONC (collectively, the "Frade Field INPEX Acquisition SPA").

The Frade Field INPEX Acquisition SPA was entered into on August 9, 2019 and the Frade Field INPEX Acquisition closed on October 1, 2019 without need for approval from the ANP or CADE. Pursuant to the terms of the Frade Field INPEX Acquisition SPA, we acquired an 18.26% working interest in the Frade Field, for a total consideration of approximately U.S.$30 million, of which approximately U.S.$15,000,000 was payable on a deferred basis by December 31, 2019, with interest accruing thereon at a rate of LIBOR plus 3% per annum. After accounting for post-signing adjustments set forth in the Frade Field INPEX Acquisition SPA, our total cash outlay in connection with this acquisition amounted to U.S.$14 million. Our obligations under the Frade Field INPEX Acquisition SPA, as well as U.S.$71 million in abandonment costs in connection with the eventual decommissioning of the Frade Field, were guaranteed by PetroRio pursuant to a separate guaranty agreement. All amounts due under the Frade Field INPEX Acquisition SPA have been paid in full as of the date of this Offering Memorandum.

Under the Frade Field INPEX Acquisition SPA, the sellers agreed to indemnify PetroRio Luxembourg in certain situations, including for losses arising out of (i) certain excluded liabilities, (ii) any breach of the representations and warranties made thereby and (iii) any taxes incurred or payable by PetroRio Luxembourg before July 1, 2017.

Sellers' liability under the Frade Field INPEX Acquisition SPA is capped at U.S.$30,000,000, except for (i) certain excluded liabilities, to which no cap applies and (ii) tax claims, which are capped at U.S.$160,000,000. The basket for the sellers' liability is U.S.$1,000,000, except for certain excluded liabilities which have no basket. The *de minimis* threshold for liability is U.S.$100,000.

The time limit for sellers' liability is (i) two years after closing for breaches of fundamental representations and warranties, (ii) 18 months after closing for breach of representations and warranties relating to litigation and contracts, (iii) six years for tax claims, (iv) four years after closing for breach of environmental representations and warranties, (v) four years after closing for decommissioning and (vi) 12 months after closing for any remaining claims. Market standard limitations to liabilities arising from disclosed matters applies to the sellers' liability. Excluded liabilities are not subject to any time limits or minimum and maximum amounts under the Frade Field INPEX Acquisition SPA.

The Frade Field Petrobras Acquisition SPA

In connection with the Frade Field Petrobras Acquisition, the following transactions were entered into on November 28, 2019:

- PetroRio Jaguar, as buyer, entered into a SPA with Petrobras, as seller, for the acquisition of a 30% working interest in the Frade Field; and
- PetroRio Luxembourg Holding, as buyer, and Petrobras Frade Inversiones S.A., as seller, entered into a SPA for the acquisition of 30% of the share capital of Frade B.V. and its economic rights in the FPSO Frade (collectively, the "Frade Field Petrobras Acquisition SPA").

The Frade Field Petrobras Acquisition closed on February 5, 2021. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field. See note 12(c) to the Unaudited Individual and Consolidated Interim Financial Information.

Pursuant to the terms of the Frade Field Petrobras Acquisition, we acquired a 30% working interest in the Frade Field and in the FPSO Frade (as well as related subsea equipment), for a total consideration of approximately U.S.$100 million. The Frade Field Petrobras Acquisition closed on February 5, 2021. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field. See "*—Properties in Production and Development—The Frade Field*" and "*—Material Contracts—The Frade Field*" and note 12(c) to the Unaudited Individual and Consolidated Interim Financial Information.

PetroRio also agreed in the Frade Field Petrobras Acquisition SPA that it would establish, as a minimum undertaking in connection with the decommissioning guarantee, a provision fund with the initial deposit being made no later than ten years prior to the beginning of decommissioning, or otherwise be subject to a penalty of 10% of the purchase price.

Under the Frade Field Petrobras Acquisition SPA, Petrobras agreed to indemnify PetroRio in certain situations, including for losses arising from (i) certain excluded liabilities, (ii) any breach of the representations and warranties made by Petrobras, (iii) any breach of the covenants made by Petrobras, and (iv) any taxes incurred or payable before July 1, 2019.

Petrobras' liability under the Frade Field Petrobras Acquisition SPA is capped at 8% of the purchase price, except for (i) certain excluded liabilities and excluded assets, to which no cap applies and (ii) any breach of fundamental warranties, for which the liability is capped at 100% of the purchase price. The basket for Petrobras' liability is 1% of the purchase price and the *de minimis* threshold for liability is 0.5% of the purchase price, except for certain excluded liabilities and excluded assets which are not subject to any such thresholds.

The time limit for Petrobras' liability under the Frade Field Petrobras Acquisition SPA is two years after closing, except for (i) specific liabilities, which will survive indefinitely and (ii) tax matters, for which the time limit is five years after closing. Market standard limitations to liabilities arising from disclosed matters applies to the Petrobras' liability.

The Frade Concession Contract

The Frade Concession Contract was entered into between the Original Frade Field Consortium and the ANP in 1998 as part of ANP's so-called "Round Zero." The concession covers exploration, development and production of hydrocarbons within the concession area. Assignment procedures follow ANP standards which require the ANP's approval prior to the transfer of ownership. As of the date of this Offering Memorandum, PetroRio holds 100% of the Frade concession.

The Frade Concession Contract was originally due to expire at the end of 2024; however, in 2016, Chevron, the operator of the field at the time, negotiated a concession extension until 2041 with the ANP, which was approved by the ANP on July 19, 2017. The extension is conditioned on the execution of a redevelopment program of the Frade Field, including the drilling of at least five new wells and the resumption of water injection. The original ANP-approved redevelopment plan is reflected in PetroRio's Frade Field Redevelopment Plan, which we plan to submit to the ANP for approval by August 2020.

The ANP did not set a deadline for the completion of the redevelopment program. We plan to drill up to seven new wells at the Frade Field pursuant to the Frade Field Redevelopment Plan from 2020 to 2022. See "*Business—Properties in Production and Development—The Frade Field—Future Plans.*"

The concession contract does not include any local content obligations, nor any performance guarantees. All minimum exploratory program ("PEM") obligations in the Frade Concession Contract have already been met.

Due to the current level of production, the field is no longer subject to the payment of special participation fee, hence there is only the royalty fee (10% of the field's revenue). As of the date of this Offering Memorandum, the Frade Field's gross abandonment costs are estimated to be U.S.$178.5 million without taking into account the new wells to be drilled pursuant to the Frade Field Redevelopment Plan. See "*Properties in Production and Development —The Frade Field—Decommissioning*."

There are currently five administrative proceedings resulting from infraction notices issued by the ANP in respect of the Frade Field Concession: (i) one alleges non-compliance with the operational safety system, carrying a penalty ranging from R$5,000 to R$2,000,000, which is at the initial stage of the proceeding; (ii) two allege non conformities at FPSO Frade metering system, carrying a penalty ranging from R$5,000 to R$2,000,000 each, which are at the initial stage of the proceedings; (iii) one alleges lack of information on 2016 (PAT/PAP) Annual Working Program/Annual Production Program provided to ANP, carrying a penalty of R$34,400.00, currently under appeal; and (iv) one alleges non-compliance with the development plan, carrying a penalty up to R$100,000, which is at the initial stage of the proceeding.

There are three proceedings currently under review by the ANP related to the research & development obligation provisions of the concession agreement, which carry a penalty up to R$10,000,000. The penalty amount, once decided by the ANP, must be invested in research & development activities.

The Frade JOA

The onshore roles and responsibilities of the holders of working interests in the Frade Field, including PetroRio as operator, under the Frade Concession Contract are set forth in a joint operating agreement (the "Frade JOA"). Costs related to joint operations and activities at the Frade Field are shared among the parties to the Frade JOA on a pro-rata basis. Approximately two months before the date on which the FPSO Frade will reaches a total stock of 975 thousand exportable barrels, the consortium member with the largest balance of oil in its individual stock is awarded the lifting entitlement. If this consortium partner has not yet produced the total amount of inventory to be sold on its own (i.e., 975 thousand barrels), it will borrow the outstanding portion of inventory belonging to the other partners. The JOA partner that is entitled to lift the cargo will have a negative oil balance in the same amount used as a loan and the balance of oil inventory of participants that did not perform this offtake will remain unchanged.

Currently, the parties to the Frade JOA are PetroRio Jaguar (as operator) with a 51.74% working interest, PetroRio White Shark with a 18.26% working interest and, until the completion of the Frade Field Petrobras Acquisition, Petrobras with a 30% working interest. As of the date of this Offering Memorandum, there are no outstanding cash calls. Following completion of the Frade Field Petrobras Acquisition, Petrobras will no longer be a party to the Frade JOA, and the partners thereto will be PetroRio Jaguar and PetroRio White Shark.

The Frade OJVA

The offshore roles and responsibilities of the holders of working interests in the Frade Field under the Frade Concession Contract are set forth in an offshore joint venture agreement (the "Frade OJVA"). The parties to the Frade JOA established an offshore consortium, the activities of which are carried out by Frade B.V., a private limited liability company (*besloten vennootschap met beperkte aansprakelijkheid*) established under the laws of the Netherlands.

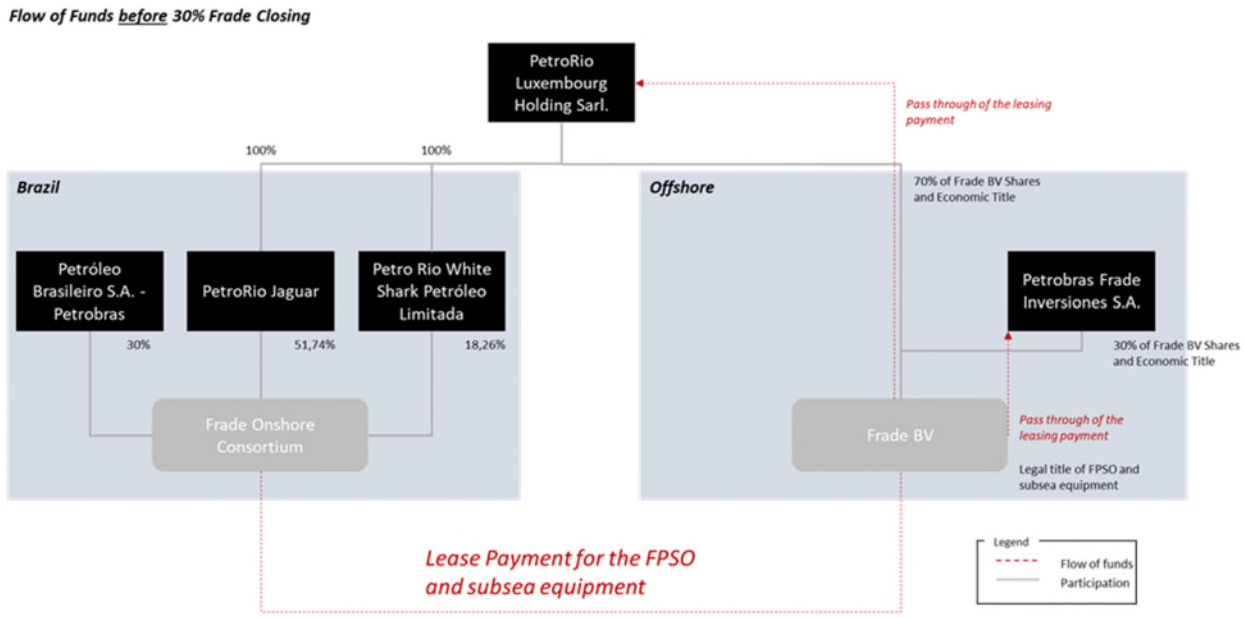
The structure of the Frade OJVA is similar to that of the Frade JOA. However, rather than regulating operations and activities under a concession contract, the Frade OJVA establishes a joint venture incorporated for the purposes of holding legal title to the assets used in connection with offshore operations. Until December 2020, Frade B.V. used to hold legal title to the FPSO Frade and related subsea equipment, and leases them to

the parties to the Frade OJVA. Following a series of internal acquisitions in December 2020, PetroRio Jaguar now owns the FPSO Frade. Frade B.V. acted as a "pass-through" entity and booked a small brokerage fee for its activities. Lease payments were channeled to the beneficial holders of the FPSO Frade and related subsea equipment, which are Frade B.V.'s shareholders. The costs related to the operations of Frade B.V. are chargeable among the parties to the Frade OJVA on a pro-rata basis.

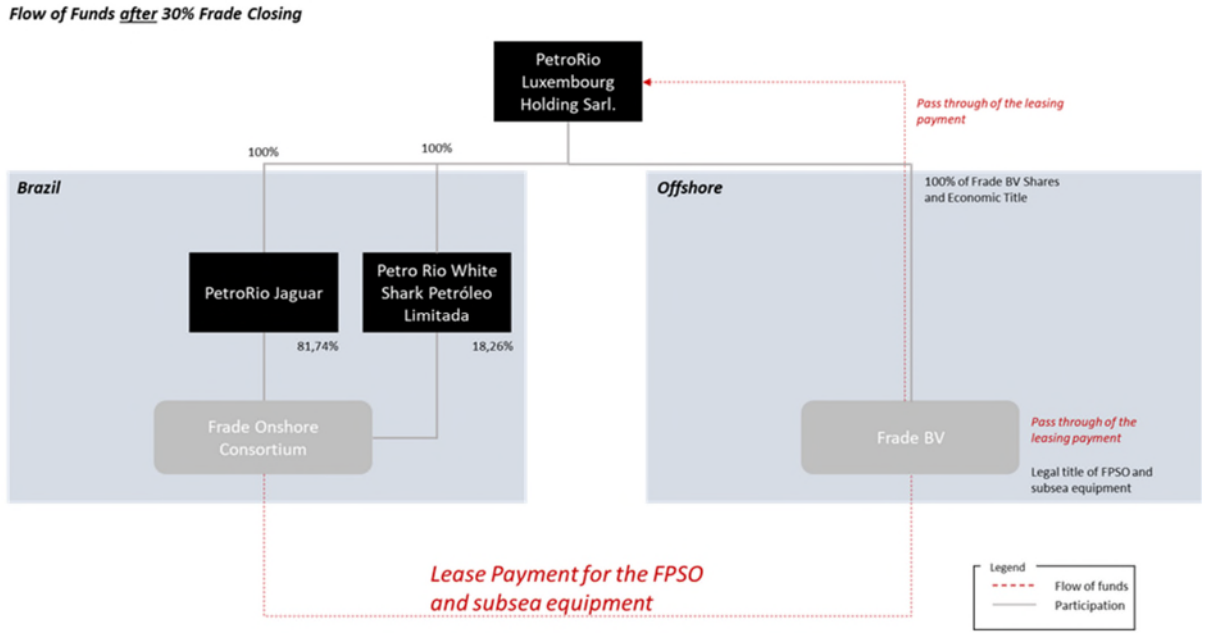
The current shareholders of Frade B.V. are PetroRio Luxembourg Holding (70%) and Petrobras Frade Inversiones S.A. (30%). 18.26% of our interest in Frade B.V. was originally held by INPEX Offshore North Campos Ltd., the entity we acquired as part of the Frade Field INPEX Acquisition, and this ownership interest was transferred to PetroRio Luxembourg Holding (and INPEX Offshore North Campos Ltd. liquidated) as part of an internal restructuring process in 2020.

In connection with Repetro-Sped, which effectively replaces the current Brazilian customs regime for the importation of certain equipment used in connection with the research and exploitation of oil and gas, we are required to redomicile certain of our foreign-held oil and gas related assets to Brazilian entities in order to continue to receive certain tax benefits. As such, we concluded the process of transferring the ownership of the FPSO Frade and related subsea equipment from Frade B.V. to PetroRio Jaguar in December 2020. After this transfer is complete, we intend to liquidate Frade B.V.

Following completion of the Frade Field Petrobras Acquisition, Petrobras will no longer be a party to the Frade OJVA, and the partners thereto will be PetroRio Jaguar and PetroRio White Shark. The following chart sets forth the structure of the Frade JOA and the Frade OVJA (and cashflows thereunder) without giving effect to the completion of the Frade Field Petrobras Acquisition:



The following chart sets forth the structure of the Frade JOA and the Frade OVJA (and cashflows thereunder) after giving effect to the completion of the Frade Field Petrobras Acquisition:



The Manati Field

The Manati Field Acquisition SPA

On December 21, 2016, Goldman Sachs & Co., as ultimate seller, and PetroRio O&G, as buyer, entered into a SPA for 70.5% of the voting shares of Brasoil held by Brasoil Fundo de Investimento em Participações, which is indirectly held by Goldman Sachs & Co. (the "GS SPA").

On December 30, 2016, Fundo Brascan de Petróleo, Gás e Energia – Fundo de Investimento em Participações ("Brascan"), as seller, and PetroRio O&G, as buyer, entered into a SPA for 29.2099% of the voting shares of Brasoil (the "Brascan SPA").

Immediately after signing, the remaining minority shareholders of Brasoil exercised their tag along rights under the existing shareholders' agreement and became parties to the GS SPA before closing.

Closing of the transactions occurred on March 20, 2017 with no ANP approval required. There are no outstanding amounts due by us in respect of the GS SPA or the Brascan SPA.

The Manati Field Concession Contract

The Manati Field Concession Contract was entered into with ANP in 1998 as part of the ANP's so-called "Round Zero." Assignment procedures follow ANP standards which require ANP's approval prior to transfer of ownership. PetroRio holds 10% of the concession and the concession expires in 2029. The concession contract does not include any local content obligations, nor any performance guarantees. All PEM obligations under the concession contract are already met.

Due to the current level of production, the Manati Field is subject to the payment of special participation fee (10% of the field's "net revenue" in accordance with the Federal Decree No. 2,705/98) and royalties (7.5% of field's revenue).

The consortium forecasted a gross decommissioning cost of U.S.$120 million, however, U.S.$106 million has already been paid through an escrow account mechanism, and hence, the remaining gross amount to be paid is U.S.$14 million.

There are no relevant outstanding ANP infraction notices.

The Manati JOA

Joint operations and activities under the Manati Field Concession Contract, as well as the operations and activities carried out by the operator on behalf of the other parties, are set forth in a joint operations agreement (the "Manati JOA"). Costs related to such operations and activities are shared among the partners on a pro rata basis. The parties to the Manati JOA are Petrobras (operator) with a 35% working interest, Enauta S.A. (formerly QGEP) with a 45% working interest, which has recently announced the sale of its 45% working interest to Gas Bridge, subject to the satisfaction of conditions precedent, Petro Rio Coral Exploração Petrolífera Ltda. with a 10% working interest and Geopark Brasil Produção e Exploração de Petróleo e Gás S.A. with a 10% working interest. In August 2020, Petrobras announced that it will start the binding phase of a bidding procedure aimed at the divestiture of its working interest in the Manati Field. As a result, Petrobras may no longer be the Manati Field's operator in the near future.

Gas sales agreement

A gas sales agreement entered into in 2007 between the Manati JOA partners, as sellers, and Petrobras, as buyer regulates the sale of Manati's gas production to Petrobras until the end of the field's economic life, which is estimated to 2029. Extension may apply, if the Manati JOA partners request so to ANP, subject to the presentation of a new development plan. A take or pay clause obliges Petrobras to buy 85% of the predefined production curve per month and per year. Pricing of gas in *reais* and indexed to IGP-M which is a Brazilian inflation index.

In April 2020, Petrobras invoked the force majeure clause of the Manati Field Offtake Agreement, and suspended its performance of its obligations thereunder, citing the COVID-19 outbreak. We and our partners in the Manati Field resolved this contractual dispute with Petrobras by amending the Manati Field Offtake Agreement to reduce the take or pay volume in 2020 and increase, in the same amount, the volume for 2021.

The Polvo Field

During 2014 and 2015, PetroRio closed sales and purchase agreements, in two separate transactions, with both BP Energy America LLC and Maersk to acquire 100% WI and the operatorship of the Polvo Field.

The Polvo Field Acquisition SPA

Closing of the BP transaction occurred on January 8, 2014, whilst closing of Maersk transaction occurred on February 25, 2016. The assignment of Maersk's participation on Polvo Field to PetroRio was subject to the approval of the decommissioning guarantees to be granted in favor of ANP by the parties. Originally, the abandonment costs were estimated to U.S.$85,612,040 and its guarantees were conceived to be composed by (i) a letter of credit in the amount of U.S.$34,244,816 issued in favor of ANP by Crédit Agricole Corporate, to secure Maersk's share of the abandonment; (ii) a pledge agreement granting 200,000 barrels of Polvo Field oil stored in FPSO Polvo as ballast, with an estimated value of U.S.$12,000,000 based on an oil price of U.S.$60 per barrel; and (iii) an escrow account with monthly based deposits.

There are no outstanding amounts in respect of BP or Maersk deferred payments.

The Polvo Field Concession Contract

The Polvo Field Concession Contract was entered into with ANP in 2000 as part of ANP's Round 2. Assignment procedures follow ANP standards which require ANP's approval prior to transfer of ownership. PetroRio holds 100% of the concession and the concession expires in 2032. All PEM obligations under the concession contract are already met. Due to the current level of production, the field is no longer subject to the payment of special participation fee, hence there is only the royalty fee (10% over the reference curve of production/ 5% over the incremental curve) payable as government take.

Regarding the original provision for the Polvo's abandonment costs of approximately U.S.$86 million, PetroRio was able to approve a review of methodology, grounded on studies carried by TSB Offshore, at the

ANP's superintendence for the development and production. In 2020, the ANP agreed to reduce the amount to be secured for the Polvo Field decommissioning activities to approximately U.S.$51.7 million, which may be secured by a letter of credit, a provisioning fund and a parent company guarantee.

The estimated decommissioning cost of approximately U.S.$51.7 million was initially covered by a letter of credit from Maersk in the total amount of U.S.$34,244,816 as well as a parent company guarantee in the amount of approximately U.S.$17.4 million.

Recently, ANP approved the opening of an escrow account to serve as the provisioning fund, which received the corresponding U.S.$34.2 million of the letter of credit from Maersk pursuant to ANP's Board Resolutions No. 350/2020, 444/2020 and 512/02020.

There are currently three administrative proceedings resulting from infraction notices issued by the ANP in respect of the Polvo Field Concession Contract that allege non-compliance with the operational safety system: (i) one is currently being appealed, carrying a penalty of R$1,720,725; and (ii) the other two are at the initial stages of the proceedings, carrying a penalty ranging from R$5,000 to R$2,000,000 each.

There are also two lawsuits resulting from infraction notices issued by the ANP: (i) one alleges non-conformities at FPSO Polvo oil and natural gas metering system, carrying a penalty of R$3,437, 440; and (ii) the other alleges non-compliance with the ANP's operational safety management system ("SGSO") at the Plataforma Polvo A, carrying a penalty of R$4,992,827. There is also a tax enforcement action to collect R$25,152, 293 as fine for alleged non-compliance with the ANP's SGSO.

FPSO Polvo Charter Agreement

The bareboat charter with BW Offshore for the FPSO Polvo has a flat daily rate of U.S.$100,000 and expires in 2021, after which will not be renewed in light of our acquisition of the FPSO Bravo and the expected completion of the TBMT-Polvo Tieback Project (which will effectively allow us to use the FPSO Bravo for production at the Polvo Field). Under the charter agreement, indemnification provisions are on a knock-for-knock basis. The total aggregate liability of BW Offshore towards PetroRio arising out of the services provided under the agreement shall not exceed U.S.$30,000,000, except for indemnities arising out of environmental and compliance with laws liabilities, as well as liens and tax obligations.

The PetroChina Marketing Agreement

The PetroChina Marketing Agreement was executed together with the ICBC Facility in February 2019. The ICBC Facility was repaid in full on December 29, 2020 and the PetroChina Marketing Agreement will remain in effect through June 29, 2021.

The marketing process is conducted according to the following principles:

- PetroRio O&G has the right to market the first out of every three cargoes, selling it at a premium or discount to the ICE Brent Price;
- The second and third cargoes can be bought by PetroChina at the same premium or discount to the ICE Brent price realized in the first cargo of the batch;
- Alternatively, PetroChina may propose a premium or discount less competitive than the one obtained by PetroRio O&G for the first cargo of the batch. In this case PetroRio O&G may market the cargo, if it can obtain a similar or more competitive quote than the one proposed by PetroChina.

PetroRio O&G pays a marketing fee to PetroChina on a per barrel basis. In case PetroRio O&G decides to repay the ICBC loan at any point of time, the marketing agreement lasts for an additional six months.

The Tubarão Martelo Field

The TBMT Farm-In Agreement and FPSO Bravo Acquisition

In connection with the Tubarão Martelo Field Acquisition, PetroRio O&G, as farmee, entered into a farm-in agreement with Dommo Energia, as farmor, in respect of an 80% working interest in, and operatorship of, the Tubarão Martelo Field on February 3, 2020 (the "TBMT Farm-In Agreement").

On January 27, 2020, we entered into a separate agreement with PSS Oil and Gas LLC and PSS Petro LLC for the acquisition of the FPSO Bravo, the Tubarão Martelo Field's dedicated FPSO vessel, from OSX-3 Leasing B.V., a shareholder in Dommo Energia. The total consideration for the acquisition of the FPSO Bravo was U.S.$140 million, which was financed using cash on hand and a bridge loan provided by Prisma. See "*Management's Discussion and Analysis of Financial Condition and Results of Operations—Loans and Financing—Financing Arrangements—Prisma Long-term Financing*." The acquisition of the FPSO Bravo was completed on April 20, 2020 and our interest in the FPSO Bravo is held by PetroRio Luxembourg.

The CADE approved the Tubarão Martelo Field Acquisition on February 26, 2020 and the ANP provided its approval on July 2, 2020 subject to certain conditions, which have since been satisfied. The Tubarão Martelo Field Acquisition closed on August 3, 2020.

Pursuant to the terms of the TBMT Farm-In Agreement, upon approval of the Tubarão Martelo Field Acquisition by the ANP, PetroRio O&G will acquire an 80% working interest and operatorship of the Tubarão Martelo Field, in exchange for (i) consideration equivalent to the amount that would have been due by Dommo Energia to OSX-3 Leasing B.V. under the charter agreement for the FPSO Bravo had we not acquired the FPSO Bravo and (ii) the assumption by PetroRio O&G of 100% of the decommissioning costs of the Tubarão Martelo Field.

Pursuant to the TBMT Farm-In Agreement, the parties agreed to the following allocation of revenues from the Tubarão Martelo Field between PetroRio O&G and Dommo Energia:

- From February 1, 2020 until the completion of the TBMT-Polvo Tieback Project, Dommo Energia shall be entitled to 20% of the revenue minus 20% of the fixed operational expenditures, while PetroRio O&G shall be entitled to 80% of the revenue plus 20% of the fixed operational expenditures and shall bear 100% of the interim production costs;
- From the date of completion of the TBMT-Polvo Tieback Project, (a) Dommo Energia shall be entitled to 5% of revenue arising from the TBMT-Polvo Cluster (up to a total production of 30 million barrels) and 4% of revenue arising therefrom for oil produced after the 30 million barrel threshold and (b) PetroRio O&G shall bear 100% of the interim production costs and all other costs associated with the field.

Under the TBMT Farm-In Agreement, Dommo Energia agreed to indemnify PetroRio, with no time or financial limits, for (i) all losses arising from facts, acts or omissions that occurred prior to the closing date, (ii) any breach of the representations and warranties made by Dommo Energia, (iii) any breach of the interim period covenants made by Dommo Energia and (iv) any tax assessments imposed by the tax authorities if the triggering event occurs prior to the closing date. In order to secure any indemnifications that become due, the TBMT Farm-In Agreement sets forth that Dommo Energia's entitlement thereunder to revenues arising from production at the Tubarão Martelo Field may be reduced up to 65% for the first entitlement and 80% for subsequent entitlements by the amount corresponding to a materialized loss as determined by a final unappealable decision – this is secured by a fiduciary assignment from Dommo Energia to PetroRio O&G of its entitlement in the Tubarão Martelo Field.

The Wahoo Field and the Itaipu Field

On November 18, 2020, our subsidiary PetroRio Jaguar signed a contract with BP Brazil for the acquisition of a 35.7% working interest in the Wahoo Field, and 60% working interest in the Itaipu Field. On the same date, we announced the Wahoo-Itaipu BP Acquisition. Once the necessary approvals are obtained and the acquisition closes, we will become the operator of both pre-salt fields. The closing of the Wahoo-Itaipu Acquisition is subject to the satisfaction of conditions precedents, including regulatory approvals.

The U.S.$100 million acquisition price will be paid in five installments: (i) U.S.$17.5 million is payable between signing and closing of the transaction, once all conditions are satisfied; (ii) U.S.$15 million is due in December 2021; and (iii) U.S.$67.5 million will be paid in three installments during 2022. There is also an additional earn-out amount of U.S.$40 million, which is contingent on the unitization (or first oil) of the Itaipu Field.

On March 4, 2021 we announced the signing of an agreement with Total Brasil for the acquisition of a 28.6% working interest in the Wahoo Field. The Wahoo-Itaipu Acquisitions, which remain subject to the satisfaction of conditions precedent, will entitle us to a 64.3% working interest in the Wahoo Field.

Financing Arrangements

See "*Management's Discussion and Analysis of Financial Condition and Results of Operations—Loans and Financing—Financing Arrangements*" and "*Loans and Financing*" in the attached Audited Consolidated Financial Statements for information on our Financing Agreements.

Insurance

We maintain insurance coverage of types and amounts that we believe to be customary and reasonable for companies of our size and with similar operations in the oil and gas industry. However, as is customary in the industry, we do not insure fully against all risks associated with our business, either because such insurance is not available or because premium costs are considered prohibitive. As of March 31, 2021, the Group had insurance covering a total value of approximately R$29.7 billion (or U.S.$5.2 billion).

Currently, our insurance program includes coverage for, among other things, construction, fire, vehicle, technical, umbrella liability, director's and officer's liability and employer's liability coverage. A loss not fully covered by insurance could have a materially adverse effect on our business, financial condition and results of operations. See "*Risk Factors—Risks Related to the Group, its Business and the Oil and Gas Industry—Oil and gas operations contain a high degree of risk and we may not be fully insured against all risks we face in our business*."

Oil and Natural Gas Reserves

Overview

We have achieved consistent growth in our oil and gas reserves from our various acquisitions since 2014, when we acquired the Polvo Field, as well as from our successful development activities, including the Polvo Field Redevelopment Plan, the Frade Field Redevelopment Plan and, once completed, the TBMT-Polvo Tieback Project. See "*Summary Historical Reserves and Contingent Resources Data*."

Internal Controls Over Reserves Estimation Process

We maintain an internal staff of petroleum engineers and geosciences professionals who work closely with DeGolyer, our independent qualified reserves engineers, to ensure the integrity, accuracy and timeliness of data furnished to our independent reserves engineers in their estimation process and who have knowledge of the specific properties under evaluation. Our Head of Subsurface and Production, Lincoln Nakajima, is primarily responsible for overseeing the preparation of our reserves estimates and for the internal control over our reserves' estimation. He has more than 19 years of industry experience as a reservoir engineer, with broad experience in reserves assessment, field development, exploration portfolio generation and management and acquisition and divestiture opportunities evaluation.

In order to ensure the quality and consistency of our reserves estimates and reserves disclosures, we maintain and comply with a reserves process that satisfies the following key control objectives:

- estimates are prepared using generally accepted practices and methodologies;
- estimates are prepared objectively and free of bias;
- estimates and changes therein are prepared on a timely basis;
- estimates and changes therein are properly supported and approved; and
- estimates and related disclosures are prepared in accordance with regulatory requirements.

In the course of the preparation of certified reserves reports in respect of our properties, our technical team meets with DeGolyer, who are provided with full access to complete and accurate information pertaining to the properties to be evaluated and all applicable personnel. This independent assessment of the internally-

generated reserves estimates is beneficial in ensuring that interpretations and judgments are reasonable and that the estimates are free of preparer and management bias.

Independent Qualified Reserves Engineers

DeGolyer, a Delaware corporation with offices in Dallas, Houston, Moscow, Algiers, Astana and Buenos Aires has been providing consulting services to the oil and gas industry since 1936, and to PetroRio since its founding. The firm has more than 200 professionals, including engineers, geologists, geophysicists, petrophysicists and economists that are engaged in the appraisal of oil and gas properties, the evaluation of hydrocarbon and other mineral prospects, basin evaluations, comprehensive field studies and equity studies related to the domestic and international energy industry. DeGolyer restricts its activities exclusively to consultation and does not accept contingency fees, nor does it own operating interests in any oil, gas or mineral properties, or securities or notes of its clients. The firm subscribes to a code of professional conduct, and its employees actively support their related technical and professional societies. DeGolyer is registered as an engineering firm in the state of Texas.

In connection with the preparation of the D&M Reserves Reports, DeGolyer prepared its own estimates of our reserves. In the process of the reserves evaluation, DeGolyer did not independently verify the accuracy and completeness of information and data furnished by us with respect to ownership interests, oil and gas production, well test data, historical costs of operation and development, product prices, or any agreements relating to current and future operations of the fields and sales of production. However, if in the course of the examination something came to the attention of DeGolyer that brought into question the validity or sufficiency of any such information or data, DeGolyer did not rely on such information or data until it had satisfactorily resolved its questions relating thereto or had independently verified such information or data. The assumptions, data, methods and procedures used, including the percentage of our total reserves reviewed in connection with the preparation of the D&M Reserves Reports were appropriate for the purpose served by such reports, and DeGolyer used all methods and procedures as it considered necessary under the circumstances to prepare such reports.

However, uncertainties are inherent in estimating quantities of reserves, including many factors beyond our and our independent reserves engineers' control. Reserves engineering is a subjective process of estimating subsurface accumulations of oil and natural gas that cannot be measured in an exact manner, and the accuracy of any reserves estimate is a function of the quality of available data and its interpretation. As a result, estimates by different engineers often vary, sometimes significantly. In addition, physical factors such as the results of drilling, testing and production subsequent to the date of an estimate, economic factors such as changes in product prices or development and production expenses, and regulatory factors, such as royalties, development and environmental permitting and concession terms, may require revision of such estimates. Our operations may also be affected by unanticipated changes in regulations concerning the oil and gas industry in the countries in which we operate, which may impact our ability to recover the estimated reserves. Accordingly, oil and natural gas quantities ultimately recovered will vary from reserves estimates.

Governance

Overview

PetroRio is listed on the *Novo Mercado* segment of the B3, which requires adherence to the strictest corporate governance standards in the Brazilian market, in addition to the governance rules otherwise required by Brazilian law. The listing segments of the B3 (*Novo Mercado*, Level 1 and Level 2) require public companies to (i) disclose information to the market and their shareholders in connection with their business in addition to the information required by law, (ii) adopt corporate governance practices, such as best practices for management, transparency and protection of minority shareholders, and (iii) ensure the protection of minority shareholders. Companies listed on the *Novo Mercado* are subject to stricter requirements than those under the Brazilian Corporate Law and, for listings under the Level 1 and Level 2 listing segments, and are required to, among others:

- issue common shares only, except as specifically authorized under the Novo Mercado listing rules;

- ensure that shares of the issuer representing at least 25.0% of its total capital stock are effectively available for trading, or at least 15.0% (a) where the daily average trading volume reaches or surpasses R$25.0 million considering the 12 previous months, or (b) where the requirements set forth under the *Novo Mercado* listing rules are satisfied, in the case of a public offering; have at least two, or the equivalent of 20%, whichever is greater, independent members on the board of directors, with a term limited to two years, subject to reelection;
- agree to adopt and publish (i) a code of conduct that establishes the principles and values that guide the Group, (ii) an appointment policy for management members, (iii) a risk management policy, (iv) a compensation policy, (v) a related-party transactions policy and (vi) an insider trading policy that applies, at a minimum, to the company, its controlling shareholder (where applicable), the members of the board of directors and fiscal council, the executive management team and members of other corporate bodies that have a technical or consultative role as may be created from time to time by our bylaws or by any employee and third parties hired by the company who have permanent or occasional access to relevant information;
- have an audit committee and implement compliance measures;
- ensure simultaneous disclosure of material information, benefit distribution information and results press releases in both Portuguese and English; and
- agree to require the company, its shareholders, directors and members of the fiscal council to resolve any and all disputes among them by arbitration before the B3 Arbitration Chamber (*Câmara de Arbitragem do Mercado*);
- conduct public tender offers for purchase of shares under certain circumstances, such as a delisting from the *Novo Mercado* segment;
- prepare and disclose the internal regulation of the Board of Directors and all of its advisory committees, including the fiscal council, if implemented;
- carry out, within five (5) business days after the disclosure of quarterly results or financial statements a public presentation about the information disclosed;
- disclose, by December 10th of each year, an annual calendar for the following year containing, at least the foreseen dates of the (a) disclosure of standard financial statements (DFP) and the complete annual financial statements; (b) disclosure of quarterly financial information; (c) ordinary shareholders' meeting; and (d) disclosure of the reference form;
- when conducting public offerings, to adopt one of the following proceedings in order to facilitate broad share ownership: (a) ensure access by all interested investors; or (b) distribute at least 10% of total offering shares to natural persons or non-institutional investors;
- extend, where applicable, to all shareholders the same conditions given to a controlling shareholder by occasion of a stock sale of the company resulting in a change of control; and
- provide monthly non-financial information, including the number of shares held by the controlling shareholder and the number of outstanding shares.

In addition to the obligations set forth by the *Novo Mercado* rules we also must comply with disclosure obligations imposed by Brazilian Corporate Law, the CVM Instruction No. 480, dated as of December 7, 2009 ("ICVM 480") and the CVM Instruction No. 358, dated as January 3, 2002, such as:

- disclose financial statements and consolidated financial statements at the end of each quarter (except the last quarter of the year) and at the end of each fiscal year;
- disclose and annually update the register form (*formulário cadastral*), including disclose the updated document within seven business days after changes in the information contained therein;
- disclose minutes of all shareholders' meetings;

- disclose minutes of the board of directors' meetings in case the decisions taken during such meetings affect third parties;
- disclose and annually update the reference form (*formulário de referência*), including disclose the updated document within seven business days after changes in relevant information of the company, such as:
    - change in management or of a committee member;
    - change in capital stock;
    - issuance of new securities even if for private subscription;
    - change in the rights of the securities issued;
    - change in direct or indirect holdings by controlling shareholders or variations in their share positions which makes their positions go higher or lower than 5%, 10%, 15% and so on of the same types or class of stocks of the company;
    - when any natural or legal person, or a group of persons representing the same interest, has a direct or indirect share which makes their positions go higher or lower than 5%, 10%, 15% and so on of the same type or class of stocks of the company, provided that the company is aware of such change;
    - merger, merger of shares, or spin-off;
    - change in the projections or estimates or disclosure of new projections or estimates;
    - execution, amendment or termination of a shareholders' agreement filed at PetroRio's headquarters or to which the controlling shareholder is party that provides for the exercise of voting rights or the control of PetroRio;
    - bankruptcy, judicial reorganization, liquidation, or court approval of an extrajudicial reorganization; and
    - communication by the company of changes to its independent auditor.

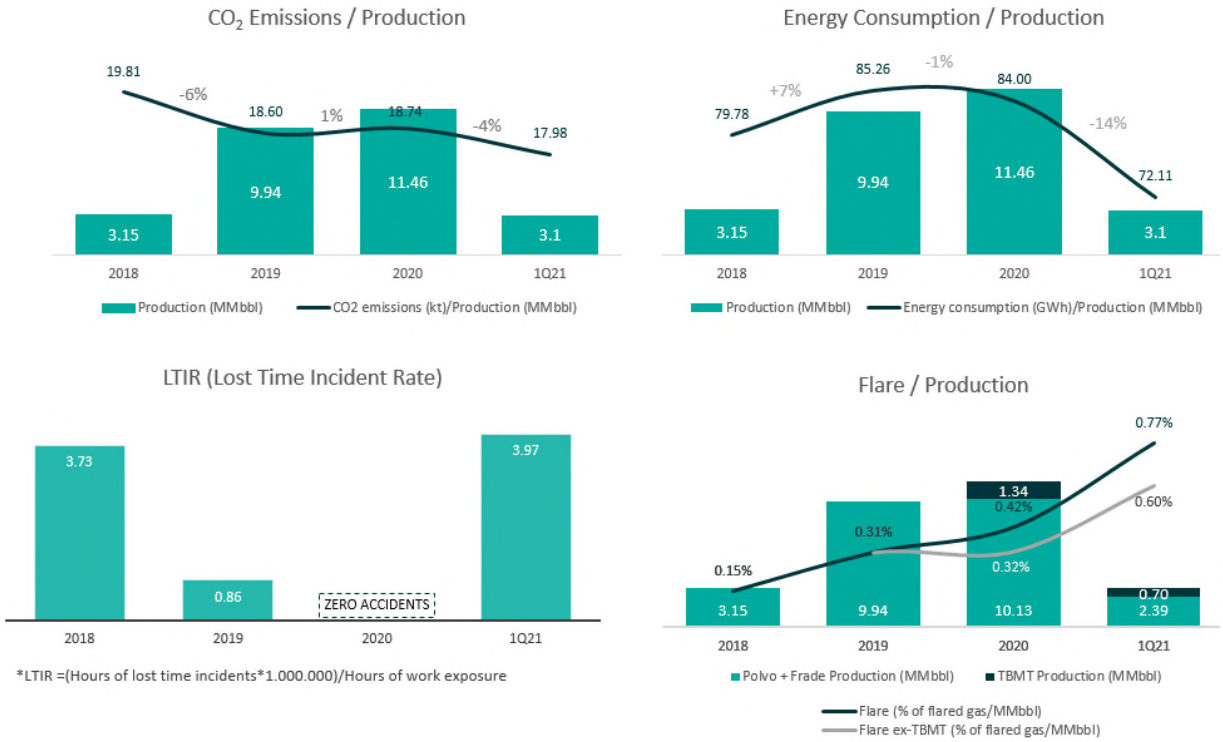
Furthermore, to protect minority shareholders and the company, PetroRio's bylaws were amended by its shareholders to provide that shareholders or affiliated groups of shareholders are not permitted to vote more than 15% of their voting shares in PetroRio's shareholders meetings.

Since the shareholders' meeting held on April 27, 2018, our Fiscal Council, which is independent of our board of directors, management and external auditors, is in place to oversee management, analyze the financial statements and report its findings to the shareholders. See "*Management—Fiscal Council*." Our individual and consolidated financial statements for the years ended December 31, 2018, 2019 and 2020 have unqualified opinions issued by our independent auditor.

Health, Safety and Environment

Our activities are based on the fundamental values of respect for the safety of all employees, life and nature. In this way, we are committed to several initiatives, projects of safety, environment and health ("HSE") guided by transparency and governance. We plan to meet the Brazilian legal requirements of regulatory and labor authorities, as well as incorporate and reference internationally recognized environmental and social standards with our HSE projects. To ensure the conservation of the environment in the production sites, independent consultants carry out audits on our plans and procedures, so that our projects are developed with the maximum environmental and social responsibility, in accordance with international standards.

Our main HSE indicators monitored for the three-month period ended March 31, 2021 are:



Source: PetroRio HSE department.

As a result of the Frade and Tubarão Martelo Fields Acquisitions, we added two FPSOs to our assets and, considering the totality of fields we operate, our total CO2 emissions rates (kilotons CO2/MMboe production) were approximately 17.98, 18.7 and 18.6 for the three-month period ended March 31, 2021 and the years ended December 31 of 2020 and 2019, respectively. The rates were based on our increasing production. Our production as operator as measured in million barrels was 3.1 MMboe, 11,46 MMboe and 9.9 MMboe as of March 31, 2021 and for the years ended December 31 of 2020 and 2019, respectively. This increase in production highlights the results of our growth strategy.

We reported the following flare rates (% of boe flare/MMboe production) 0.772%, 0.418% and 0.312% as of March 31, 2021 and December 31 of 2020 and 2019, respectively. In December 2019, an emergency shutdown at the FPSO Frade caused the burning levels to be considerably higher. The same event happened in November 2020 at FPSO Frade.

Our energy consumption is related to our growth in production. We consumed 223 thousand MWh, 963 thousand MWh and 847 thousand MWh for the three-month period ended March 31, 2021 and the years ended December 31 of 2020 and 2019, respectively. Our energy consumption in 2020 compared to 2019 decreased by 1.78%, as measured in thousand MWh energy/MMboe production.

Oil production represented 94.3% of our net volume produced by March 31, 2021, with the remaining 5.7% being made up of the volume of natural gas extracted at the Manati Field. As of December 31, 2020, oil production represented 94.06% of our net volume produced, with the remaining 5.94% being made up of the volume of natural gas extracted at the Manati Field. As of December 31, 2019, oil production represented 88.2% of our net volume produced, with the remaining amount being made up of the volume of natural gas extracted at the Manati Field.

The lost time incidents rate (LTIR) that occurred per every 1 million worked hours was 3.97, nil and 0.86 for the three-month period ended March 31, 2021 and the years ended December 31 of 2020 and 2019,

respectively. Number of hours worked totaled 503,248 hours, 1,095,859 hours and 1,165,344 hours for the three-month period ended March 31, 2021 and the years ended December 31, 2020 and 2019, respectively. In 2020 there was a decrease in hours worked, when compared to 2019, as a result of a 40% decrease of POB offshore units resulting of the COVID-19 pandemic.

The measures of operational, safety and environmental excellence we adopted prevented the recording of any hydrocarbon spills greater than one barrel in the three-month period ended March 31, 2021 and each of the years ended December 31, 2020 and 2019. We produced a total of 0.149 million kg, 1.26 million kg and 1.37 million kg of waste for the three-month period and the years ended December 31, 2020 and 2019, respectively. For 2020, this represents a 35% decrease compared to 2019. We recycled 13.48 tons, 189 tons and 308 tons of waste in the three-month period ended March 31, 2021 and the years ended December 31, 2020 and 2019, respectively. For 2020, this represents a 35% decrease compared to 2019. We sent 6.1 tons of waste, 24 tons of waste and 83 tons of waste to landfills in the three-month period ended March 31, 2021 and the years ended December 31, 2020 and 2019, respectively. For 2020, this represents a 70% decrease compared to 2019.

Compliance

We recognize the importance of continuously improving our policies and control mechanisms to preserve the interests of our shareholders and comply with the applicable law and market best practices. We decided to formalize our compliance and integrity program in 2018 ("Compliance Program"). Our Compliance Program, which follows Brazilian and foreign laws applicable to our Group, our industry best practices and corporate governance rules, is applicable to our entire Group, employees and business partners.

The creation of a robust and effective compliance program is the first step in mitigating the risks associated with the Group's business. Our Compliance Program aims to detect and remedy deviations, fraud and illegal actions against national and foreign governmental authorities, in addition to guide decision-making of our executives to protect shareholders' and other stakeholders' interests. Subsequently, on March 2019, our board of directors unanimously approved (i) the creation of our Ethics and Compliance Committee and our new Code of Ethics and Conduct, (ii) our Anti-Corruption Policy, (iii) Anti-Money Laundering and Counter Terrorist Financing Policy, and (iv) the implementation of our Integrity Channel.

We are committed to comply with the anti-corruption laws and all applicable laws and regulations relating to the fight against bribery, corruption, money laundering and terrorist financing. We determined that our managers, employees and service providers must conduct all their activities with integrity and complying with the highest ethical standards. Our Code of Ethics and Conduct and its complementary policies apply to all directors, officers, employees, third parties, and all persons working directly or indirectly for PetroRio, its subsidiaries, jointly controlled companies, joint ventures, business and commercial partners, and is intended to clarify the Group's ethical and legal obligations, promoting healthy relationships both domestically and internationally.

In case of occurrence or suspected occurrence of any act of corruption or bribery, or any other practice contrary to the principles established in our Anti-Corruption Policy or related policies, as well as in the laws in force and applicable to our business, any employee or third party must report the fact to their immediate superior or to the Compliance area, or report it on the Integrity Channel, available on our website or our intranet.

Clients and Field and Commercial Partners

Clients

PetroRio's most relevant clients are PetroChina, Valero, Trafigura, Petrobras, Repsol, ENAP, and Shell. The table below sets forth the revenue from oil sales attributable to our largest clients for each of the three-month period ended March 31, 2021 and the year ended December 31, 2020:

Client	Revenue		
	U.S.$ (thousands) [(1)]	R$ (thousands)	%
Three-month period ended March 31, 2021			
Trafigura	52,382	298,434	54%
PetroChina	61,283	349,149	46%
Year ended December 31, 2020			
Trafigura	113,667	647,593	33%
PetroChina	130,827	745,360	40%
Shell	41,750	237,862	13%

(1) Solely for the convenience of the reader, amounts in *reais* have been translated into U.S. dollars at the exchange rate as of March 31, 2021 of R$5.6973 to U.S.$1.00, which was the commercial selling rate as reported by the Central Bank

Field Partners

PetroRio is the operator and holder of a 100% working interest in the Polvo Field, and therefore has no field partners in respect thereof. See "*Business—Properties in Production and Development—The Polvo Field*."

PetroRio holds a 10% working interest in the Manati Field through Petro Rio Coral Exploração Petrolífera Ltda., and is partnered with Petrobras, which is the operator of the field and holds a 35% working interest therein, Enauta S.A. (formerly QGEP), which holds a 45% working interest (and has recently announced the sale of its 45% working interest to Gas Bridge, subject to the satisfaction of conditions precedent, including regulatory approvals) and Geopark Brasil Produção e Exploração de Petróleo e Gás S.A. (an independent Latin American O&G company, the largest private producer in Chile and third-largest operator in Colombia), which holds a 10% working interest. Petrobras has expressed its intention to divest its interest in the Manati Field. See "*Business—Properties in Production and Development—The Manati Field*" and notes 1 and 9 to the Unaudited Individual and Consolidated Interim Financial Information.

PetroRio has entered into an agreement to purchase the operatorship and 80% working interest in the Tubarão Martelo Field, whereupon Dommo Energia will become a field partner with a 20% working interest in the Tubarão Martelo Field, and no operational input. PetroRio intends to complete the TBMT-Polvo Tieback Project, which, pursuant to the agreement, will then grant PetroRio the rights to 95% of the TBMT-Polvo Cluster's production up to 30MMBoe, and 96% thereafter (with the remaining interests held by Dommo Energia). See "*Business—Properties in Production and Development—The Tubarão Martelo Field—Future Plans*."

Commercial Partners – Oil

We sell oil produced at the Polvo Field and the Frade Fields to large trading and oil companies, including PetroChina, Valero, Trafigura, Total and Petrobras (i) in spot transactions with PetroRio Luxembourg as intermediary, including through intra-group marketing agreements such as the Polvo Field Spot Marketing Agreement, and (ii) in respect of oil produced at the Polvo Field, to PetroChina through a marketing agreement therewith.

Under the Polvo Field Spot Marketing Agreement, our trading team monitors the crude market, including allocations of vessels, international demand and logistics of nearby fields, and works with our operational and finance teams to determine optimal lifting and cargo size. The trading team then communicates the opportunity

to market, collects quotes and selects the preferred bidder. Typical cargoes vary between 400-500 Mboe, and often leverage co-loadings with neighboring fields.

After the selection and communication of the preferred bidder, our trading team enters into a sales contract therewith (and a corresponding intra-group arrangement is entered into between PetroRio Luxembourg and PetroRio O&G). Typically, receivables are payable within 30 days with a 30-day pricing period (based on the average price of Brent crude oil during this period). Some of the common buyers of crude oil produced at the Polvo Field are PetroChina, Repsol, Shell, Petrobras, Trafigura, Enap, Chevron and Sinochem. These clients are selected through a competitive bidding process, to minimize our sales costs and optimize liquidity.

In February 2019, we entered into the PetroChina Marketing Agreement, a marketing agreement with PetroChina that allows PetroChina to purchase crude oil produced at the Polvo Field on a right-to-match basis for the duration of the ICBC Facility. Pursuant to the PetroChina Marketing Agreement, we have the right to market the first out of every three cargoes in a batch, while the second and third cargoes can be bought by PetroChina at the price used for the first cargo of the batch (potentially at a discount). Alternatively, PetroChina may propose a discount less competitive than the one obtained by PetroRio for the first cargo of the batch. We have the right to market the cargo elsewhere if we can obtain a quote that is identical to or more competitive than the one proposed by PetroChina. In the event that we decide to redeem the ICBC Facility before its maturity date, the PetroChina Marketing Agreement will remain in effect for six months from the date of redemption.

Commercial Partner – Gas

The Manati Field's production is subject to a take-or-pay agreement pursuant to which Petrobras purchases all gas produced at the field at a fixed price (in Brazilian reais), which is annually readjusted by the IGP-M rate. See "*Business—Properties in Production and Development—The Manati Field—Marketing and Offtake Arrangements*."

Employees

We are headquartered in Rio de Janeiro, Brazil, and, as of the date of this Offering Memorandum, we have 419 employees. All core management and production operations are managed in-house by us. The table below provides detailed information about our workforce as of the dates indicated:

	As of March 31, 2021	As of December 31,		
		2020	2019	2018
Operational/technical team	341	338	202	60
Administrative Personnel	70	68	76	70
Legal	8	6	9	8
Total	**419**	**412**	**287**	**138**

Our employees are split into corporate teams (with sub-divisions for finance, RH, mergers and acquisitions, legal, investor relations and regulatory), which include 78 employees, and operational teams, which include 341 employees. 63% of our employees are shareholders of PetroRio.

Our operational teams include 270 employees responsible for operation of our FPSOs and the Polvo A platform, 18 employees for subsea and well engineering, 11 employees for geophysics, geological and reservoir engineering and 42 employees for other support functions, such as procurement, operations, maintenance, HSE, logistics and supply chain.

The third-party professionals are contracted by the contractors and used to perform various activities on the construction sites. As of March 31, 2021, there were approximately 87 outsourced professionals rendering services to us (general services, operational services and administrative and finance services).

Legal and Regulatory

Licenses

The table below sets forth certain details regarding our concessions.

Concession holding entity	Basin	Block/ Permit	Operator	Working Interest	Area	Status	Granted	Expiry
				(%)	(km^2)			
Petro Rio O&G Exploração e Produção de Petróleo Ltda.....	Campos	Polvo	PetroRio	100	134	Production	2000	2032
Petro Rio Jaguar Petróleo Ltda. (81.74%) and Frade Japão Petróleo Ltda. (18.26%)[1]	Campos	Frade	PetroRio	100	154	Production	1998	2041
Petro Rio O&G Exploração e Produção de Petróleo Ltda.[2].....	Campos	Tubarão Martelo	PetroRio	80	31	Production	2008	2039
Petro Rio Coral Exploração Petrolífera Ltda.	Camamu-Almada	Manati	Petrobras	10	75	Production	1998	2029
Petro Rio Coral Exploração Petrolífera Ltda.	Foz de Amazonas	FZA-M-539	PetroRio	100	192	Exploratory	2013	Exploratory period: 2024
Petro Rio Coral Exploração Petrolífera Ltda.	Foz de Amazonas	FZA-M-254	PetroRio	100	192	Exploratory	2013	Exploratory period: 2024

(1) The Frade Field Petrobras Acquisition closed on February 5, 2021. Accordingly, since February 5, 2021, PetroRio accounts for 100% of the working interest in the Frade Field.

(2) In February 2020, we announced the Tubarão Martelo Field Acquisition. On July 2, 2020, the ANP approved the Tubarão Martelo Field Acquisition subject to certain conditions, which have since been satisfied. On August 3, 2020, we completed the Tubarão Martelo Field Acquisition.

Legal Proceedings

We are considering in this list of proceedings quantitative and qualitative criteria to determine its relevance. The proceedings with a value equal to or greater than R$100,000 thousand were considered quantitatively relevant. The qualitative criteria adopted considers, regardless of value, the characteristics of each process related to (a) the ability of the proceeding to impact ours and our subsidiaries' businesses; (b) the sensitivity of the issue addressed, including its potential reputational risk to us and our subsidiaries; and (c) the other particularities of each specific case.

Civil Actions

As of the date of this Offering Memorandum, we are involved in 22 non-confidential civil actions, involving the total amount of R$155,221 thousand. Among these lawsuits, the risk of loss was evaluated as "possible" for 21 of them and involve the total amount of R$152,788 thousand, based on the opinions of our outside legal counsel representing us in such lawsuits. 1 lawsuit has a risk of loss evaluated as "probable" and involves the total amount of R$2,434 thousand, based on the opinions of our outside legal counsels representing us in such lawsuits.

Among these actions, we consider the following 2 to be material based on the above criteria.

- The bankruptcy estate of Geoquasar Energy Solutions Participações Ltda. ("Geoquasar"), our former provider of geological services, filed a civil action against us and one of our subsidiaries, PetroRio O&G, seeking an indemnity in the amount of R$128,433 thousand for losses resulting from its bankruptcy. On March 8, 2013, the parties entered into a service agreement for the purposes of Geoquasar rending geological services in the Solimões Basin ("Geoquasar Services Agreement"). Geoquasar alleges that the unilateral termination by us of the Geoquasar Services Agreement caused its bankruptcy, as Geoquasar relied on Geoquasar Services Agreement and allocated services and investments to fulfill the obligations under the Geoquasar Services Agreement. On October 31, 2017, the judge of the court of first instance rejected all of Geoquasar's claims. Geoquasar appealed the decision before the Court of Justice of the State of Rio de Janeiro (TJRJ). On November 24, 2020, the First Civil Chamber of the TJRJ rejected, by a unanimous vote, Geoquasar's appeal, upholding the ruling of the court of first instance in its entirety. On January 21, 2021, Geoquasar filed a special appeal. On April 23, 2021, the STJ dismissed Geoquasar's appeal. We are awaiting the filing of a new appeal by Geoquasar to reverse such decision.
- Geoquasar filed a civil action alleging an indemnity claim of R$21,288 thousand against us and our subsidiary, PetroRio O&G, corresponding to certain allegedly unpaid invoices issued to PetroRio O&G. On September 25, 2014, the court of first instance moved the lawsuit to arbitration, due to the arbitration clause provided for in the Geoquasar Services Agreement. Geoquasar appealed the decision and on October 4, 2016, the TJRJ changed the court of first instance's decision, ordering the court to decide on the case base on its merits PetroRio O&G appealed this decision before the STJ, and decision on such appeal remains pending.

Labor Claims

As of April 30, 2021, we were involved in 64 labor claims in total amount of R$78,627 thousand.

The amount involved in proceedings with a risk of loss evaluated as: (i) "possible" is R$30,353 thousand; (ii) as "probable" is R$20,898 thousand; and (iii) "remote" is R$27,374 thousand.

Labor claims deal with matters such as overtime, additional payment for health hazard, wage matching, outsourcing and others.

As of the date of this Offering Memorandum, no labor claims were considered individually material by the company.

Tax Proceedings

As of March 31, 2021, we were a party to administrative tax proceedings. The amount involved on such proceedings was R$677,239 thousand, provided, however, that out of this amount only R$192,426 thousand corresponds to our responsibility. The "probable" loss estimated by our legal counsel is R$4,578 thousand.

Below is the information on the tax proceedings that we consider material.

- Tax enforcement filed for the collection of IRPJ and CSLL under the Administrative Procedure No. 12448.723574/2014-93, which had been drawn up for the collection of IRPJ and CSLL, due to the rules of transfer price - PRL 60 method, referring to the rents and charters paid to Frade BV, for the year 2010. Currently, the process is suspended due to the guarantee offered under the Annulment Action No. 1001926-86.2018.4.01.3400, in the process before the 13th Federal Court of the Judicial Section of the Federal District. We are awaiting decision by the first instance.
- Infraction Notice against us for the collection of IRRF and CSLL related to events that occurred in the calendar year of 2012, referring to exchange rate variation, non-deductible operating expenses, unproven deductions and insufficient collection of IRPJ and CSLL. The appeal was rejected in part. We appealed again and are waiting for judgement.

Arbitration Proceedings

An unfavorable decision was rendered against our subsidiary PetroRio O&G, involving an approximate amount of R$82,954 thousand. This decision was subject to an annulment action and the judgment of the court of second instance in this action was favorable to us and the action is currently before the STJ. There is also an action for enforcement of an arbitral award relating to the same dispute that is suspended until the final judgment of the action is annulled. The subject matter of the dispute involved the termination of two drilling rig lease agreements. We are disputing the entire value of this proceeding. Based on the opinions of our legal counsel for these matters, we consider that chance of loss to be "possible."

Environmental Proceedings

Frade Field Incident

In 2019, we acquired a company, Chevron Upstream Frade Ltda. ("Chevron") which, in 2012, was a defendant in two public-interest civil actions filed by the Federal Public Prosecutor of Campos dos Goytacazes, due to alleged environmental damage resulting from oil spills in the Frade field, with an estimated value of R$ 20.0 billion for each action (Public-interest Civil Action No. 0002561-36.2011.4.02.5103 and Public-interest Civil Action No. 0000558-74.2012.4.02.5103). At the end of 2012, Chevron provisioned R$ 95,000,000.00 regarding compensatory measures under the Term of Conduct Adjustment (TAC) which was approved and signed in September 2013 together with the MPF, ANP and IBAMA. The TAC replaces the two Public-interest Civil Actions, which were initially brought by the MPF. On March 31, 2021, our management maintained an accounting provision in the amount of R$14,938 thousand corresponding to our participation in the Frade Field.

Other Environmental Proceedings

- Public-interest Civil Action filed by the Federação Única dos Petroleiros ("FUP"), which is the Brazilian workers union, through which FUP demanded (i) a judgment enforcing the defendants to cease their activities entirely within national territory; (ii) a judgment enforcing the defendants to completely seal off leaks on the seabed; (iii) a judgment enforcing the defendants to pay collective non-pecuniary damages to the Brazilian State; (iv) the termination of all concession agreements for oil and natural gas exploration and production signed by Chevron with the ANP; (v) a declaration that the pledge agreement ancillary to the mentioned concession agreement is null and void; (vi) judgment enforcing the defendants to pay an indemnity to the Federal Government; (vii) a judgment enforcing the defendants to compensate for the damage to the marine environment; and (viii) a judgment enforcing defendants to pay an indemnity to the Federal Government and to the State Government of Rio de Janeiro and its Municipalities, which would receive taxes derived from the activities and should, according to the FUP, be indemnified for any period of shutdown of extraction activity. The amount involved in this action is R$65.1 thousand. On April 1, 2012, a decision was rendered (i) recognizing the connection of this fact with the Public-interest Civil Actions initiated by the MPF in the face of the same companies and, consequently, (ii) determining the redistribution of this action to the 1st Federal Court of Rio de Janeiro. On February 19, 2020, an order was issued determining (i) the dispatch of an official letter to the First Federal Court to analyze the ANP's statement, and (ii) the suspension of the fact until the Federal Court responds. On February 2, 2021, the 1st Federal Court rendered a decision determining that the case to be submitted to the 2nd Business Branch of the Rio de Janeiro State Court, under the argument that the jurisdiction of that Court had already been affirmed by the STJ. On March 1, 2021, we filed a motion for clarification of the decision. On April 29, 2021, our motion was dismissed. As of the date of the Offering Memorandum, we are awaiting for a ruling of the State Court of Rio de Janeiro.
- Public-interest Civil Action filed by the State Prosecution Office of Amazonas, alleging environmental damage caused by oil exploration activities carried out by PetroRio O&G in the Municipality of Tefé (State of Amazonas) and non-compliance with the Degraded Areas Recovery Plan ("PRAD") carried out by State Prosecution Office of Amazonas. The amount involved in this action is R$3,107 thousand. On August 14, 2016, a decision was issued which (i) upheld the preliminary injunction measure by the State Prosecution Office; (ii) ordered us to implement the

environmental recovery measures in the locations described in the notices of offence of the Instituto de Proteção Ambiental do Amazonas - IPAAM and (iii) imposed a fine of R$10 thousand per each day of non-compliance. On June 11, 2019, we issued a statement claiming that (i) we only became aware of the action on April 29, 2019, (ii) we gave notice that the TAC between ourselves and IPAAM had been signed, aiming to minimize the negative effects to the environment related to the Notices of Offence, and (iii) we were in compliance with the PRAD. At the hearing it was (i) demanded that IPAAM submit a written notice confirming compliance with the agreed clauses in the TAC, and (ii) an order was made to suspend the deadline for filing a challenge to the ruling and to appeal. At present, we are waiting for IPAAM to submit writing notice confirming compliance.

- Injunction filed against Chevron requiring submission of expert evidence, filed by the Federation of Fishermen of the State of Rio de Janeiro ("FEPERJ"), with the purpose of discovering any material or non-pecuniary damages (indirect damages) caused by a Frade Field oil spill. The amount involved in this action is R$290,377.13 On February 15, 2015, a sentence was issued (i) ratifying the expert report and (ii) ordering Chevron to pay attorney fees to FEPERJ, in the amount of R$ 5 thousand. In view of this, Chevron filed an appeal. The aforementioned appeal, however, was dismissed. On January 15, 2018, the sentence began to be enforced and, on April 4, 2018, the subpoena for payment was issued, and the amount was deposited on April 16, 2018. Thus, on May 23, 2018, a sentence was handed down (i) recognizing the discharge of Chevron, and (ii) determining the execution process to be extinct. However, the decision on the appeal filed by us before the STJ in connection with the expert's fees is still pending.

- Indemnity action filed by FEPERJ against Chevron alleging material and non-pecuniary damages as a result of two oil spill incidents at Frade Field in November 2011 and March 2012 to fishermen registered in the colonies between the Municipalities of São João da Barra and Niterói. The amount involved in this action is R$352,209 thousand. The FEPERJ made the following requests: (i) a judgment to pay R$3,742.56 (historic value) in compensation to each fisherman to compensate for material damages, (ii) compensation to the fishermen for indirect damages, which amount is not informed in the lawsuit, (iii) payment of late payment interest and monetary adjustment; and (iv) a judgment to pay all attorney's fees. On September 28,2020, we, as a precaution, presented our final allegations. On February 24, 2021, our motion for clarification of the decision was dismissed. On April 8, 2021, we filed an appeal against such decision. At the moment, we are awaiting judgment on such appeal.

- Civil lawsuit filed by Petro Rio O&G, requesting cancellation of the infraction notice levying a fine for alleged non-compliance of operations of Platform Polvo A, from August 11, 2014 to August 14, 2014, in view of the SGSO_2014_033 Report and SGSO Technical Regulations approved by ANP Resolution 43/2007. The amount involved in this action is R$5,300 thousand. A preliminary injunction was filed by us, requesting the fine to be suspended, regardless of any guarantee. The preliminary injunction request was granted and we are waiting for the final decision to be issued.

- Civil lawsuit filed by Petro Rio O&G, requesting cancellation of the infraction notice levying a fine for alleged non-compliance of operations of FPSO Polvo in November 2013, in view of the Regulation on Measurement of oil and natural gas approved by ANP/INMETRO Resolution nº 1/2000. The amount involved in this action is R$3,649 thousand. A preliminary injunction was filed by us, requesting the fine to be suspended, regardless of any guarantee. On March 18, 2016 the action was dismissed by the courts, but we appealed. On October 2018 our appeal was denied by the Supreme Court. We then filed a petition gathering new rulings on the matter. On February 17, 2021, the Supreme Court rendered a decision partially reforming the previous award. The Supreme Court decided that only one fine may be applied for each set of violations of the same nature. On February 24, 2021, we filed a motion for clarification of the decision.

- Tax collection action proposed by the ANP against PetroRio for alleged non-compliance with ANP's SGSO. We have guaranteed the tax collection action and the judgment of the appeal on the nullification action proposed by us is suspended until the STJ renders a final decision on the internal appeal proposed by us. In such internal appeal we argue that the first decision on the annulment

action was rendered by an incompetent judge. The amount involved in this action is R$25,744 thousand.

Administrative Proceedings

CVM Proceeding against PetroRio and Société Mondiale FIA (PAS CVM No. RJ2018/4059)

In June 2018, the CVM instituted a proceeding against PetroRio, Société Mondiale FIA ("Société") and Bridge Administradora de Recursos Ltda. ("Bridge"), an investment fund, considering PetroRio and Société's liability as shareholders of Oi S.A., and Bridge as manager of Sociéte, for allegedly infringing art. 12 of CVM Rule 358/02, alleging that PetroRio and Société acted under the same interest in certain investments made in Oi S.A. and failed to make the required joint public disclosure in respect of such investments, which exceeded the 5% capital stock limit in Oi S.A. in June 2016, resulting in both entities disclosing incomplete information to the market.

PetroRio presented its defense to the charges made by the CVM's technical department in the sense that it did not act jointly with any such shareholders. PetroRio proposed a commitment term, which was rejected by the CVM. As of the date of this Offering Memorandum, a trial date is yet to be set by the CVM commissioners. If we receive an adverse outcome in the proceeding, we may be subject to one or more penalties provided for under article 11 of Law No. 6,385/76, which include, without limitation, the application of a warning, fine, suspension of the registrations to perform its activities, temporary prohibition for certain practices and to act, directly or indirectly, in certain transaction in the capital markets.

CVM Procedure against Mr. Nelson de Queiroz Sequeiros Tanure (No. 19957.009206/2018-61 (9206/2018)

In 2018, the CVM's technical department instituted a proceeding against Mr. Nelson de Queiroz Sequeiros Tanure, the chairman of PetroRio's board of directors, in which the CVM argues that Mr. Nelson de Queiroz Sequeiros Tanure would not have responding, or not have responding properly, to the CVM during the investigation related to such proceeding. The CVM made this accusation when Mr. Nelson de Queiroz Sequeiros Tanure was an officer of a limited liability company and had not taken any office at PetroRio.

As of the date of this Offering Memorandum, this proceeding is ongoing, and no decision has been rendered by the CVM, or settlement has been agreed by the parties.

CVM Procedures against Mr. Roberto Bernardes Monteiro (PAS CVM No. 19957.000591/2015-39 (RJ2014/12838) and PAS No. 19957.000592/2015-83 (RJ2014/6517))

In 2014, the CVM's technical department instituted proceedings against Mr. Roberto Bernardes Monteiro, our current chief executive officer, to investigate alleged breaches to articles 153, 176 and 177 of the Brazilian Law No. 6,404/76, and articles 14, 26 and 29 of CVM Instruction No. 480/09. The proceedings are related to the disclosure of a material fact and preparation of financial statements that would have both omitted material information to comprehend the financial conditions of the company in which he as an officer at that time.

In 2019, the CVM decided to apply fines of R$300 thousand and R$500 thousand to Mr. Roberto Bernardes Monteiro, who appealed to the Council of Appeals of the National Finance System (the "CRSFN"). The appeal is currently pending judgment.

Relevant Confidential Proceedings

- As of the date of this Offering Memorandum, our subsidiary, PetroRio O&G is party to a confidential lawsuit seeking to terminate an arbitral award in the approximate amount of R$82,954 thousand. The judgment from the court of second instance was favorable to us and the action is currently before the STJ. There is also an enforcement action of an arbitral award relating to the same dispute that is suspended until the final judgment of the annulment action. The subject matter of the dispute involves the termination of two drilling rig lease agreements. We and/or our subsidiaries dispute the entire value of this action. We, based on the opinions of our counsel in these

actions, consider the likelihood of loss as "possible." The amount of R$48,427 thousand is provisioned by us.

- In addition, as of the date of this Offering Memorandum, one of our subsidiaries is a defendant of a confidential judicial process involving electoral matters, currently under analysis by the Supreme Court in the form of an extraordinary appeal. Our subsidiary claims that the constitutional principles of proportionality, free enterprise and the social function of property are being violated. The proceeding involves an approximate amount of R$7,921 thousand and if adversely decided, may prevent our subsidiary from contracting with public administration for a period of 5 years. We, based on the opinions of our counsel in these actions, consider the likelihood of loss as "possible."

Other Relevant Administrative and Judicial Proceedings

- On September 13, 2013, a TAC was concluded between the MPF, Chevron Brasil Upstream Frade Ltda., Chevron Latin America Marketing LLC and Transocean Brasil Ltda. with the intervention of ANP and IBAMA. This TAC had obligations of a preventative, precautionary and compensatory nature, assumed by Chevron Brasil, resulting from the oil spills that occurred in the Frade field in the Campos Basin Rio de Janeiro in November 2011 and March 2012, under the terms of the Public-interest Civil Actions n. 0002561-36.2011.4.2.5103 and n. 0000558-74.2012.4.02.5103. Chevron Brasil has agreed to: (i) adopt prevention measures to avoid environmental accidents and to improve the response system of such incidents, which includes among other measures, revisions to the risk management system; (ii) implement the preventative measures required by the ANP; (iii) install on board of FPSO Frade and at least two emergency response vessels, integrated oil detection and a monitoring system; and (iv) perform compensatory measures in the total amount of R$96.2 million. The TAC also determines that, in case of non-compliance, Chevron is subject to a daily fine of R$1,000 thousand.

- To comply with the TAC referenced above, Chevron has taken the following measures:

  (i) The risk management system was revisited, both to update the risk management procedures and for the inclusion of the scenarios that gave rise to the Frade incidents, identifying mitigating and preventative safeguards;

  (ii) The preventative measures established by the ANP according to section 2.1.4 of the TAC and item 169 of Letter No. 156/SSM/2012 are considered implemented according to the presentation used during a meeting with the ANP held on September 30, 2019.

  (iii) Chevron Brasil has installed, on board the FPSO Frade and two other emergency response vessels and an integrated oil detection and monitoring system. This system is operational and logins have been created to access a list of IBAMA servers. This integrated oil detection system is considered implemented, according to Technical Opinion No. 246/2020-COEXP/CGMAC/DILIC submitted by IBAMA on October 20, 2020.

  (iv) Chevron maintains a current contract with a company specialized in the supply of satellite images that guarantees coverage of the entire area potentially affected by leaks, including the probable trajectories of an oil slick and such images are provided periodically by sending an access link to IBAMA.

  (v) The oil study was carried out and finalized, which awaits IBAMA signaling (CGEMA) to present the results obtained;

  (vi) A meteoceanographic station was installed, which is in operation in the Frade field, and monthly reports containing the compiled data are sent to IBAMA; and

  (vii) Pertaining to the compensatory measures, such measures are in place and are monitored by IBAMA and these obligations remain mostly in the implementation phase and with satisfactory results, according to Technical Opinion No. 246/2020-COEXP/CGMAC/DILIC forwarded by IBAMA on October 20, 2020.

- On October 26, 2015, another TAC related to pollution and consequent material and moral damage caused to the Rio de Janeiro community due to an oil spill in the Frade filed was entered into. This TAC was between the State of Rio de Janeiro and Chevron Brasil Upstream Frade Ltda., (02.031.413/0001-69), with the intervention of INEA, with the objective of providing measures to compensate, in addition to the obligations established in the federal TAC, any damage arising from the incident in the light of which Public-interest Civil Action No. 0485873-12.2011.8.19.0001 was proposed. A bank transfer of R$5,000 thousand was made on December 14, 2016 from the Frade field consortium to the Brazilian Biodiversity fund.
- As of March 31, 2021, there were no other material proceedings.

THE ISSUER

Overview

The Issuer is an indirect, wholly-owned subsidiary of PetroRio and a private limited liability company (*société à responsabilité limitée*) incorporated under the laws of Grand Duchy of Luxembourg on June 13, 2012. The Issuer has its registered office at 13-15, avenue de la Liberté, L-1931 Luxembourg, Grand Duchy of Luxembourg, and is registered with the Luxembourg Register of Commerce and Companies (*Registre de commerce et des sociétés, Luxembourg*) under number B169.949.

The Issuer's constitutional documents and any other documents referred to in this Offering Memorandum concerning the Issuer can be inspected at PetroRio's headquarters in Brazil. Copies of the Issuer's bylaws are available during normal business hours at our executive offices, the offices of the Trustee, Registrar, Paying Agent and Transfer Agent (as defined herein), in each case at the address set out on the back cover of this Offering Memorandum.

As of the date of this offering memorandum, the issued and fully paid-up share capital of the Issuer amounts to a total of U.S.$2 million, divided into 20,000 shares, each with a nominal value of U.S.$100.00.

We prepare annual financial statements of the Issuer in accordance with Luxembourg GAAP. The Issuer Financial Statements, which are audited, are attached to this Offering Memorandum. See "*Presentation of Financial and Other Information*." The Issuer's financial information is also consolidated into the Consolidated Financial Statements. The Issuer's financial year runs from January 1 to December 31 each year.

Operations

Trading Operations

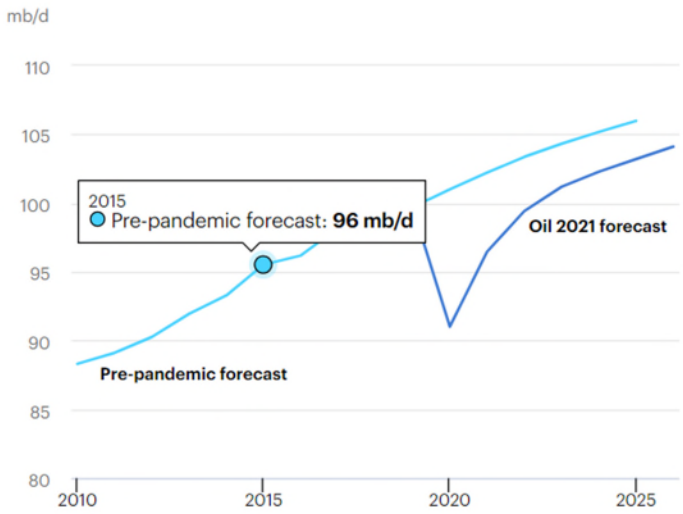
The Issuer is the Group's trading company. The majority of the oil we produce at the Frade Field is sold to off-takers in spot transactions with the Issuer acting as intermediary. Since February 2019, the totality of the oil we produce at the Polvo Field is sold under the PetroChina Marketing Agreement, which will remain in effect through June 29, 2021. We believe the sale of our oil through a Luxembourg-based entity provides certain tax benefits to the Group.

Overview of the Oil & Gas Market in the World

Long term perspectives

Historically, demand for oil has grown steadily, and from 2010 until the beginning of the COVID-19 pandemic its demand has only increased. According to International Energy Agency estimates by 2023 the global consumption is expected to resume to 2019 levels (pre COVID-19 pandemic).

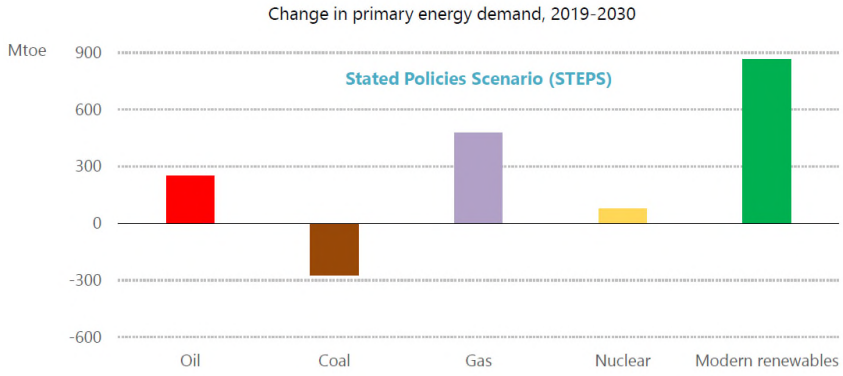
Chart 1 – Global oil demand 2010-2030 (million barrels per day)



Source: World Energy Outlook 2021

In addition to a natural recovery in oil demand, other sources of energy, among them natural gas, are expected to gain more relevance in the years to come. As per World Energy Outlook research, until 2030 natural gas – an import product we can explore in our reserves – will outpace other energy sources.

Chart 2 – Changing primary energy demand 2019-2030 (tons of oil equivalent)

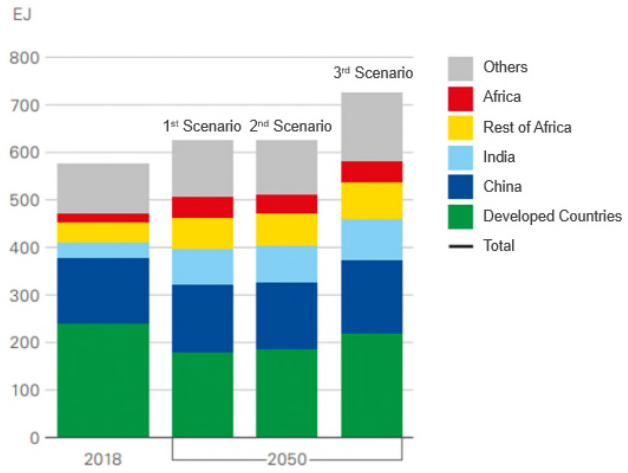


Source: World Energy Outlook 2020

Overall, it is expected that China and developing countries will likely support the increasing demand for energy as (i) their population grows at a faster pace than developed economies; and (ii) the respective domestic economies develop on the back of industrial activities and household consumption. All in, the contribution of

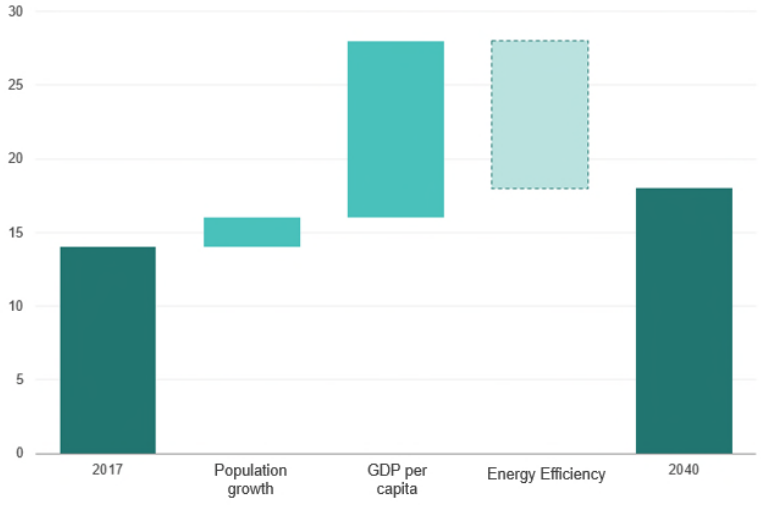
both population growth and increasing GDP in these economies set a fertile ground for increasing energy consumption

Chart 3 – Primary energy consumption by region (joules)



Source: BP Energy Outlook 2020

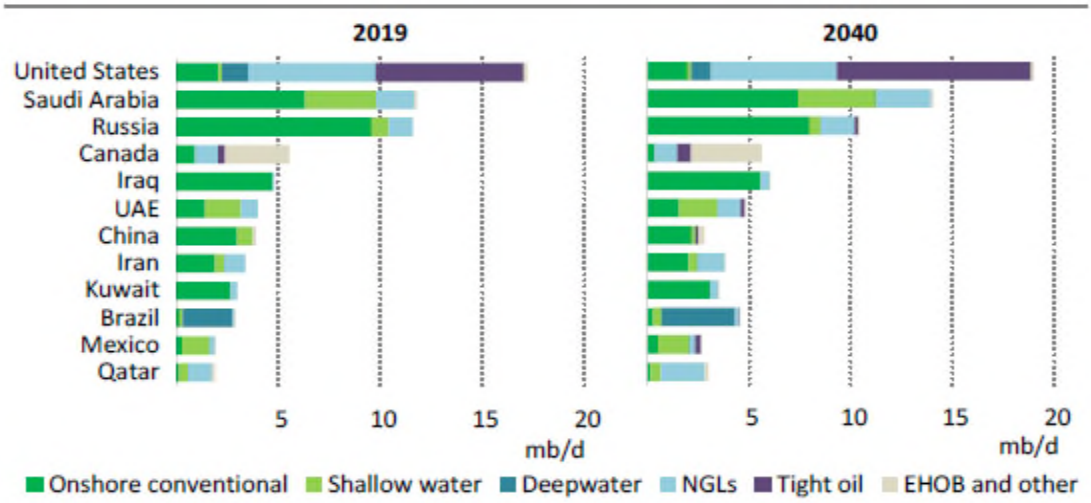
Chart 4 – Primary energy demand, 2017-2040 (billion barrels of oil equivalent)



Source: BP Energy Outlook 2019

Within the context of increasing global demand for energy, Brazil is well positioned as a large producer with still room to expand its relevance in terms of oil output. Ranked within the top 10th largest oil producers in the world in 2019, Brazil is expected to move upwards in the rank to occupy the 7th place by 2040 as oil companies explore more of the country's deep waters potential – exactly the niche in which our oil and gas production is focused.

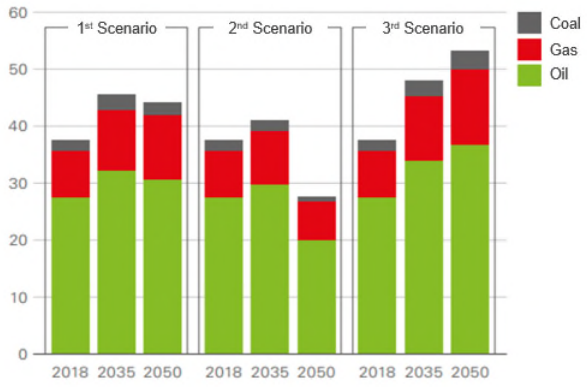
Chart 5 – Top 12 largest oil producing countries, 2019 and 2040 (million barrels per day)



Source: World Energy Outlook 2020

Besides energy purposes, oil demand is also expected to be pushed by the increasing volumes of plastics and oil-derivate substances (e.g. asphalt, fibers, syntetic textiles, among others) as both household consumption and civil construction sectors further develop. On 2020, BP published its views to the sector, tracing 3 potential scenarios for oil demand destined to non-fuel products. In all scenarios, despite the long term view in 2050, it was expected an increase both oil and gas demand until 2035. Only one conservative scenario considered a potential disruption in demand that may be caused by the adoption of new technologies and substances to replace oil in the production of plastics and other products.

Chart 6 – Demand per type of fuel for non-fuel products (joules)



Source: BP Energy Outlook 2020

Historical Overview of the Brazilian Oil and Gas Market

The Brazilian O&G industry history goes hand in hand with Petrobras. Petrobras was created in October 3, 1953, through the Law Nº 2.004, establishing its monopoly in E&P, refining, and transportation of oil in Brazil. The development of the Oil & Gas industry and the expansion of the investments by the automobile

industry in Brazil, would continue to place the oil & gas industry at the center of government decisions in the following years, marked by the escalation of political issues.

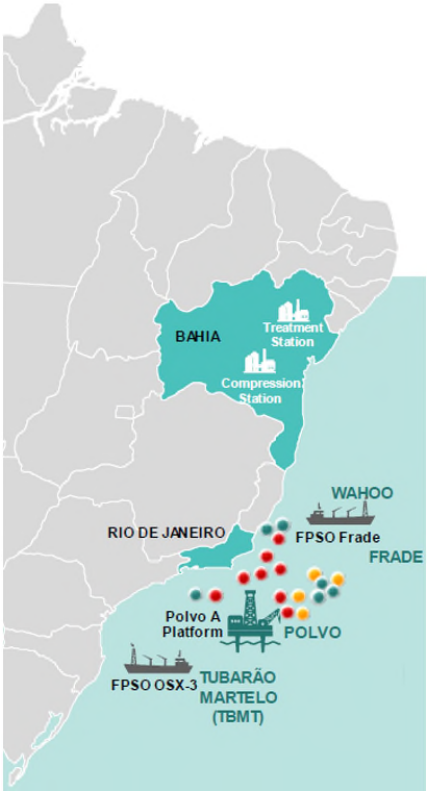
In 1990 the National Fuel Department (DNC) was created, which had the role of "guiding and supervising the activities related to the Union's monopoly" in activities related to oil, gas and other hydrocarbon fluids. The end of the Petrobras monopoly began in 1995 with the approval of two amendments to the federal constitution, one allowing states to grant private companies the services of piped gas and the other allowing the Union to contract oil and gas activities with state or private companies. However, with approval of Law 9.748/97, the Petroleum Law, the Union's ownership of oil/gas deposits was ratified, establishing the principles of energy policy and ending the Petrobras monopoly. This new law allowed other Brazilian companies to act in each stage of the E&P chain, from well to wheel, under concession or authorization regimes. The Petroleum Law also created two fundamental institutions in Brazilian O&G environment:

- Brazilian Agency of Oil, Natural Gas and Biofuels, or "ANP" (*Agência Nacional de Petróleo, Gás Natural e Biocombustí*veis)
- National Council for Energy Policy, or "CNPE" (*Conselho Nacional de Política Energética*)

Although the monopoly was formally extinguished, Petrobras still controls a majority share of the Brazilian oil and gas market, as it is currently responsible for approximately 74% of national production and owns 13 out of 17 refineries around the country, as of the first quarter of 2021. Through these refineries, the company owns circa 98% of the Brazilian refining capacity. It has recently initiated a sale process for 8 refineries (around 50% of its refining capacity), having entered into an agreement for the sale of the first refinery (the Landulpho Alves Refinery – RLAM, located in Bahia) on March 24, 2021.

Within the perspective of Petrobras' divestments, Petrobras announced in September 2020 a plan to divest upstream assets, among which, 18 present investment potential, totaling a production of 921 thousand barrels of oil equivalent per day in natural gas production.

Figure 1 – Assets Close to PetroRio's Clusters

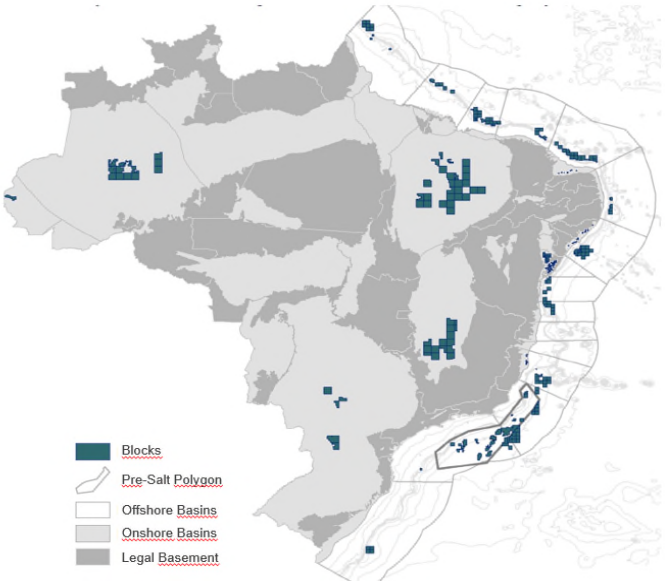


Source: management data from PetroRio and Petrobras
Subtitles:
Red – Assets not operated by Petrobras
Yellow – Assets operated by Petrobras with third party share
Green – Assets operated 100% by Petrobras

A technical landmark in Brazilian oil and gas industry was achieved in 2005 and announced in 2006, when Petrobras for the first time employed new techniques for deep sea drilling and discovered huge oil and gas reserves in the Pre-Salt layer, located 5,000 to 7,000 meters subsoil. First oil from the Pre-Salt layer came from the Jubarte field, in September 2008.

Pre-Salt Polygon

Figure 2 – Pre-Salt Polygon



Source: ANP

Since 2010, ANP has been increasing Exploration and Production regulatory framework flexibility, creating a more favorable business environment for small Exploration and Production companies. The key milestones in the Brazilian regulations are presented below:

ANP's Regulatory Agenda

Figure 3 – ANP's Historical regulatory agenda with events

Source: ANP

2010: **Production Sharing System:** In the current Production Sharing System, the State owns the oil, which is produced in a partnership agreement with the Federal Government.

2016: **ANP Shifts Focus:** Since 2016 there has been a significant shift of mindset in the Ministry of Mines and Energy (*Ministério de Minas e Energia*) and ANP towards a more favorable business environment, encouraging investments from smaller Exploration and Production companies.

2018: **Reserve-Based Lending:** ANP approved a proposal for a resolution that allows the use of mechanisms such as Reserve-Based Lending, or RBL among the guarantees that can be offered by oil and gas companies in the assignment of rights in exploration and production contracts. Such resolution was published in the first semester of 2019.

2019: **1st Permanent Offer Bidding Round:** Consolidation of a new bidding model that offers a portfolio of blocks and areas with marginal accumulation for oil and gas exploration and production.

2020: **Royalties Upon Incremental Production Adjustment:** First royalty reduction of 5% on incremental production from new investments, which was granted to PetroRio for the Polvo Field enabling the extension of the field's economic life.

The regulatory agenda of the ANP for 2020-2021, in turn, consists of more than 60 regulatory actions, which seek to: (i) encourage the exploration and production of oil and natural gas for the benefit of Brazilian society; (ii) act for the development of a natural gas market that serves the interests of society; (iii) encourage investments in the production, distribution and resale of oil products and biofuels; (iv) expand the dialogue with regulated agents and society; (v) updating ANP regulations, minimizing investment barriers and reducing costs imposed by regulation; (vi) using IT and innovation solutions as promoters of productivity in ANP activities; and (vii) improve the ANP's governance to increase productivity and the quality of deliveries to society.

In 2017, the CNPE issued Resolution No. 17, which established the purpose of the Policy for Exploration and Production of Oil and Gas as:

(i) maximize resource recovery;

(ii) accurate quantification of the national potential for petroleum-related activities;

(iii) intensify exploratory activities; and

(iv) adequate monetization of existing reserves.

Under such policy, many improvements have been made to promote investments, such as:

(i) the end of Petrobras' mandatory operatorship and participation in all Pre Salt ventures (replaced by a pre-emptive right regulated by Decree No. 9,041/2010) by the end of 2016 brought the opportunity to streamline and accelerate the development of these reservoirs;

(ii) ANP established an annual auction schedule, with a five-year outlook;

(iii) ANP issued a new local content policy following the 2017 rounds, increasing flexibility compared to previous local content requirements;

(iv) several government programs have been launched, such as Reate, to revive onshore areas, Gas to Grow (*Gás para Crescer*) and the New Gas Market (*Novo Mercado de Gás*), Brazil Fuel (*Combustível Brasil*) and Renovabio - the latter focused on natural gas industries;

(v) New objective guidelines for unitization;

(vi) REPETRO (the special customs regime for export and import of assets destined to research activities and production of oil and natural gas) was extended until 2040; and

(vii) ANP changed the concession contracts, with innovations such as the adoption of the single exploration stage, differentiated royalties for areas in new frontiers and mature basins, reduction of

the minimum net equity for non-operators and incentives to increase the participation of investment funds.

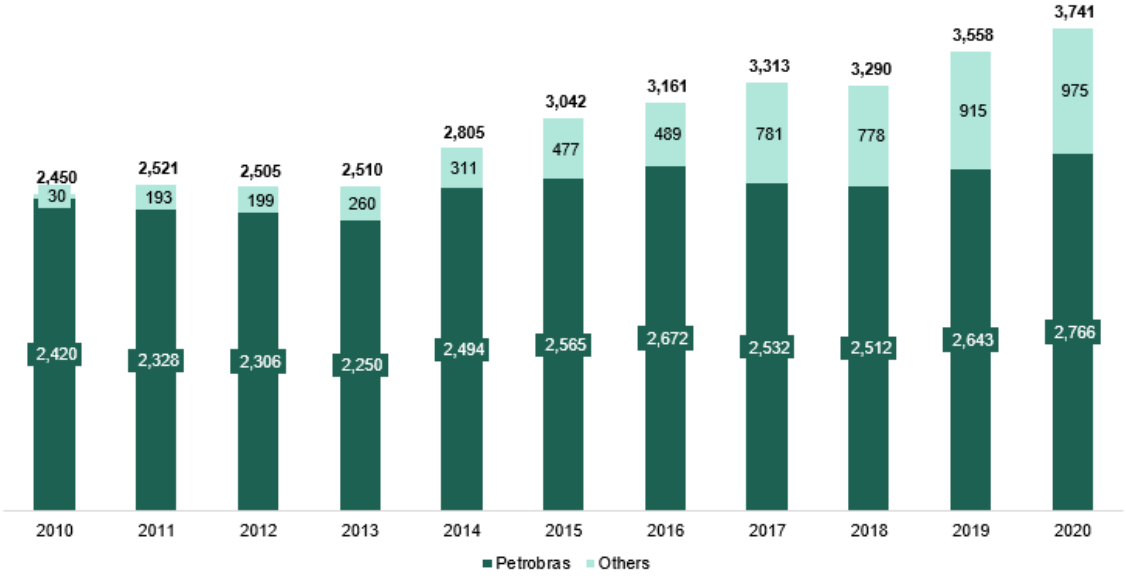
In addition to all these concrete measures, the Federal Government and the ANP are constantly communicating with the market. This approach has resulted in regulatory developments open to collaboration with regulated entities, resulting in reasonable regulations that are aligned with the best practices in the oil industry.

The most recent milestone in the regulatory environment is related to an adjustment in royalties upon incremental production of mature oil and gas fields. We played a crucial role on this latest update. In 2017, it had requested the ANP for a reduction from 10% to 5% on the Polvo Field's royalties' rate over incremental production. This request was approved by the agency in February 2020, and not only will it be applied to the Polvo Field, but also to other mature fields in the Campos Basin. This was the first time that the ANP has granted a reduction over the incremental production for mature fields.

Petrobras is by far the largest oil producer in Brazil, with fields responsible for 74.1% of total oil and 75% of total natural gas produced as of 2020, according to ANP. With the change in legislation ending Petrobras' mandatory operatorship in the Pre-Salt areas, the presence of major oil companies in the country is increasing. The most recent ANP license bidding round, Round 16, had significant interest from major oil companies, wherein Total, Shell, Chevron and Exxon placed successful bids. Further rounds have also been announced for 2021-2022. As a result, as shown below, Petrobras' share of national production has decreased significantly over the years, creating space for small and medium exploration and production companies to increase their shares of Brazil's production.

Total Historical Oil and Gas Production in Brazil

Chart 7 – Historical Oil & Gas Production in Brazil, 2010 – 2020 (million of boepd)



Source: ANP

As a result of recent acquisitions, PetroRio has become the 3rd largest oil and gas operator in Brazil, and the largest independent national oil and gas operator. The chart below presents an overview of the 10 largest producers in Brazil, except for Petrobras, for the last twelve months on average as of March-2021:

Brazil's Largest Oil and Gas Producers

Table 1 – Ranking of oil and gas production by operator in Brazil (ex-Petrobras) (March 2021)

Nº	Operator	Oil (bbl/d)	Gas (Mm³/d)	Total Production (boe/d)
1	Total E&P do Brasil	50,605	2,025	63,343
2	Shell Brasil	33,745	328	35,806
3	Petro Rio Jaguar	16,967	204	18,252
4	Petro Rio O&G	15,841	45	16,124
5	Karoon	14,566	93	15,149
6	Trident Energy	11,717	113	12,425
7	Enauta Energia	9,917	81	10,428
8	Potiguar E&P S.A.	5,353	236	6,835
9	SPE 3R Petroleum	4,836	150	5,777
10	Perenco Brasil	4,515	23	4,659
11	Maha Energy	3,052	66	3,465
12	Alvopetro	48	267	1,726
13	SHB	1,241	17	1,346
14	Imetame	158	141	1,045
15	Duna Energia	475	1	484
16	Imetame Lagoa Parda	354	4	377
17	Petrosynergy	-	4	375
18	Petroborn	-	45	281
19	Nova Petróleo	171	1	180
20	Partex Brasil	178	0	179
21	Petrom	161	3	178
22	Eagle	3	26	165
23	Recôncavo E&P	118	1	124
24	Eneva	7	18	123
25	BGM	61	0.05	61
26	Phoenix Óleo & Gás	45	2	57
27	Santana	39	1	45
28	Oeste de Canoas	36	0.2	37
29	Ubuntu Engenharia	14	0.01	14
30	Perícia	13	0.04	13
31	Guto & Cacal	11	0.03	12
32	EPG Brasil	9	0.2	11
33	Vipetro	8	0.02	8
34	Newo	5	0.005	5
35	Energizzi Energias	4	0.05	4
Total		**174,271**	**3,894**	**199,113**

Source: ANP Production Report (March 2021)

The two largest oil and gas producing basins in Brazil are the Santos Basin and the Campos Basin, contributing 93% of the total production, according to the ANP's monthly production bulletin issued in May 2021, relating to production for March 31, 2021.

Production Distribution per Basin

Table 2 – Ranking of oil and gas production by cluster in Brazil

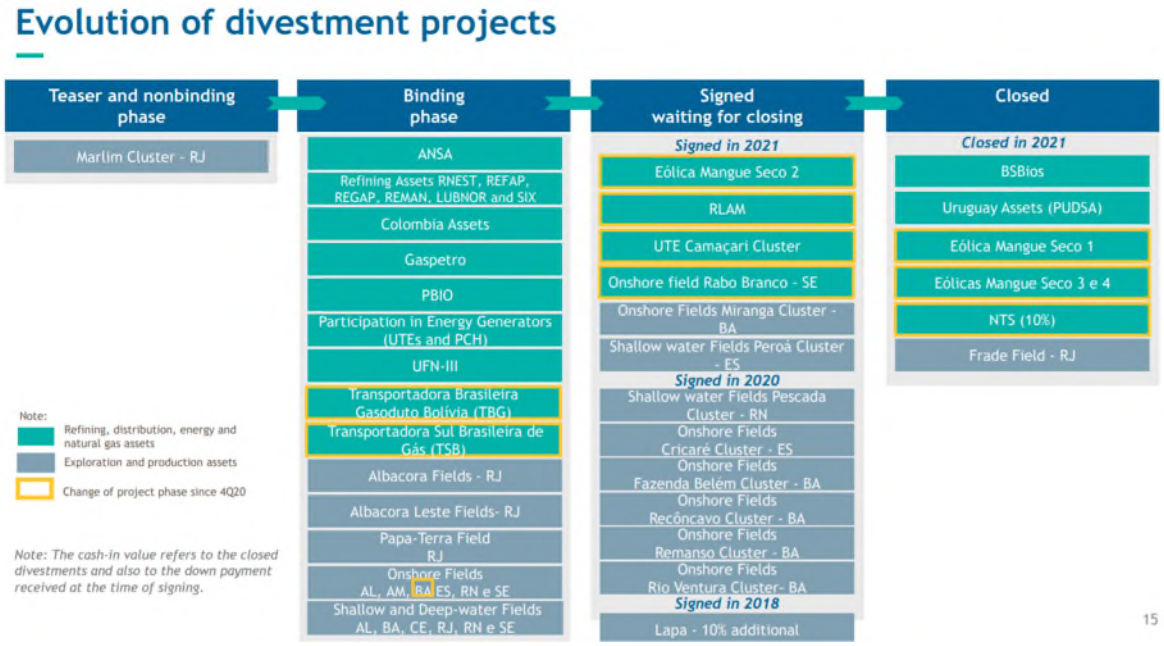
Basin	Oil (bbl/d)	Gas(Mm³/d)	Total Production (boe/d)	No. Of Producing Fields
Santos	1,993,374	90,067	2,559,881	22
Campos	749,353	14,139	838,282	28
Solimões	15,529	13,735	101,922	6
Potiguar	35,941	650	40,030	71
Recôncavo	23,793	2,120	37,126	69
Camamu	257	3,639	23,144	1
Espírito Santo	15,152	966	21,226	31
Sergipe	8,596	60	8,970	10
Alagoas	2,278	622	6,191	11
Tucano Sul	3	70	446	5
Parnaíba	7.3	18	123	3
Barreirinhas	36	0.2	37	1
Total	**2,844,318**	**126,086**	**3,637,377**	**258**

Source: ANP monthly production bulletin issued in May 2021, relating to production for March 31, 2021

Petrobras Divestments Plans and New Opportunities in the Exploration and Production (E&P) Segment

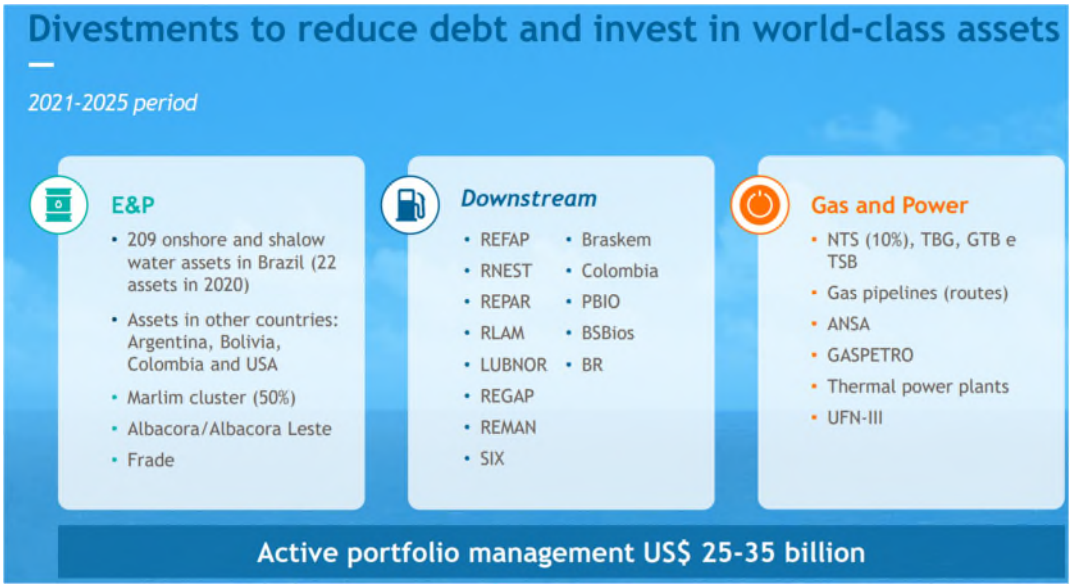
Since 2016, both ANP and Petrobras are heading initiatives that will likely transform the E&P landscape and dynamics.

With a bold portfolio management program, Petrobras has been reducing its exposure to mature upstream assets, non-core downstream operations as well as gas and power activities, and focusing most of its efforts and resources on the exploration and development of assets in the pre-salt and post-salt ultra-deep waters.



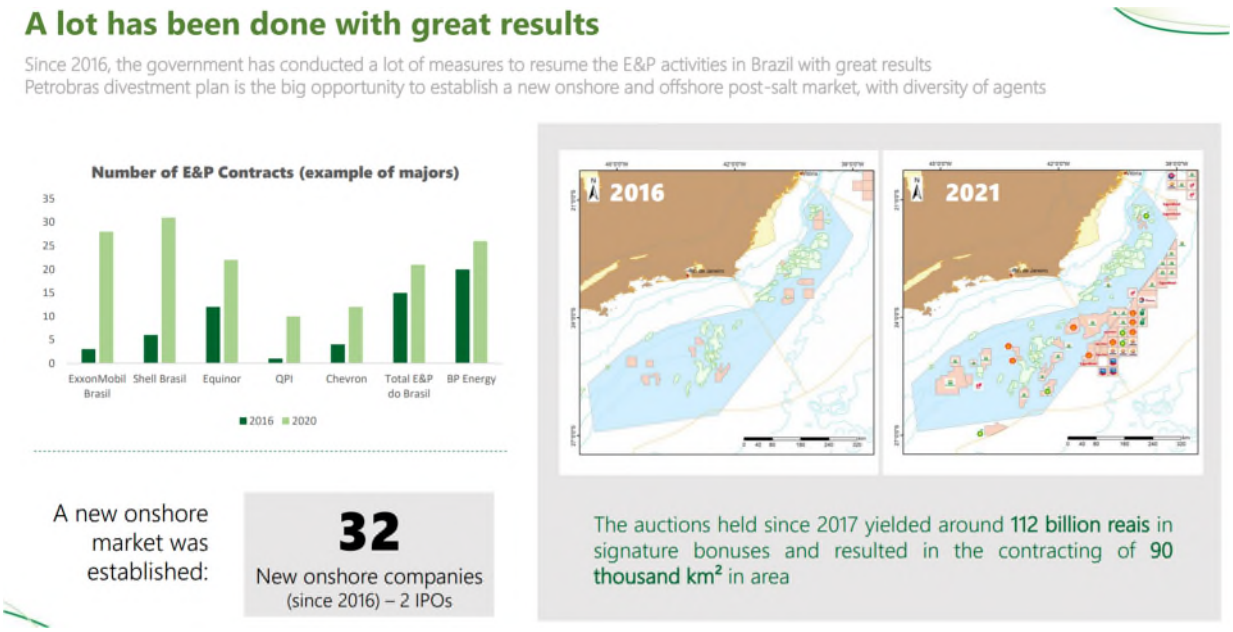
Source: Petrobras

As Brazil's national oil company gradually concentrates its resources on specific E&P assets, it creates opportunities for new players to enter and increase its exposure to the region. And this trend is expected to keep running as Petrobras recently disclosed its 5-year strategic plan including its divestment program pipeline aiming at raising ~US$25-35 billion within 2021-2025E.



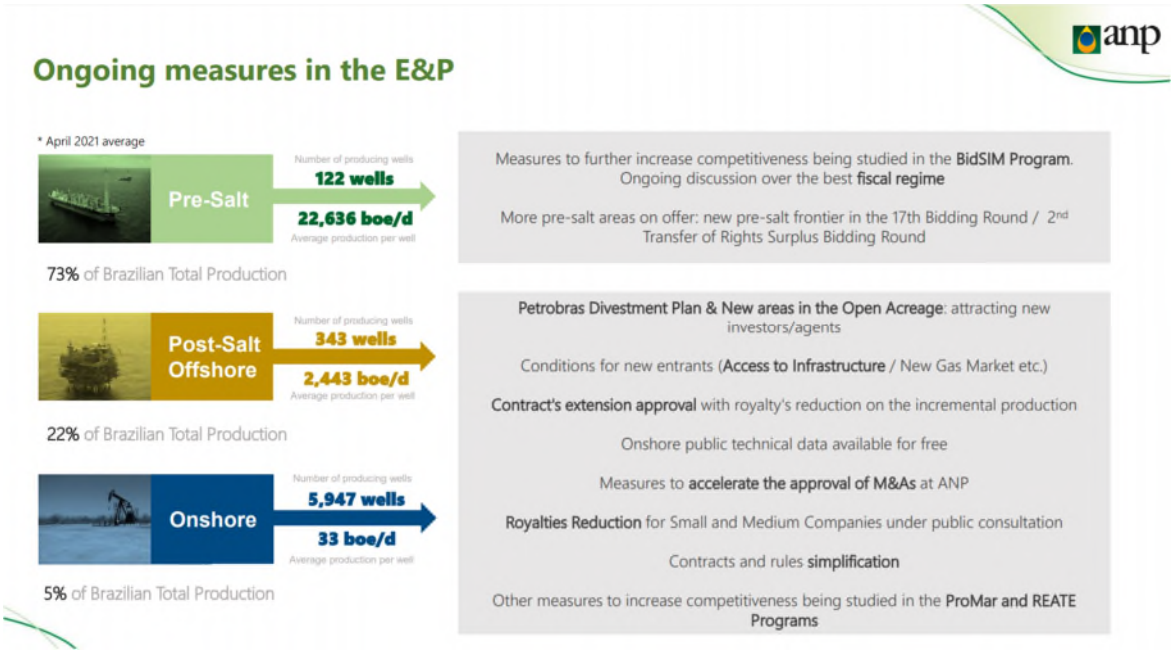
Source: Petrobras

With respect to initiatives led by the regulator, since 2016 ANP has conducted 16th bidding rounds for encompassing E&P assets, creating multiple opportunities for new private players to enter the Brazilian market and explore both onshore and offshore fields, in basins more or less prominent as depictured by ANP in the figure below.



Source: ANP

Looking forward, ANP is already committed to more liberal agenda for the sector, including the execution of new bidding rounds with assets of distinct profiles, and the crystallization of a more investor-friendly regulatory framework – including contracts and rules simplification, royalties reduction for mature assets, etc.



Source: ANP

Altogether, the positive reflexes from both Petrobras divestments and ANP's privatization agenda pave the way for a new and more dynamic E&P segment, with room for both the entrance of new private players, and opportunity for consolidation of well-positioned ones.

With new investments in mature fields, development of pre-salt fields, offshore blocks in the exploratory phase and a calendar of new auctions, Brazil is ready to grow its oil production and relevance in the global O&G landscape.

Government policy objectives

The Petroleum Law describes the general guidelines for the government's policy objectives for the rational use of the country's energy resources. The objectives include to:

- preserve the nation's and consumers' interests;
- foster the expansion of energy resources;
- protect the environment;
- ensure the supply of oil by-products nationwide; and
- increase the country's international competitiveness.

Oil and Gas Regulation

Brazil's Federal Constitution of 1988 granted to the Brazilian Federal Government's ownership over oil deposits, natural gas and other fluid hydrocarbons, including:

- onshore;
- in territorial waters;
- on the continental shelf; and
- in the exclusive economic zone.

Art. 177 of the Brazilian Constitution establishes the monopoly of the Brazilian Federal Government to undertake oil and gas activities. The monopoly was held by the State-controlled oil company Petrobras, on behalf of the Brazilian Federal Government.

In 1995, Amendment No. 9 to the Brazilian Constitution was enacted, modifying its article 177, authorizing the Brazilian Federal Government to hire state-owned or private companies to perform oil and gas activities, introducing flexibility in the monopoly of the Brazilian Federal Government, so far executed by Petrobras.

Subsequently, the Petroleum Law was enacted, regulating and transforming the Brazilian oil & gas sector's legal framework. The Petroleum Law introduced the concession regime for exploration and production of oil and gas in Brazil. Under this new framework, the Federal Government authorized different companies to explore and produce hydrocarbons under relevant concession agreements, following bid proceedings conducted by the ANP, the national petroleum regulatory agency also created by the Petroleum Law.

Since state-owned companies typically have rigid rules for contracting services and materials, a presidential decree was issued to avoid Petrobras being hindered by such rules when competing with private international oil companies (namely, Decree 2,745/1998). Decree No. 2,745/1998 provided Petrobras with a simplified contracting procedure, applicable to contracts related to Petrobras' business scope as an oil company.

In 2008, with the discovery of the massive reserves in the Pre-Salt layer, the Brazilian government implemented special regimes applicable to those areas, based on the view that exploratory risk was low while

the reward for successful oil finds were high. Laws Nos. 12,276/10 and 12,351/10 were then enacted, respectively establishing the onerous transfer of rights and production sharing systems.

Thus, since 2010, three systems have coexisted in Brazil: concession, production sharing, and onerous transfer of rights.

Oil and Gas Regulatory Authorities

The regulatory authorities for the oil and gas sector are the:

- ANP (*Agência Nacional de Petróleo, Gás Natural e Biocombustíveis*);
- Ministry of Mines and Energy (*Ministério de Minas e Energia* or the MME); and
- CNPE (*Conselho Nacional de Política Energética*).

ANP

The ANP was created by the Petroleum Law of 1997 to act as the oil sector regulator, under the Ministry of Mines and Energy, in the form of a special agency under indirect federal administration. The Agency is run by a board composed of a General Director and four directors appointed by the President after approval of the appointees by the Senate. Their mandate runs in a 5-year term and, as a general rule, cannot be extended.

The ANP is responsible for the regulation and supervision of economic activities of the oil industry. Regarding the production sharing regime, the ANP has taken a position as technical advisor to the MME in planning the grants of blocks, by direct contract or through bidding rounds. Regarding the promotion of bidding and the monitoring of the subsequent contracts, its obligations were strengthened, having contractual autonomy in the preparation of the tender protocol, the concession agreement and the production sharing agreement, although it has to submit the documents to the approval of the MME in the case of production sharing regimes.

By August 2019, the ANP had completed fifteen bidding rounds for the concession of exploratory blocks, four rounds for the concession of marginal fields, five rounds under the production sharing regime, in addition to conducting the signature processes of the contracts of the Zero Round and Onerous Assignment. The ANP also carried out the sixth round for production sharing regime, the 16th round for concession of exploratory blocks, the transfer of rights surplus production sharing bidding round and the open acreage bidding round in 2019, all in line with its policy of continuously providing new areas for E&P activities. The ANP expects to carry out the 17th round for the concession regime until the end of 2021, and the 18th round for the concession regime until the end of 2022. There is no official schedule for the 7th and 8th bidding rounds for the production sharing regime.

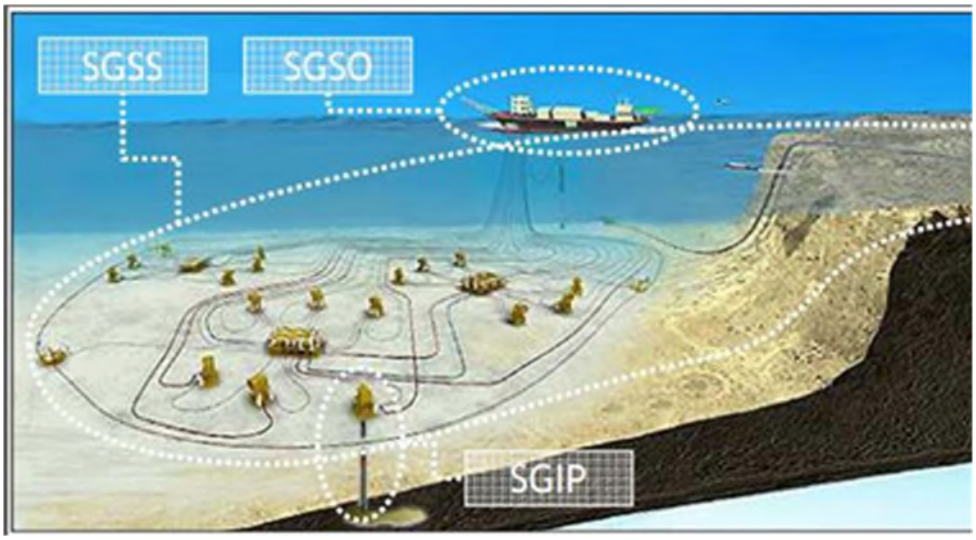
Among its competences, ANP establishes procedural standards for the Brazilian oil and gas industry, all issued in line with international best practices. For offshore assets, such as those held by us, the main operational safety rules are:

- Well Integrity Management System (*Sistema de Gerenciamento da Integridade de Poços*, or – SGIP);
- Operational Safety Management System ("*Sistema de Gerenciamento de Segurança Operacional*, or SGSO);
- System for Management of the Operational Safety of Subsea Systems (*Sistema de Gerenciamento de Segurança Operacional de Sistemas Submarinos*, or SGSS);
- ANP Resolution 37/2015 (regulates inspections by ANP's Environmental and Operational Safety Superintendence, or SSM);
- ANP Resolution 44/2009 (regulates reporting of incidents); and
- ANP Resolution 817/2020 (regulates decommissioning activities).

The areas of ruling of the most relevant ANP regulation could be graphically depicted as following:

ANP's Operational Safety Ruling Areas

Figure 4 – Operational safety decision area ANP



Source: ANP

In general, the enforcement of these operational safety rules goes by the following procedure:

(i) ANP periodically inspects the relevant facilities (or their mandatory operational reports issued by the concessionaire), assessing the concessionaire's operational routine;

(ii) in case in such inspections ANP notices any violation to the operational safety rules, an infraction notice is issued, indicating the non-conforming behaviors and the corresponding violated rules;

(iii) after the end of the infraction notice administrative proceeding (which must be performed observing the principles of the due legal process and right of defense by the concessionaire), the ANP ultimately decides if/which penalties are applicable to the case, notifying the Concessionaire to pay the relevant penalty amount or to remedy the default.

Each violation by a concessionaire (as specified in the ANP's operational safety rules) may be seen as an independent event of infraction, in which case the ANP is authorized by Federal Law No. 9,847 of 1999 to impose separate penalties for each such event, with the value of each penalty potentially ranging from R$5,000 to R$5,000,000 (article 3 and its sub items of said law), regardless of the actual loss/damage being caused.

Should the relevant concessionaire fail to pay the penalties or to remedy the violation, and in the case a performance guarantee is in place, the ANP may call upon the guarantee and directly claim the guarantor to pay/remedy the infraction.

CNPE

The Petroleum Law created CNPE as an advisory body for the Presidency of the Republic, chaired by the Minister of Mines and Energy, to formulate energy policy and guidelines.

CNPE's internal regulations allow the participation, without voting rights and according to the agenda, of the ANP's Director General, Petrobras' chief executive, the president of the National Economic Development Bank (*Banco Nacional do Desenvolvimento Social*, or BNDES) and other authorities related to the Brazilian energy sector.

The Petroleum Law, as amended by the Production Sharing Law, established that CNPE must propose to the President of Brazil national policies and specific measures aimed to:

- promote the rational use of energy resources in the country;
- define the blocks to be subjected to concession or production sharing;
- define the strategy and policy of technological and economic development of the oil industry, natural gas, other fluid hydrocarbons and biofuels, as well as its supply chain; and
- cause an increase in the minimum levels of local content of goods and services, to be followed in biddings and concession and production sharing agreements.

Since its creation in 1997 through 2003, CNPE's interference in upstream activities, especially in the bidding rounds, was not very significant. From the 15th Bidding Round, held in 2003, CNPE began authorizing studies to define the blocks to be offered in the bidding rounds, and began to carry out these auctions, approving the blocks to be offered.

The new regulatory framework further intensified the participation of CNPE in exploration and production activities, especially for production sharing bidding rounds. Moreover, the Production Sharing Law states that the CNPE must propose to the President of the Republic the cases in which Petrobras will be contracted directly by the government for carrying out E&P activities, considering the national interest and other objectives of the energy policy, whilst also proposing the contracting parameters.

The CNPE is also responsible for selecting blocks to be offered under the production sharing regime, offering Petrobras the preference of operatorship. Upon receiving Petrobras' response, the CNPE then presents the blocks that might be operated by Petrobras to the Brazilian President, indicating the minimum interest the state-owned company will hold in the block, which cannot be less than 30%.

It should also be noted that, through Resolution 3/2020, CNPE guarantees ANP the competence to define and bid blocks in any land or sea basins, as well as the possibility to bid, in the Permanent Offering system, fields returned or in return process. However, the new competence of ANP does not include (i) fields or blocks located in the pre-salt area; (ii) fields or blocks that fit the definition of "strategic areas" conferred by article 2 of the Law on Sharing; (iii) blocks located on the Continental Platform beyond 200 nautical miles; (iv) blocks authorized to compose the 17th Bidding Round; and (v) sectors indicated for the 18th Bidding Round. The definition of these non-encompassed areas, in turn, will remain with CNPE.

MME

The MME was created in 1960, then abolished in 1990 when its functions were transferred to the Ministry of Infrastructure, and then again recreated in 1992. The Petroleum Law, published under a more liberal administration, limited the role of the MME on E&P activities to carrying out studies and sectoral planning with the Brazilian sedimentary basins technical data bank, maintained by the ANP.

Drafted by a more interventionist government, the Production Sharing Law significantly expanded the MME's competencies, giving it an important role in planning the production sharing bidding rounds:

"*Art 10. The Ministry of Mines and Energy shall, among other responsibilities:*

(I) plan the exploitation of oil and natural gas;

(II) suggest to the CNPE, once the ANP has been heard, the definition of blocks that will be subject to concession or production sharing agreements;

(III) suggest to the CNPE the following technical and economic parameters of production sharing agreements:

(a) criteria for the definition of the Federal Government's profit oil;

(b) the minimum percentage of the Federal Government's profit oil;

(c) the minimum participation of Petrobras in the consortium stated under art. 4º (redacted by the Law nº 13.365/2016)

(d) the limits, deadlines, criteria, and conditions for the calculation and appropriation by the contractor of the oil cost and the production volume corresponding to the royalties owed;

(e) the minimum local content and other criteria related to the development of national industry, and

(f) the amount of the signature bonus, and the part to be allocated to a public company, stated in x1 of art. 8;

(IV) establish guidelines to be observed by ANP to promote the bid under item II of the article. 8, as well as the preparation of tender protocol drafts and production sharing agreements, and

(V) *approve the tender protocol drafts for the bidding and for the production sharing agreements developed by ANP."*

In addition, the Production Sharing Law also assigns the following functions to the MME:

- to promote, prior to contracting, the evaluation of the potential of pre-salt and strategic areas, directly or through the ANP;
- to sign production sharing contracts;
- to authorize the transfer of rights and obligations related to the Production Sharing Agreements;
- to establish the technical, financial and legal requirements that the transferee must meet.

Regulatory contractual models

Concession contracts model

- This model is usually applied in case of high or medium exploration risk;
- The concessionaire takes on all risks and investments in exploration and production;
- In the bidding process, the ANP decides the winner after evaluation of the following criteria: (a) signing bonus; (b) local content percentage; and (c) minimum exploratory program;
- In case of commercial discovery, the concessionaire shall pay the Federal Union taxes levied on income, plus the applicable government take (royalties, special participation and payment for area occupation or retention - as well as a share of production to landowners, in case of onshore areas);
- After payment of taxes and government takes are performed, hydrocarbons produced become exclusive property of the concessionaire, to use or sell at its discretion;
- The concession model encompasses all sedimentary basins in Brazil, with the exception of the Pre-Salt and other strategic areas (as defined by the National Council of Energetic Policy). Pre-Salt areas put up for bidding prior to the Brazilian *Lei da Partilha* are also regulated by the concession model.

Production sharing contracts model

- This model is typically used in case of low exploratory risk;
- The oil company (contractor) undertakes the exploration and production activities at its own expense and risk;
- In production sharing bidding processes, the ANP evaluates (i) the signing bonus and (ii) percentage of excess oil (called profit oil, since the relevant costs are converted into equivalent oil price and discounted) to decide the winning proposals;
- Commercial discoveries provide to the relevant company or consortium compensation for their exploration costs in form of production volumes (oil cost), as well as production volumes equivalent

to the amount of government take due and profit oil. The government take is transferred to the Brazilian Federal Government, which distributes it to states and municipalities;

- The Brazilian Federal Government's interests arising from the production sharing regime are represented by the state-owned company Pré-sal Petróleo S.A. - PPSA, which is a party to such contracts;
- This model is adopted for hydrocarbon E&P activities in Pre-Salt areas that were not granted under the concession model before the Brazilian Law No. 12,351/10, as well as for strategic areas;
- In such cases, Petrobras has the right of preference to be the operator of the blocks, before they are offered in the rounds of bidding promoted by the ANP.

Onerous Transfer of rights contract

- The Brazilian Federal Government granted Petrobras the right to undertake, through direct contracting, E&P activities in Pre-Salt areas that were not under the concession model;
- Petrobras has exclusivity over such areas until the areas' aggregate production reaches 5 billion barrels of oil and gas. After such milestone, Petrobras will have to decide which areas to keep, relinquishing the remaining areas to the ANP – which will offer the relevant E&P rights in bidding processes;
- In these areas, Petrobras bear all costs and take-on all production risks;
- The criteria used to determine the values for production done under the onerous transfer of rights system were set via negotiations between the Brazilian Federal Government and Petrobras based on technical reports issued by international certification entities.

Natural Gas Regulation

The recently enacted Law No. 14,134/2021, which revoked the Law No. 11,090/2009, or the "New Gas Law" regulates the transportation, treatment, processing, storage, liquefaction, regasification, commercialization, import and export of natural gas.

The Brazilian natural gas market is also regulated by the ANP, from exploration and production sites to city-gates. From city-gates, state regulatory agencies are responsible for the regulation of the distribution of such products to final consumers. Both state-owned and private companies, either national or international, are able to participate in all stages of the gas value chain.

The Brazilian Federal Constitution allows Brazilian states to exploit piped gas either directly or through concessions, as such activities are regulated by state authorities.

It should be noted that the Brazilian natural gas market is undergoing wide alterations aimed at deverticalizing Petrobras' position in the natural gas chain. In 2019, the Federal Government launched the New Gas Market initiative (*Novo Mercado do Gás*) with the purpose to develop the natural gas industry and to incentivize the use of natural gas. This initiative led the Congress to enact Law 14,134/2021 and, among other changes, ensure free access to third parties to essential facilities, alter the regime for construction and operation of gas pipelines (that is, change from the concession regime to the authorization model) and restrict self-dealing and related parties transactions.

MANAGEMENT

According to its bylaws, PetroRio is managed by a board of directors (Conselho de Administração) and by executive officers (Diretoria). The members of PetroRio's board of directors and executive officers are subject to the rules set forth in Brazilian Corporate Law, Brazilian Securities Laws and the Novo Mercado regulations.

Board of Directors

PetroRio's board of directors is the decision-making body responsible for determining general guidelines and policies for our business, including our long-term strategies, as well as the control and oversight of our performance. The board of directors is also responsible for, among other things, appointing and supervising our executive officers.

Pursuant to PetroRio's bylaws, its board of directors must be composed of a minimum of five and a maximum of eleven members. The directors are elected at the annual shareholders' meeting of PetroRio, for a unified, two-year term of office. The members of the board of directors can be re-elected and removed at any time by its shareholders in a shareholders' meeting. Due to PetroRio's listing under the *Novo Mercado* listing segment of the B3, a minimum of 20% of the members of its board of directors are required to be independent, though currently a majority (four out of seven) of its members is independent. Prior to taking office, the directors are required to sign the administrators' instrument of consent (*Termo de Anuência dos Administradores*), as established in the *Novo Mercado* listing segment regulation. In addition, under Brazilian Corporate Law, the members of the board of directors are prohibited from acting in any transaction or business in which their interests conflict with our own.

Ordinary meetings of PetroRio's board of directors are held on a quarterly basis, while extraordinary meetings are held whenever called by its chairman.

Currently, the board of directors of PetroRio consists of seven members, four of whom are independent members. The following table sets forth the name, position, age, date of election and term expiration of each of the current members of PetroRio's board of directors:

Name	Position	Age	Date of Election	Expiration of Term[(2)]
Nelson de Queiroz Sequeiros Tanure	Chairman	35	March 1, 2019	2022
Emiliano Fernandes Lourenço Gomes	Vice-Chairman	45	November 13, 2019	2022
Felipe Bueno da Silva[(1)]	Director	45	April 20, 2020	2022
Felipe Villela Dias[(1)]	Director	39	April 20, 2020	2022
Gustavo Rocha Gattass[(1)]	Director	45	April 20, 2020	2022
Marcia Raquel Cordeiro de Azevedo[(1)]	Director	46	April 20, 2020	2022
Roberto Bernardes Monteiro	Director	46	October 1, 2019	2022

(1) Independent Directors in accordance with *Novo Mercado* rules.

(2) The term of the mandates of the elected directors shall terminate on the date of the annual general shareholders' meeting in charge of evaluating PetroRio's audited consolidated financial statements for the year ended December 31, 2021.

Set forth below are brief biographies of the current members of PetroRio's board of directors.

Nelson de Queiroz Sequeiros Tanure. Mr. Tanure is the chairman of the board of directors and has played an active role in PetroRio's management since 2014, when he led the strategic review that culminated in the successful turnaround and launch of PetroRio, Brazil's largest independent oil company. He has extensive experience in several turnaround cases in industries such as oil and gas and infrastructure. Mr. Tanure studied economics at Boston College and *Instituto Brasileiro de Mercado de Capitais – IBMEC*.

Emiliano Fernandes Lourenço Gomes. Mr. Gomes is the vice chairman of the board of directors and head of PetroRio's Legal, Regulatory and Administrative department. A lawyer by training, he joined the Group in 2015 and was an integral part of the turnaround process. Previously, he has worked at Vesper, Docas Investimentos, Globo.com, and Intelig, where he was the Chief Legal and Regulatory Officer. He studied law at Pontifical Catholic University of Rio de Janeiro (PUC Rio), has a post-graduate degree in business law from IBMEC Rio de Janeiro and in corporate law and capital markets from FGV Rio de Janeiro.

Felipe Bueno da Silva. Mr. Bueno has been an independent member of PetroRio's board of directors since April 2020. He was an associate of Banco Votorantim for 11 years, where he worked in the corporate sphere, specifically in structured credit, equity, capital market and derivative operations. For the past five years, he has been managing partner and executive of BX Capital, a financial advisory and investment management firm focused on stressed credit operations, mergers and acquisitions, and fund structuring, among others. Mr. Bueno has also worked with prominent mergers and acquisitions as well as debt restructurings, including those of Oi Telefonia, ZPMC Holdings and BTG Pactual. He is an active investor in local and international markets. Mr. Bueno holds a bachelor's degree in economics from PUC-Rio.

Felipe Villela Dias. Mr. Dias has been an independent member of PetroRio's board of directors since April 2020. He is a partner at Visagio, working as a specialist in finance and investments. He was a board member at Smiles Fidelidade S.A., and a partner at Squadra Investimentos for ten years, specializing in civil construction, logistics, aviation and loyalty programs areas. During his tenure at Squadra, he also held the position of Chief Financial and Investor Relations Officer at Brasil Brokers Participações S.A. for one year. He is an independent member of the board of directors of Grupo Technos S.A., Santos Brasil Participações S.A., and Centrais Elétricas Brasileiras S.A. – ELETROBRAS. Mr. Dias holds a degree in production engineering from the Federal University of Rio de Janeiro – UFRJ, with a specialization in logistics from Coppead.

Gustavo Rocha Gattass. Mr. Gattass has been an independent member of PetroRio's board of directors since April 2020. As a partner at BTG Pactual, Mr. Gattass was responsible for the equity research team. Previously he was an analyst covering the oil and gas sector in Latin America at BTG Pactual from 2009 to May 2015, and at UBS Pactual from 2006 to 2009. He also worked as an analyst covering the electricity and sanitation sectors for UBS from 2000 to 2006), and as an assistant analyst of these sectors for UBS and ICATU banks from 1996 to 2000. Mr. Gattass is a member of the board of directors of Companhia de Saneamento de Minas Gerais (Copasa-MG), Omega Geração SA, and has worked at BTG Pactual, UBS Pactual, UBS and ICATU. Mr. Gattass has received several accolades over the course of his career, including being recognized as one of the top three analysts in the sectors covered both in Latin America and in Brazil on several occasions during the last 10 years by Institutional Investor magazine. Mr. Gattass holds a bachelor's degree in economics from PUC-Rio.

Marcia Raquel Cordeiro de Azevedo. Ms. Azevedo has been an independent member of PetroRio's board of directors since April 2020. Ms. Azevedo is a partner at Falconi Consultores de Resultado. She has more than 20 years of experience as a management consultant in projects in several industries, including oil and gas, chemical and petrochemical, civil construction, education, entertainment, transportation, third sector, hospitals, telecommunications, dairy and state and municipal governments. Ms. Azevedo teaches Process Management, Routine Management and Results Management courses at Falconi Consultores de Resultado. She has a business degree from the Federal University of Minas Gerais, with a specialization in organizations and human resources management, and a master's in business administration ("MBA") in finance from the Federal University of Rio de Janeiro.

Roberto Bernardes Monteiro. Mr. Monteiro joined PetroRio in 2014, playing a central role in the Group's strategic renewal, and has previously held the position of Chief Operations Officer at PetroRio. He is currently the Chief Executive Officer, the Investor Relations Officer and New Business Director of PetroRio. Previously, he was the Chief Financial Officer and the Investor Relations Officer at OGX Petróleo e Gás, and the Chief Financial Officer and the Investor Relations Officer for OSX Brasil S.A., in the shipping and offshore business. Mr. Monteiro held various previous positions at America Latina Logística – ALL, including the Operations Officer and the Executive Officer for ALL Argentina. Mr. Monteiro holds a degree in civil engineering from

the *Universidade de São Paulo* (USP – *São Carlos*), and an MBA from Carnegie Mellon University – Tepper School.

Advisory Committees to the Board of Directors of PetroRio

PetroRio's bylaws provide for the creation of technical and consulting committees to assist the board of directors. These committees may comprise members of the board of directors, executive officers or external service providers. The board of directors of PetroRio has the discretion to create committees, determine their responsibilities and objectives, and elect their members. We currently have the following committee:

Ethics & Compliance Committee

PetroRio's ethics and compliance committee was created on August 13, 2019 and is a technical advisory committee responsible for advising PetroRio's board of directors in connection with compliance matters. The ethics and compliance committee is responsible for, *inter alia*, (i) monitoring the activities included in the compliance program, (ii) acting as an advisory body with respect to ethical issues, (iii) evaluating the effectiveness and sufficiency of PetroRio's internal control structure and processes, proposing improvements to the policies, practices and procedures employed and/or the adoption of complementary initiative, (iv) evaluating reports of alleged nonconformities, and immediately reporting to the board of directors any situation with a potential high risk of damage (either to the physical integrity or life of individuals, or to our reputation and image), (v) establishing proceedings to investigate facts related to non-compliance with relevant laws and internal rules, and (vi) hiring, when necessary to determine potential nonconformities, external consultancy specialized in corporate investigations, and monitoring and evaluating their work.

PetroRio's ethics and compliance committee is required to have four members, all of whom are appointed by PetroRio's board of directors to two-year terms.

Executive Officers

PetroRio's executive officers are responsible for the day-to-day management of PetroRio's business and for implementing the general policies and directives established by PetroRio's board of directors. Pursuant to Brazilian Corporate Law, each executive officer must be a resident of Brazil, but they do not need to be a shareholder of PetroRio. Members of our board of directors may also serve as executive officers.

Under PetroRio's bylaws, we are required to have at least three and up to seven executive officers, each of whom must be a Brazilian resident, that fulfil the following roles: Chief Executive Officer, Chief Financial Officer and Investor Relations Officer. The remaining four officers shall have the title and powers ascribed to them by the Chief Executive Officer and subsequently confirmed by the Board of Directors. PetroRio's executive officers are appointed by its board of directors to two-year terms and are eligible for re-election. Currently, PetroRio has two executive officers. The following table sets forth certain information regarding PetroRio's executive officers:

Name	Position	Age	Date of Appointment	Expiration of Term[(2)]
Roberto Bernardes Monteiro	Chief Executive Officer and Investor Relations Officer	46	February 26, 2021	February 25, 2023
Milton Salgado Rangel Neto	Chief Financial Officer	37	April 9, 2021	February 25, 2023
Francisco Francilmar Fernandes	Chief Operations Officer	40	February 26, 2021	February 25, 2023

The following is a summary of the business experience of our current executive officers who are not members of the board of directors:

Milton Salgado Rangel Neto. Mr Rangel Neto has been at PetroRio since 2015 and actively participating in its turnaround. Prior to being appointed Chief Financial Officer, Mr. Rangel Neto held several positions at PetroRio including Treasury Manager, Head of Investor Relations and Head of Finance. Prior to joining PetroRio, Mr. Rangel Neto held positions at Schahin Petróleo and OSX Brasil. Further, Mr. Rangel Neto was involved in the restructuring of OGX Petroleo e Gas as FP&A and Corporate Finance Manager. Mr. Rangel Neto has also held positions at Brookfield Brasil, equity research at Banco Brascan and at McKinsey & Company and Ernst & Young. Mr Milton holds a degree in Economics from Ibmec/RJ and he is a candidate to Level III of Chartered Financial Analyst by CFA Institute.

Francisco Francilmar Fernandes. Prior to his appointment as PetroRio's Chief Operations Officer, Mr. Fernandes held several positions at PetroRio, including well engineer, drilling manager and operations manager. He has more than 16 years' experience in the oil and gas industry and has actively participated in our turnaround and strategic refresh since 2014. He was also responsible for the successful execution of the first two phases of the Polvo Field Redevelopment Plan, including the 2016 workover and the 2018 Polvo Field Drilling Campaign. Previously, Mr. Fernandes held the position of Rig Manager at Perbras – Empresa Brasileira de Perfuração. He holds a degree in mechanical engineering from UFPB and has also studied business administration at UFPB. He also has specialization in petroleum engineering from UNP and an MBA in Project Management from FGV.

Fiscal Council

Pursuant to Brazilian Corporate Law, the fiscal council (*Conselho Fiscal)* is a corporate body that is independent of our board of directors, executive officers and external auditors and which is responsible for overseeing our management, analyzing our financial statements and reporting its findings to the shareholders. The fiscal council is not the equivalent of an audit committee as contemplated by U.S. federal securities laws.

PetroRio's fiscal council consists of three members, with an equal number of alternates, each of whom is elected to a term of one year by shareholders at shareholders' meetings. Members of the fiscal council may be reelected. Only residents of Brazil who do not have any relationship or connection with any of PetroRio's competitors (either (i) as a shareholder, member of management, employee; or (ii) through marriage to, or status as a second degree relative of, a member of management or shareholder) may be elected.

Pursuant to the rules of the *Novo Mercado* listing segment, the members of PetroRio's fiscal council are required to agree to comply with the *Novo Mercado* regulations and the rules of the B3 Arbitration Chamber before taking office. Under Brazilian Corporate Law, when a fiscal council is not permanent, it must be established at a shareholders' meeting upon the request of shareholders who, in the aggregate, hold at least 10% of the voting shares, and its members must remain in office until the annual shareholders' meeting of the year following their election. In addition, minority shareholders who represent at least 10% of our issued common shares have the right to separately elect a member of the fiscal council and his/her respective alternate.

Under Brazilian Corporate Law, each member of the fiscal council is entitled to receive compensation equal to at least 10% of the average salary paid to our executive officers, excluding fringe benefits, bonuses and income sharing arrangements.

The following table sets forth the name, position, age and date of initial appointment of each member and alternate member of the fiscal council:

Name	Position	Age	Date of Initial Appointment	Expiration of Term[(1)]
Elias de Matos Brito	Member	55	April 27, 2018	2022
Gilberto Braga	Member	60	April 27, 2018	2022
Marco Antônio Peixoto Simões Velozo	Member	53	April 20, 2020	2022
Anderson Mascouto Peixoto	Alternate	51	April 20, 2018	2022
Cíciero Ivan do Vale	Alternate	59	April 20, 2020	2022

Name	Position	Age	Date of Initial Appointment	Expiration of Term[(1)]
Ronaldo dos Santos Machado	Alternate	44	April 20, 2020	2022

(1) The term of the mandates of our elected members of the fiscal council shall terminate on the date of our annual general shareholders' meeting in charge of evaluating our audited consolidated financial statements for the year ended December 31, 2020.

The following is a brief biographical description of the members and alternate members of PetroRio's fiscal council.

Elias de Matos Brito. Mr. Brito has been a member of our fiscal council since April 2014. He is a court-appointed Surveyor Accountant of the Court of Rio de Janeiro, working in various civil courts and chambers and corporation courts, and a court-appointed surveyor of the Regional Electoral Court of Rio de Janeiro. He is also an expert of the arbitration court of CIESP and FIESP. Mr. Brito is a member of the fiscal council of Profarma Distribuidora de Produtos Farmacêuticos S/A, and was a member of the fiscal council of the Jornal O DIA, and the liquidator of Banco do Estado do Rio de Janeiro (currently known as BERJ). Mr. Brito is professor of finance of graduate courses at Fundação Getúlio Vargas and IBMEC, and is the Vice President of the Association of Court-Appointed Surveyors of the State of Rio de Janeiro. He holds a degree in accounting from Faculdade de Ciências Contábeis e Administrativas Morais Junior, and is a business consultant in financial, capital markets, corporate, and tax areas.

Gilberto Braga. Mr. Braga has been a member of our fiscal council since April 2014. He is a court-appointed surveyor of the Regional Electoral Court of Rio de Janeiro, and is a business consultant and expert of the arbitration court of CIESP and FIESP. Mr. Braga is also a member of the fiscal council of Santos Brasil and Profarma Distribuidora de Produtos Farmacêuticos S/A. He has a column at *O Dia* Newspaper and *O Globo* Newspaper (digital edition), and has been a TV guest for GloboTV network and Globo News. Mr. Braga is a professor of controlling and accounting at IBMEC, UFRJ, UCAM, FGV, PUC, Dom Cabral and others. He holds a bachelor's degree in economics from *Universidade Cândido Mendes Ipanema (UCAM Ipanema)*, a post-graduate degree in accounting from *Universidade Gama Filho (UGF)* and holds an MBA in finance and capital markets from IBMEC-Rio.

Marco Antônio Peixoto Simões Velozo. Mr. Velozo has been a member of our fiscal council since April 2020. He has been working in the consulting and auditing industries since 1989, in addition to teaching management accounting and balance sheet analysis at Fundação Getúlio Vargas – FGV. Mr. Velozo is currently a partner at Vértice Auditoria, responsible for audits under the guidelines of the *Comitê de Pronunciamentos Contábeis – CPC*, the *Conselho Federal de Contabilidade – CFC* and the *Instituto dos Auditores Independentes do Brasil – IBRACON*. Previously, Mr. Velozo was an audit manager at Arthur Andersen until 1996, when he left the company to create Vértice Auditoria. He holds a degree in economics and accounting sciences and an MBA in corporate finance from IBMEC.

Anderson Mascouto Peixoto. Mr. Peixoto has been an alternate member of our fiscal council since April 2021. Mr. Anderson holds a bachelor's degree in Accounting from the *Universidade Estadual do Rio de Janeiro* and a postgraduate degree in financial management from *Fundação Getúlio Vargas - FGV*. He has been a partner at Vértice Auditoria since 1999, acting in the role of coordinator for key activities of the company, such as audit and management methodologies. Previously, he was the control manager at Brazil Fast Food Corp., where he is currently a member of the Compliance Committee. Mr. Peixoto also worked for seven years at Arthur Andersen as an audit assistant and audit manager.

Cícero Ivan do Vale Mr. Vale has been an alternate member of our fiscal council since April 2021. He holds a bachelor's degree in Accounting from *Faculdade Moraes Júnior* (Brazilian Institute of Accounting), a postgraduate degree in Accounting from *Faculdade Getúlio Vargas - FGV* and an Executive MBA in corporate finance from the Brazilian Institute of Capital Markets - IBMEC. He is currently an accounting expert at the Federal Justice of Rio de Janeiro and a partner at Vale Consultoria Empresarial Ltda., where he consults on accounting and tax matters. He has worked as a consultant for market recognized companies. Mr. Vale has experience as a manager in the fields of planning and control, financial accounting, administration, and has

worked as an accounting coordinator and auditor. In addition, he was a professor at Faculdade Cândido Mendes, where he taught accounting courses for three years.

Ronaldo dos Santos Machado. Mr. Machado has been an alternate member of our fiscal council since April 2014. He is currently a partner at Exato Assessoria Contábil Ltda., an accounting, auditing, economic, financial and business consultancy firm. Mr. Machado has more than 13 years of experience in the Lundgren Group – Casas Pernambucanas, in which he has held the positions of Financial Analyst, Planning Assistant, Promotion and Advertising Manager and Treasury Manager. He holds a bachelor's degree in accounting from *Faculdade de Ciências Contábeis e Administrativas Morais Júnior (Instituto Brasileiro de Contabilidade)*, Rio de Janeiro and an MBA in accounting and auditing from *Universidade Federal Fluminense – UFF*.

Audit Committee

The following table sets forth the name, position, age and date of initial appointment of each member of the Audit Committee:

Name	Position	Age	Date of Initial Appointment	Expiration of Term
Felipe Villela Dias	Member	39	February 26, 2021	2023
Felipe Bueno da Silva	Member	45	February 26, 2021	2023
Anderson dos Santos Amorim	Member	44	February 26, 2021	2023

The following is a brief biographical description of the members of PetroRio's Audit Committee.

Felipe Villela Dias see "—Board of Directors."

Felipe Bueno da Silva see "—Board of Directors."

Anderson dos Santos Amorim see "—Fiscal Council."

Ownership of Shares

The table below sets forth the number of shares issued by PetroRio and held directly or indirectly by PetroRio management as of March 31, 2021:

	Common Shares	Percentage of outstanding shares
Board of Directors[(1)]	6,193,588	3.53%
Executive Officers	262,107	0.15%
Fiscal Council	0	0.00%

(1) The shares held by members of the board of directors who are also executive officers are included under the shares listed under board of directors.

Compensation

Pursuant to Brazilian Corporate Law, PetroRio's shareholders are responsible for establishing, at a shareholders' meeting, on an annual basis, the total amount of compensation of the members of PetroRio's management. The board of directors is responsible for deciding how to allocate the amount agreed upon between its members and the executive officers.

In the year ended December 31, 2020, management's aggregate compensation totaled R$18.5 million, including social charges and benefits. At PetroRio's general shareholders' meeting held on April 20, 2020, PetroRio's shareholders approved an aggregate compensation for the members of our management of up to R$20.1 million, including benefits and social charges for the year ended 2020. At our general shareholders'

meeting held on April 18, 2019, our shareholders approved an aggregate compensation for the members of our management of up to R$19.9 million, including benefits and social charges for the year ended 2019.

The table below sets forth the aggregate compensation that our management received in the year ended December 31, 2020:

	Fixed	Variable	Total
Board of Directors	1,458,000	0	1,458,000
Executive Officers[(1)]	1,544,400	15,066,000	16,610,400
Fiscal Council	432,000	0	432,000
Total	3,434,400	15,066,000	18,500,400

(1) Fixed amount does not include share-based compensation awarded pursuant to the Plan.

In addition to receiving a fixed salary, the executive officers of PetroRio participate in a profit-sharing program based on the achievement of certain annual corporate goals. In addition to such variable compensation, PetroRio offers to its key personnel stock options, described below.

Stock Option Plan

On December 22, 2017, PetroRio's shareholders approved a stock option plan, as amended on April 20, 2020 (the "Plan"), which established the framework terms governing the award of stock options by the board of directors to key employees of PetroRio. Pursuant to the terms of the Plan, the total number of stock options granted under the Plan may not exceed 9% of our capital stock.

The Plan allows the board of directors to establish specific programs for the award of stock options, which confer to grantees under a given program the right to acquire a specified number of common shares of PetroRio at a specified exercise price and/or subject to certain to the achievement of certain performance conditions or other vesting terms.

As of the date of this Offering Memorandum, stock options representing a maximum of 1.4% of our common shares have been granted to our executive officers and key employees under programs established by the board of directors pursuant to the Plan.

Program	Number of options granted	Grant date	Last vesting date	Expiration date
First	329,557	01/25/2018	01/01/2021[(1)]	04/01/2021
Second	12,169	02/28/2018	01/01/2020[(2)]	04/01/2020
Third	33,481	11/05/2018	01/01/2020[(3)]	04/01/2020
Fourth	152,744	11/05/2018	01/01/2022[(4)]	04/01/2022
Fifth	24,665	02/28/2019	01/01/2021[(5)]	04/01/2021
Sixth	105,790	02/28/2019	01/01/2021[(6)]	04/01/2021
Seventh	79,026	02/28/2019	01/01/2023[(7)]	04/01/2023
Eighth	524,870	03/20/2020	01/01/2022[(8)]	04/01/2022
Ninth	1,003,896	03/20/2020	01/01/2024[(9)]	04/01/2024
Tenth	280,340	04/30/2020	01/01/2023[(10)]	04/01/2023
Eleventh	649,340	04/30/2021	01/01/2025[(11)]	04/01/2025

(1) Other vesting dates: (i) January 3, 2018, (ii) January 1, 2019 and (iii) January 1, 2020.

(2) Other vesting date: January 1, 2019.

(3) Other vesting date: January 1, 2019.

(4) Other vesting dates: (i) January 1, 2019, (ii) January 1, 2020 and (iii) January 1, 2021.
(5) Other vesting date: January 1, 2020.
(6) Other vesting date: January 1, 2020.
(7) Other vesting dates: (i) January 1, 2020, (ii) January 1, 2021 and (iii) January 1, 2022.
(8) Other vesting date: January 1, 2021.
(9) Other vesting dates: (i) January 1, 2021, (ii) January 1, 2022 and (iii) January 1, 2023.
(10) Other vesting date: January 1, 2022.
(11) Other vesting date: (i) January 1, 2022, (ii) January 1, 2023 and (iii) January 1, 2024.

Under terms of the Plan, if a beneficiary decides to terminate his or her employment with us, if the beneficiary is dismissed (with or without cause), or in case of retirement, disability or death, all unvested options will be automatically terminated.

PRINCIPAL SHAREHOLDERS

The table below sets forth certain information relating to holders of 5% or more of our common shares as of the date of this Offering Memorandum.

Shareholder	Common Shares	Percentage of Common Shares
Aventti Strategic Partners LLP [(1)]	167,937,200	19.12%
Truxt Investimentos Ltda.	96,781,165	11.02%
Treasury Shares	39,171,715	4.46%
Others	574,440,765	65.40%
Total	**878,330,845**	**100.00**

Sources: Company

(1) Mr. Nelson Sequeiros Rodriguez Tanure has decisive influence over Aventti Strategic Partners LLP.

RELATED PARTY TRANSACTIONS

We adopt corporate governance practices as recommended and/or required by law, including those provided under CVM regulations and the *Novo Mercado* listing rules.

Brazilian Corporate Law prohibits members of the board of directors and company management from: (i) carrying out any acts detrimental to the company; (ii) taking loans from the company or leasing its assets for the benefit of companies in which they hold interest without the prior consent of the company's shareholders or board of directors; (iii) receiving any type of direct or indirect personal advantage or gain from third parties, unless authorized pursuant to the company's bylaws or its shareholders; and (iv) participating in any operation or business in which there is a conflict of interest with company, or in any resolutions taken by the board of directors.

The Brazilian Corporate Law also provides that any person who has a conflict of interest with the company may only be elected to the board if such election is waived at our general shareholder's meeting. Board members are prohibited from intervening in any corporate transaction in which they have a conflict of interest with the company, and are required to inform us of the nature and extent of their interest in the minutes of the relevant board of directors or board of executive officers meeting. Nevertheless, any such board member is permitted to enter into agreements with us on arms-length terms equivalent to those we enter into with third parties under ordinary market conditions. Board members who are also our shareholders may not vote in the resolutions at the general shareholder's meeting concerning the appraisal report of assets that contribute to the formation our capital stock, nor deliberate on the approval of their accounts as board members nor any other measure that may benefit them in their individual capacity or otherwise involve a conflict of interest with us. Any decision made as a result of a vote in which a shareholder has a conflicting interest with us is voidable, and the shareholder may be held liable for damages caused and is required to transfer to us any benefits accrued as a result.

According to our general related party transactions policy, the board of directors must approve any transaction or group of transactions involving us and any direct or indirect related parties, irrespective of the value of such transaction or group of transactions, except for capital increases in our subsidiaries or controlling companies, which can be carried out without our board of directors' approval. Our bylaws define a "related party" as any member of management or employee of PetroRio, subsidiaries or affiliates of PetroRio, or any shareholder that holds, directly or indirectly, more than a 5% interest in PetroRio's share capital. If applicable law requires that our shareholders approve a certain related party transaction, it shall be subject to review and approval by the board of directors prior to being submitted for the shareholders' approval.

In the ordinary course of our business, we enter into related party transactions on an arm's length basis, Transactions between Group entities do not have an impact on the Consolidated Financial Statements, given that they are eliminated in consolidation. We present below an overview of our related party transactions. For further information on related party transactions, see note 22 to the PetroRio Unaudited Individual and Consolidated Interim Financial Information and note 22 to the 2020 Audited Consolidated Financial Statements.

Shared Services

In the ordinary course of business, entities within the Group enter into shared service agreements on an arm's length basis, in particular whereby PetroRio O&G and PetroRio S.A. provide certain services to Group entities, including PetroRio Jaguar, PetroRio White Shark and PetroRio Coral Exploração Petrolífera Ltda. These agreements relate to the provision of services relating to legal, marketing, accounting and treasury functions, as well as the lease of office space and equipment and back-office services (such as payroll and accounting).

Loans with Related Parties

In the ordinary course of business, entities within the Group enter into loan agreements on an arm's length basis and backed by independent third-party studies on transfer pricing. There are currently intra-Group loan agreements, primarily for the purpose of providing working capital to the relevant entities.

DESCRIPTION OF NOTES

In this Description of Notes, "Issuer" refers only to Petrorio Luxembourg S.à r.l., an indirect wholly-owned subsidiary of Petro Rio S.A. (the "Company"), and any successor obligor on the Notes, and not to any of its subsidiaries. You can find the definitions of certain terms used in this description under "—Certain definitions."

The Notes will be issued under an Indenture (the "Indenture") to be dated as of June 9, 2021 among the Issuer, the Company and other direct and indirect subsidiaries of the Company as described below as guarantors (together with the Company, the "Initial Guarantors"), The Bank of New York Mellon, in its capacity as trustee, registrar, transfer agent, paying agent (in such capacity, the "Trustee") and collateral agent in Luxembourg (in such capacity, the "Luxembourg Collateral Agent"), TMF Brasil Administração e Gestão de Ativos Ltda. ("TMF Brasil") in its capacity as collateral agent in Brazil (in such capacity, the "Brazilian Collateral Agent") and TMF Group New York, LLC in its capacity as collateral agent in the Bahamas (in such capacity, the "Bahamian Collateral Agent,") and together with the Luxembourg Collateral Agent and the Brazilian Collateral Agent, the "Collateral Agents," and each a Collateral Agent. The terms of the Notes include those stated in the Indenture.

The proceeds of the offering of the Notes sold on the Issue Date will be used to prepay all amounts outstanding under the Existing Indebtedness and release of all security interests on the collateral existing thereon, together with any other fees, costs and expenses payable in connection therewith, as set forth in this Offering Memorandum under the caption "Use of Proceeds."

The following is a summary of the material provisions of the Indenture, the Notes Guaranties contained therein and the various Collateral Agreements (as defined herein). Because this is a summary, it may not contain all the information that is important to you. You should read the Indenture, the Notes Guaranties and the Collateral Agreements in their entirety. Copies of the proposed form of the Indenture are available as described under "Available information" in this offering memorandum.

Basic Terms of Notes

The Notes will:

- be senior obligations of the Issuer, secured by a first lien on the Collateral, as provided herein described under "—Collateral;"
- rank effectively senior to all unsecured Debt of the Issuer to the extent of the value of the Collateral;
- any outstanding amounts due after the foreclosure of the Collateral will rank equally in right of payment with all senior existing and future obligations of the Issuer;
- rank senior in right of payment to all existing and future subordinated indebtedness of the Issuer;
- be guaranteed by the Initial Guarantors as described under "—Notes Guaranties;"
- rank effectively junior to any future secured obligations of the Company, the other Initial Guarantors and any of their subsidiaries with a security interest on assets not constituting Collateral, in each case, to the extent of the value of the collateral securing such obligations;
- be structurally subordinated to any existing or future Debt or other obligations of any subsidiary of the Company that is not Issuer or does not guarantee the Notes,
- be issued in an original aggregate principal amount of U.S.$600.0 million;
- mature on June 9, 2026, unless earlier redeemed in accordance with the terms of the Notes (see "—*Optional Redemption*" below);
- bear interest commencing the date of issue at the rate set forth on the cover of this offering memorandum (the "Initial Interest Rate"), payable semiannually in arrears on each June 9 and

December 9, commencing December 9, 2021, to holders of record on the November 24 or May 25 immediately preceding the interest payment date;

- bear interest on overdue principal and overdue interest, at 1% per annum higher than the rate otherwise applicable to the Notes;
- otherwise bear interest subject to adjustment as provided under "—Collateral—Interest Step-Up;" and
- be guaranteed by the Company and the other Initial Guarantors as described under "—Notes Guaranties," and secured by a first lien on the Collateral, as provided herein.

Interest on the Notes will accrue from the most recent date to which interest has been paid or, if no interest has been paid, from and including the Issue Date. Interest will be computed on the basis of a 360-day year of twelve 30-day months.

The Issuer will maintain a paying agent and a registrar, each with an office in the Borough of Manhattan, New York City. Initially, the Trustee will act as registrar, transfer agent and paying agent for the Notes. The Issuer may change the registrar, transfer agent and paying agent, without notice to holders. If a holder of Notes in an aggregate principal amount of at least U.S.$1,000,000 has given wire transfer instructions to the Issuer, the Issuer will make all principal, premium, if any, and interest payments (including Additional Amounts) in respect of those Notes in accordance with those instructions. All other payments on the Notes will be made at the office or agency of the paying agent in New York City unless the Issuer elects to make interest payments by check mailed to the registered holders at their registered addresses.

The Issuer and the Company will apply to the Singapore Exchange Securities Trading Limited (the "Singapore Stock Exchange") for the Notes to be admitted to the Official List of the Singapore Stock Exchange. See "*—Listing*" below. In the event that the Notes are listed on the Singapore Stock Exchange, for so long as the Notes are listed on such exchange and the rules of the exchange so require, the Issuer will also maintain a listing agent in Singapore. Upon any issuance of definitive notes, the Issuer will appoint and maintain a paying agent in Singapore, for so long as the Notes are listed on the Singapore Stock Exchange and the rules of such exchange so require.

Additional Notes

Subject to the covenants described below, the Issuer may issue additional notes ("Additional Notes") under the Indenture having the same terms in all respects as the Notes, or in all respects except with respect to the initial issuance price, initial interest accrual date, initial interest payment date, and interest paid or payable on or prior to the first interest payment date after the issuance of such Notes, *provided* that if the Additional Notes are not fungible with the Notes for United States federal income tax purposes, the Additional Notes will have a separate CUSIP number. The Notes offered hereby and any Additional Notes will be treated as a single class for all purposes under the Indenture and will vote together as one class on all matters with respect to the Notes. Holders of Additional Notes issued in the future will benefit from any Note Guaranty and share equally and ratably with all other outstanding Notes in the Collateral.

Ranking

The Notes will have the benefit of a first-priority perfected security interest on the Collateral as described under "*Collateral*," and as such, will be senior secured obligations of the Issuer to the extent of the value of the Collateral. The Notes Guaranties will be senior secured obligations of each of the Guarantors to the extent of the value of the Collateral. After the creation and perfection of the Collateral, the Notes and the Notes Guaranties will be secured by the Collateral pursuant to the terms of the Collateral Agreements. Any outstanding amounts due after foreclosure on the Collateral will rank equally in right of payment with all other existing and future senior unsecured and unsubordinated Debt of the Issuer and the Guarantors.

The Notes are effectively junior to all other secured Debt of the Issuer and the Guarantors to the extent of the value of the assets securing such Debt (other than Additional Notes to the extent secured by assets constituting Collateral). As of March 31, 2021, the Company and its Subsidiaries had U.S.$ 244.6 million of

secured Debt and U.S.$ 135.1 million of unsecured Debt. Subject to the limits described under "*—Certain Covenants—Limitation on Liens*," the Company and its Restricted Subsidiaries, including the Issuer, may Incur additional secured Debt.

The Notes and each Note Guaranty will also be effectively subordinated to any debt, preferred stock obligations and other liabilities of the Company's Subsidiaries (other than the Issuer) who will not be Guarantors. See "*Risk Factors—Risks Related to the Notes, the Notes Guaranties and the Collateral—Our obligations with respect to the Notes will be structurally subordinated to all liabilities of our subsidiaries that do not guarantee the Notes, including liens granted to secure other indebtedness*."

Although the Indenture limits the Incurrence of Debt and Disqualified or Preferred Stock of Restricted Subsidiaries, the limitation is subject to a number of significant exceptions. Moreover, the Indenture does not impose any limitation on the Incurrence by Restricted Subsidiaries of liabilities that are not considered Debt or Disqualified or Preferred Stock under the Indenture. See "*—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock*."

Notes Guaranties

The Notes will be guaranteed, as of the Issue Date, by the Initial Guarantors, all of which are direct or indirect wholly-owned subsidiaries of the Company and affiliates of the Issuer. The Initial Guarantors and their respective jurisdictions of incorporation will be as follows:

Petro Rio S.A.	Brazil
Petro Rio Internacional S.A.	Brazil
Petro Rio do Brasil Exploração Petrolífera S.A.	Brazil
Petro Rio Jaguar Petróleo Ltda.	Brazil
Petro Rio White Shark Petróleo Ltda.	Brazil
Petro Rio OPCO Exploração Petrolífera Ltda	Brazil
Petrorio Luxembourg Holding S.à r.l.	Luxembourg
Petro Rio O&G Exploração e Produção de Petróleo Ltda.	Brazil

Together, the Initial Guarantors represented in aggregate 102.2%, 100.0% and 99.4% of the Group's Adjusted EBITDA, revenue and total assets, respectively, on a consolidated basis as of and for the three-month period ended March 31, 2021.

Each Note Guaranty of the Notes will, at the time a Guarantor grants such Note Guaranty:

- be senior obligations of relevant Guarantor, secured by a first lien on the Collateral, as provided herein described under "—Collateral;"
- rank effectively senior to all unsecured Debt of that Guarantor to the extent of the value of the Collateral;
- any outstanding amounts due after the foreclosure of the Collateral will rank equally in right of payment with all senior existing and future obligations of that Guarantor (except those obligations of the Guarantors incorporated under the laws of Brazil preferred by operation of Brazilian law, including without limitation labor and tax claims, as described herein);
- rank senior in right of payment to all existing and future subordinated indebtedness of that Guarantor;
- be guaranteed by the Initial Guarantors as described under "—Notes Guaranties;"
- rank effectively junior to any future secured obligations of that Guarantor with a security interest on assets not constituting Collateral, in each case, to the extent of the value of the collateral securing such obligations;

- be structurally subordinated to any existing or future Debt or other obligations of any subsidiary of the Company that is not Issuer or does not guarantee the Notes;
- be subject to the guarantee limitations described herein and under "—Certain limitations on the Collateral and the Notes Guaranties."

Each Note Guaranty will be granted on a senior secured basis for the full and punctual payment when due, of all payment obligations of the Issuer under the Indenture and the Notes so Guaranteed, whether for payment of principal of or interest on or in respect of such Notes, fees, expenses, indemnification or otherwise, *provided* that the obligations of a Guarantor under its Note Guaranty will be limited as necessary to reflect limitations under applicable law or capital maintenance regulations as further described under "—Certain limitations on the Collateral and the Notes Guaranties." in this offering memorandum. In addition, the Notes Guaranties and the Collateral securing the Notes and Notes Guaranties will be subject to release under certain circumstances as described under "Release of Notes Guaranties" in this Description of Notes.

The Company may be required to cause certain other Subsidiaries to provide a guaranty of the Notes pursuant to the provision described under "—Certain Covenants—Future Guarantors."

Collateral

General

The obligations of the Issuer with respect to the Notes and the performance of all other obligations of the Issuer under or relating to the Indenture will be secured by a first-priority perfected security interest on (i) the shares issued under Brazilian and Luxembourg laws by the Guarantors, except for the shares issued by the Company (the "Share Collateral") and (ii) the Vessels (the Vessels, together with the Initial Share Collateral and any Additional Share Collateral, the "Collateral"). All of the foregoing security interests will be granted and in effect on or about the Issue Date and perfected against third parties within the timeframes set forth herein. See also *"—Additional Matters relating to the Collateral*."

The Issuer may be required, or required to cause certain of its Subsidiaries, to grant additional first-priority perfected security interests on certain Equity Interests as described under *"—Future Pledges of Equity Interests.*"

The Issuer will be able to issue Additional Notes in the future that will equally and ratably share in the Collateral. The amount of any Additional Notes will be limited by the covenants described under "*—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock*," "*—Limitation on Liens*" and "*Certain Definitions—Permitted Collateral Liens*." Under certain circumstances, the amount of such Debt could be significant.

Share Collateral

The security interests in the Initial Share Collateral described above will be effected pursuant to one or more pledge agreements governed by the laws of Luxembourg and Brazil or applicable law based on the jurisdiction of organization of the relevant entity (the Brazilian Share Pledge Agreements and the Luxembourg Share Pledge Agreement, collectively, the "Initial Share Pledge Agreements") and perfected on or about the Issue Date. See also "—Additional Matters relating to the Collateral."

On the Issue Date, the Initial Share Pledge Agreements will be entered into over the share of the following subsidiaries of the Company:

Petro Rio Internacional S.A.	Brazil
Petro Rio do Brasil Exploração Petrolífera S.A.	Brazil
Petro Rio Jaguar Petróleo Ltda.	Brazil
Petro Rio White Shark Petróleo Ltda.	Brazil
Petro Rio OPCO Exploração Petrolífera Ltda	Brazil
Petrorio Luxembourg Holding S.à r.l.	Luxembourg

Petro Rio O&G Exploração e Produção de Petróleo Ltda. ..... Brazil

The Issuer, the Company and the Guarantors agree and covenant that (i) each of the Initial Share Pledge Agreements and any related ancillary document shall be executed on or before the Issue Date, (ii) all internal notifications and procedures relating to the Share Collateral and any relating ancillary document shall be duly completed by the Issuer, the Company, and any relevant Subsidiary of the Company as of the Issue Date and (iii) all filings and applications for registrations, authorizations and internal notations or approvals shall (1) with respect to the Luxembourg Share Pledge Agreement, be made, and perfected against third parties, within ten Business Days of the Issue Date, and (2) with respect to the Brazilian Share Pledge Agreements, be made with all appropriate authorities in Brazil within five Business Days of the Issue Date, and perfected against third parties within 90 days.

Bahamian Security Package

As additional collateral for the Notes, the Company shall cause its subsidiaries holding interests in the Vessels, consisting on the date hereof of Petro Rio O&G Exploração e Produção de Petroleo Ltda. and Petro Rio Jaguar Petróleo Ltda., to effect the Vessel Mortgages and the associated Vessel Deeds of Covenant governed by the laws of the Bahamas and perfected on or about the Issue Date (the "Bahamian Security Package"). See also "—Additional Matters relating to the Collateral."

Consistent with customary procedures, the interest of the Trustee and Bahamian Collateral Agent on behalf of the holders of the Notes in the Vessels will be perfected on or about the Issue Date, by registering the Vessel Mortgages with the Registrar of Bahamian Ships, New York. Further, the Company shall cause Petro Rio O&G Exploração e Produção de Petroleo Ltda. and Petro Rio Jaguar Petróleo Ltda. to enter into on the Issue Date the Deeds of Covenant in respect of the Vessel Mortgages.

The Issuer, the Company and the Guarantors agree and covenant that (i) each of the Vessel Mortgages and the Vessel Deeds of Covenant and any related ancillary document shall be executed, and all filings relating to the Bahamian Security Package shall be prepared, as of the Issue Date, (ii) all internal notifications and procedures relating to the Bahamian Security Package and any relating ancillary documentation shall be duly completed by the Issuer, the Company, and any relevant Subsidiary of the Company as of the Issue Date and (iii) all filings and applications for registrations, authorizations, approvals and perfection against third parties with respect to the Bahamian Security Package shall be made within ten Business Days as of the Issue Date.

Insurance of the Vessels

The Issuer, the Company and the Guarantors agree to maintain insurance consistent with industry practice, with insurers of nationally or internationally recognized reputation that the Company believes to be financially sound, covering total or partial damage to the Vessels and such insurance must provide for the reimbursement of the Issuer, the Company and the Guarantors expenditure in repairing or replacing any damaged or destroyed Vessel. If any such Vessel is not repaired or replaced, such insurance must provide for the payment of the amount it would cost to repair or replace such Vessel, on the date of loss, with proper deduction for obsolescence and physical depreciation. The Issuer, the Company and the Guarantors also agree to maintain third party liability insurance with respect to the Vessels in an amount and scope as it customarily maintains for assets similar to the Vessels and with insurers of nationally or internationally recognized reputation that the Company believes to be financially sound.

Additional Matters Relating to Collateral

So long as no Event of Default shall have occurred and be continuing, and subject to certain terms and conditions, the Company, the Issuer or any of their Subsidiary, as the case may be (i) will be entitled to exercise, directly or indirectly, any economic, voting and other consensual rights pertaining to all Collateral existing at the time thereof and (ii) may collect, invest and dispose of any income arising from the Collateral. Upon the occurrence and during the continuance of an Event of Default, to the extent permitted by law and subject to the provisions of the Indenture and the relevant Collateral Agreements, and as further described in the following paragraph:

(1) all of the rights of the pledgor to exercise voting or other consensual rights with respect to the Collateral shall cease, and all such rights shall depend on previously written instructions of the Trustee and the relevant Collateral Agent;

(2) all rights of the Issuer to receive all interest, dividends, distributions and other payments made upon or with respect to the Collateral will cease and such interest and other payments will be paid to the relevant Collateral Agent for the benefit of the Trustee and the holders of the Notes; and

(3) the applicable Collateral Agent may sell the Collateral or any part thereof in accordance with the terms of applicable law, applicable governmental requirements and the Collateral Agreements, as the case may be.

See "*Risk Factors—Risks Related to the Notes, the Notes Guaranties and the Collateral—Realizing on a portion of the collateral held by the Collateral Agents in respect of the Notes may require consent from counterparties to certain of our agreements or otherwise involve third parties*."

Upon the occurrence and during the continuance of an Event of Default, the holders of a majority in principal amount of the Notes may direct the Trustee to instruct the Collateral Agents to foreclose upon and sell the applicable Collateral and to distribute the net proceeds of such sale to the Trustee and the holders of the Notes, subject to applicable laws and applicable governmental requirements. Following an Event of Default, enforcement of the security interests on the Collateral will be made in accordance to applicable law and, to the extent permitted by applicable law, by the relevant Collateral Agent acting upon the instruction of the Trustee, in accordance with the provisions of the Indenture, the Collateral Agreements and applicable governmental requirements. If applicable, the relevant Collateral Agent will distribute all cash proceeds of the Collateral (after payment of the costs of enforcement and administration) received by it under the Collateral Agreements to the Trustee for the ratable benefit of the holders of the Notes and holders of other Obligations secured by Permitted Collateral Liens. Accordingly, any proceeds received upon foreclosure of all or any portion of the Collateral will be applied by the Trustee as follows:

first, pro rata, to the payment of all costs and expenses incurred by the Trustee and the relevant Collateral Agent in connection with the collection of proceeds or sale of any Collateral or otherwise in connection with the Indenture and the Collateral Agreements, including all court costs and the fees and expenses of its agents and legal counsel, the repayment of all advances made by the Trustee and the relevant Collateral Agent on behalf of the Issuer and any other costs or expenses incurred in connection with the exercise of any right or remedy of the holders of the Notes and such other Obligations;

second, to pay the Notes, any accrued and unpaid interest thereon and such other Obligations on a pro rata basis based on the respective amounts of the Notes and such other Obligations then outstanding; and

third, to the extent of the balance of such proceeds after application in accordance with the foregoing, to the Issuer, its successors or assigns, or as a court of competent jurisdiction may otherwise direct.

Interest Step-Up

In the event that the Collateral Agents for the benefit of the holders of the Notes do not, for any reason, have a perfected first priority security interest on the relevant Collateral publicly registered as necessary under applicable law and effective against third parties on the Issue Date and in any event within 60 days of the Issue Date, the amount of interest otherwise payable on the Notes shall increase by an amount equal to 2% per annum (the "Step- Up") of the aggregate principal amount of Notes held as of the record date preceding the next subsequent interest payment date thereafter. The Step-Up will continue to apply only on each subsequent day that the Issuer has not notified the Trustee and the relevant Collateral Agent in accordance with the Indenture that it has created and perfected all Liens on the Collateral (as described below) until the maturity date of the Notes. The Step-Up will be payable as an increase in the interest rate payable on the Notes for each relevant semi-annual period in the manner described under "—Basic terms of Notes." From and including the date that notice is given that a first priority security interest on Collateral has been created and perfected, together with the documents described in the next paragraph, the Step-Up shall no longer apply and interest

on the Notes for the remainder of such semi-annual period, and subsequently through the maturity date of the Notes, will accrue at the Initial Interest Rate.

The Issuer shall deliver to the Trustee and the each Collateral Agent upon creation and perfection of a first priority security interest on the Collateral: (x) an Officers' Certificate to the effect that a first priority security interest on the Collateral has been created and perfected, (y) the relevant Collateral Agreement, duly executed, together with copies of the documents evidencing registration of the relevant Collateral Agreement and (z) an Opinion of Counsel independent of the Issuer that a first priority security interest on the relevant Collateral has been created and perfected in accordance with applicable law. Immediately upon delivery of the above, any applicable Step-Up will cease to be in effect. To the extent the Issuer has not delivered such documents on or before the date that is 60 days after the Issue Date, the Trustee shall begin to calculate the interest payable on the Notes for each day thereafter by including the Step-Up, until, but not including, the day such documents are delivered. The Trustee shall have no duty to independently determine whether a Step-Up is no longer due.

Collateral Release

The Indenture and the Collateral Agreements will provide that the Liens on the Collateral pursuant to the Collateral Agreements will automatically and without the need for any further action by the holders of the Notes, or any other Person (unless otherwise provided for in the applicable Collateral Agreement) be released:

(1) with respect to any Collateral, upon the sale or other disposition (including by way of consolidation, amalgamation or merger) of the issuer of the shares or membership interests, as the case may be, constituting such Collateral (other than to the Issuer or any Guarantor) otherwise permitted by the Indenture;

(2) in whole, upon payment in full of the principal of, accrued and unpaid interest, if any, and premium, if any, on, the Notes;

(3) in whole, if the Equity Interests of the Pledged Subsidiary were required to be pledged pursuant to the terms of the Indenture, if there is a cessation of the circumstances requiring such pledge;

(4) in whole, if the Pledged Subsidiary becomes a Guarantor of the Notes. For the avoidance of doubt, this provision does not apply to the Initial Guarantors;

(5) defeasance or discharge of the Indenture as set forth below under the caption "—Certain Covenants—Defeasance and Discharge;"

(6) as described under the caption "—Certain Covenants—Designation of Restricted and Unrestricted Subsidiaries;" or

(7) as described under the caption "—Amendments and Waivers."

The Indenture and the Collateral Agreements shall provide that if the issuer of any Collateral redomiciles or changes its jurisdiction of incorporation (whether by assignment, transfer, conveyance, amalgamation, merger or otherwise), the Trustee and the relevant Collateral Agent, as the case may be shall at the Issuer's expense execute, acknowledge and deliver such documents and instruments (including the filing of financing statements or amendments or continuations thereto) and take such other actions which may be necessary to assure, perfect, transfer and confirm the rights conveyed by the Collateral Agreements, to the extent permitted by applicable law, in order to effectuate such redomiciliation or change of jurisdiction. Upon the consummation of any transaction effected in accordance with these provisions, if the original issuer of the Collateral is not the continuing Person, such issuer will be released from its obligations under the Indenture, the Notes and the Collateral Agreements.

Release of the Notes Guaranties

The Indenture will provide that the Notes Guaranties of a Guarantor will terminate and release:

(1) upon a sale or other disposition (including by way of consolidation or merger) of the Capital Stock of the relevant Guarantor other than the Company (whether by direct sale or sale of a holding

company as a result of which such Guarantor would no longer be a Restricted Subsidiary) or the sale or disposition of all or substantially all the assets of the Guarantor (other than to the Company or a Restricted Subsidiary) otherwise permitted by the Indenture;

(2) in whole, upon payment in full of the principal of, accrued and unpaid interest, if any, and premium, if any, on, the Notes;

(3) defeasance or discharge of the Indenture as set forth below under the caption "—Certain Covenants—Defeasance and Discharge;"

(4) as described under the caption "—Certain Covenants—Designation of Restricted and Unrestricted Subsidiaries;"

(5) as described under the caption "—Amendments and Waivers"; or

(6) as a result of a transaction permitted by "—Certain Covenants—Consolidation, amalgamation, merger or sale of assets."

The Trustee and the Collateral Agents shall each take all necessary actions, to effectuate any release of a Note Guaranty in accordance with these provisions, subject to customary protections and indemnifications.

Certain limitations on the Collateral and the Notes Guaranties

The value of the Collateral in the event of liquidation will depend on many factors. In particular, the Equity Interests that are pledged represent an equity interest in the pledged Subsidiaries, and only have value to the extent that the assets of such Subsidiaries are worth in excess of the liabilities of such Subsidiaries (and, in a bankruptcy or liquidation, will only receive value after payment upon all such liabilities, including all Debt of such Subsidiaries). Consequently, liquidating the Collateral may not produce proceeds in an amount sufficient to pay any amounts due on the Notes. See "*Risk Factors—Risks Related to the Notes, the Notes Guaranties and the Collateral—There may be limitations on foreclosure or enforcement of rights in the Collateral and the value of the Collateral may not be sufficient to satisfy the obligations under the Notes.*" In addition, enforcement of the Liens on the Collateral may be limited by applicable governmental requirements. Foreclosure upon the Collateral will be subject to certain rights, including rights of third parties. See "*Risk Factors—Risks Related to the Notes, the Notes Guaranties and the Collateral—Realizing on a portion of the Collateral held by the Collateral Agents in respect of the Notes may require consent from or otherwise involve third parties*." The fair market value of the Collateral is subject to fluctuations based on factors that include, among others, prevailing interest rates, the ability to sell the Collateral in an orderly sale, general economic conditions, the availability of buyers and similar factors.

The value of the Collateral securing the Notes and consequently the amount to be received upon a sale of the Collateral would be dependent on numerous factors, including the actual fair market value of the Collateral at such time and the timing and the manner of the sale. By its nature, some of the Collateral may be illiquid and may have no readily ascertainable market value. In the event of a foreclosure, liquidation, bankruptcy or similar proceeding, we cannot assure you that the proceeds from any sale or liquidation of the Collateral will be sufficient to pay the Issuer's Obligations under the Notes. Any claim for the difference between the amount, if any, realized by holders of the Notes from the sale of Collateral securing the Notes and the Obligations under the Notes will rank equally in right of payment with all of the Issuer's and any Guarantor's other unsecured senior debt and other unsubordinated obligations, including trade payables.

The ability of the holders to realize on the Collateral may be subject to certain bankruptcy law limitations in the event of a bankruptcy. See "*—Certain Bankruptcy Limitations*."

Additionally, the Collateral securing the Notes may be diluted under certain circumstances, including upon the issuance of Additional Notes by the Company, subject to the terms of the Indenture. See "Risk Factors—Risks Related to the Notes, the Note Guarantees and the Collateral—If we were to incur further indebtedness upon the issuance of additional Notes under the Indenture, this could adversely affect the value of the Collateral and the credit support package securing the Issuer's obligations under the Notes. We may also incur additional indebtedness ranked equally with the Notes."

Impairment of Security Interest

The Collateral Agreements will provide that Issuer and the Company will not be permitted to grant to any Person, or permit any Person to retain (other than the applicable Collateral Agent), any security interest or Lien whatsoever on the Collateral, other than Permitted Collateral Liens. The Issuer and the Company will not enter into any agreement that requires the proceeds received from any sale of Collateral to be applied to repay, redeem, defease or otherwise acquire or retire any Debt of any Person, other than as permitted by the Indenture, the Notes and the Collateral Agreements.

Certain Bankruptcy Limitations

Brazil

The right of the Brazilian Collateral Agent to repossess and dispose of the Collateral upon the occurrence of an Event of Default would be significantly impaired in the event that a bankruptcy or judicial reorganization were to be commenced by or against the Guarantors incorporated in Brazil prior to the Brazilian Collateral Agent having repossessed and disposed of the Collateral.

Under the Brazilian Bankruptcy Law, all claims existing against the debtor in the date of the judicial reorganization filing, even those not yet due, are subject to the proceeding, except for (a) tax claims; (b) credits related to an advance of foreign exchange agreements (*adiantamento de contrato de câmbio*) ("ACC") ; and (c) credits secured by fiduciary liens or arising from financial leases, owner or committed seller of real estate. This means that debt secured by pledge or mortgage will be subject to the judicial reorganization, but their holders may try to negotiate better terms of payment in the plan.

The acceptance by the court of a judicial reorganization proceeding stays the course of all lawsuits and enforcement proceedings filed against the debtor for a period of 180 days (the "Stay Period"), this may be extended once for an equal period, on an exceptional basis, provided that the debtor has not caused the overcoming such term, during which foreclosure of collateral that is not subject to the proceeding may be subject to certain restrictions. For instance, (a) Article 49, §3 restricts the foreclosure of assets that were granted by the debtor in fiduciary lien and are deemed to be essential to carry out the debtor's activities and (b) Article 49, §5 establishes that any credit rights and receivables pledged on behalf of creditors shall be deposited into a judicial account and shall not be withdrawn during the Stay Period.

The judicial reorganization plan will provide new payment conditions, which will novate the existing debts, it is mandatory and binding for the debtor and all creditors subject to it. The parties are free to negotiate how judicial reorganization is implemented, including, for instance, the reduction of liability, sale of assets and priority of repayment.

In the event of bankruptcy liquidation of the Guarantors incorporated in Brazil their obligations under the Notes will be subordinated to the statutory preferences established by the Brazilian Bankruptcy Law. Payments of any amounts due by the debtor shall follow the following priority ranking: (i) labor related claims up to 150 minimum monthly wages (as determined by the Federal Government of Brazil) per creditor plus claims for damages arising from labor related accidents; (ii) secured credits (up to the value of the collateral), such as credits secured by pledges and mortgages; (iii) tax claims, regardless their nature and time of its constitution (except for extra-bankruptcy credits (*créditos extraconcursais)* and fines); (iv) unsecured credits (including labor related claims in excess of the amount mentioned in item (i) above and claims of secured creditors with a value exceeding that of the collateral); (v) contractual penalties and fines for breach of criminal or administrative law (including tax related fines); (vi) subordinated credits, (a) as defined by law or pursuant to the relevant agreement and (b) the credits of the partners and administrators with no employment relationship, whose contracting has not observed the strictly commutative conditions (i.e., the involved parties are independent and with the same rights and conditions) and market practices; and (vii) interest accrued from liquidation decree, as established by Brazilian Bankruptcy Law . The foregoing priority is established by law and may not be modified by a court. Please note that, except for fiduciary property, which will be used for payment of the respective holder, in rem guarantees, such as mortgage and pledge, will be collected by the judicial administrator and, once sold, the product of the sale will be implemented in the waterfall of payment

for creditors. This means that the holder of the in-rem guarantees is not directly paid with the proceeds arising for the sale of such assets.

According to Article 84 of the Brazilian Bankruptcy Law, there are certain credits that are senior to or excluded from the priority order above, such as: (a) costs of the proceedings, (b) labor claims due on the 3 months before the bankruptcy declaration, (c) amounts provided by creditors, investors or third parties to the debtor during the judicial reorganization proceeding (DIP Financing), (d) cash restitution related to the fiduciary assignment/lien (*cessão/alienação fiduciária*), as described above, (e) judicial administrator's fees, (f) obligations resulting from valid legal acts performed during the judicial reorganization, or after the decree of liquidation, (g) sums provided to the state by the creditors, (h) expenses with collection, management, asset realization and distribution of the proceeds, as well as court costs of the bankruptcy liquidation proceeding, (i) court costs with respect to lawsuits and enforcement proceedings in which the estate is defeated, and (j) taxes relating to generating facts occurring after the decree of the liquidation, with due regard for the order established in Article 83 of the Brazilian Bankruptcy Law and will be paid with preference before the creditors listed above.

Pursuant to Article 85 of the Brazilian Bankruptcy Law, creditors secured by fiduciary assignment/lien (*cessão/alienação fiduciária*) may claim for restitution of the asset over which the security has been constituted, and such restitution claim is also available to owners of assets in possession of the debtor, as well as to sellers of goods to the debtor, where the sale occurred within 15 days prior to the bankruptcy liquidation request and the assets have not been transferred to a third party; cash restitution is additionally available with respect to debts arising from an advance against foreign exchange contracts (ACC) pursuant to Article 86, II of the aforementioned law.

In addition, obligations assumed before any clearings systems pursuant to Article 193 of Brazilian Bankruptcy Law, amongst other specific cases established in Brazilian Bankruptcy Law, are not affected by the bankruptcy liquidation.

It is not possible to predict how long payments under the Notes could be delayed following commencement of a bankruptcy case or liquidation proceeding, whether or when the Brazilian Collateral Agent could repossess or dispose of the collateral, the value of the Collateral at the time of the judicial reorganization filing or commencement of a bankruptcy liquidation proceeding, or whether or to what extent holders of the Notes would be compensated for any delay in payment or diminution in the value of the Collateral. In a judicial reorganization scenario, the holders of the Notes may receive in exchange for their claims a recovery that could be substantially less than the amount of their claims (potentially even nothing) and any such recovery could be in the form of cash, new debt instruments or some other security. Furthermore, in the event the value of the Collateral is not sufficient to repay all amounts due on the Notes, the balance of the Notes that is not covered by the collateral would be classified as unsecured claims, which means that they would have a secured claim to the extent of the value of the Collateral and an unsecured claim for the difference.

For more detailed information see "*Risk Factors—Risks Related to the Notes, the Notes Guaranties and the Collateral—Your ability to recover payments due on the Notes in the event of our bankruptcy or insolvency may be more limited than would be the case under U.S. bankruptcy laws*."

Luxembourg

See "*Risk Factors—Risks Related to the Notes, the Notes Guaranties and the Collateral—There may be limitations on foreclosure or enforcement of rights in the Collateral and the value of the Collateral may not be sufficient to satisfy the obligations under the Notes*" and "*Enforcement of Judgments—Insolvency Proceedings in Luxembourg.*"

Bahamas

See "*Risk Factors—Risks Related to the Notes, the Notes Guaranties and the Collateral—The Bahamian Collateral Agent may face limitations to enforce the vessel mortgages outside The Bahamas.*" and "*Enforcement of Judgments—Insolvency Proceedings in the Bahamas*."

Additional Amounts

All payments of principal, premium, if any, and interest in respect of the Notes and each Note Guaranty will be made free and clear of, and without withholding or deduction for or on account of, any present or future taxes, duties, assessments or governmental charges of whatever nature imposed, levied, collected, withheld or assessed by or by or within any political subdivision thereof or any authority therein or thereof having power to tax or any other jurisdiction through which payments are made in respect of the Notes (each such jurisdiction a "Relevant Jurisdiction" and such taxes, "Taxes"), unless such withholding or deduction is required by law or by the interpretation or administration thereof. In the event of any such withholding or deduction of Taxes, the Issuer will pay to holders such additional amounts ("Additional Amounts") as will result in the receipt by each holder of the net amount that would otherwise have been receivable by such holder in the absence of such withholding or deduction, except that no such Additional Amounts will be payable:

(a) in respect of any Taxes that would not have been so withheld or deducted but for the existence of any present or former connection (including, without limitation, a permanent establishment in the Relevant Jurisdiction or between the holder, applicable recipient of payment or beneficial owner of the note or any payment in respect of such note (or, if the holder or beneficial owner is an estate, nominee, trust, partnership, corporation or other business entity, between a fiduciary, settlor, beneficiary, member or shareholder of, or possessor of power over, the holder, applicable recipient of a payment or beneficial owner) and a Relevant Jurisdiction, other than the mere receipt of such payment or the mere holding or ownership of such note or beneficial interest or the enforcement of rights thereunder;

(b) in respect of any Taxes that would not have been so withheld or deducted if the note had been presented for payment within 30 days after the Relevant Date (as defined below) to the extent presentation is required (except to the extent that the holder would have been entitled to Additional Amounts had the note been presented for payment on the last day of such 30-day period);

(c) in respect of any Taxes that would not have been so withheld or deducted but for the failure by the holder or the beneficial owner of the note or any payment in respect of such note to (i) make a customary declaration of non-residence, or any other claim or filing for exemption, to which it is entitled or (ii) comply with any customary certification, identification, information, documentation or other reporting requirement concerning its nationality, residence, identity or connection with the Relevant Jurisdiction or with any jurisdiction through which payments are made; *provided* that such declaration or compliance was required as a precondition to exemption from all or part of such Taxes and the Issuer has given the holders at least 30 days prior notice that they will be required to comply with such requirements;

(d) in respect of any estate, inheritance, gift, value added, sales, use, excise, transfer, personal property or similar taxes, duties, assessments or other governmental charges;

(e) in respect of any Taxes that are payable otherwise than by deduction or withholding from payments on the Notes;

(f) in respect of any taxes that would not have been so imposed if the holder had presented the note for payment (where presentation is required) to another paying agent;

(g) in respect of any payment to a holder of a note that is a fiduciary or partnership (including an entity treated as a partnership for tax purposes) or any Person other than the sole beneficial owner of such payment or note, to the extent that a beneficiary or settlor with respect to such fiduciary, a member of such partnership or the beneficial owner of such payment or note would not have been entitled to the Additional Amounts had such beneficiary, settlor, member or beneficial owner been the actual holder of such note;

(h) in respect of any combination of clauses (a) through (g) above.

Notwithstanding anything to the contrary in the preceding paragraph, none of the Issuer, a Guarantor, any paying agent or any other person shall be required to pay any Additional Amounts with respect to any

withholding or deduction imposed on or in respect of any note pursuant to Sections 1471 to 1474 of the Code ("FATCA"), any treaty, law, regulation or other official guidance enacted by any jurisdiction implementing FATCA or an intergovernmental agreement with respect to FATCA or any similar legislation imposed by any other governmental authority, or any agreement between the Issuer and the United States or any authority thereof implementing FATCA.

"Relevant Date" means whichever is the later of (i) the date on which such payment first becomes due and (ii) if the full amount payable has not been received in New York City, New York by 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 holders in accordance with the Indenture.

All references to principal, premium, if any, and interest in respect of the Notes will be deemed also to refer to any Additional Amounts which may be payable as set forth in the Indenture or in the Notes.

Notwithstanding the foregoing, the limitations on the Issuer's Obligations to pay Additional Amounts set forth in clause (c) will not apply if the provision of any certification, identification, information, documentation or other reporting requirement described in such clause (c) would be materially more onerous, in form, in procedure or in the substance of information disclosed, to a holder or beneficial owner of a note than comparable information or other reporting requirements imposed under U.S. tax law, regulations and administrative practice (such as IRS Forms W- 8BEN and W-9).

As soon as reasonably practicable, prior to each date on which any payment under or with respect to the Notes is due and payable (unless such obligation to pay Additional Amounts arises after the 30th day prior to the date on which payment under or with respect to the Notes is due and payable, in which case it will be thereafter), if the Issuer will be obligated to pay Additional Amounts with respect to such payment, the Issuer will deliver to the Trustee an Officers' Certificate stating that such Additional Amounts will be payable and the amounts so payable and setting forth such other information as is necessary to enable the Trustee to pay such Additional Amounts to the holders of such Notes on the payment date.

The Indenture will contain a provision that the Trustee may withhold taxes, to the extent it reasonably believes it is required to do so under applicable law. The Issuer will furnish to the Trustee documentation reasonably satisfactory to the Trustee evidencing payment of any taxes so deducted or withheld. Copies of such documentation will be made available by the Trustee to holders upon written request to the Trustee.

The Issuer will promptly pay when due any present or future stamp, court or similar documentary taxes or any other excise or property taxes, charges or similar levies that arise in any jurisdiction from the execution, delivery or registration of each note or any other document or instrument referred to herein or therein, excluding any such taxes, charges or similar levies imposed by any jurisdiction outside of any Relevant Jurisdiction and except, in certain cases, for taxes, charges or similar levies resulting from certain registration of transfer or exchange of Notes.

Open Market Purchases

The Issuer, the Company and its Restricted Subsidiaries may at any time and from time to time purchase Notes in the open market or otherwise, at such price and on such terms as it sees fit, provided that any such purchased Notes will not be resold, except in compliance with applicable requirements or exemptions under the relevant securities laws. Any Notes redeemed or repurchased by the Company, the Issuer and its Restricted Subsidiaries may, at the option of the Company, continue to be outstanding or be cancelled.

Optional Redemption

Optional Redemption with a Make-Whole Premium

At any time prior to June 9, 2024, the Issuer will have the right, at its option, to redeem any of the Notes, in whole or in part, at a redemption price equal to 100% of the principal amount of such Notes plus, the greater of (1) 1.00% of the then outstanding principal amount of the Notes, and (2) the excess, if any, of: (a) the present value at such redemption date of (i) the redemption price of the Notes at June 9, 2024 (such redemption price being set forth in the table below under "—Optional Redemption without a Make-Whole Premium") plus

(ii) all required interest payments thereon through June 9, 2024 (excluding accrued but unpaid interest to the redemption date), discounted to the redemption date on a semi- annual basis (assuming a 360-day year consisting of twelve 30- day months) at the Treasury Rate as of such redemption date plus 50 basis points, over (b) the then outstanding principal amount of the Notes (the "Make-Whole Amount"), plus, in each case, any accrued and unpaid interest (including Additional Amounts, if any) on the principal amount of the Notes to the date of redemption.

For purposes herein:

"Treasury Rate" means, with respect to any redemption date, the rate per annum equal to the semi-annual equivalent yield to maturity or interpolated maturity (on a day count basis) of the Comparable Treasury Issue, assuming a price for the Comparable Treasury Issue (expressed as a percentage of its principal amount) equal to the Comparable Treasury Price for such redemption date.

"Comparable Treasury Issue" means the United States Treasury security or securities selected by an Independent Investment Banker as having an actual or interpolated maturity that would be utilized, at the time of selection and in accordance with customary financial practice.

"Independent Investment Banker" means one of the Reference Treasury Dealers appointed by the Issuer. "Comparable Treasury Price" means, with respect to any redemption date (1) the average of the Reference Treasury Dealer Quotations for such redemption date, after excluding the highest and lowest such Reference Treasury Dealer Quotation or (2) if the Issuer obtains fewer than four such Reference Treasury Dealer Quotations, the average of all such quotations.

"Reference Treasury Dealer" means Morgan Stanley & Co. LLC and one nationally recognized investment banking firm selected by the Issuer which is a primary United States government securities dealers in New York City.

"Reference Treasury Dealer Quotation" means, with respect to each Reference Treasury Dealer and any redemption date, the average, as determined by the Issuer, of the bid and asked price for the Comparable Treasury Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Issuer by such Reference Treasury Dealer at 3:30 pm New York City time on the third Business Day preceding such redemption date.

Optional Redemption without a Make-Whole Premium

At any time and from time to time on or after June 9, 2024, the Issuer may, at its option, redeem all or part of the Notes at the redemption prices, expressed as percentages of principal amount, set forth below, plus accrued and unpaid interest thereon (including Additional Amounts), if any, to the applicable redemption date, if redeemed during the 12 month period beginning on June 9 of the years indicated below:

Year	Percentage
2024	103.063 %
2025 and thereafter	101.531 %

Optional Redemption with Proceeds of Equity Offerings

At any time prior to June 9, 2024, the Issuer may, at its option, on one or more occasions, redeem up to 35% of the aggregate principal amount of Notes (including any Additional Notes) at a redemption price of 106.125% of the principal amount thereof, plus accrued and unpaid interest (including Additional Amounts, if any) to the redemption date, with the net cash proceeds of one or more Equity Offerings; *provided* that:

(1) Notes in an aggregate principal amount equal to at least 65% of the aggregate principal amount of Notes issued on the first Issue Date remain outstanding immediately after the occurrence of such redemption; and

(2) the redemption must occur within 90 days of the date of the closing of such Equity Offering.

Optional Redemption upon a Tax Event

The Notes may be redeemed, in whole but not in part, at the Issuer's option, at a redemption price equal to 100% of the outstanding principal amount of the Notes, plus accrued and unpaid interest (including Additional Amounts, if any) to the redemption date, if Issuer has or will become obligated to pay Additional Amounts in respect of interest received on the Notes with respect to Taxes as a result of any change in, or amendment to, the laws (or any regulations or rulings promulgated thereunder) of any Relevant Jurisdiction, or any political subdivision or taxing authority thereof or therein, or any change in the official application, administration or interpretation of such laws, regulations or rulings (including a holding by a court of competent jurisdiction) in any Relevant Jurisdiction, or any other jurisdiction with the power to impose, levy or assess Taxes in respect of payments on the Notes, if such change or amendment occurs on or after the date of the Indenture and such obligation cannot be avoided by the Issuer, taking reasonable measures available to it; *provided* that no such notice of redemption will be given earlier than 60 days prior to the earliest date on which the Issuer would be obligated to pay such Additional Amounts, were a payment in respect of the Notes then due. Prior to the giving of notice of redemption of Notes pursuant to the Indenture, the Issuer will deliver to the Trustee an Officers' Certificate to the effect that the Issuer is or at the time of the redemption will be entitled to effect such a redemption pursuant to the Indenture, and setting forth in reasonable detail the circumstances giving rise to such right of redemption. The Officers' Certificate will be accompanied by a written opinion of recognized counsel in any Relevant Jurisdiction independent of the Issuer to the effect, among other things, that:

(1) the Issuer is, or is expected to become, obligated to pay such Additional Amounts as a result of a change or amendment, as described above;

(2) the Issuer cannot avoid payment of such Additional Amounts by taking reasonable measures available to the Issuer; and

(3) all governmental approvals necessary for the Issuer to effect the redemption have been obtained and are in full force and effect or specifying any such necessary approvals that as of the date of such opinion have not been obtained.

Selection and Notice

Notice of any redemption will be mailed by first-class mail, postage prepaid, at least 15 days before the redemption date to the Trustee (unless a shorter notice shall be agreed to in writing by the Trustee) and at least 10 but not more than 60 days before the redemption date to holders of Notes to be redeemed at their respective registered addresses. For so long as the Notes are listed on the Singapore Stock Exchange and the rules of the exchange require, the Issuer will cause notices of redemption to also be published as described in "—Certain Covenants—Notices" below.

Notes called for redemption will become due on the date fixed for redemption. The Issuer will pay the redemption price for the Notes together with accrued and unpaid interest thereon (including Additional Amounts, if any) through the date of redemption. On and after the redemption date, interest will cease to accrue on the Notes as long as the Issuer has deposited with the paying agent funds in satisfaction of the applicable redemption price pursuant to the Indenture. Upon redemption of the Notes by the Issuer, the redeemed Notes will be cancelled.

If fewer than all of the Notes are being redeemed, the Trustee will select the Notes to be redeemed pro rata, by lot or by any other method the Trustee in its sole discretion deems fair and appropriate or in accordance with DTC procedures, in denominations of U.S.$200,000 principal amount and integral multiples of U.S.$1,000 in excess thereof. In the case of certificated notes, upon surrender of any note redeemed in part, the holder will receive a new note equal in principal amount to the unredeemed portion of the surrendered note. Once notice of redemption is sent to the holders, Notes called for redemption become due and payable at the redemption price on the redemption date, and, commencing on the redemption date, Notes to be redeemed will cease to accrue interest.

The Issuer may acquire Notes by means of the redemption provisions above or by means other than a redemption, whether by tender offer, open market purchases, negotiated transactions or otherwise, in accordance with the applicable securities laws, so long as such acquisition does not otherwise breach the terms of the Indenture.

Notwithstanding the foregoing, in connection with any tender for Notes, if holders of not less than 90% in the aggregate principal amount of the outstanding Notes validly tender and do not withdraw such Notes in such tender offer and the Issuer, or any other Person making such tender offer, purchases all of the Notes of such series validly tendered and not withdrawn by such holders, the Issuer will have the right, upon notice given not more than 30 days following such purchase pursuant to such tender offer, to redeem all of the Notes of such series that remain outstanding following such purchase at a price in cash equal to the price offered to each holder in such tender offer, plus, to the extent not included in the tender offer payment, accrued and unpaid interest to but excluding the redemption date.

Any redemption of Notes (including in connection with an Equity Offering) or notice thereof may, at the Issuer's discretion, be subject to the satisfaction (or, waiver by the Issuer in its sole discretion) of one or more conditions precedent, which may include consummation of any related Equity Offering, obtainment of debt financing or the occurrence of a Change of Control that results in a Rating Decline. If such redemption or notice is subject to satisfaction of one or more conditions precedent, such notice may state that, in Issuer's discretion, the redemption date may be delayed until such time as any or all such conditions shall be satisfied (or waived by the Issuer in its sole discretion), or such redemption may not occur and such notice may be rescinded in the event that any or all such conditions shall not have been (or, in the Issuer's sole determination, may not be) satisfied (or waived by the Issuer in its sole discretion) by the redemption date, or by the redemption date so delayed.

No Mandatory Redemption or Sinking Fund

There will be no mandatory redemption or sinking fund payments for the Notes.

Suspension of Certain Covenants

If at any time after the Issue Date that (i) the Notes are rated Investment Grade by at least two of the Rating Agencies and (ii) no Default has occurred and is continuing under the Indenture, the Issuer, the Company, and any of their Restricted Subsidiaries will not be subject to the covenants in the Indenture specifically listed under the following captions in this "Description of Notes" section of this offering memorandum (the "Suspended Covenants"):

(1) "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock;"

(2) "—Certain Covenants—Limitation on Restricted Payments;"

(3) "—Certain Covenants—Limitation on Dividend and Other Payment Restrictions Affecting Restricted Subsidiaries;"

(4) "—Certain Covenants—Limitation on Asset Sales;"

(5) "—Certain Covenants—Limitation on Transactions with Affiliates;"

(6) "—Certain Covenants—Anti-layering;"

(7) "—Certain Covenants—Future Guarantors;"

(8) clause (a)(3) of "—Certain Covenants—Consolidation, Amalgamation, Merger or Sale of Assets—Issuer;" and

(9) "—Certain Covenants—Future Pledges of Equity Interests."

Additionally, at such time as the above referenced covenants are suspended (a "Suspension Period"), the Company will no longer be permitted to designate any Restricted Subsidiary as an Unrestricted Subsidiary unless the Company would have been permitted to designate such Subsidiary as an Unrestricted Subsidiary if

a Suspension Period had not been in effect for any period and such designation shall be deemed to have created a Restricted Payment as set forth under "Certain Covenants—Limitation on Restricted Payments" following the Reversion Date (as defined below).

In the event that the Company, the Issuer and any of their Restricted Subsidiaries are not subject to the Suspended Covenants for any period of time as a result of the foregoing, and on any subsequent date (the "Reversion Date") the condition set forth in clause (i) of the first paragraph of this section is no longer satisfied, then the Issuer and the Restricted Subsidiaries will thereafter again be subject to the Suspended Covenant with respect to future events. Notwithstanding that the Suspended Covenants may be reinstated, no Default will be deemed to have occurred as a result of a failure to comply with the Suspended Covenants during the Suspension Period.

On each Reversion Date, all Debt Incurred during the Suspension Period prior to such Reversion Date will be deemed to be Debt Incurred pursuant to clause (b)(8) under "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock." For purposes of calculating the amount available to be made as Restricted Payments under clause (3) of clause (a) of "—Certain Covenants—Limitation on Restricted Payments," calculations under such covenant shall be made as though such covenant had been in effect during the entire period of time after the Issue Date (including the Suspension Period). Restricted Payments made during the Suspension Period not otherwise permitted pursuant under clause (b) of the "—Certain Covenants—Limitation on Restricted Payments" covenant will reduce the amount available to be made as Restricted Payments under clause (3) of clause (a) of such covenant. For purposes of the "—Limitation on Asset Sales" covenant, on the Reversion Date, the amount of Excess Proceeds will be reset to the amount of Excess Proceeds in effect as of the first day of the Suspension Period ending on such Reversion Date.

There can be no assurance that the Notes will ever achieve or maintain a rating of Investment Grade from the Rating Agencies.

Certain Covenants

The Indenture contains covenants that apply to the Issuer, the Company or the Guarantors, including, among others, the following:

Further Assurances with respect to Collateral

The Issuer, the Company and the Guarantors will take all action necessary to (i) ensure that each of the Collateral Agreements and any relating ancillary documents are promptly and duly filed publicly with all appropriate authorities in Brazil, Luxembourg and the United States, and (ii) secure all such Collateral Agreements are properly recorded, all fees in connection therewith paid, and all ancillary actions to be taken in connection therewith taken as applicable. The Collateral Agreements and the Indenture will provide that the pledgor, the Issuer or any Guarantor, as applicable, shall, at its sole expense, do all acts which may be reasonably necessary to deliver evidence to that the applicable Collateral Agent that the Collateral was duly created, is enforceable and perfected first-priority Liens on the Collateral within the timeframe described above under "—Collateral," subject to Permitted Collateral Liens. Pursuant to the terms of the Collateral Agreements, upon request of the applicable Collateral Agent, the Trustee or a majority of the holders of the Notes, the pledgor, the Issuer and any Guarantor, as applicable, shall, at their sole expense, execute, acknowledge and deliver such documents and instruments (including the filing of financing statements or amendments or continuations thereto) and take such other actions which may be necessary to assure, perfect, transfer and confirm the rights conveyed by the Collateral Agreements, to the extent permitted by applicable law.

In addition, promptly following the issuance of the Notes and the repayment of all debt obligations as provided for under the caption "Use of Proceeds" of this Offering Memorandum, PetroRio shall ensure the release of all Liens, pledges, security interests and other encumbrances on any and all assets or property securing such debt obligations, including filing of all necessary or appropriate notices with public authorities in Brazil or elsewhere.

Limitation on Debt and Disqualified or Preferred Stock

(a) The Company:

(1) will not, and will not permit any of the Restricted Subsidiaries to, Incur any Debt; and

(2) will not, and will not permit any Restricted Subsidiary to, Incur any Disqualified Stock, and will not permit any Restricted Subsidiary that is not a Guarantor to Incur any Preferred Stock (other than Disqualified or Preferred Stock of Restricted Subsidiaries held by the Company or a Restricted Subsidiary, so long as it is so held);

provided that Issuer and any Guarantor may Incur Debt or Disqualified Stock and any Guarantor may Incur Preferred Stock if, on the date of the Incurrence, after giving effect to the Incurrence and the receipt and application of the proceeds therefrom, the Net Leverage Ratio of the Company and its Restricted Subsidiaries is not greater than 2.50 to 1.00;

(b) Notwithstanding the foregoing, the Company and any Restricted Subsidiary may Incur the following ("Permitted Debt"):

(1) Debt Incurred pursuant to Credit Facilities; *provided* that the aggregate principal amount at any time outstanding does not exceed the greater of (x) U.S.$100.0 million (or the equivalent in other currencies) and (y) 7.5% of Consolidated Tangible Assets;

(2) Debt of the Company or any Restricted Subsidiary to the Company or any Restricted Subsidiary so long as such Debt continues to be owed to the Company or a Restricted Subsidiary and which, if the obligor is Company or a Restricted Subsidiary, is subordinated in right of payment to the Notes;

(3) (i) the incurrence of Debt of the Issuer pursuant to the Notes (other than Additional Notes) and (ii) Debt of any Guarantor pursuant to a Note Guaranty;

(4) Debt ("Permitted Refinancing Debt") constituting an extension or renewal of, replacement of, or substitution for, or issued in exchange for, or the net proceeds of which are used to repay, redeem, repurchase, refinance or refund, including by way of defeasance (all of the above, for purposes of this clause, "refinance") then outstanding Debt in an amount not to exceed the principal amount of the Debt so refinanced, plus premiums, fees and expenses; *provided* that:

(A) in case the Debt to be refinanced is Subordinated Debt, the new Debt, by its terms or by the terms of any agreement or instrument pursuant to which it is outstanding, is expressly made subordinate in right of payment to the Notes at least to the extent that the Debt to be refinanced is subordinated to the Notes,

(B) the new Debt does not have a Stated Maturity prior to the Stated Maturity of the Debt to be refinanced, and the Average Life of the new Debt is at least equal to the remaining Average Life of the Debt to be refinanced,

(C) in no event may Debt of the Issuer or any Guarantor be refinanced pursuant to this clause by means of any Debt of any Restricted Subsidiary that is not a Guarantor, and

(D) Debt Incurred pursuant to clauses (b)(1), (2), (5), (6), (9), (11), (12) and (13) may not be refinanced pursuant to this clause;

(5) Hedging Agreements entered into in the ordinary course of business and not for speculation;

(6) Debt consisting of letters of credit, banker's acceptances, performance bonds, appeal bonds, surety bonds, bid bonds, *seguro garantia*, customs bonds and other similar bonds and reimbursement obligations Incurred by the Company or any Restricted Subsidiary in the ordinary course of business securing the performance of contractual, franchise or license obligations of the Issuer or any Restricted Subsidiary (in each case, other than for an obligation for borrowed money);

(7) (i) Acquired Debt or (ii) Debt incurred in connection with an acquisition, *provided* that in each case, after giving effect to the Incurrence thereof, the Company could Incur at least U.S.$1.00 of Debt under paragraph (a) above;

(8) Debt outstanding on the Issue Date (and, for purposes of clause (4)(D), not otherwise constituting Permitted Debt);

(9) Debt, which may include Capital Leases, Incurred on or after the Issue Date no later than 180 days after the date of purchase or completion of construction, improvement, repair, maintenance, upgrade or replacement of property (real or personal) or equipment for the purpose of financing all or any part of the purchase price or cost thereof, *provided* that the principal amount of any Debt Incurred pursuant to this clause may not exceed (a) the greater of U.S.$100.0 million (or the equivalent in other currencies) and 7.5% of Consolidated Tangible Assets less (b) the aggregate outstanding amount of Permitted Refinancing Debt Incurred to refinance Debt Incurred pursuant to this clause;

(10) [Reserved];

(11) Debt of the Issuer or any Guarantor consisting of Guarantees of Debt of the Issuer or any Guarantor Incurred under any other clause of this covenant;

(12) Debt arising from the honoring by a bank or other financial institution of a check, draft or similar instrument drawn against insufficient funds or Debt in respect of netting services, automatic clearinghouse arrangements, overdraft protections and similar arrangements in connection with deposit accounts, in each case in the ordinary course of business; and

(13) Debt of the Company or any Restricted Subsidiary Incurred on or after the Issue Date not otherwise permitted in an aggregate principal amount at any time outstanding not to exceed the greater of U.S.$100.0 million (or the equivalent in other currencies) and 7.5% of Consolidated Tangible Assets.

Notwithstanding any other provision of this covenant, for purposes of determining compliance with this covenant, increases in Debt solely due to fluctuations in the exchange rates of currencies will not be deemed to exceed the maximum amount that the Company or a Restricted Subsidiary may Incur under this covenant. For purposes of determining compliance with any U.S. dollar-denominated restriction on the Incurrence of Permitted Debt, the U.S. dollar-equivalent principal amount of Debt denominated in a foreign currency shall be calculated based on the relevant currency exchange rate in effect on the date such Debt was Incurred; provided that if such Debt is Incurred to refinance other Debt denominated in a foreign currency, and such refinancing would cause the applicable U.S. dollar-denominated restriction to be exceeded if calculated at the relevant currency exchange rate in effect on the date of such refinancing, such U.S. dollar-denominated restriction shall be deemed not to have been exceeded so long as the principal amount of such refinancing Debt does not exceed the principal amount of such Debt being refinanced. The principal amount of any Debt Incurred to refinance other Debt, if Incurred in a different currency from the Debt being refinanced, shall be calculated based on the currency exchange rate applicable to the currencies in which such respective Debt is denominated that is in effect on the date of such refinancing.

(c) In the event that an item of Debt meets the criteria of more than one of the types of Debt described in this covenant, the Company, in its sole discretion, will classify items of Debt and will only be required to include the amount and type of such Debt in one of such clauses and the Company will be entitled to divide and classify an item of Debt in more than one of the types of Debt described in this covenant, and may change the classification of an item of Debt (or any portion thereof) to any other type of Debt described in this covenant at any time; *provided* that Debt under the Credit Facilities outstanding on the Issue Date shall be deemed at all times to be Incurred under clause (1) of Permitted Debt.

(d) For purposes of determining compliance with, and the outstanding principal amount of, any particular Debt Incurred pursuant to and in compliance with this covenant:

(1) the outstanding principal amount of any item of Debt will be counted only once;

(2) the amount of Debt issued at a price that is less than the principal amount thereof will be equal to the amount of the liability in respect thereof determined in accordance with IFRS;

(3) Guarantees of, or obligations in respect of letters of credit or similar instruments relating to, Debt which is otherwise included in the determination of a particular amount of Debt will not be included; and

(4) the accrual of interest, the accretion or amortization of original issue discount, the payment of regularly scheduled interest in the form of additional Debt of the same instrument or the payment of regularly scheduled dividends on Disqualified Stock in the form of additional Disqualified Stock with the same terms will not be deemed to be an Incurrence of Debt for purposes of this covenant; *provided* that any such outstanding additional Debt or Disqualified Stock paid in respect of Debt Incurred pursuant to any provision of clause (2) above will be counted as Debt outstanding thereunder for purposes of any future Incurrence under such provision.

(e) If at any time an Unrestricted Subsidiary becomes a Restricted Subsidiary, any Debt of such Subsidiary shall be deemed to be Incurred by a Restricted Subsidiary of the Company as of such date (and, if such Debt is not permitted to be Incurred as of such date under the covenant described under this "—Limitation on Debt and Disqualified or Preferred Stock" section, the Issuer shall be in Default of this covenant).

Limitation on Restricted Payments

(a) The Company will not, and will not permit any Restricted Subsidiary to, directly or indirectly (the payments and other actions described in the following clauses being collectively "Restricted Payments"):

(1) declare or pay any dividend or make any distribution on its Equity Interests (other than dividends or distributions paid in Qualified Equity Interests) held by Persons other than the Company or any of the Restricted Subsidiaries;

(2) purchase, redeem or otherwise acquire or retire for value any Equity Interests of the Company or any direct or indirect parent of the Issuer held by Persons other than the Company or any of the Restricted Subsidiaries;

(3) repay, redeem, repurchase, defease or otherwise acquire or retire for value, or make any payment on or with respect to, any Subordinated Debt except a payment of interest or principal at Stated Maturity; or

(4) make any Investment other than a Permitted Investment;

unless, at the time of, and after giving effect to, the proposed Restricted Payment:

(5) no Default or Event of Default has occurred and is continuing,

(6) the Company could Incur at least U.S.$1.00 of Debt under paragraph (a) under "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock," and

(7) the aggregate amount expended for all Restricted Payments made on or after the Issue Date would not, subject to paragraph (c), exceed the sum of:

(A) 50% of the aggregate amount of the Consolidated Net Income (or, if the Consolidated Net Income is a loss, minus 100% of the amount of the loss) accrued on a cumulative basis during the period, taken as one accounting period, beginning on January 1, 2021 and ending on the last day of the Company's most recently completed fiscal quarter for which internal financial statements are available, plus

(B) subject to paragraph (c), the aggregate net cash proceeds and the fair market value of property other than cash received by the Company (other than from a Subsidiary) after the Issue Date from:

(i) the issuance and sale of Qualified Equity Interests of the Company, including by way of issuance of its Disqualified Equity Interests or Debt to the extent since converted into Qualified Equity Interests of the Company, or

(ii) any contribution to its common equity, plus

(C) an amount equal to the sum, for all Unrestricted Subsidiaries, of the following:

(x) the cash return, after the Issue Date, on Investments in an Unrestricted Subsidiary made after the Issue Date pursuant to this paragraph (a) as a result of any sale for cash, repayment, redemption, liquidating distribution or other cash realization (not included in Consolidated Net Income), plus

(y) the portion (proportionate to the Company's equity interest in such Unrestricted Subsidiary) of the fair market value of the assets less liabilities of an Unrestricted Subsidiary at the time such Unrestricted Subsidiary is designated a Restricted Subsidiary,

not to exceed, in the case of any Unrestricted Subsidiary, the amount of Investments made after the Issue Date by the Company and the Restricted Subsidiaries in such Unrestricted Subsidiary pursuant to this paragraph (a), plus

(D) the cash return, after the Issue Date, on any other Investment made after the Issue Date pursuant to this paragraph (a), as a result of any sale for cash, repayment, redemption, liquidating distribution or other cash realization (not included in Consolidated Net Income), not to exceed the amount of such Investment so made; plus

(E) the Starter Amount.

The amount expended in any Restricted Payment, if other than in cash, will be deemed to be the fair market value of the relevant non-cash assets, as determined in good faith by the Board of Directors of the Company whose determination will be conclusive and evidenced by a Board Resolution.

(b) The foregoing will not prohibit:

(1) the payment of any dividend within 60 days after the date of declaration thereof if, at the date of declaration, such payment would comply with paragraph (a);

(2) dividends or distributions by a Restricted Subsidiary payable, on a pro rata basis or on a basis more favorable to the Company, to all holders of any class of Capital Stock of such Restricted Subsidiary, a majority of which is held, directly or indirectly through Restricted Subsidiaries, by the Company;

(3) the repayment, redemption, repurchase, defeasance or other acquisition or retirement for value of Subordinated Debt with the proceeds of, or in exchange for, Permitted Refinancing Debt;

(4) the purchase, redemption or other acquisition or retirement for value of Equity Interests of the Company or any direct or indirect parent of the Company in exchange for, or out of the proceeds of a substantially concurrent offering of, Qualified Equity Interests of the Company or of a cash contribution to the common equity of the Company;

(5) the repayment, redemption, repurchase, defeasance or other acquisition or retirement of Subordinated Debt of the Company in exchange for, or out of the proceeds of, a substantially concurrent offering of, Qualified Equity Interests of the Company or of a cash contribution to the common equity of the Company;

(6) any Investment made in exchange for, or out of the net cash proceeds of, a substantially concurrent offering of Qualified Equity Interests of the Company or of a cash contribution to the common equity of the Company;

(7) the repayment, redemption, repurchase, defeasance or other acquisition or retirement for value of any Subordinated Debt at a purchase price not greater than (x) 101% of the principal amount thereof in the event of a Change of Control that results in a Rating Decline pursuant to a provision no more favorable to the holders thereof than "—Repurchase of Notes upon a Change of Control that results in a Rating Decline" or (y) 100% of the principal amount thereof in the event of an Asset Sale pursuant to a provision no more favorable to the holders thereof than "—Limitation on Asset Sales," *provided* that, in each case, prior to the repurchase Company (or a Restricted Subsidiary on behalf thereof) has made an Offer to Purchase and repurchased all Notes issued under the Indenture that were validly tendered for payment in connection with the Offer to Purchase;

(8) the declaration and payment of dividends and other distributions in each fiscal year not to exceed the Minimum Legally Required Dividends, provided however, that such payment shall be included in the calculation of the amount of Restricted Payments pursuant to clause (a)(7) above; or

(9) Restricted Payments not otherwise permitted in an aggregate amount not to exceed U.S.$25.0 million (or the equivalent in other currencies);

provided that, in the case of clauses (6), (7) and (8), no Default has occurred and is continuing or would occur as a result thereof.

(c) Proceeds of the issuance of Qualified Equity Interests will be included under clause (3) of paragraph (a) only to the extent they are not applied as described in clause (4), (5) or (6) of paragraph (b). Restricted Payments permitted pursuant to clause (3), (4), (5), (6) (7) or (8) will not be included in making the calculations under clause (3) of paragraph (a).

(d) For purposes of determining compliance with this covenant, in the event that a Restricted Payment permitted pursuant to this covenant or a Permitted Investment meets the criteria of more than one of the categories of Restricted Payment described in clauses (1) through (8) above or one or more clauses of the definition of Permitted Investments, as the case may be, the Company shall be permitted to classify such Restricted Payment or Permitted Investment on the date it is made, or later reclassify all or a portion of such Restricted Payment or Permitted Investment, in any manner that complies with this covenant, and such Restricted Payment or Permitted Investment shall be treated as having been made pursuant to only one of such clauses of this covenant or of the definition of Permitted Investments, as the case may be. For purposes of covenant compliance, the amount of any Investment shall be the amount actually invested, without adjustment for subsequent increases or decreases in the value of such Investment, less any amount paid, repaid, returned, distributed or otherwise received in cash in respect of such Investment.

Limitation on Liens

The Company will not, and will not permit any Restricted Subsidiary to, directly or indirectly, Incur or permit to exist any Lien of any nature whatsoever on any of its properties or assets (including Capital Stock of a Restricted Subsidiary), whether owned at the Issue Date or thereafter acquired, other than (1) in the case of any property that does not constitute Collateral, Permitted Liens, *provided*, *however*, that any Lien on such property shall be permitted notwithstanding that it is not a Permitted Lien if all Obligations under the Indenture and the Notes are secured on an equal and ratable basis with (or, if the obligation to be secured by the Lien is subordinated in right of payment to the Notes or any Note Guaranty, prior to) the obligations so secured for so long as such obligations are no longer secured by a Lien on such property; and (2) in the case of any property that constitutes Collateral, Permitted Collateral Liens.

Limitation on Dividend and Other Payment Restrictions Affecting Restricted Subsidiaries

(a) Except as provided in paragraph (b) below, the Company will not, and will not permit any Restricted Subsidiary to, create or otherwise cause or permit to exist or become effective any consensual encumbrance or restriction of any kind on the ability of any Restricted Subsidiary to:

(1) pay dividends or make any other distributions on or in respect of any Equity Interests of a Restricted Subsidiary owned by the Company or any other Restricted Subsidiary,

(2) pay any Debt or other obligation owed to the Company or any other Restricted Subsidiary,

(3) make loans or advances to, or Guarantee any Debt or other obligations of, or make any Investment in, the Company or any other Restricted Subsidiary, or

(4) transfer any of its property or assets to the Company or any Restricted Subsidiary.

(b) The provisions of paragraph (a) do not apply to any encumbrances or restrictions:

(1) existing on the Issue Date in the Indenture or any other agreements in effect on the Issue Date, and any amendments, modifications, restatements, extensions, renewals, replacements or refinancings of any of the foregoing; *provided* that the encumbrances and restrictions in the amendment, modification, restatement, extension, renewal, replacement or refinancing are, taken as a whole, in the good faith judgment of the Company, no less favorable in any material respect to the holders of the Notes than the encumbrances or restrictions being amended, modified, restated, extended, renewed, replaced or refinanced;

(2) existing under or by reason of applicable law, rule, regulation or order;

(3) existing:

(A) with respect to any Person, or to the property or assets of any Person, at the time the Person is acquired by the Company or any Restricted Subsidiary, or

(B) with respect to any Unrestricted Subsidiary at the time it is designated or is deemed to become a Restricted Subsidiary,

which encumbrances or restrictions (i) are not applicable to any other Person or the property or assets of any other Person and (ii) were not put in place in anticipation of such event and any amendments, modifications, restatements, extensions, renewals, replacements or refinancings of any of the foregoing, *provided* that the encumbrances and restrictions in the amendment, modification, restatement, extension, renewal, replacement or refinancing are, taken as a whole, in the good faith judgment of the Company, no less favorable in any material respect to the holders of the Notes than the encumbrances or restrictions being amended, modified, restated, extended, renewed, replaced or refinanced;

(4) of the type described in clause (a)(4) arising or agreed to in the ordinary course of business (i) that restrict in a customary manner the subletting, assignment or transfer of any property or asset that is subject to a lease, license, conveyance or similar contract, including with respect to intellectual property, (ii) that restrict in a customary manner, pursuant to provisions in partnership agreements, limited liability company organizational governance documents, joint venture agreements and other similar agreements, the transfer of ownership interests in, or assets of, such partnership, limited liability company, joint venture or similar Person (in each case relating solely to the respective partnership, limited liability company, joint venture or similar Person) or (iii) by virtue of any Lien on, or agreement to transfer, option or similar right with respect to any property or assets of, the Company or any Restricted Subsidiary;

(5) with respect to a Restricted Subsidiary and imposed pursuant to an agreement that has been entered into for the sale or disposition of all or substantially all of the Capital Stock of, or property and assets of, the Restricted Subsidiary that is permitted by "—Limitation on Asset Sales;"

(6) contained in the terms governing any Debt if (as determined in good faith by the Company) (i) the encumbrances or restrictions are ordinary and customary for a financing of that type and (ii) the encumbrances or restrictions either (x) would not, at the time agreed to, be expected to materially adversely affect the ability of the Issuer or any Guarantor to make payments on the Notes or (y) in the case of any Permitted Refinancing Debt, are, taken as a whole, no less favorable in any material respect to the holders of the Notes than those contained in the agreements governing the Debt being refinanced; or

(7) required pursuant to the Indenture, the Notes or any Note Guaranty.

Future Guarantors

If, after the Issue Date, (a) the Company or any of its Restricted Subsidiaries acquires or creates any Significant Subsidiary that is not an Excluded Subsidiary that (i) Guarantees any Debt of the Company or any Restricted Subsidiary in an aggregate amount in excess of U.S.$10.0 million outstanding at any one time (unless such Debt is fully repaid within ten Business Days of its Incurrence) or (ii) Incurs Debt in excess of U.S.$10.0 million outstanding at any one time (unless such Debt is fully repaid within ten Business Days of its Incurrence); (b) the Company otherwise elects to have any Significant Subsidiary become a Guarantor, (c) any Significant Subsidiary of the Company that is not an Excluded Subsidiary acquires assets in excess of U.S.$10 million, including any interest in any oil field, or (d) any Subsidiary of the Company that is not an Excluded Subsidiary Incurs Debt in excess of U.S.$50.0 million, then, in each such case, the Company shall cause such Significant Subsidiary or Subsidiary, as applicable, to:

(1) execute and deliver to the Trustee within 10 Business Days of such event a supplemental Indenture to the Indenture, as prescribed in the Indenture, providing for the Note Guaranty of the payment of the Notes, and

(2) deliver to the Trustee an Officers' Certificate and Opinion of Counsel stating that such supplemental Indenture and further providing that such Guarantee (a) has been duly authorized, executed and delivered by such Significant Subsidiary and (b) constitutes a valid and legally binding obligation of such Significant Subsidiary that is enforceable in accordance with its terms.

The obligations of each future Guarantor will be limited to the maximum amount that would not render the Guarantors' obligations subject to avoidance under applicable fraudulent conveyance provisions under applicable law. By virtue of this limitation, a Guarantor's obligation under its Note Guaranty could be significantly less than amounts payable with respect to the Notes, or a Guarantor may have effectively no obligation under its Note Guaranty.

Future Pledges of Equity Interests

If, after the Issue Date, the Company or any of its Restricted Subsidiaries acquires or creates a Significant Subsidiary other than an Excluded Pledge Subsidiary, the Company shall cause:

(1) a first-priority perfected security interest in all of the Company's direct or indirect Equity Interests in such Significant Subsidiary (a "Pledged Subsidiary") to be granted, pursuant to an Additional Share Pledge Agreement to the Additional Share Pledge Collateral Agent on the same terms (including with respect to priority) as Initial Share Pledge Agreements; and

(2) to deliver to the Additional Share Pledge Collateral Agent an Officers' Certificate and Opinion of Counsel stating that such Additional Share Pledge Agreement (a) has been duly authorized, executed and delivered by such Pledged Subsidiary, (b) constitutes a valid and legally binding obligation of such Pledged Subsidiary that is enforceable in accordance with its terms, and (c) certain other certificates and opinions in respect thereof as specified in the Indenture.

Repurchase of Notes upon a Change of Control that results in a Rating Decline

Not later than 30 days following the date on which a Change of Control that results in a Rating Decline occurs, the Issuer will make an Offer to Purchase all outstanding Notes (in integral multiples of U.S.$1,000,

provided that the principal amount of such holder's note will not be less than U.S.$200,000) at a purchase price equal to 101% of the principal amount thereof plus any accrued and unpaid interest (including Additional Amounts, if any) thereon to the date of purchase.

An "Offer to Purchase" must be made by written offer (a copy of which will be delivered to the Trustee), which will specify the principal amount of Notes subject to the offer and the purchase price. The offer must specify an expiration date (the "expiration date") not less than 30 days or more than 60 days after the date of the offer and a settlement date for purchase (the "purchase date") not more than five Business Days after the expiration date. The offer must include information concerning the business of the Company and its Restricted Subsidiaries which the Issuer in good faith believes will enable the holders to make an informed decision with respect to the Offer to Purchase. The offer will also contain instructions and materials necessary to enable holders to tender Notes pursuant to the offer.

A holder may tender all or any portion of its Notes pursuant to an Offer to Purchase, subject to the requirement that any portion of a note tendered must be in a multiple of U.S.$1,000 principal amount. Holders are entitled to withdraw Notes tendered up to the close of business on the expiration date. On the purchase date the purchase price will become due and payable on each note accepted for purchase pursuant to the Offer to Purchase, and interest on Notes purchased will cease to accrue on and after the purchase date.

The Issuer will not be required to make an Offer to Purchase following a Change of Control that results in a Rating Decline if a Restricted Subsidiary or a third party makes the Offer to Purchase in the manner, at the times and otherwise in compliance with the requirements set forth in the Indenture applicable to an Offer to Purchase following a Change of Control that results in a Rating Decline made by the Issuer and if such Person purchases all Notes validly tendered and not withdrawn under such Offer to Purchase.

If holders of not less than 90% in aggregate principal amount of the outstanding Notes validly tender and do not withdraw such Notes in the Offer to Purchase following a Change of Control that results in a Rating Decline and the Issuer, or any third party making the Offer to Purchase in lieu of the Issuer as described above, purchases all of the Notes validly tendered and not withdrawn by such holders, the Issuer or such third party will have the right, upon not less than 10 nor more than 60 days' prior notice, given not more than 30 days following such purchase pursuant to such Offer to Purchase, to redeem all Notes of such series that remain outstanding following such purchase at a price in cash equal to 101% of the principal amount thereof plus accrued and unpaid interest to but excluding the date of such redemption.

The Issuer will comply with U.S. securities laws, to the extent applicable, and all other applicable laws in making any Offer to Purchase, and the above procedures will be deemed modified as necessary to permit such compliance.

The Issuer has agreed in the Indenture that it will timely repay Debt or obtain consents as necessary under, or terminate, agreements or instruments that would otherwise prohibit an Offer to Purchase required to be made pursuant to the Indenture. Notwithstanding this agreement of the Issuer, it is important to note the following:

Future debt of the Issuer may also prohibit the Issuer from purchasing Notes in the event of a Change of Control (whether or not as a result of a rating decline), provide that a Change of Control is a default or require repurchase upon a change of control. Moreover, the exercise by the holders of the Notes of their right to require the Issuer to purchase the Notes could cause a default under other debt, even if the Change of Control that results in a Rating Decline itself does not, due to the financial effect of the purchase on the Issuer.

Finally, the Issuer's ability to pay cash to the holders of the Notes following the occurrence of a Change of Control that results in a Rating Decline may be limited by the Issuer's then existing financial resources. There can be no assurance that sufficient funds will be available when necessary to make the required purchase of the Notes. See "*Risk Factors—Risks Related to the Notes, the Notes Guaranties and the Collateral—We may be unable to repurchase the Notes upon a change of control*."

The phrase "all or substantially all," as used with respect to the assets of the Issuer in the definition of "Change of Control," is subject to interpretation under applicable state law, and its applicability in a given instance would depend upon the facts and circumstances. As a result, there may be a degree of uncertainty in

ascertaining whether a sale or transfer of "all or substantially all" the assets of the Issuer has occurred in a particular instance, in which case a holder's ability to obtain the benefit of these provisions could be unclear.

Except as described above with respect to a Change of Control that results in a Rating Decline, the Indenture does not contain provisions that permit the holder of the Notes to require that the Issuer purchase or redeem the Notes in the event of a takeover, recapitalization or similar transaction.

The provisions under the Indenture relating to the Issuer's obligation to make an offer to repurchase the Notes as a result of a Change of Control that results in a Rating Decline may be waived or amended as described in "—Amendments and waivers."

Limitation on Asset Sales

The Company will not, and will not permit any Restricted Subsidiary to, make any Asset Sale unless the following conditions are met:

(1) The Asset Sale is for at least fair market value, as determined in good faith by the Board of Directors of the Company.

(2) At least 75% of the consideration consists of cash or Cash Equivalents received at closing or Additional Assets or any combination of the foregoing. For purposes of this clause (2), except in connection with a disposition of Collateral, each of the following will be deemed to be cash:

  (A) any liabilities of the Company or such Restricted Subsidiary (other than Subordinated Debt) that are assumed by the transferee of any such assets pursuant to a customary novation agreement that releases the Company or such Restricted Subsidiary from further liability; and

  (B) any securities notes or other obligations received by the Company or such Restricted Subsidiary from such transferee that are, within 90 days after the Asset Sale, converted by the Company or such Restricted Subsidiary into cash or Cash Equivalents, but only to the extent of the cash or Cash Equivalents actually received in that conversion.

(3) Within 360 days in the case of clause (3)(A) or 720 days in the case of clause (3)(B)) after the receipt of any Net Cash Proceeds from an Asset Sale, unless the Asset Sale was of Collateral, the Net Cash Proceeds may be used:

  (A) to permanently repay secured Debt of the Issuer or a Guarantor or any Debt of a Restricted Subsidiary of the Company that is not a Guarantor (and in the case of a revolving credit, permanently reduce the commitment thereunder by such amount), in each case owing to a Person other than the Company or any Restricted Subsidiary, or

  (B) to enter into a binding commitment to acquire all or substantially all of the assets of a Permitted Business, or a majority of the Voting Stock of another Person that thereupon becomes a Restricted Subsidiary engaged in a Permitted Business, or to make capital expenditures or otherwise acquire long-term assets that are to be used in a Permitted Business

(4) The Net Cash Proceeds of an Asset Sale not applied pursuant to clause (3) within 360 days or 720 days, as applicable, of the Asset Sale (including proceeds of any disposition of Collateral, which are not permitted to be applied pursuant to clause (3)) constitute "Excess Proceeds," *provided* that, any such Net Cash Proceeds of an Asset Sale not applied pursuant to clause (3)(B) within 720 days that are applied to purchase and held in the form of United States government securities will not be considered Excess Proceeds. Excess Proceeds of less than U.S.$30.0 million (or the equivalent in other currencies) will be carried forward and accumulated. When accumulated Excess Proceeds equals or exceeds such amount, the Issuer must, within 30 days, make an Offer to Purchase Notes having a principal amount equal to:

  (A) accumulated Excess Proceeds, multiplied by:

  (B) a fraction (x) the numerator of which is equal to the outstanding principal amount of the Notes and (y) the denominator of which is equal to the outstanding principal amount of the Notes and

all *pari passu* Debt similarly required to be repaid, redeemed or tendered for in connection with the Asset Sale,

rounded down to the nearest U.S.$1,000. The purchase price for the Notes will be 100% of the principal amount plus accrued interest to the date of purchase. If the Offer to Purchase is for less than all of the outstanding Notes and Notes in an aggregate principal amount in excess of the purchase amount are tendered and not withdrawn pursuant to the offer, the Issuer will purchase Notes having an aggregate principal amount equal to the purchase amount on a pro rata basis, with adjustments so that only Notes in multiples of U.S.$1,000 principal amount will be purchased *provided* that the principal amount of such tendering holder's note will not be less than U.S.$200,000. Upon completion of the Offer to Purchase, Excess Proceeds will be reset at zero, and any Excess Proceeds remaining after consummation of the Offer to Purchase may be used for any purpose not otherwise prohibited by the Indenture.

If at any time any non-cash consideration received by the Issuer or any Restricted Subsidiary, as the case may be, in connection with any Asset Sale is converted into or sold or otherwise disposed of for cash (other than interest received with respect to any non-cash consideration), the conversion or disposition will be deemed to constitute an Asset Sale hereunder and the Net Cash Proceeds thereof will be applied in accordance with this covenant within 360 days or 720 days, as applicable, of conversion or disposition.

The Issuer will comply with the requirements of U.S. securities laws, to the extent applicable, and any other securities laws and regulations to the extent any such rule, laws and regulations are applicable in connection with the purchase of Notes pursuant to an Offer to Purchase. To the extent that the provisions of any applicable securities laws or regulations conflict with the "Asset Sale" provisions of the Indenture, the Issuer will comply with these laws and regulations and will not be deemed to have breached its obligations under the "Asset Sale" provisions of the Indenture by doing so.

The Issuer will not be required to make an Offer to Purchase following an Asset Sale if a Restricted Subsidiary or a third party makes the Offer to Purchase in the manner, at the times and otherwise in compliance with the requirements set forth in the Indenture applicable to an Offer to Purchase following an Asset Sale made by the Issuer and if such Person purchases all Notes validly tendered and not withdrawn under such Offer to Purchase.

Limitation on Transactions with Affiliates

(a) The Company will not, and will not permit any Restricted Subsidiary to, directly or indirectly, enter into, renew or extend any transaction or arrangement including the purchase, sale, lease or exchange of property or assets, or the rendering of any service with any Affiliate of the Company or any Restricted Subsidiary (a "Related Party Transaction"), except upon fair and reasonable terms no less favorable to the Company or the Restricted Subsidiary than could be obtained in a comparable arm's-length transaction with a Person that is not an Affiliate of the Company or such Restricted Subsidiary, as the case may be.

(b) Prior to entering into any Related Party Transaction or series of Related Party Transactions (1) with an aggregate value in excess of U.S.$20.0 million (or the equivalent in other currencies), the terms of such Related Party Transaction will be approved by a majority of the members of the Board of Directors of the Company, and a majority of the Board of Directors of the Company who are disinterested directors with respect to such Related Party Transaction, the approval to be evidenced by a Board Resolution stating that the Board of Directors of the Company has determined that such transaction complies with the preceding provisions, and (2) with an aggregate value in excess of U.S.$35.0 million (or the equivalent in other currencies), the Issuer must obtain and deliver to the Trustee a favorable written opinion from a nationally recognized (in the relevant jurisdiction) Independent Financial Advisor as to the fairness of the transaction to the Company and the Restricted Subsidiaries from a financial point of view.

(c) The foregoing paragraphs do not apply to:

(1) any transaction between or among the Company and any of the Restricted Subsidiaries, or between or among Restricted Subsidiaries of the Company;

(2) reasonable fees and compensation paid to, and any indemnity or insurance provided on behalf of, officers, directors, employees, consultants or agents of the Company or any Restricted Subsidiary;

(3) any Restricted Payments of a type described in one of the first two bullet points in paragraph (a) under "—Certain Covenants—Limitation on Restricted Payments" if permitted by that covenant;

(4) transactions or payments pursuant to any employee, consultant, officer or director compensation or benefit plans or arrangements entered into in the ordinary course of business;

(5) transactions pursuant to any contract or agreement in effect on the date of the Indenture, as amended, modified or replaced from time to time so long as the amended, modified or new agreements, taken as a whole, are no less favorable to the Company and the Restricted Subsidiaries than those in effect on the date of the Indenture; or

(6) loans and advances to employees in the ordinary course of business or consistent with past practices.

Line of Business

The Company will not, and will not permit any of the Restricted Subsidiaries, to engage in any business other than a Permitted Business, except to an extent that so doing would not be material to the Company and its Restricted Subsidiaries, taken as a whole.

Designation of Restricted and Unrestricted Subsidiaries

(a) The Board of Directors of the Company may designate any Subsidiary, including a newly acquired or created Subsidiary, to be an Unrestricted Subsidiary if it meets the following qualifications and the designation would not cause a Default:

(1) Such Subsidiary does not own any Capital Stock of the Company or any Restricted Subsidiary or hold any Debt of, or any Lien on any property of the Company or any Restricted Subsidiary.

(2) At the time of the designation, the designation would be permitted under "—Certain Covenants—Limitation on Restricted Payments" or as a Permitted Investment.

(3) To the extent the Debt of the Subsidiary is not Non-Recourse Debt, any Guarantee or other credit support thereof by the Company or any Restricted Subsidiary is permitted under "—Certain Covenants— Limitation on Debt and Disqualified or Preferred Stock" and "—Certain Covenants —Limitation on Restricted Payments."

(4) The Subsidiary is not party to any transaction or arrangement with the Company or any Restricted Subsidiary that would not be permitted under "—Certain Covenants—Limitation on Transactions with Affiliates."

(5) Neither the Company nor any Restricted Subsidiary has any obligation to subscribe for additional Equity Interests of the Subsidiary or to maintain or preserve its financial condition or cause it to achieve specified levels of operating results, except to the extent permitted by "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock" and "—Limitation on Restricted Payments."

Once so designated the Subsidiary will remain an Unrestricted Subsidiary, subject to paragraph (b).

(b)

(1) A Subsidiary previously designated an Unrestricted Subsidiary which fails to meet the qualifications set forth in paragraph (a) will be deemed to become at that time a Restricted Subsidiary, subject to the consequences set forth in paragraph (d).

(2) The Board of Directors of the Company may designate an Unrestricted Subsidiary to be a Restricted Subsidiary if the designation would not cause a Default.

(c) Upon a Restricted Subsidiary becoming an Unrestricted Subsidiary:

(1) all existing Investments of the Company and the Restricted Subsidiaries therein (valued at the Company's proportional share of the fair market value of its assets less liabilities) will be deemed made at that time;

(2) all existing transactions between it and the Company or any Restricted Subsidiary will be deemed entered into at that time;

(3) it is released at that time from its Note Guaranty, if any;

(4) the release of the Liens on the Collateral where such Subsidiary is the Company or the shares constituting such Collateral; and

(5) it will cease to be subject to the provisions of the Indenture as a Restricted Subsidiary.

(d) Upon an Unrestricted Subsidiary becoming, or being deemed to become, a Restricted Subsidiary:

(1) all of its Debt and Disqualified or Preferred Stock will be deemed Incurred at that time for purposes of "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock," but will not be considered the sale or issuance of Equity Interests for purposes of "—Certain Covenants—Limitation on Asset Sales;"

(2) Investments therein previously charged under "—Certain Covenants—Limitation on Restricted Payments" will be credited thereunder;

(3) it may be required to issue a Note Guaranty pursuant to "—Certain Covenants—Future Guarantors;"

(4) the Company or Restricted Subsidiary may be required to grant a first-priority perfected security interest on the Equity Interests of such Subsidiary pursuant to "—Future pledges of Equity Interests"; and

(5) it will thenceforward be subject to the provisions of the Indenture as a Restricted Subsidiary.

(e) Any designation by the Board of Directors of the Company of a Subsidiary as a Restricted Subsidiary or Unrestricted Subsidiary will be evidenced to the Trustee by promptly filing with the Trustee a copy of the Board Resolution giving effect to the designation and an Officers' Certificate certifying that the designation complied with the foregoing provisions.

(f) The designation of a Subsidiary of the Company as an Unrestricted Subsidiary will be deemed to include the designation of all of the Subsidiaries of such Subsidiary, unless otherwise determined by the Board of Directors of the Company.

Anti-layering

Neither the Issuer nor any Guarantor may Incur any Debt that is subordinated in right of payment to other Debt of the Issuer or the Guarantor unless such Debt is also subordinated in right of payment to the Notes or the relevant Note Guaranty on substantially identical terms. This does not apply to distinctions between categories of Debt that exist by reason of any Liens or Guarantees securing or in favor of some but not all of such Debt.

Reports to Holders

If at any point the Issuer or the Company is not subject to the reporting requirements of Section 13 or 15(d) of the Exchange Act, so long as any Notes are "restricted securities" within the meaning of Rule 144(a)(3) under the Securities Act, the Issuer and the Company will furnish to the holders of the Notes and to prospective investors, upon their request, the information required to be delivered pursuant to Rule 144A(d)(4) under the Securities Act.

If at any point the Issuer or the Company is not subject to the reporting requirements of Section 13 or 15(d) of the Exchange Act, the Issuer and the Company will furnish or cause to be furnished to the Trustee in English (for distribution only to the holders of Notes):

(1) within 90 days (i) after the end of the first, second and third quarters of the Company's fiscal year (commencing with the quarter ending immediately following the Company no longer being subject to such reporting requirements), quarterly unaudited financial statements for the Company on a consolidated basis and (ii) after the end of the first, second and third quarters of the Issuer's fiscal year, quarterly management financial statements for the Issuer on a standalone basis; and

(2) within 120 days after the end of the fiscal year of the Company and the Issuer (commencing with the first fiscal year ending immediately following the Company or the Issuer no longer being subject to such reporting requirements), annual audited financial statements of the Company on a consolidated basis for such fiscal year and a report on such annual financial statements by the Company's auditor, and annual audited financial statements of the Issuer on a standalone basis.

Delivery of such reports, information and documents to the Trustee is for informational purposes only and the Trustee's receipt of such reports shall not constitute constructive notice of any information contained therein or determinable from information contained therein, including the Issuer's, the Company's or any other Person's compliance with any of its covenants under the Indenture or the Notes (as to which the Trustee is entitled to rely exclusively on Officers' Certificates).

The Trustee shall not be obligated to monitor or confirm, on a continuing basis or otherwise, the Issuer's, the Company's or any other Person's compliance with the covenants described above or with respect to any reports or other documents filed under the Indenture; *provided, however,* that nothing herein shall relieve the Trustee of any obligations to monitor the Issuer's and the Company's timely delivery of all reports and certificates described in this section.

Reports to Trustee

The Issuer and the Company will deliver to the Trustee:

(1) within 120 days after the end of each fiscal year a certificate stating that each of the Issuer, the Company and the Guarantors has fulfilled its obligations under the Indenture, the Notes Guaranties or Collateral Agreements or, if there has been a Default, specifying the Default and its nature and status; and

(2) as soon as possible and in any event within 30 days after a responsible officer of the Company becomes aware or should reasonably become aware of the occurrence of a Default, an Officers' Certificate setting forth the details of the Default, and the action which the Company proposes to take with respect thereto.

Consolidation, Amalgamation, Merger or Sale of Assets

Company

(a) The Company will not, in a single transaction or series of related transactions,

(1) consolidate with, amalgamate or merge with or into any Person; or

(2) sell, convey, transfer, or otherwise dispose of (or cause or permit any Restricted Subsidiary to sell, assign, transfer, convey or otherwise dispose of) all or substantially all of its assets as an entirety or

(3) substantially an entirety (determined on a consolidated basis for the Company and the Restricted Subsidiaries), to any Person; or

(4) permit any Person to amalgamate or merge with or into the Company.

unless:

(1) either (x) the Company is the continuing Person or (y) the resulting, surviving or transferee Person is organized and validly existing under the laws of Luxembourg, the United States of America, any State thereof or the District of Columbia, Brazil or any OECD Country and expressly assumes by supplemental Indenture all of the obligations of the Company under the Indenture, the Notes, and to the extent Company has become an obligor under any Collateral Agreement, such Collateral Agreement;

(2) immediately after giving effect to the transaction, no Default has occurred and is continuing;

(3) immediately after giving effect to the transaction on a pro forma basis, the Company or the resulting surviving or transferee Person could Incur at least U.S.$1.00 of Debt under paragraph (a) under "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock"; and

(4) the Company delivers to the Trustee an Officers' Certificate and an Opinion of Counsel, each stating that the consolidation, amalgamation, merger, sale, conveyance, transfer or other disposal of assets and the supplemental Indenture (if any) comply with the Indenture and all conditions precedent provided for in the Indenture relating to such transaction have been complied with;

(b) the Company shall not lease all or substantially all of its assets, whether in one transaction or a series of transactions, to one or more other Persons.

(c) Upon the consummation of any transaction effected in accordance with these provisions, if the Company is not the continuing Person, the resulting, surviving or transferee Person will succeed to, and be substituted for, and may exercise every right and power of, the Issuer under the Indenture and the Notes with the same effect as if such successor Person had been named as Company in the Indenture. Upon such substitution, except in the case of a sale, conveyance, transfer or disposition of less than all its assets, the Company will be released from its obligations under the Indenture and the Notes.

Issuer

(a) the Issuer will not, in a single transaction or series of related transactions,

(1) consolidate with, amalgamate or merge with or into any Person; or

(2) sell, convey, transfer, or otherwise dispose of (or cause or permit any Restricted Subsidiary to sell, assign, transfer, convey or otherwise dispose of) all or substantially all of its assets as an entirety or

(3) substantially an entirety (determined on a consolidated basis for the Issuer and the Restricted Subsidiaries), to any Person; or

(4) permit any Person to amalgamate or merge with or into the Issuer.

unless:

(1) either (x) the Issuer is the continuing Person or (y) the resulting, surviving or transferee Person is organized and validly existing under the laws of Luxembourg, the United States of America, any State thereof or the District of Columbia, Brazil or any OECD Country and expressly assumes by supplemental Indenture all of the obligations of the Issuer under

the Indenture, the Notes, and to the extent Issuer has become an obligor under any Collateral Agreement, such Collateral Agreement;

(2) immediately after giving effect to the transaction, no Default has occurred and is continuing;

(3) immediately after giving effect to the transaction on a pro forma basis, the Issuer or the resulting surviving or transferee Person could Incur at least U.S.$1.00 of Debt under paragraph (a) under "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock"; and

(4) the Issuer delivers to the Trustee an Officers' Certificate and an Opinion of Counsel, each stating that the consolidation, amalgamation, merger, sale, conveyance, transfer or other disposal of assets and the supplemental Indenture (if any) comply with the Indenture and all conditions precedent provided for in the Indenture relating to such transaction have been complied with;

provided, that clauses (2) to (3) do not apply (i) to the consolidation or merger of the Issuer with or into a Restricted Subsidiary or the consolidation, amalgamation or merger of a Restricted Subsidiary with the Issuer, or (ii) if, in the good faith determination of the Board of Directors of the Issuer, whose determination is evidenced by a Board Resolution, the purpose of the transaction is to change the jurisdiction of incorporation of the Issuer.

(b) the Issuer shall not lease all or substantially all of its assets, whether in one transaction or a series of transactions, to one or more other Persons.

(c) Upon the consummation of any transaction effected in accordance with these provisions, if the Issuer is not the continuing Person, the resulting, surviving or transferee Person will succeed to, and be substituted for, and may exercise every right and power of, the Issuer under the Indenture and the Notes with the same effect as if such successor Person had been named as Issuer in the Indenture. Upon such substitution, except in the case of a sale, conveyance, transfer or disposition of less than all its assets, the Issuer will be released from its obligations under the Indenture and the Notes.

Subsidiary Guarantors

No Subsidiary Guarantor may, in a single transaction or series of related transactions,

(1) consolidate with, amalgamate or merge with or into any Person; or

(2) sell, convey, transfer or dispose of, all or substantially all its assets as an entirety or substantially as an entirety, to any Person; or

(3) permit any Person to amalgamate or merge with or into the Guarantor unless:

(A) the other Person is the Company or the Issuer or any Restricted Subsidiary that is a Guarantor or becomes a Guarantor concurrently with the transaction); or

(B)

(1) either (x) the Guarantor is the continuing Person or (y) the resulting, surviving or transferee Person expressly assumes by supplemental Indenture all of the obligations of the Guarantor under its Note Guaranty and to the extent such Guarantor has become an obligor under any Collateral Agreement, such Collateral Agreement; and

(2) immediately after giving effect to the transaction, no Default has occurred and is continuing; or

(C) the transaction constitutes a sale or other disposition (including by way of consolidation, amalgamation or merger) of the Guarantor or the sale or disposition of all or substantially all the assets of the Guarantor (in each case other than to the Company or a Restricted Subsidiary) otherwise permitted by the Indenture,

provided, that Company will have delivered to the Trustee an Officers' Certificate and an Opinion of Counsel, each stating that the consolidation, amalgamation, merger, sale, conveyance, transfer or other disposal of assets and the supplemental Indenture (if any) comply with the Indenture and all conditions precedent provided for in the Indenture relating to such transaction have been complied.

Notices

As long as Notes in global form are outstanding, notices to be given to holders will be given to the depositary, in accordance with its applicable policies as in effect from time to time. If the Issuer issues Notes in certificated form, notices to be given to holders will be sent by mail to the respective addresses of the holders as they appear in the registrar's records, and will be deemed given when mailed.

For so long as any Notes are listed on the Singapore Stock Exchange and in accordance with the rules and regulations of the Singapore Stock Exchange, the Issuer or the Company will publish all notices to holders in a newspaper with general circulation in Singapore. Any such notice shall be deemed to have been delivered on the date of first publication.

Neither the failure to give any notice to a particular holder, nor any defect in a notice given to a particular holder, will affect the sufficiency of any notice given to another holder.

Substitution of the Issuer

The Issuer may, without the consent of any holder of the notes, be substituted by

(a) the Company or

(b) any Wholly Owned Subsidiary of the Company as principal debtor in respect of the notes (in that capacity, the "Substituted Issuer");

provided that the following conditions are satisfied:

(1) such documents will be executed by the Substituted Issuer, the Issuer, the Company and the Trustee as may be necessary to give full effect to the substitution, including a supplemental indenture under which the Substituted Issuer assumes all of the Issuer's obligations under the indenture and the notes and, unless the Guarantors' then existing guarantees remain in full force and effect, substitute guarantees issued by the Guarantors in respect of the notes (collectively, the "Issuer Substitution Documents");

(2) the Issuer Substitution Documents will contain covenants:

(A) to ensure that each holder and beneficial owner of the notes has the benefit of a covenant in terms corresponding to the obligations of the Issuer in respect of the payment of additional amounts (but, if relevant, replacing references to Luxembourg with references to the other jurisdiction) and

(B) to indemnify the Trustee, any paying agent and each holder and beneficial owner of the notes against all taxes and duties that:

(1) arise by reason of a law or regulation in effect or contemplated on the effective date of the substitution that are incurred or levied against the Trustee, any paying agent or such holder or beneficial owner of the notes as a result of the substitution and that would not have been so incurred or levied had the substitution not been made, and

(2) are imposed on the Trustee, any paying agent or such holder or beneficial owner of the notes by any political subdivision or taxing authority of any country in which the Trustee, any paying agent or such holder or beneficial owner of the notes resides or is subject to any such tax or duty and that would not have been so imposed had the substitution not been made; *provided that* any holder or beneficial owner of such note making a claim with respect to such tax indemnity shall provide the Issuer or the Company with notice of such claim, along with supporting documentation, within two years of the announcement

of the substitution of the Issuer; provided further, that none of the Issuer, the Company, any paying agent or any other person shall be required to indemnify any holder or beneficial owner of the notes for any taxes imposed pursuant to FATCA, the laws of Brazil, or Luxembourg or any other jurisdiction implementing FATCA, or any agreement between the Issuer, the Company or any other person, and the United States or any authority thereof implementing FATCA;

(C) the Issuer will deliver, or cause the delivery, to the Trustee of an Opinion of Counsel in the jurisdiction of organization of the Substituted Issuer, Luxembourg and the United States as to the validity, legally binding effect and enforceability of the Issuer Substitution Documents and specified other legal matters, as well as an officer's certificate as to compliance with the provisions described under this section;

(D) no Event of Default has occurred or is continuing; and

(E) the substitution will comply with all applicable requirements under the laws of the jurisdiction of organization of the Substituted Issuer, Luxembourg and Brazil.

Upon the execution of the Issuer Substitution Documents, any substitute guarantees and compliance with the other conditions set forth above, the Substituted Issuer will be deemed to be named in the Indenture and the notes as the principal debtor in place of the Issuer and the Issuer, will be released from all of its obligations under the notes and the indenture.

Not later than ten Business Days after the execution of the Issuer Substitution Documents, the Substituted Issuer will give notice thereof to the holders of the notes.

Notwithstanding any other provision of the indenture, the Company will (unless it is the Substituted Issuer) do or cause to be done all acts and things and promptly execute and deliver any documents or instruments, including any substitute guarantees and a legal opinion of internationally recognized Brazilian or Luxembourg counsel, that may be required, or that the Trustee may reasonably request, to ensure that the Guarantors' guarantees are in full force and effect for the benefit of the holders and beneficial owners of the notes following the substitution.

Default and Remedies

Events of Default

An "Event of Default" occurs if:

(1) the Issuer defaults in the payment of the principal or any related Additional Amounts, if any, of any note when the same becomes due and payable at maturity, upon acceleration or redemption, or otherwise (other than pursuant to an Offer to Purchase);

(2) the Issuer defaults in the payment of interest (including any Additional Amounts) on any note when the same becomes due and payable, and the default continues for a period of 30 days;

(3) the Issuer fails to make an Offer to Purchase and thereafter accept and pay for Notes tendered when and as required pursuant to "—Certain Covenants—Repurchase of Notes upon a Change of Control that results in a Rating Decline" or "—Certain Covenants—Limitation on Asset Sales," or the Issuer, the Company or any Guarantor fails to comply with "—Certain Covenants—Consolidation, Amalgamation, Merger or Sale of Assets;"

(4) the Issuer, the Company or a Significant Subsidiary defaults in the performance of or breaches any other covenant or agreement of the Issuer, the Company, any Guarantor or a Restricted Subsidiary in the Indenture, under the Notes or the Collateral Agreements, and the default or breach continues for a period of 60 consecutive days after written notice to the Issuer by the Trustee or to the Issuer and the Trustee by the holders of 25% or more in aggregate principal amount of the Notes;

(5) there occurs with respect to any Debt of the Issuer, the Company, any Guarantor or Restricted Subsidiary having an outstanding principal amount of U.S.$50.0 million (or the equivalent in other

currencies) or more in the aggregate for all such Debt of all such Persons (i) an event of default that results in such Debt being due and payable prior to its scheduled maturity or (ii) failure to make a principal payment when due and such defaulted payment is not made, waived or extended within the applicable grace period;

(6) one or more final judgments or orders for the payment of money are rendered against the Issuer, the Company, any Guarantor or any Restricted Subsidiary and are not paid or discharged, and either (i) an enforcement proceeding has been commenced by any creditor upon such judgment or order and is not dismissed within 30 days following commencement of such enforcement proceedings or (ii) there is a period of 60 consecutive days following entry of the final judgment or order that causes the aggregate amount for all such final judgments or orders outstanding and not paid or discharged against all such Persons to exceed U.S.$30.0 million (or the equivalent in other currencies) (in excess of amounts which the Issuer's or Company's insurance carriers have agreed to pay under applicable policies) during which a stay of enforcement, by reason of a pending appeal or otherwise, is not in effect;

(7) certain bankruptcy defaults occur with respect to the Issuer, the Company, any Guarantor or any Significant Subsidiary;

(8) any Note Guaranty or any Collateral Agreement ceases to be in full force and effect, other than in accordance the terms of the Indenture, or a Guarantor or party to any Collateral Agreement denies or disaffirms its obligations under its Note Guaranty or Collateral Agreement, and such Default continues for 30 consecutive days;

(9) (A) any of the Collateral Agent fails to have a perfected first priority security interest in (i) any Collateral having a fair market value in excess of U.S.$15.0 million (ii) on or before (I) the date that is ten Business Days after the Issue Date, for Collateral relating to Luxembourg Share Pledge Agreement; (II) the date that is ten Business Days after the Issuer Date, for Collateral relating to the Vessel Mortgages and the associated Vessel Deeds of Covenant; and (III) the date that is the later of 90 days after the Issue Date, for Collateral relating to the Brazilian Share Pledge Agreements, (B) a determination is made in a judicial proceeding that the Collateral Agreements or any other agreement or instrument purporting to grant a security interest on the Collateral is unenforceable or invalid against the Issuer, the Company, or any Restricted Subsidiary for any reason, or (C) the Issuer, the Company, any Guarantor or any Restricted Subsidiary breaches, denies or disaffirms its obligations under the Collateral Agreements or any other agreement or instrument purporting to grant a security interest on the Collateral, including any failure to comply with the terms described under "—Certain Covenants—Further Assurances with respect to Collateral;" or

(10) all or substantially all of the undertaking, assets and revenues of the Company, Guarantors or any Significant Subsidiary is condemned, seized or otherwise appropriated by any Person acting under the authority of any national, regional or local government or the Company, a Guarantor or any Significant Subsidiary is prevented by any such Person from exercising normal control over all or substantially all of the undertaking, assets and revenues of the Company or any Significant Subsidiary.

Consequences of an Event of Default

If an Event of Default, other than a default described under (7) occurs and is continuing under the Indenture, the Trustee or the holders of at least 25% in aggregate principal amount of the Notes then outstanding, by written notice to the Issuer (and to the Trustee if the notice is given by the holders), may, and the Trustee at the request of such holders shall, declare the principal of and accrued interest on the Notes to be immediately due and payable. Upon a declaration of acceleration, such principal and interest will become immediately due and payable. If a default occurs as described under (7), the principal of and accrued interest on the Notes then outstanding will become immediately due and payable without any declaration or other act on the part of the Trustee or any holder.

The holders of a majority in principal amount of the outstanding Notes by written notice to the Issuer and to the Trustee may waive all past defaults and rescind and annul a declaration of acceleration and its consequences if

(1) all existing Events of Default, other than the nonpayment of the principal of, premium, if any, and interest (including Additional Amounts) on the Notes that have become due solely by the declaration of acceleration, have been cured or waived, and

(2) the rescission would not conflict with any judgment or decree of a court of competent jurisdiction.

Except as otherwise provided in "—Consequences of an Event of Default" or "—Amendments and Waivers—Amendments with Consent of Holders," the holders of a majority in principal amount of the outstanding Notes may, by written notice to the Trustee, waive an existing Default and its consequences. Upon such waiver, the Default will cease to exist, and any Event of Default arising therefrom will be deemed to have been cured, but no such waiver will extend to any subsequent or other Default or impair any right consequent thereon.

The holders of a majority in principal amount of the outstanding Notes may 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. However, the Trustee may refuse to follow any direction that conflicts with law or the Indenture, that may involve the Trustee in personal liability, or that the Trustee determines in good faith may be unduly prejudicial to the rights of holders of Notes not joining in the giving of such direction, and may take any other action it deems proper that is not inconsistent with any such direction received from holders of Notes.

A holder may not institute any proceeding, judicial or otherwise, with respect to the Indenture or the Notes, or for the appointment of a receiver or Trustee, or for any other remedy under the Indenture or the Notes, unless:

(1) the holder has previously given to the Trustee written notice of a continuing Event of Default;

(2) holders of at least 25% in aggregate principal amount of outstanding Notes have made written request to the Trustee to institute proceedings in respect of the Event of Default in its own name as Trustee under the Indenture;

(3) holders have offered to the Trustee indemnity and/or security satisfactory to the Trustee against any costs, liabilities or expenses to be incurred in compliance with such request;

(4) the Trustee for 60 days after its receipt of such notice, request and offer of indemnity and/or security has failed to institute any such proceeding; and

(5) during such 60-day period, the holders of a majority in aggregate principal amount of the outstanding Notes have not given the Trustee a direction that is inconsistent with such written request.

Notwithstanding anything to the contrary, the right of a holder of a note to receive payment of principal of or interest on its note on or after the Stated Maturities thereof, or to bring suit for the enforcement of any such payment on or after such dates, may not be impaired or affected without the consent of that holder.

If any Default occurs and is continuing and written notice of which is received by a responsible officer of the Trustee with direct responsibility for the administration of the Indenture, the Trustee will send notice of the Default to each holder within 90 days after it occurs, unless the Default has been cured; *provided* that, except in the case of a Default in the payment of the principal of or interest on any note, the Trustee may withhold the notice if and so long as the board of directors, the executive committee or a trust committee of directors of the Trustee in good faith determine that withholding the notice is in the interest of the holders.

A Default under the Notes, unless cured or waived, could trigger a default under certain of our future debt agreements.

No Liability of Directors, Officers, Employees, Incorporators, Members and Stockholders

No director, officer, employee, incorporator, member or stockholder of the Issuer or any Guarantor, as such, will have any liability for any obligations of the Issuer or such Guarantor under the Notes, any Note Guaranty, the Indenture, the Collateral Agreements or for any claim based on, in respect of, or by reason of, such obligations. Each holder of Notes by accepting a note waives and releases all such liability. The waiver and release are part of the consideration for issuance of the Notes. This waiver may not be effective to waive liabilities under the federal securities laws and it is the view of the SEC that such a waiver is against public policy.

Amendments and Waivers

Amendments Without Consent of Holders

The Issuer and the Trustee upon the Trustee's receipt of an Officers' Certificate and an Opinion of Counsel confirming compliance with the requirements of the Indenture, may amend or supplement the Indenture, the Notes or the Collateral Agreements without notice to or the consent of any holder of the Notes:

(1) to cure any ambiguity, defect or inconsistency in the Indenture or the Notes in a manner that is not materially adverse to the interest of the holders of the Notes;

(2) to comply with "—Certain Covenants—Consolidation, Amalgamation, Merger or Sale of Assets," including to provide for the assumption by a successor of the obligations of the Issuer or any Guarantor;

(3) to evidence and provide for the acceptance of an appointment by a successor trustee;

(4) to provide for uncertificated Notes in addition to or in place of certificated Notes, *provided* that the uncertificated Notes are issued in registered form for purposes of Section 163(f) of the Code;

(5) to provide for any Guarantee of the Notes or to confirm and evidence the release, termination or discharge of any Guarantee of or Lien securing the Notes when such release, termination or discharge is permitted by the Indenture;

(6) to provide for or confirm the issuance of Additional Notes;

(7) to make any other change that does not materially and adversely affect the rights of any holder of the Notes, which, as provided herein, share in all collateral for the Notes;

(8) to conform any provision of the Indenture, the Notes, or the Collateral Agreements to this "Description of Notes";

(9) to add Additional Assets as Collateral for the Notes; or

(10) to release Collateral from the Liens pursuant to the provisions of the Indenture and the Collateral Agreements when permitted or required by the Notes, the Indenture or the Collateral Agreements.

Amendments with Consent of Holders

(a) Except as otherwise provided in "Amendments without Consent of Holders" and "—Default and Remedies—Consequences of an Event of Default" or paragraph (b), the Issuer and the Trustee upon the Trustee's receipt of an Officers' Certificate and an Opinion of Counsel confirming compliance with the requirements of the Indenture, the Notes and the may amend the Indenture, the Notes and the Collateral Agreements with the written consent of the holders of a majority in principal amount of the outstanding Notes and the holders of a majority in principal amount of the outstanding Notes may waive future compliance by the Company or a Restricted Subsidiary with any provision of the Indenture, the Notes, or the Collateral Agreements.

The Indenture shall provide that Notes (or beneficial interest therein) owned by the Company, the Issuer or any of their Affiliates shall be disregarded and deemed not to be outstanding, for, among other purposes, consenting to any such amendments.

(b) Notwithstanding the provisions of paragraph (a), without the consent of each holder affected (except for (b)(11), which requires the consent of holders of at least two thirds in aggregate principal amount of the outstanding Notes), an amendment or waiver may not:

(1) reduce the principal amount of or change the Stated Maturity of any installment of principal of any note,

(2) reduce the rate of or change the Stated Maturity of any interest payment on any note,

(3) reduce the amount payable upon the redemption of any note or change the time of any mandatory redemption or, in respect of an optional redemption, the times at which any note may be redeemed or, once notice of redemption has been given, the time at which it must thereupon be redeemed,

(4) after the time an Offer to Purchase is required to have been made, reduce the purchase amount or purchase price, or extend the latest expiration date or purchase date thereunder,

(5) make any note payable in money other than that stated in the note,

(6) impair the right of any holder of the Notes to receive any principal payment or interest payment on such holder's Notes, on or after the Stated Maturity thereof, or to institute suit for the enforcement of any such payment,

(7) make any change in the percentage of the principal amount of the Notes required for amendments or waivers,

(8) modify or change any provision of the Indenture affecting the ranking of the Notes or any Note Guaranty in a manner materially adverse to the holders of the Notes,

(9) make any change in any Note Guaranty that would adversely affect the holders of the Notes,

(10) make any change in the provisions of the Indenture described under "—Additional Amounts" that materially and adversely affects the rights of any holder or amend the terms of the Notes in a way that would result in a loss of exemption from any applicable taxes, and

(11) make any change in the Collateral Agreements or in the provisions of the Indenture dealing with the Collateral with the effect of releasing the Liens securing the Obligations in respect of the Notes on a material portion of the Collateral, .

It is not necessary for holders of the Notes to approve the particular form of any proposed amendment, supplement or waiver, but is sufficient if their consent approves the substance thereof.

Neither the Issuer nor any of its Subsidiaries or Affiliates may, directly or indirectly, pay or cause to be paid any consideration, whether by way of interest, fee or otherwise, to any holder for or as an inducement to any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes unless such consideration is offered to be paid or agreed to be paid to all holders of the Notes that consent, waive or agree to amend such term or provision within the time period set forth in the solicitation documents relating to the consent, waiver or amendment.

The Trustee shall not be obligated to enter into any amendment which affects its own rights, duties or immunities under the Indenture.

Defeasance and Discharge

The Issuer may discharge its obligations under the Notes and the Indenture by irrevocably depositing in trust with the Trustee money or U.S. Government Obligations sufficient, without reinvestment, in the opinion of an Independent Financial Advisor to the extent such amounts consist of U.S. Government Obligations, to pay principal of and interest on the Notes to maturity or redemption within sixty days, subject to meeting certain other conditions.

The Issuer may also elect to:

(1) discharge most of its obligations in respect of the Notes and the Indenture, not including obligations related to the defeasance trust or to the replacement of Notes or its obligations to the Trustee ("legal defeasance") or

(2) discharge its obligations under most of the covenants and under clauses (a)(3) and (4) of "—Certain Covenants—Consolidation, Amalgamation, Merger or Sale of Assets—Issuer," the proviso under "—Certain Covenants—Consolidation, Amalgamation, Merger or Sale of Assets—Subsidiary Guarantors" (and the events listed in clauses (3), (4), (5), (6) and (8) under "—Default and Remedies—Events of Default" will no longer constitute Events of Default) ("covenant defeasance") by irrevocably depositing in trust with the Trustee money or U.S. Government Obligations sufficient, without reinvestment, in the opinion of an Independent Financial Advisor to the extent such amounts consist of U.S. Government Obligations, to pay principal of and interest on the Notes to maturity or redemption and by meeting certain other conditions, including delivery to the Trustee of either a ruling received from the Internal Revenue Service or an Opinion of Counsel to the effect that the beneficial owners will not recognize income, gain or loss for United States federal income tax purposes as a result of the defeasance and will be subject to United States federal income tax on the same amount and in the same manner and at the same times as would otherwise have been the case. The defeasance would in each case be effective when 123 days have passed since the date of the deposit in trust.

In the case of either discharge or defeasance, the Notes Guaranties, if any, and all obligations with respect to the Collateral Agreements will terminate.

Trustee, Registrar, Paying Agent and Transfer Agent for the Notes

The Bank of New York Mellon is the trustee under the Indenture. The principal office of the Trustee is 240 Greenwich Street, New York, NY, 10286. The Trustee will initially act as registrar and paying agent and transfer agent. In the event that the Notes are listed on the Singapore Stock Exchange, for so long as the Notes are listed on such exchange and the rules of the exchange so require, the Issuer will also maintain a listing agent in Singapore. Upon any issuance of definitive notes, the Issuer will appoint and maintain a paying agent in Singapore, for so long as the Notes are listed on the Singapore Stock Exchange and the rules of such exchange so require. In such event, an announcement shall be made through the Singapore Stock Exchange and will include all material information with respect to the delivery of the definitive Notes, including details of the paying agent in Singapore. The Issuer may change the registrar, paying agents or transfer agents without prior notice to the holders of then, and the Issuer or any of its Subsidiaries may act as registrar, paying agent or transfer agent. Any change in respect of such agents will be published in accordance with "—Certain Covenants—Notices."

Except during the continuance of an Event of Default, the Trustee need perform only those duties that are specifically set forth in the Indenture and no others, and no implied covenants or obligations will be read into the Indenture against the Trustee. In case an Event of Default has occurred and is continuing, the Trustee shall exercise such of the rights and powers vested in it by the Indenture, and use the same degree of care and skill in their exercise, as a prudent man would exercise or use under the circumstances in the conduct of his own affairs. No provision of the Indenture will require the Trustee to expend or risk its own funds or otherwise incur any financial liability in the performance of its duties thereunder, or in the exercise of its rights or powers, unless it receives indemnity and/or security satisfactory to it against any loss, liability or expense.

The Indenture contains limitations on the rights of the Trustee, should it become a creditor of any obligor on the Notes, to obtain payment of claims in certain cases, or to realize on certain property received in respect of any such claim as security or otherwise. The Trustee is permitted to engage in other transactions with the Issuer and its Affiliates; *provided* that if it acquires any conflicting interest it must eliminate the conflict within 90 days.

Form, Denomination and Title

The Notes will be issued in registered form, without interest coupons, in minimum denominations of U.S.$200,000 and integral multiples of U.S.$1,000 in excess thereof. No service charge will be made for any registration of transfer or exchange of Notes, but the Issuer or the Trustee or other agent may require payment of a sum sufficient to cover any tax or other governmental charge payable in connection therewith.

The Notes will be represented by a Restricted Global Note (as defined below) and a Regulation S Global Note (as defined below) (each sometimes referred to herein as a "Global Note" and together sometimes referred to herein as the "Global Notes").

Notes sold in reliance on Rule 144A under the Securities Act initially will be represented by one or more Global Notes in fully registered form without interest coupons (the "Restricted Global Note") and will be deposited with the Trustee as custodian for DTC and registered in the name of DTC or its nominee.

Notes sold outside the United States in reliance on Regulation S of the Securities Act will be represented by one or more Global Notes in fully registered form without interest coupons (the "Regulation S Global Note") and will be deposited with the Trustee as custodian for DTC, and registered in the name of DTC or its nominee for the accounts of Euroclear and Clearstream (as indirect participants in DTC).

The Restricted Global Note and Regulation S Global Note will be subject to certain restrictions on transfer and will bear a legend to that effect as described under 'Transfer restrictions."

Transfers of a note or beneficial interest therein to a person who takes delivery in the form of a Restricted Global Note or beneficial interest therein may be made only upon receipt by the Trustee of a written certification from the transferor (in the form provided in the Indenture) to the effect that such transfer is being made to a person that the transferor reasonably believes is a qualified institutional buyer (as defined in Rule 144A under the Securities Act) in a transaction meeting the requirements of Rule 144A and in accordance with any applicable securities laws of any state of the United States or any other jurisdiction.

Transfers of a note or beneficial interest therein to a person who takes delivery in the form of a Regulation S Global Note or beneficial interest therein may be made only upon receipt by the Trustee of a written certification from the transferor (in the form provided in the Indenture) to the effect that such transfer is being made in accordance with Rules 903 and 904 of Regulation S.

Any beneficial interest in one of the Global Notes that is transferred to a person who takes delivery in the form of an interest in another Global Note will, upon transfer, cease to be an interest in such Global Note and become an interest in the other Global Note and, accordingly, will thereafter be subject to all transfer restrictions and other procedures applicable to beneficial interests in such other Global Note for as long as it remains such an interest.

The Issuer will initially appoint the Trustee at its office in New York City specified herein as registrar and paying agent and transfer agent for the Notes. In such capacities, the Trustee will be responsible for, among other things, (i) maintaining a record of the aggregate holdings of Notes represented by the Global Notes and accepting Notes for exchange and registration of transfer, (ii) ensuring that payments of principal, premium, if any, and interest in respect of the Notes received by the Trustee from the Issuer are duly paid to DTC or its nominee and (iii) transmitting to the Issuer any notices from holders of the Notes.

Global Notes

Upon the issuance of a Restricted Global Note and a Regulation S Global Note, DTC will credit, on its internal system, the respective principal amount of the individual beneficial interests represented by such Global Note to the accounts of persons who have accounts with DTC. Such accounts initially will be designated by or on behalf of the initial purchasers. Ownership of beneficial interests in a Global Note will be limited to persons who have accounts with DTC ("DTC Participants") or persons who hold interests through DTC Participants. Ownership of beneficial interests in the Global Notes will be shown on, and the transfer of that ownership will be effected only through, records maintained by DTC or its nominee (with respect to

interests of DTC Participants) and the records of DTC Participants (with respect to interests of persons other than DTC Participants).

Investors may hold their interests in a Regulation S Global Note directly through Euroclear or Clearstream (as indirect participants in DTC), if they are participants in such systems, or indirectly through organizations that are participants in such systems. Euroclear and Clearstream will hold interests in the Regulation S Global Note on behalf of their participants through customers' securities accounts in their respective names on the books of their respective depositaries, which in turn will hold such interests in the Regulation S Global Note in customers' securities accounts in the depositaries' names on the books of DTC. Investors that are qualified institutional buyers may hold their interests in Restricted Global Notes directly through DTC if they are DTC Participants, or indirectly through organizations that are DTC Participants.

Payments of the principal, premium, if any, and interest in respect of Notes represented by a Global Note registered in the name of DTC or its nominee will be made to DTC or its nominee, as the case may be, as the registered owner of the Global Note representing such Notes. None of the Issuer, the Trustee or any paying agent will 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 Notes or for maintaining, supervising, or reviewing any records relating to such beneficial ownership interests. The Issuer expects that DTC or its nominee, upon receipt of any payment of principal, premium, if any, and interest in respect of a Global Note representing any Notes held by it or its nominee, will immediately credit DTC Participants' accounts with payments in amounts proportionate to their respective beneficial interests in the principal amount of such Global Note as shown on the records of DTC or its nominee. The Issuer also expects that payments by DTC Participants to owners of beneficial interests in such Global Note held through such DTC Participants will be governed by standing instructions and customary practices, as is now the case with securities held for the accounts of customers registered in the names of nominees for such customers. Such payments will be the responsibility of such DTC Participants.

Transfers between DTC Participants will be effected in accordance with DTC rules and procedures and will be settled in same-day funds. Transfers between participants in Euroclear and Clearstream will be effected in accordance with their respective rules and procedures.

The laws of some jurisdictions require that certain persons take physical delivery of securities in certificated form. Consequently, the ability to transfer beneficial interests in a Global Note to such persons may be limited because DTC can only act on behalf of DTC Participants, who in turn act on behalf of indirect participants and certain banks. Accordingly, the ability of a person having a beneficial interest in a Global Note to pledge such interest to persons or entities that do not participate in the DTC system, or otherwise take actions in respect of each interest, may be affected by the lack of a physical certificate for such interest.

Subject to compliance with the transfer restrictions applicable to the Notes described above and under "Transfer restrictions," cross-market transfers between DTC, on the one hand, and directly or indirectly through Euroclear or Clearstream participants, on the other, will be effected in DTC in accordance with DTC rules and procedures on behalf of Euroclear or Clearstream, as the case may be, by its respective depositary; however, such cross-market transactions will require delivery of instructions to Euroclear or Clearstream, as the case may be, by the counterparty in such system in accordance with its rules and procedures and within its established deadlines. Euroclear or Clearstream, as the case may be, will, if the transaction meets its settlement requirements, deliver instructions to its respective depositary to take action to effect final settlement on its behalf by delivering or receiving interests in Regulation S Global Notes in DTC, and making or receiving payment in accordance with normal procedures for same-day funds settlement applicable to DTC. Euroclear participants and Clearstream participants may not deliver instructions directly to the depositaries for Euroclear or Clearstream.

Because of time zone differences, the securities account of a Euroclear or Clearstream participant purchasing an interest in a Global Note from a DTC Participant will be credited during the securities settlement processing day (which must be a business day for Euroclear or Clearstream, as the case may be) immediately following the DTC settlement date, and the credit of any transactions in interests in a Global Note settled during such processing will be reported to the relevant Euroclear or Clearstream participant on such day. Cash

received in Euroclear or Clearstream as a result of sales of interests in a Global Note by or through a Euroclear or Clearstream participant to a DTC Participant will be received with value on the DTC settlement date but will be available in the relevant Euroclear or Clearstream cash account only as of the business day following settlement in DTC.

DTC has advised the Issuer that it will take any action permitted to be taken by a holder of Notes (including, without limitation, the presentation of Notes for transfer, exchange or conversion as described below) only at the direction of one or more DTC Participants to whose account with DTC interests in the Global Notes are credited and only in respect of such portion of the aggregate principal amount of the Notes as to which such DTC Participant or Participants has or have given such direction. However, in the limited circumstances described herein, DTC will exchange the Global Notes for Notes in certificated form, which it will distribute to DTC Participants. See "*—Certificated Notes*."

DTC has advised the Issuer as follows: DTC will act as the depositary for the Notes. The Notes will be issued as fully registered senior notes registered in the name of Cede & Co., which is DTC's partnership nominee. Fully registered Global Notes will be issued for the Notes, in the aggregate principal amount of the issue, and will be deposited with DTC.

DTC 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 member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Exchange Act. DTC holds securities that its participants deposit with DTC. DTC also facilitates the settlement among participants of securities transactions, including transfers and pledges, in deposited securities through electronic computerized book-entry changes to participants' accounts, thereby eliminating the need for physical movement of notes certificates. Direct participants of DTC include securities brokers and dealers, including the initial purchasers of the Notes, banks, trust companies, clearing corporations and certain other organizations. DTC is owned by a number of its direct participants and by the New York Stock Exchange, Inc., the American Stock Exchange LLC, and the National Association of Securities Dealers, Inc. Access to DTC's system is also available to indirect participants, which includes securities brokers and dealers, banks and trust companies that clear through or maintain a custodial relationship with a direct participant, either directly or indirectly. The rules applicable to DTC and its participants are on file with the SEC.

To facilitate subsequent transfers, all Global Notes representing the Notes which are deposited with, or on behalf of, DTC are registered in the name of DTC's nominee, Cede & Co. The deposit of Global Notes with, or on behalf of, 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 Global Notes representing the Notes; DTC's records reflect only the identity of the direct participants to whose accounts the 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 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.

Neither DTC nor Cede & Co. will consent or vote with respect to the Global Notes representing the Notes. Under its usual procedure, DTC mails an omnibus proxy to the Issuer as soon as possible after the applicable record date. The omnibus proxy assigns Cede & Co.'s consenting or voting rights to those direct participants to whose accounts the Notes are credited on the applicable record date (identified in a listing attached to the omnibus proxy).

DTC may discontinue providing its services as securities depositary with respect to the Notes at any time by giving reasonable notice to the Issuer or the Trustee. Under such circumstances, in the event that a successor securities depositary is not obtained, certificated Notes are required to be printed and delivered. See "*—Certificated Notes*."

The Issuer may decide to discontinue use of the system of book-entry transfers through DTC or a successor securities depositary. In that event, certificated notes will be printed and delivered. See "— *Certificated Notes.*"

Although DTC, Euroclear and Clearstream have agreed to the procedures described above in order to facilitate transfers of interests in the Global Notes among participants of DTC, Euroclear and Clearstream, they are under no obligation to perform or continue to perform these procedures, and these procedures may be discontinued at any time. Neither the Trustee nor the Issuer will have any liability or responsibility for the performance by DTC, Euroclear or Clearstream or their respective participants or indirect participants of their respective obligations under the rules and procedures governing their operations.

Certificated Notes

If DTC is at any time unwilling or unable to continue as a depositary for the reasons set forth under "— Global Notes" above and a successor depositary is not appointed by the Issuer within 90 days, the Issuer elects to discontinue use of the system of book-entry transfers through DTC or a successor securities depository, or an Event of Default has occurred and is continuing with respect to the Notes, then, upon surrender by DTC of the global notes, the Issuer will issue individual definitive notes in certificated form, having the same terms and conditions and which will have the same aggregate principal amount, in registered form in exchange for Regulation S Global Notes and Restricted Global Notes, as the case may be. Upon any exchange for certificated notes, the certificated notes will be registered in the names of the beneficial owners of the Global Notes representing the Notes, which names will be provided by DTC's relevant participants (as identified by DTC) to the Trustee.

The holder of a certificated note may transfer such note by surrendering it at the office or agency maintained by the Issuer for such purpose in the Borough of Manhattan, New York City, which initially will be the office of the Trustee. Upon the transfer, exchange or replacement of certificated bearing the legend, or upon specific request for removal of the legend on a certificated note, the Issuer will deliver only certificated notes that bear such legend, or will refuse to remove such legend, as the case may be, unless there is delivered to the Issuer such satisfactory evidence, which may include an opinion of counsel, as may reasonably be required by the Issuer, that neither the legend nor the restrictions on transfer set forth therein are required to ensure compliance with the provisions of the Securities Act.

Neither the Trustee nor the registrar or any transfer agent will be required to register the transfer of or exchange certificated notes for a period from the record date to the due date for any payment of principal of, or interest on, the Notes or register the transfer of or exchange any Notes for 15 days prior to selection for redemption through the date of redemption.

Prior to presentment of a note for registration of transfer (including a Global Note), the Issuer, the Trustee and any agent of the Issuer or the Trustee may treat the person in whose name such note is registered as the owner or holder of such note for the purpose of receiving payment of principal or interest on such note and for all other purposes whatsoever, whether or not such note is overdue, and none of the Issuer, the Trustee or any agent of the Issuer or the Trustee will be affected by notice to the contrary.

Replacement of Notes

In the event that any note becomes mutilated, defaced, destroyed, lost or stolen, the Issuer will execute and, upon the Issuer's request, the Trustee will authenticate and deliver a new note, of like tenor (including the same date of issuance) and equal principal amount, registered in the same manner, and bearing interest from the date to which interest has been paid on such note, in exchange and substitution for such note (upon surrender and cancellation thereof) or in lieu of and substitution for such note. In the event that such note is destroyed, lost or stolen, the applicant for a substitute note will furnish to the Issuer and the Trustee such security or indemnity as may be required by them to hold each of them harmless, and, in every case of destruction, loss or theft of such note, the applicant will also furnish to the Issuer and the Trustee satisfactory evidence of the destruction, loss or theft of such note and of the ownership thereof. Upon the issuance of any substituted note, the Issuer may require the payment by the registered holder thereof of a sum sufficient to

cover any tax or other governmental charge that may be imposed in relation thereto and any other fees and expenses (including the fees and expenses of the Trustee) connected therewith.

Same-day Settlement and Payment

The Indenture will require that payments in respect of the Notes represented by the Global Notes be made by wire transfer of immediately available funds to the accounts specified by holders of the Global Notes. With respect to Notes in certificated form, the Issuer will make all payments by wire transfer of immediately available funds to the accounts specified by the holders thereof or, if no such account is specified, by mailing a check to each holder's registered address.

The Notes represented by the Global Notes are expected to be eligible to trade in DTC's Same-Day Funds Settlement System, and any permitted secondary market trading activity in such Notes will, therefore, be required by DTC to be settled in immediately available funds. The Issuer expects that secondary trading in any certificated notes will also be settled in immediately available funds.

Governing Law, Consent to Jurisdiction, Currency Conversion and Service of Process

The Indenture, including the Notes Guaranties, will be governed by, and construed in accordance with, the laws of the State of New York. For the avoidance of doubt, the provisions of articles 470-1 to 470 19 of the Luxembourg law of 10 August 1915 on commercial companies, as amended, are excluded. The Brazilian Share Pledge Agreements will be governed and construed in accordance with, the laws of Brazil. The Luxembourg Share Pledge Agreement will be governed and construed in accordance with, the applicable laws of the Luxembourg. The Vessel Mortgages and the Vessel Deeds of Covenant will be governed and construed in accordance with, the applicable law of the Bahamas.

The Issuer and each Guarantor will submit to the non-exclusive jurisdiction of the New York State and U.S. federal courts located in the Borough of Manhattan, New York City with respect to any action that may be brought in connection with the Indenture or the Notes and has irrevocably appointed Cogency Global Inc. as agent for service of process.

If for the purpose of obtaining judgment in any court it is necessary to convert a sum due hereunder to the holder of a note from U.S. dollars into another currency, the Issuer and each Guarantor has agreed, and each holder by holding such note will be deemed to have agreed, to the fullest extent that he Issuer and each Guarantor may effectively do so, that the rate of exchange used will be that at which in accordance with normal banking procedures such holder could purchase U.S. dollars with such other currency in New York City, New York on the day two Business Days preceding the day on which final judgment is given.

The Issuer and each Guarantor's obligation in respect of any sum payable by it to a holder will, notwithstanding any judgment in a currency (the "judgment currency") other than U.S. dollars, be discharged only to the extent that on the Business Day following receipt by the holder of a note of any sum adjudged to be so due in the judgment currency, the holder of such note may in accordance with normal banking procedures purchase U.S. dollars with the judgment currency; if the amount of the U.S. dollars so purchased is less than the sum originally due to the holder in the judgment currency (determined in the manner set forth in the preceding paragraph), the Issuer and each Guarantor, agree, as a separate obligation and notwithstanding any such judgment, to indemnify the holder of such note against such loss, and if the amount of the U.S. dollars so purchased exceeds the sum originally due to such holder, such holder agrees to remit to the Issuer or such Guarantors, as the case may be, such excess, *provided* that such holder will have no obligation to remit any such excess as long as the Issuer or the Guarantors, as the case may be, has failed to pay such holder any obligations due and payable under such note, in which case such excess may be applied to the Issuer or each Guarantors' obligations under such note in accordance with the terms thereof.

Claims against the Issuer or any Guarantor for the payment of principal, premium, if any, or interest on the Notes must be made within six years from the due date for payment thereof.

Enforceability of Judgments

The Issuer is incorporated under the laws of Luxembourg. All of the operating assets of the Issuer and each Guarantor are outside the United States. Accordingly, any judgment obtained in the United States against the Issuer or a Guarantor, including judgments with respect to the payment of principal, premium, if any, and interest, Additional Amounts and any purchase price with respect to the Notes, may not be collectable within the United States. See "*Enforcement of Judgments*."

Waiver of Immunity

To the extent that the Issuer or a Guarantor or any of their respective properties, assets or revenues may have or may hereafter become entitled to, or have attributed to the Issuer or a Guarantor, any right of immunity, on the grounds of sovereignty or otherwise, from any legal action, suit or proceeding, from the giving of any relief in any such legal action, suit or proceeding, from setoff or from counterclaim from Luxembourg, New York State, U.S. federal court or other applicable jurisdiction, from service of process, from attachment upon or prior to judgment, from attachment in aid of execution of judgment, or from execution of judgment, or other legal process or proceeding for the giving of any relief or for the enforcement of any judgment, in any such court in which proceedings may at any time be commenced, with respect to the obligations and liabilities of the Issuer or such Guarantor, or any other matter under or arising out of or in connection with, the Notes or the Indenture, the Issuer and each Guarantor irrevocably and unconditionally waives or will waive such right, and agrees not to plead or claim any such immunity and consents to such relief and enforcement.

Listing

The Issuer and the Company will apply to list the Notes on the Singapore Stock Exchange. In the event that the Notes are listed for trading on the Singapore Stock Exchange, the Issuer and the Company will use its best efforts to maintain such listing; *provided* that if the admission of the Notes on the Singapore Stock Exchange would, in the future, require the Issuer to publish financial information either more regularly than it would otherwise be required to, or requires the Issuer or the Guarantors to publish separate financial information, or if the listing, in the judgment of the Issuer, is unduly burdensome, the Issuer may seek an alternative admission to listing, trading and/or quotation for the Notes by another listing authority, stock exchange and/or quotation system. If such alternative admission to listing, trading and/or quotation of the Notes is not available to the Issuer or is, in the Issuer's commercially reasonable judgment, unduly burdensome, an alternative admission to listing, trading and/or quotation of the Notes may not be obtained.

Certain Definitions

"Acquired Debt" means Debt of a Person existing at the time the Person merges with or into or becomes a Restricted Subsidiary and not Incurred in connection with, or in contemplation of, the Person merging with or into or becoming a Restricted Subsidiary. Acquired Debt will be deemed to have been Incurred at the time such Person becomes a Restricted Subsidiary or at the time it merges or consolidates with the Company or a Restricted Subsidiary or at the time such Debt is assumed in connection with the acquisition of assets from such Person.

"Additional Amounts" has the meaning set forth under "—Additional Amounts" above.

"Additional Assets" means:

(1) any property or assets (other than Debt and Capital Stock) to be used by the Company or a Restricted Subsidiary engaged in a Permitted Business; or

(2) the Capital Stock of a Person engaged in a Permitted Business that becomes a Restricted Subsidiary as a result of the acquisition of such Capital Stock by the Company or another Restricted Subsidiary.

"Additional Share Collateral" means all of the Equity Interests pledged pursuant to any Additional Share Pledge Agreements.

"Additional Share Pledge Agreement" means a pledge agreement on the same terms (including with respect to priority) as the Initial Share Pledge Agreements and entered into after the Issue Date, pursuant to

which the Company or a Restricted Subsidiary grants a first-priority perfected security interest in the Equity Interests in a Pledged Subsidiary to the Additional Share Pledge Collateral Agent, as the same may be amended from time to time in accordance with its terms and the Indenture.

"Additional Share Pledge Collateral Agent" means any collateral agent under an Additional Share Pledge Agreement, until a successor replaces it and, thereafter, means the successor. For the avoidance of doubt, the applicable Collateral Agent may serve as Additional Share Pledge Collateral Agent under any Additional Share Pledge Agreement governed by applicable law, as the case may be.

"Affiliate" means, with respect to any Person, any other Person directly or indirectly controlling, controlled by, or under direct or indirect common control with, such Person. For purposes of this definition, "control" (including, with correlative meanings, the terms "controlling," "controlled by" and "under common control with") with respect to any Person, means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

"Asset Sale" means any sale, lease, transfer or other disposition (including a Sale and Leaseback Transaction) of any assets by the Company or any Restricted Subsidiary, including by means of a merger, consolidation or similar transaction and including any sale or issuance of the Equity Interests of any Restricted Subsidiary (each of the above referred to as a "disposition"), *provided* that the following are not included in the definition of "Asset Sale":

(1) a disposition to the Company or a Restricted Subsidiary, including the sale or issuance by the Company or any Restricted Subsidiary of any Equity Interests of any Restricted Subsidiary to the Company or any Restricted Subsidiary;

(2) the disposition by the Company or any Restricted Subsidiary in the ordinary course of business of (i) cash and cash management investments, (ii) inventory and other assets acquired and held for resale in the ordinary course of business, (iii) damaged, worn out or obsolete assets, (iv) rights granted to others pursuant to leases or licenses or (v) any property, rights or assets upon expiration in accordance with the terms of any concession;

(3) the sale or discount of accounts receivable, including any receivables in respect of any crude oil sales, arising in the ordinary course of business;

(4) a transaction covered by "—Certain Covenants—Consolidation, amalgamation, merger or sale of assets" or any disposition that constitutes a Change of Control that results in a Rating Decline;

(5) a Restricted Payment permitted under "—Certain Covenants—Limitation on Restricted Payments" or a Permitted Investment;

(6) the issuance of Disqualified or Preferred Stock pursuant to "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock;"

(7) the surrender or waiver of contract rights or the settlement, release or surrender of contract, tort or other claims;

(8) the licensing or sub-licensing of intellectual property or other general intangibles in the ordinary course of business;

(9) the farm-out pursuant to a Farm-Out Agreement, lease or sub-lease of developed or undeveloped crude oil or natural gas properties owned or held by the Company or any Restricted Subsidiary in exchange for crude oil and natural gas properties owned or held by another Person;

(10) any Production Payments and Reserve Sales; *provided* that all such Production Payments and Reserve Sales (other than incentive compensation programs on terms that are reasonably customary in the Oil and Gas Business for geologists, geophysicists and other providers of technical services) will have been created, incurred, issued, assumed or Guaranteed in connection with the financing of, and within 60 days after the acquisition of, the oil and gas properties that are subject thereto;

(11) the sale or other disposition (regardless of whether in the ordinary course of business) of oil and gas properties; *provided* that, at the time of such sale or other disposition, such properties do not have attributed to them any proved or possible reserves; and

(12) any disposition in a transaction or series of related transactions of assets with a fair market value of less than U.S.$10.0 million (or the equivalent in other currencies).

"Average Life" means, with respect to any Debt, the quotient obtained by dividing (i) the sum of the products of (x) the number of years from the date of determination to the dates of each successive scheduled principal payment of such Debt and (y) the amount of such principal payment by (ii) the sum of all such principal payments.

"Board of Directors" means, with respect to any Person, the board of directors or similar governing body of such Person or any duly authorized committee thereof.

"Board Resolution" means, with respect to any Person, a copy of a resolution certified by the Secretary or an Assistant Secretary of such Person to have been duly adopted by the Board of Directors of such Person and to be in full force and effect on the date of such certification, and delivered to the Trustee.

"Brazilian Bankruptcy Law" means the Brazilian Federal Law No. 11,101, dated February 9, 2005, as subsequently amended from time to time.

"Brazilian Share Pledge Agreement" means each of share pledge agreement or share fiduciary assignment with respect to the Equity Interest of each of the Guarantors organized under the laws of Brazil law to be governed and perfected under by Brazilian law.

"Business Day" means a day other than a Saturday, Sunday or any day on which banking institutions are authorized or required by law, regulation or executive order to close in New York City, New York, in the City of Rio de Janeiro, Rio de Janeiro and in the City of Barueri, State of São Paulo.

"Capital Lease" means, with respect to any Person, any lease of any property which, in conformity with IFRS, is required to be capitalized on the balance sheet of such Person.

"Capital Stock" means, with respect to any Person, any and all shares of stock of a corporation, partnership interests, membership interests or other equivalent interests (however designated, whether voting or non-voting) in such Person's equity, entitling the holder to receive a share of the profits and losses, and a distribution of assets, after liabilities, of such Person.

"Cash Equivalents" means:

(1) United States dollars, Brazilian real or money in other currencies received in the ordinary course of business;

(2) U.S. Government Obligations or certificates representing an ownership interest in U.S. Government Obligations with maturities not exceeding one year from the date of acquisition;

(3) (i) demand deposits, (ii) time deposits and certificates of deposit with maturities of one year or less from the date of acquisition, (iii) bankers' acceptances with maturities not exceeding one year from the date of acquisition, and (iv) overnight bank deposits, in each case with any bank or trust company organized or licensed under the laws of the United States or any state thereof having capital, surplus and undivided profits in excess of U.S.$500 million whose short-term debt is rated "A-2" or higher by S&P or "P-2" or higher by Moody's;

(4) repurchase obligations with a term of not more than seven days for underlying securities of the type described in clauses (2) and (3), above entered into with any financial institution meeting the qualifications specified in clause (3) above;

(5) commercial paper rated at least P-1 by Moody's or A-1 by S&P and maturing within six months after the date of acquisition;

(6) (a) marketable direct obligations issued or unconditionally guaranteed by Brazil, (b) time deposits or certificates of deposit in Brazilian *real* or U.S. dollars of a Brazilian bank (other than any affiliate of the Company, as the case may be), as the case may be, the commercial paper or other short-term unsecured debt obligations of which (or in the case of a bank that is the principal subsidiary of a holding company, the holding company) are rated the highest rating of any Brazilian bank, but in no event less than the short-term rating of A-2 by S&P or P-2 by Moody's, and maturing within 90 days (unless the short-term rating is not less than A-1 by S&P or P-1 by Moody's in which case maturing within one year from the date of acquisition thereof by the Company or a Restricted Subsidiary), (c) repurchase obligations with a term of not more than 30 days for underlying securities of the types described in clause (a) above entered into with a bank (other than any affiliate of the Company) meeting the qualifications described in clause (b) above, or (d) commercial paper of a Brazilian issuer (other than any affiliate of the Company), the long-term unsecured debt obligations of which are rated at the time of the acquisition the highest rating of a Brazilian issuer, but in no event less than the equivalent short-term rating of A-2 by S&P or P-2 by Moody's, and maturing within 90 days (unless the short-term rating is not less than A-1 by S&P or P-1 by Moody's, in which case maturing within one year from the date of acquisition thereof by the Company or a Restricted Subsidiary);

(7) money market funds at least 95% of the assets of which consist of investments of the type described in clauses (1) through (6) above; or

(8) substantially similar investments of comparable credit quality to clauses (1) through (7) above, denominated in the currency of any jurisdiction in which the Company or any Restricted Subsidiary conducts business, of issuers whose country's credit rating is at least "BBB- " (or the then equivalent grade) by S&P and the equivalent rating by Moody's.

"Change of Control" means:

(1) the direct or indirect sale, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the properties or assets of the Company and its Restricted Subsidiaries, taken as a whole, to any Person;

(2) the consummation of any transaction (including without limitation, any consolidation, amalgamation or merger) the result of which is that (x) any "person" or "group" of related persons (as such terms are used in Sections 13(d) and 14(d) of the Exchange Act as in effect on the Issue Date), becomes the "beneficial owner" (as defined in Rules 13d-3 and 13d-5 under the Exchange Act as in effect on the Issue Date), directly or indirectly, of 50% or more of the outstanding Voting Stock of the Company, measured by voting power rather than number of shares;

(3) the Company ceases to directly or indirectly hold 100% of the Capital Stock of the Issuer; or

(4) the adoption of a plan relating to the liquidation or dissolution of the Company or the Issuer.

"Clearstream" means Clearstream Banking S.A. Luxembourg.

"Code" means the Internal Revenue Code of 1986, as amended.

"Collateral Agent" means, individually and collectively as the context may require, for the Share Collateral relating to the Luxembourg Share Pledge Agreements, The Bank of New Mellon, for the Share Collateral relating to the Brazilian Share Pledge Agreements, TMF Brasil, for the Bahamian Security Package, TMF Group New York, LLC and any Additional Share Pledge Collateral Agent (including, in each case, certain of the subsidiaries or affiliates acting as sub-agent, or directly, as the case may be), as appropriate.

"Collateral Agreements" means the Initial Share Pledge Agreements, any Additional Share Pledge Agreements, the Vessel Mortgages and the Vessel Deeds of Covenant.

"Consolidated Interest Charges" means, for any period, the sum of:

(1) Interest Expense for such period; and

(2) the product of

(x) cash and non-cash dividends paid, declared, accrued or accumulated on any Disqualified or Preferred Stock of the Company or a Restricted Subsidiary, except for dividends payable in the Company's Qualified Stock or paid to the Company or to a Restricted Subsidiary, and

(y) a fraction, the numerator of which is one and the denominator of which is one minus the sum of the currently effective combined Federal, state, local and foreign tax rate applicable to the Company and the Restricted Subsidiaries.

"Consolidated Net Income" means, for any period, the aggregate net income (or loss) of the Company and the Restricted Subsidiaries for such period determined on a consolidated basis in conformity with IFRS, *provided* that the following (without duplication) will be excluded in computing Consolidated Net Income:

(1) the net income (but not loss) of any Person that is not a Restricted Subsidiary, except to the extent of the lesser of

(x) the dividends or other distributions actually paid in cash to the Company or any of the Restricted Subsidiaries (subject to clause (3) below) by such Person during such period, and

(y) the Company's pro rata share of such Person's net income earned during such period;

(2) any net income (or loss) of any Person acquired in a pooling of interests transaction for any period prior to the date of such acquisition;

(3) the net income (but not loss) of any Restricted Subsidiary to the extent that the declaration or payment of dividends or similar distributions by such Restricted Subsidiary of such net income would not have been permitted for the relevant period by charter or by any agreement, instrument, judgment, decree, order, statute, rule or governmental regulation applicable to such Restricted Subsidiary;

(4) any net after-tax gains or losses attributable to Asset Sales or the extinguishment of Debt;

(5) any net after-tax extraordinary gains or losses; and

(6) the cumulative effect of a change in accounting principles.

In calculating the aggregate net income (or loss) of the Company and the Restricted Subsidiaries on a consolidated basis, income attributable to Unrestricted Subsidiaries will be excluded altogether.

"Consolidated Tangible Assets" means, for Company and the Restricted Subsidiaries, at any time, the total consolidated assets of the Company and the Restricted Subsidiaries as set forth on the balance sheet as of the most recent fiscal quarter, less any assets that would be treated as intangible assets on such balance sheet in accordance with IFRS.

"Credit Facilities" means one or more credit facilities with banks or other lenders providing for revolving credit loans or term loans or the issuance of letters of credit or bankers' acceptances or the like, or other instruments or agreements evidencing any other Debt, in each case, as amended, supplemented, modified, waived, extended, restructured, repaid, renewed, refinanced, restated, replaced (whether or not upon termination, and whether with the original lenders or otherwise) or refunded in whole or in part from time to time.

"Debt" means, with respect to any Person on any date of determination, without duplication:

(1) all indebtedness of such Person for borrowed money;

(2) all obligations of such Person evidenced by bonds, debentures, notes or other similar instruments;

(3) all obligations of such Person in respect of letters of credit, bankers' acceptances or other similar instruments, excluding obligations in respect of trade letters of credit or bankers' acceptances issued in respect of trade payables to the extent not drawn upon or presented, or, if drawn upon or presented, the resulting obligation of the Person is paid in 10 Business Days;

(4) all obligations of such Person to pay the deferred and unpaid purchase price of property or services which are recorded as liabilities under IFRS, excluding (i) trade payables arising in the ordinary course of business and (ii) deferred and unpaid purchase price for the acquisition of property in relation to which the approval of the Brazilian National Agency of Petroleum, Natural Gas and Biofuel is pending;

(5) all obligations of such Person as lessee under Capital Leases; *provided* that, for purposes of this definition only, Debt of the Company and its Restricted Subsidiaries shall be calculated by applying IFRS in effect on the Issue Date to classify Capital Leases, excluding any Capital Lease which would be considered an operating lease under IFRS prior to the adoption of IFRS 16;

(6) all Debt of other Persons Guaranteed by such Person to the extent so Guaranteed;

(7) all Debt of other Persons secured by a Lien on any asset of such Person, whether or not such Debt is assumed by such Person; and

(8) all obligations of such Person under Hedging Agreements.

The amount of Debt of any Person will be deemed to be:

(A) with respect to contingent obligations, the maximum liability upon the occurrence of the contingency giving rise to the obligation;

(B) with respect to Debt secured by a Lien on an asset of such Person but not otherwise the obligation, contingent or otherwise, of such Person, the lesser of (x) the fair market value of such asset on the date the Lien attached and (y) the amount of such Debt;

(C) with respect to any Debt issued with original issue discount, the face amount of such Debt less the remaining unamortized portion of the original issue discount of such Debt;

(D) with respect to any Hedging Agreement, the net amount payable if such Hedging Agreement terminated at that time due to default by such Person; and

(E) otherwise, the outstanding principal amount thereof.

"Default" means any event that is, or after notice or passage of time or both would be, an Event of Default.

"Disqualified Equity Interests" means Equity Interests that by their terms or upon the happening of any event are:

(1) required to be redeemed or redeemable at the option of the holder prior to the Stated Maturity of the Notes for consideration other than Qualified Equity Interests, or

(2) convertible at the option of the holder into Disqualified Equity Interests or exchangeable for Debt;

provided that Equity Interests will not constitute Disqualified Equity Interests solely because of provisions giving holders thereof the right to require repurchase or redemption upon an "asset sale" or "change of control" occurring prior to the Stated Maturity of the Notes if those provisions:

(A) are no more favorable to the holders than "—Certain Covenants—Limitation on Asset Sales" and "—Repurchase of Notes upon a Change of Control that results in a Rating Decline," and

(B) specifically state that repurchase or redemption pursuant thereto will not be required prior to the Issuer's repurchase of the Notes as required by the Indenture.

"Disqualified Stock" means Capital Stock constituting Disqualified Equity Interests.

"Dollar-Denominated Production Payments" means production payment obligations recorded as liabilities in accordance with IFRS, together with all undertakings and obligations in connection therewith.

"DTC" means The Depository Trust Company.

"EBITDA" means, for any period, the sum of:

(1) Consolidated Net Income, plus

(2) Consolidated Interest Charges, to the extent deducted in calculating Consolidated Net Income, plus

(3) consolidated financial costs, other than Consolidated Interest Charges; plus

(4) consolidated foreign exchange gain or losses; plus

(5) all unrealized gains or losses in connection with Hedging Agreement or other derivative instruments; plus

(6) to the extent deducted in calculating Consolidated Net Income and as determined on a consolidated basis for the Company and the Restricted Subsidiaries in conformity with IFRS:

(A) income taxes, other than income taxes or income tax adjustments (whether positive or negative) attributable to Asset Sales or extraordinary gains or losses;

(B) depreciation, amortization and all other non-cash items (such as write-offs, impairments and share based payments) reducing Consolidated Net Income (not including non-cash charges in a period which reflect cash expenses paid or to be paid in another period), less all non-cash items increasing Consolidated Net Income; and

(C) all non-recurring losses (and minus all non-recurring gains);

provided that, with respect to any Restricted Subsidiary, such items will be added only to the extent and in the same proportion that the relevant Restricted Subsidiary's net income was included in calculating Consolidated Net Income, plus

(7) net after-tax losses attributable to Asset Sales, and net after-tax extraordinary losses, to the extent reducing Consolidated Net Income.

"Electric Power Business" means:

(1) the business of generating, trading and distributing electric power, including acquiring from, importing, exporting and disposing of electric power to third parties (generators, independent producers, traders, distributors and/or consumers);

(2) any business relating to the activity of acting as agent in intermediation in the purchase and sale of electric power to third parties and to the activity of rendering consultancy or management services related to electric power agreements; and

(3) any business or activity relating to, arising from, or necessary, appropriate or incidental to the activities described in the foregoing clauses (1) through (3) of this definition.

"Equity Interests" means all Capital Stock and all warrants or options with respect to, or other rights to purchase, Capital Stock, but excluding Debt convertible into equity.

"Equity Offering" means an offering for cash, after the Issue Date, of Qualified Stock of the Company or of any direct or indirect parent of the Company (to the extent the proceeds thereof are contributed to the common equity of the Company).

"Euroclear" means Euroclear Bank S.A./N.V., as operator of the Euroclear System.

"Exchange Act" means the U.S. Securities Exchange Act of 1934, as amended, or any successor statute or statutes thereto.

"Excluded Subsidiary" means (a) each Significant Subsidiary that is prohibited from guaranteeing the Notes by any requirement of law or that would require consent, approval, license or authorization of a governmental authority to Guarantee the Notes as determined in good faith by the Board of Directors of the Company whose determination will be conclusive and evidenced by a Board Resolution, (b) each Significant Subsidiary that is prohibited by any applicable contractual requirement from guaranteeing the Notes on the

Issue Date or at the time such Significant Subsidiary becomes a Significant Subsidiary (to the extent not incurred in connection with becoming a Restricted Subsidiary and in each case for so long as such restriction or any replacement or renewal thereof is in effect), and (c) any Unrestricted Subsidiary.

"Excluded Pledge Subsidiary" means (i) each Subsidiary Guarantor, (ii) each Significant Subsidiary where a first-priority perfected security interest on the Equity Interests of such Significant Subsidiary cannot be granted due to any requirement of law or that would require consent, approval, license or authorization of a governmental authority to guarantee the Notes, as determined in good faith by the Board of Directors of the Company whose determination will be conclusive and evidenced by a Board Resolution, (iii) each Significant Subsidiary that is prohibited by any applicable contractual requirement from pledging Equity Interests on the Issue Date or at the time such Significant Subsidiary becomes a Restricted Subsidiary (to the extent not incurred in connection with becoming a Restricted Subsidiary and in each case for so long as such restriction or any replacement or renewal thereof is in effect), or (iv) any Unrestricted Subsidiary.

"Existing Indebtedness" means the Prisma Loan and certain credit facilities entered into with several international and Brazilian banks in an aggregate principal amount of approximately U.S.$270 million.

"Existing Debt Lenders" means the lenders whose Debt is to be repaid by the Issuer with the proceeds of the offering of the Notes.

"Farm-In Agreement" means an agreement whereby a Person agrees to pay all or a share of the drilling, completion or other expenses of an exploratory or development well (which agreement may be subject to a maximum payment obligation, after which expenses are shared in accordance with the working or participation interests therein or in accordance with the agreement of the parties) or perform the drilling, completion or other operation on such well in exchange for an ownership interest in an oil or gas property.

"Farm-Out Agreement" means a Farm-In Agreement, viewed from the standpoint of the party that transfers an ownership interest to another.

"Fitch" means Fitch Inc. and its successors.

"FPSO Bravo" means the vessel registered in the port of Nassau under IMO number 8715027, MMSI Number 311 001 017, call sign C6EW2.

"FPSO Valente" means the vessel registered in the port of Nassau under IMO number 7522318, MMSI Number 309 864 000, call sign C6WN.

"Guarantee" means any obligation, contingent or otherwise, of any Person directly or indirectly guaranteeing any Debt or other obligation of any other Person and, without limiting the generality of the foregoing, any obligation, direct or indirect, contingent or otherwise, of such Person (i) to purchase or pay (or advance or supply funds for the purchase or payment of) such Debt or other obligation of such other Person (whether arising by virtue of partnership arrangements, or by agreement to keep-well, to purchase assets, goods, securities or services, to take- or-pay, or to maintain financial statement conditions or otherwise) or (ii) entered into for purposes of assuring in any other manner the obligee of such Debt or other obligation of the payment thereof or to protect such obligee against loss in respect thereof, in whole or in part; *provided* that the term "Guarantee" does not include endorsements for collection or deposit in the ordinary course of business. The term "Guarantee" used as a verb has a corresponding meaning.

"Guarantor" means the Initial Guarantors and each Person that executes a supplemental Indenture to the Indenture providing for the guaranty of the payment of the Notes, or any successor obligor under its Note Guaranty pursuant to "—Certain Covenants—Consolidation, amalgamation, merger or sale of assets," in each case unless and until such Guarantor is released from its Note Guaranty pursuant to the Indenture.

"Hedging Agreement" means (i) any interest rate swap agreement, interest rate cap agreement or other agreement designed to protect against fluctuations in interest rates (ii) any foreign exchange forward contract, currency swap agreement or other agreement designed to protect against fluctuations in foreign exchange rates, or (iii) any puts, cap transactions, floor transactions, collar transactions, forward contract, commodity swap agreement, commodity futures agreements or other similar agreement designed to protect against fluctuations

in the prices of commodities related to the Oil and Gas Business (including, without limitation, oil, gas and methanol).

"Hydrocarbons" means oil, gas, casinghead gas, drip gasoline, natural gasoline, condensate, distillate, liquid hydrocarbons, gaseous hydrocarbons, natural gas liquids, and all constituents, elements or compounds thereof and products refined or processed therefrom.

"IFRS" means International Financial Reporting Standards as adopted by the International Accounting Standards Board as in effect from time to time.

"Incur" means, with respect to any Debt or Capital Stock, to incur, create, issue, assume or Guarantee such Debt or Capital Stock. If any Person becomes a Restricted Subsidiary on any date after the date of the Indenture (including by redesignation of an Unrestricted Subsidiary or failure of an Unrestricted Subsidiary to meet the qualifications necessary to remain an Unrestricted Subsidiary), the Debt and Capital Stock of such Person outstanding on such date will be deemed to have been Incurred by such Person on such date for purposes of "Limitation on Debt and Disqualified or Preferred Stock," but will not be considered the sale or issuance of Equity Interests for purposes of "Limitation on Asset Sales." The accretion of original issue discount or payment of interest in kind will not be considered an Incurrence of Debt.

"Independent Financial Advisor" means an accounting firm, appraisal firm, investment banking firm or consultant that is, in the judgment of the Company's Board of Directors, qualified to perform the task for which it has been engaged and which is independent in connection with the relevant transaction.

"Initial Share Collateral" means all the Equity Interests pledged pursuant to the Initial Share Pledge Agreements.

"Initial Guarantor" means each of the Company, Petro Rio Internacional S.A., Petro Rio O&G Exploração e Produção de Petróleo Ltda., Petrorio Luxembourg Holding S.à r.l., Petro Rio do Brasil Exploração Petrolífera S.A., Petro Rio Jaguar Petróleo Ltda., Petro Rio White Shark Petróleo Ltda. and Petro Rio OPCO Exploração Petrolífera Ltda.

"Initial Interest Rate" has the meaning set forth under "—Basic terms of Notes."

"Initial Share Pledge Agreements" means the Brazilian Share Pledge Agreements and the Luxembourg Share Pledge Agreement.

"Interest Expense" means, for any period, the consolidated interest expense of the Company and the Restricted Subsidiaries, net of any consolidated interest income of the Company and the Restricted Subsidiaries, plus, to the extent not included in such consolidated interest expense, and to the extent incurred, accrued or payable by the Company or the Restricted Subsidiaries, without duplication, (i) interest expense attributable to Sale and Leaseback Transactions, (ii) amortization of debt discount and debt issuance costs, (iii) capitalized interest, (iv) non-cash interest expense, (v) commissions, discounts and other fees and charges owed with respect to letters of credit and bankers' acceptance financing, and (vi) any of the above expenses with respect to Debt of another Person Guaranteed by the Company or any of the Restricted Subsidiaries, as determined on a consolidated basis and in accordance with IFRS.

"Investment" means:

(1) any direct or indirect advance, loan or other extension of credit to another Person,

(2) any capital contribution to another Person, by means of any transfer of cash or other property or in any other form,

(3) any purchase or acquisition of Equity Interests, bonds, Notes or other Debt, or other instruments or securities issued by another Person, including the receipt of any of the above as consideration for the disposition of assets or rendering of services, or

(4) any Guarantee of any obligation of another Person.

If the Company or any Restricted Subsidiary (x) sells or otherwise disposes of any Equity Interests of any direct or indirect Restricted Subsidiary so that, after giving effect to that sale or disposition, such Person

is no longer a Subsidiary of the Company, or (y) designates any Restricted Subsidiary as an Unrestricted Subsidiary in accordance with the provisions of the Indenture, all remaining Investments of the Company and the Restricted Subsidiaries in such Person shall be deemed to have been made at such time.

"Investment Grade" means BBB- or higher by S&P, Baa3 or higher by Moody's and BBB- or higher by Fitch, or the equivalent of such ratings by another Rating Agency.

"Issue Date" means the date on which the Notes are originally issued under the Indenture.

"Lien" means any mortgage, pledge, security interest, encumbrance, lien or charge of any kind (including any conditional sale or other title retention agreement or Capital Lease).

"Luxembourg Share Pledge Agreement" means the share pledge agreement with respect to the Equity Interest of Petrorio Luxembourg Holding S.à r.l., the Guarantor organized under Luxembourg law to be governed by and perfected under Luxembourg law.

"Minimum Legally Required Dividends" means, for any Person and any period, an amount equal to the minimum dividend required to be distributed under applicable law by such Person to holders of its Capital Stock during such period, which may be paid in the form of interest on shareholders' equity.

"Moody's" means Moody's Investors Service, Inc. and its successors.

"Net Cash Proceeds" means, with respect to any Asset Sale, the proceeds of such Asset Sale in the form of cash (including, except in the case of Collateral, (i) payments in respect of deferred payment obligations to the extent corresponding to, principal, but not interest, when received in the form of cash, and (ii) proceeds from the conversion of other consideration received when converted to cash), net of

(1) brokerage commissions and other fees and expenses related to such Asset Sale, including fees and expenses of counsel, accountants and investment bankers;

(2) provisions for taxes as a result of such Asset Sale without regard to the consolidated results of operations of the Company and the Restricted Subsidiaries;

(3) payments required to be made to holders of minority interests in Restricted Subsidiaries as a result of such Asset Sale or to repay Debt outstanding at the time of such Asset Sale that is secured by a Lien on the property or assets sold; and

(4) appropriate amounts to be provided as a reserve against liabilities associated with such Asset Sale, including pension and other post-employment benefit liabilities, liabilities related to environmental matters and indemnification obligations associated with such Asset Sale, with any subsequent reduction of the reserve other than by payments made and charged against the reserved amount to be deemed a receipt of cash.

"Net Leverage Ratio" means, on any date (the "transaction date"), the ratio of:

(x) (i) the sum of the Debt of the Company and the Restricted Subsidiaries (other than Hedging Agreements) minus

(ii) the aggregate amount of cash and Cash Equivalents held by the Company and the Restricted Subsidiaries, to

(y) the aggregate amount of EBITDA for the four fiscal quarters immediately prior to the transaction date for which internal financial statements are available (the "reference period").

In making the foregoing calculation:

(1) any Debt, Disqualified Stock or Preferred Stock to be repaid or redeemed on the transaction date will be excluded; and

(2) pro forma effect will be given to:

(A) the creation, designation or redesignation of Restricted and Unrestricted Subsidiaries,

(B) the acquisition or disposition of companies, divisions or lines of businesses by the Company and the Restricted Subsidiaries, including any acquisition or disposition of a company, division or line of business since the beginning of the reference period by a Person that became a Restricted Subsidiary after the beginning of the reference period, and

(C) the discontinuation of any discontinued operations

that have occurred since the beginning of the reference period as if such events had occurred, and, in the case of any disposition, the proceeds thereof applied, on the first day of the reference period. To the extent that pro forma effect is to be given to an acquisition or disposition of a company, division or line of business, the pro forma calculation will be based upon the most recent four full fiscal operating quarters for which the relevant financial information is available.

"Non-Recourse Debt" means Debt as to which none of the Company or any Restricted Subsidiary provides any Guarantee and as to which the lenders have been notified in writing that they will not have any recourse to the stock or assets of the Company or any Restricted Subsidiary.

"Note Guaranty" means the guaranty of the Notes by a Guarantor pursuant to the Indenture.

"OECD Country" means any member country of the Organisation for Economic Co-operation and Development.

"Obligations" means, with respect to any Debt, all obligations (whether in existence on the Issue Date or arising afterwards, absolute or contingent, direct or indirect) for or in respect of principal (when due, upon acceleration, upon redemption, upon mandatory repayment or repurchase pursuant to a mandatory offer to purchase, or otherwise), premium, interest, Additional Amounts, penalties, fees, indemnification, reimbursement and other amounts payable and liabilities with respect to such Debt, including all interest accrued or accruing after the commencement of any bankruptcy, insolvency or reorganization or similar case or proceeding at the contract rate (including, without limitation, any contract rate applicable upon default) specified in the relevant documentation, whether or not the claim for such interest is allowed as a claim in such case or proceeding.

"Officers' Certificate" means, an officer certificate of the Company on behalf of itself or its Subsidiaries, including the Issuer, signed by two officers of the Company, one of whom is the principal executive officer, the principal financial officer, the treasurer or the principal accounting officer, or by any other officer and either an assistant treasurer or an assistant secretary of the Company, and delivered to the Trustee.

"Oil and Gas Business" means:

(1) the business of acquiring, exploring, exploiting, developing, producing, operating, transporting and disposing of interests in oil, natural gas, liquefied natural gas and other Hydrocarbon properties or products produced in association with any of the foregoing;

(2) any business relating to oil and gas field sales and service; and

(3) any business or activity relating to, arising from, or necessary, appropriate or incidental to the activities described in the foregoing clauses (1) through (3) of this definition.

"Opinion of Counsel" means a written opinion of counsel, who may be an employee of or counsel for the Issuer or the Company (except as otherwise provided in the Indenture), obtained at the expense of the Issuer or the Company, or the surviving or transferee Person or a Restricted Subsidiary, and who is reasonably acceptable to the Trustee.

"Permitted Business" means the Oil and Gas Business, the Electric Power Business and the Renewable Energy Business, *provided* that, for purposes of the covenants described under "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock," "—Certain Covenants—Limitation on Restricted Payments;" "—Certain Covenants—Limitation on Asset Sales;" "—Certain Covenants—Limitation on Liens; " "—Certain Covenants—Lines of Business;" "—Certain Covenants—Designation of Restricted and Unrestricted Subsidiaries," any Investment, payment, acquisition, or other action or activities arising out of, or relating to, the Electric Power Business and the Renewable Energy Business, shall not be permitted if

Consolidated Tangible Assets relating to Electric Power Business and the Renewable Energy Business in the aggregate are equal to, or exceed, at any time, 15.0% of Consolidated Tangible Assets, as evidenced by a certificate delivered by the Chief Financial Officer of the Company to the Trustee.

"Permitted Business Investments" means Investments and expenditures made in the ordinary course of, and of a nature that is or shall have become customary in, (1) the Oil and Gas Business as a means of actively exploiting, exploring for, acquiring, developing, processing, gathering, marketing or transporting oil, natural gas, other Hydrocarbons and minerals (including with respect to plugging and abandonment) through agreements, transactions, interests or arrangements that permit one to share risks or costs of such activities or comply with regulatory requirements regarding local ownership, including without limitation, (a) ownership interests in oil, natural gas, other Hydrocarbons and minerals properties, liquefied natural gas facilities, processing facilities, gathering systems, pipelines, storage facilities or related systems or ancillary real property interests; (b) Investments in the form of or pursuant to operating agreements, working interests, royalty interests, mineral leases, processing agreements, Farm- In Agreements, Farm-Out Agreements, contracts for the sale, transportation or exchange of oil, natural gas, other Hydrocarbons and minerals, production sharing agreements, participation agreements, development agreements, area of mutual interest agreements, unitization agreements, pooling agreements, joint bidding agreements, service contracts, joint venture agreements, partnership agreements (whether general or limited), subscription agreements, stock purchase agreements, stockholder agreements and other similar agreements (including for limited liability companies) with third parties; and (c) direct or indirect ownership interests in drilling rigs and related equipment, including, without limitation, transportation equipment; (2) the Electric Power Business and (3) the Renewable Energy Business, *provided* that, any Investments and expenditures under clauses (2) and (3) shall not be permitted if Consolidated Tangible Assets relating to Electric Power Business and the Renewable Energy Business in the aggregate are equal to, or exceed, at any time 15.0% of Consolidated Tangible Assets, as evidenced by a certificate delivered by the Chief Financial Officer of the Company to the Trustee.

"Permitted Collateral Liens" means: (1) Liens on the Collateral to secure Obligations in respect of the Notes (excluding any Additional Notes); and (2) Liens on the Collateral that rank *pari passu* with the Liens securing the Obligations in respect of the Notes and that secure Obligations in respect of Additional Notes permitted to be Incurred pursuant to the covenant described under "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock."

"Permitted Investments" means:

(1) any Investment in the Company or in a Restricted Subsidiary that is engaged in a Permitted Business;

(2) any Investment in Cash Equivalents;

(3) any Investment by the Company or any Subsidiary of the Company in a Person, if as a result of such Investment,

  (A) such Person becomes a Restricted Subsidiary engaged in a Permitted Business, or

  (B) such Person is merged or consolidated with or into, or transfers or conveys substantially all its assets to, or is liquidated into, the Company or a Restricted Subsidiary engaged in a Permitted Business;

(4) Investments received as non-cash consideration in an Asset Sale made pursuant to and in compliance with "—Certain Covenants—Limitation on Asset Sales;"

(5) Hedging Agreements otherwise permitted under the Indenture;

(6) (i) receivables owing to the Company or any Restricted Subsidiary if created or acquired in the ordinary course of business, (ii) endorsements for collection or deposit in the ordinary course of business, and (iii) securities, instruments or other obligations received in compromise or settlement of debts created in the ordinary course of business, or by reason of a composition or readjustment of debts or reorganization of another Person, or in satisfaction of claims or judgments;

(7) Permitted Business Investments;

(8) payroll, travel and other loans or advances to, or Guarantees issued to support the obligations of, officers and employees, in each case in the ordinary course of business, not in excess of U.S.$1.0 million (or the equivalent in other currencies) outstanding at any time;

(9) extensions of credit to customers and suppliers in the ordinary course of the Oil and Gas Business;

(10) [Reserved], and

(11) in addition to Investments listed above, other Investments not to exceed the greater of U.S.$100.0 million (or the equivalent in other currencies) and 7.5% of Consolidated Tangible Assets.

"Permitted Liens" means:

(1) Liens existing on the Issue Date;

(2) Liens securing the Notes or any Note Guaranty;

(3) Liens securing Obligations under or with respect to Credit Facilities of the Issuer or any Guarantor or any Debt of a Restricted Subsidiary that is not a Guarantor (other than the Issuer), in the aggregate not to exceed the amount of Debt permitted under clause (b)(1) of "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock;"

(4) pledges or deposits under worker's compensation laws, unemployment insurance laws or similar legislation, or good faith deposits in connection with bids, tenders, contracts or leases, or to secure public or statutory obligations, surety bonds, customs duties and the like, or for the payment of rent, in each case incurred in the ordinary course of business and not securing Debt;

(5) Liens imposed by law, such as carriers', vendors', warehousemen's and mechanics' liens, in each case for sums not yet due or being contested in good faith and by appropriate proceedings;

(6) Liens in respect of taxes and other governmental assessments and charges which are not yet due or which are being contested in good faith and by appropriate proceedings;

(7) Liens securing reimbursement obligations with respect to letters of credit that encumber documents and other property relating to such letters of credit and the proceeds thereof;

(8) survey exceptions, encumbrances, easements or reservations of, or rights of others for, licenses, rights of way, sewers, electric lines, telegraph and telephone lines and other similar purposes, or zoning or other restrictions as to the use of real property, not interfering in any material respect with the conduct of the business of the Company and the Restricted Subsidiaries;

(9) licenses or leases or subleases as licensor, lessor or sublessor of any of its property, including intellectual property, in the ordinary course of business;

(10) customary Liens in favor of trustees and escrow agents, and netting and setoff rights, banker's liens and the like in favor of financial institutions and counterparties to financial obligations and instruments, including Hedging Agreements;

(11) Liens on assets pursuant to merger agreements, stock or asset purchase agreements and similar agreements in respect of the disposition of such assets;

(12) options, put and call arrangements, rights of first refusal and similar rights relating to Investments in joint ventures, partnerships and the like;

(13) judgment liens, and Liens securing appeal bonds or letters of credit issued in support of or in lieu of appeal bonds, so long as no Event of Default then exists as a result thereof;

(14) Liens (including the interest of a lessor under a Capital Lease) on assets or property that secure Debt Incurred under clause (a) of "—Certain Covenants—Limitation on Debt and Disqualified or Preferred Stock" or clauses (7) or (9) of "Permitted Debt," in each case for the purpose of financing (i) all or any part of the purchase price of such assets or property, or (ii) the cost of construction or improvement of such assets or property (including, for the avoidance of doubt, Equity Interests,

improvements, or improvements on property consisting of undeveloped land) and which attach within 180 days after the date of such acquisition, purchase or the completion of construction or improvement;

(15) Liens on property of a Person at the time such Person becomes a Restricted Subsidiary, provided such Liens were not created in contemplation thereof and do not extend to any other property of the Company or any Restricted Subsidiary;

(16) Liens on assets, property, or shares of stock of a Person at the time Company or any of the Restricted Subsidiaries acquires such assets or property, including any acquisition by means of a merger or consolidation with or into the Company or a Restricted Subsidiary of such Person; provided, that such Liens are limited to the assets, property or shares of stock acquired (including those of a Person that becomes a Restricted Subsidiary);

(17) Liens securing Debt or other obligations of the Company or a Restricted Subsidiary to the Company, or a Restricted Subsidiary;

(18) Liens securing Hedging Agreements that are incurred in the ordinary course of business and not for speculation);

(19) any pledge of the Capital Stock of an Unrestricted Subsidiary to secure Debt of such Unrestricted Subsidiary, to the extent such pledge constitutes an Investment permitted under "—Certain Covenants— Limitation on Restricted Payments;"

(20) extensions, renewals or replacements of any Liens referred to in clauses (1), (2), (14) or (15) in connection with the refinancing of the obligations secured thereby, *provided* that such Lien does not extend to any other property and, except as contemplated by the definition of "Permitted Refinancing Debt," the amount secured by such Lien is not increased;

(21) Liens in respect of Production Payments and Reserve Sales;

(22) Liens on pipelines and pipeline facilities that arise by operation of law;

(23) Liens arising under joint venture agreements, partnership agreements, oil and gas leases or subleases, assignments, purchase and sale agreements, division orders, contracts for the sale, purchasing, processing, transportation or exchange of oil or natural gas, unitization and pooling declarations and agreements, development agreements, area of mutual interest agreements, licenses, sublicenses, net profits interests, participation agreements, Farm-Out Agreements, Farm-In Agreements, carried working interest, joint operating, unitization, royalty, sales and similar agreements relating to the exploration or development of, or production from, oil and gas properties entered into in the ordinary course of business in a Permitted Business;

(24) Liens reserved in oil and gas mineral leases for bonus, royalty or rental payments and for compliance with the terms of such leases;

(25) Liens on, or related to, properties or assets to secure all or part of the costs incurred in the ordinary course of a Permitted Business for exploration, drilling, development, production, processing, transportation, marketing, storing, abandonment or operation; and

(26) other Liens securing obligations in an aggregate amount not exceeding the greater of (x) U.S.$100.0 million (or the equivalent in other currencies) and (y) 7.5% of Consolidated Tangible Assets.

"Person" means an individual, a corporation, a partnership, a limited liability company, an association, a trust or any other entity, including a government or political subdivision or an agency or instrumentality thereof.

"Preferred Stock" means, with respect to any Person, any and all Capital Stock which is preferred as to the payment of dividends or distributions, upon liquidation or otherwise, over another class of Capital Stock of such Person.

"Prisma Loan" means, a loan agreement entered into with PSS Oil and Gas LLC, dated as of January 27, 2020 (as amended, supplemented or otherwise modified from time to time).

"Production Payments and Reserve Sales" means Dollar-Denominated Production Payments and Volumetric Production Payments, collectively.

"Qualified Equity Interests" means all Equity Interests of a Person other than Disqualified Equity Interests.

"Qualified Stock" means all Capital Stock of a Person other than Disqualified Stock.

"Rating Agencies" means each of S&P, Moody's and Fitch; *provided*, that if either S&P, Moody's or Fitch shall cease issuing a rating on the notes for reasons outside the control of the Issuer may select a "nationally recognized statistical rating organization" within the meaning of Rule 15c3-1(c)(2)(vi)(F) under the Exchange Act, selected by us as a replacement agency for S&P, Moody's or Fitch, as the case may be.

"Rating Decline" means that at any time within 90 days (which period shall be extended so long as the rating of the Notes is under publicly announced consideration for possible down grade by any Rating Agency) after the earlier of the (A) date of public notice of a Change of Control and (B) Company's intention or that of any Person to effect a Change of Control, (i) in the event the Notes are assigned an Investment Grade by at least two of the Rating Agencies prior to such public notice, the rating of the Notes by at least two of the Rating Agencies shall be below an Investment Grade; or (ii) in the event the Notes are not assigned an Investment Grade by at least two of the Rating Agencies prior to such public notice, the rating of the Notes by at least two of the Rating Agencies shall be decreased by one or more categories; provided that, in each case, any such Rating Decline is in whole or in part in connection with a Change of Control. Notwithstanding the foregoing, No Change of Control with Rating Decline will be deemed to have occurred in connection with any particular Change of Control unless and until such Change of Control has actually been consummated.

"Renewable Energy Business" means (1) the business of acquiring, exploiting, developing, producing, operating and disposing of projects or assets, or interests therein, that generate electricity from renewable energy sources including, but not limited to, solar, wind, ocean, hydropower, biomass, geothermal resources, and biofuels and hydrogen derived from renewable resources; and (2) any business or activity relating to, arising from, or necessary, appropriate or incidental to the activities described in the foregoing clause (1).

"Restricted Payment" has the meaning set forth under "—Certain Covenants—Limitation on Restricted Payments."

"Restricted Subsidiary" means the Issuer, any Guarantor or other Subsidiary of the Company other than an Unrestricted Subsidiary.

"Reversion Date" has the meaning set forth under "—Suspension of Certain Covenants."

"S&P" means Standard & Poor's Ratings Services and its successors.

"Sale and Leaseback Transaction" means, with respect to any Person, an arrangement whereby such Person enters into a lease of property previously transferred by such Person to the lessor.

"SEC" means the U.S. Securities and Exchange Commission.

"Share Collateral" means the Initial Share Collateral and any Additional Share Collateral.

"Share Pledge Agreements" means the Initial Share Pledge Agreements and any Additional Share Pledge Agreements.

"Significant Subsidiary" means any Wholly-Owned Restricted Subsidiary of the Company that would constitute a "Significant Subsidiary" of the Company in accordance with Rule 1-02 under Regulation S-X under the Securities Act in effect on the Issue Date.

"Stated Maturity" means (i) with respect to any Debt, the date specified as the fixed date on which the final installment of principal of such Debt is due and payable or (ii) with respect to any scheduled installment of principal of or interest on any Debt, the date specified as the fixed date on which such installment is due

and payable as set forth in the documentation governing such Debt, not including any contingent obligation to repay, redeem or repurchase prior to the regularly scheduled date for payment.

"Starter Amount" means U.S.$20.0 million.

"Step-Up" has the meaning set forth under "—Collateral—Interest Step-Up."

"Subordinated Debt" means any Debt of the Issuer or any Guarantor which is subordinated in right of payment to the Notes or the Note Guaranty, as applicable, pursuant to a written agreement to that effect.

"Subsidiary" means with respect to any Person, any corporation, association or other business entity of which more than 50% of the outstanding Voting Stock is owned, directly or indirectly, by, or, in the case of a partnership, the sole general partner or the managing partner or the only general partners of which are, such Person and one or more Subsidiaries of such Person (or a combination thereof). Unless otherwise specified, "Subsidiary" means a Subsidiary of the Company.

"Subsidiary Guarantor" means the Guarantors other than the Company.

"Suspended Covenants" has the meaning set forth under "—Suspension of Certain Covenants."

"Suspension Period" has the meaning set forth under "—Suspension of Certain Covenants."

"U.S. Government Obligations" means obligations issued or directly and fully guaranteed or insured by the United States of America or by any agent or instrumentality thereof, *provided* that the full faith and credit of the United States of America is pledged in support thereof.

"Unrestricted Subsidiary" means any Subsidiary of the Company that at the time of determination has previously been designated, and continues to be, an Unrestricted Subsidiary in accordance with "Designation of Restricted and Unrestricted Subsidiaries," and any Subsidiary of such Subsidiary.

"Vessels" means each of FPSO Bravo and FPSO Valente.

"Vessel Deeds of Covenant" means each of that (i) certain deed of covenant, to be dated as of June 9, 2021, among Petro Rio O&G Exploração e Produção de Petroleo Ltda. and the Bahamian Collateral Agent relating to the FPSO Bravo Vessel Mortgage and (ii) certain deed of covenant, to be dated as of June 9, 2021, among Petro Rio Jaguar Petróleo Ltda. and the Bahamian Collateral Agent relating to the FPSO Valente Vessel Mortgage.

"Vessel Mortgages" means each of that (i) certain ship mortgage, to be dated as of June 9, 2021, pursuant to which Petro Rio O&G Exploração e Produção de Petroleo Ltda. shall grant a preferred ship mortgage over the FPSO Bravo and (ii) certain ship mortage, dated as of June 9, 2021 pursuant to which Petro Rio Jaguar Petróleo Ltda. grants a preferred ship mortgage over the FPSO Valente, in both cases in favor of the Bahamian Collateral Agent on behalf of the holders of the Notes.

"Volumetric Production Payment" means production payment obligations recorded as deferred revenue in accordance with IFRS, together with all related undertakings and obligations.

"Voting Stock" means, with respect to any Person, Capital Stock of any class or kind ordinarily having the power to vote for the election of directors, managers or other voting members of the governing body of such Person.

"Wholly-Owned" means, with respect to any Restricted Subsidiary, a Restricted Subsidiary all of the outstanding Capital Stock of which (other than any director's qualifying shares) is owned by the Company and one or more Wholly-Owned Restricted Subsidiaries (or a combination thereof).

CERTAIN TAX CONSIDERATIONS

Certain Brazilian Tax Considerations

The following discussion is a summary of the Brazilian tax considerations relating to an investment in the bonds by an investor considered as resident or domiciled outside Brazil for tax purposes (a "Non-Resident Holder"). The discussion contained herein is based on the tax laws of Brazil as in effect on the date hereof and is subject to any possible changes in Brazilian law that may come into effect after such date.

The information set forth below is intended to be a general discussion only and does not address all possible tax consequences relating to an investment in the bonds and it is not applicable to all categories of investors, some of which may be subject to special rules. Prospective investors should consult their own tax advisors as to the consequences of purchasing the bonds, including, without limitation, the consequences of the receipt of interest and the sale, redemption or repayment of the bonds.

Interest or principal payments

Generally, a Non-Resident Holder is taxed in Brazil only when income is derived from Brazilian sources or gains are realized on the disposition of assets located in Brazil. Therefore, based on the fact that the Issuer is considered for tax purposes as domiciled abroad, any income (including interest and original issue discount) paid by the Issuer in respect of the Notes issued in favor of Non-Resident Holders should not generally be subject to withholding or deduction in respect of Brazilian income tax or any other taxes, duties, assessments or governmental charges in Brazil, provided that such payments are made with funds held by the Issuer outside of Brazil.

Gains realized from sale or disposition of the Notes

According to Law No. 10,833, enacted on December 29, 2003, capital gains realized on the disposition of assets located in Brazil by a Non-Resident Holder, are subject to taxation in Brazil. Given that the Issuer is an entity incorporated under the laws of Luxemburg, as well as it is not registered to carry out business in Brazil, it would not qualify as a Brazilian resident for purposes of the Brazilian tax legislation. Thus, and also taking into consideration that the bonds will be issued and registered outside Brazil, the Notes should not fall within the definition of assets located in Brazil for the purposes of Law No. 10,833. Therefore, gains arising from the sale or disposition of the Notes (which for the purposes of this paragraph includes any deemed income on the difference between the issue price of the notes and the price at which the Notes are redeemed, or "original discount") made outside Brazil by a Non-Resident Holder to another non-Brazilian resident should not be subject to Brazilian taxes.

However, considering the general and unclear scope of Law No. 10,833 and the absence of judicial guidance in respect thereof, it is impossible to confirm whether such interpretation will ultimately prevail in the Brazilian courts. Therefore, if income tax is deemed to be due, the gains may be subject to income tax in Brazil. For Non-Resident Holders that are not in Favorable Tax Jurisdictions (see definition below), income tax on gains realized on the sale or disposition of assets located in Brazil will be subject to rates ranging from 15% to 22.5%, according to the amount of the gain. Please note that different rates may apply if the tax treaty between the country of residence of the Non-Resident Holder and Brazil sets forth a lower WHT rate.

In case the Non-Resident Holder making the sale or disposition is located in a jurisdiction that does not impose any income tax or which imposes it at a maximum rate lower than 20% or in a country or location where laws impose restrictions on the disclosure of shareholding composition or securities ownership or do not allow for the identification of the beneficial owner of income attributed to non-residents ("Favorable Tax Jurisdiction" — see "*—Discussion on Favorable Tax Jurisdiction*"), the gains will be subject to a flat 25% rate.

In certain circumstances, if a given transaction is not subject to WHT and tax authorities take the position that the WHT should have been levied, tax authorities may increase the taxable basis of the WHT, as if the amount actually received by the beneficiary outside Brazil had already been reduced by the applicable WHT (gross-up).

Discussion on Favorable Tax Jurisdictions

A Favorable Tax Jurisdiction is a country or location that (1) does not impose any tax on income or which imposes such tax at a maximum statutory rate lower than 20% or (2) imposes restrictions on the disclosure of shareholding composition or the ownership of the investment. A regulation issued by the Ministry of Treasury on November 28, 2014 (Ordinance 488, of 2014) decreased from 20% to 17% this minimum threshold for certain specific cases. The 17% threshold applies only to countries and regimes aligned with international standards of fiscal transparency in accordance with rules to be established by the Brazilian tax authorities in Normative Ruling 1,530 dated December 19, 2014.

Law No. 11,727 introduced the concept of a "privileged tax regime" in connection with transactions subject to Brazilian transfer pricing rules and also applicable to thin capitalization/cross border interest deductibility rules, which is broader than the concept of e LTJ. Pursuant to Law No. 11,727, a regime will be considered a "privileged tax regime" if: (i) does not tax income or tax it at a maximum rate lower than 20%, or 17%, %, provided that the requirements set forth in Normative Ruling No. 1,530 dated December 19, 2014 are met; (ii) grants tax advantages to a non-resident entity or individual (a) without requiring substantial economic activity in the jurisdiction of such non-resident entity or individual or (b) to the extent such non-resident entity or individual does not conduct substantial economic activity in the jurisdiction; (iii) does not tax or taxes foreign-sourced income, or imposes taxes on foreign-sourced income at a maximum rate lower than 20%, or 17%, %, provided that the requirements set forth in Normative Ruling No. 1,530 dated December 19, 2014 are met or (iv) restricts the ownership disclosure of assets and ownership rights or restricts disclosure about economic transactions carried out.

Although we believe that the best interpretation of the current tax legislation should lead to the conclusion that the privileged tax regime concept applies solely for purposes of Brazilian tax rules related to transfer pricing, thin capitalization and taxation of profits of foreign affiliates and controlled entities, we are not able to confirm if this privileged tax regime concept will only be applied to such transactions or whether it will also be used to extend the concept of a Favorable Tax Jurisdiction. Currently, the understanding of the Brazilian tax authorities is that the rate of 15% of WHT applies to interest paid to beneficiaries resident in privileged tax regimes. In any case, if Brazilian tax authorities determine that payments made to a Non-Resident Holder under a Privileged Tax Regime are subject to the same rules applicable to payments made to Non-Resident Holders located in a Favorable Tax Jurisdiction, the withholding income tax applicable to such payments could be assessed at a rate up to 25%.

On June 4, 2010, the Brazilian Federal Revenue Service enacted Normative Ruling 1,037 listing situations in which an entity or individual shall be considered as (1) LTJ, and (2) a privileged tax regime.

We recommend that prospective purchasers consult their own tax advisors regarding the concepts of LTJ and privileged tax regime listed by Normative Ruling 1,037.

Payments on the Notes made by the Guarantors

If the Issuer fails to punctually pay any due amount, including any payment of principal, interest or any other amount that may be due and payable in respect of the Notes, the Guarantors will be required to assume the obligation to pay such due amounts to the Non-Resident Holder.

As there is no specific legal provision dealing with the imposition of the WHT on payments made by Brazilian sources to non-resident beneficiaries under guarantees and no uniform decision from the Brazilian courts, there is a risk that tax authorities may take the position that the funds remitted by the Guarantors to the Non-Resident Holders may be subject to the imposition of the WHT at a general 15% rate, or at a 25% rate, if the Non-Resident Holder is located in a Favorable Tax Jurisdiction. In any case, we understand that there are arguments to sustain that (a) payments made under the guarantee structure should be subject to imposition of the WHT according to the nature of the guaranteed payment, in which case only interest and fees should be subject to taxation at the rates of 15% or 25%, in cases of beneficiaries located in LTJ, as defined by the Brazilian legislation; or (b) that payments made under guarantee by Brazilian sources to non-resident beneficiaries should not be subject to the imposition of the WHT, to the extent that they should qualify as a

new credit transactions by the Brazilian party to the borrower. This is however a controversial issue, still not decided by the Brazilian Courts.

Furthermore, fees and commissions payable by a Brazilian source may also be subject to adverse tax impacts, depending on the nature of the transaction.

Please note that different rates may apply if the tax treaty between the country of residence of the Non-Resident Holder and Brazil sets forth a lower WHT rate.

Other taxes

Pursuant to Decree No. 6,306, of December 14, 2007, as amended, conversions of foreign currency into Brazilian currency or vice versa are subject to the tax on foreign exchange transactions ("IOF/Exchange"), including foreign exchange transactions in connection with payments made by a Brazilian guarantor under the guarantee to Non-Resident Holders. Currently, the IOF/Exchange rate is 0.38% for most foreign exchange transactions, including foreign exchange transactions in connection with payments made by a Brazilian guarantor to Non-Brazilian Holders.

Despite the above, in any case, the Brazilian government is allowed to reduce the IOF/Exchange rate at any time down to 0% or increase the IOF/Exchange rate at any time up to 25%, but only with respect to future foreign exchange transactions.

Generally, there are no stamp, transfer or other similar taxes in Brazil with respect to the transfer, assignment or sale of the notes outside Brazil nor any inheritance, gift or succession tax applicable to the ownership, transfer or disposition of the notes, except for gift and inheritance taxes imposed by some states of Brazil on gifts and bequests by a Non-Resident Holder to individuals or entities domiciled or residing within such Brazilian states.

Luxembourg Tax Considerations

Withholding Tax

Under Luxembourg tax law currently in effect and subject to the exception below, no Luxembourg withholding tax is due on payments of interest (including accrued but unpaid interest) or repayments of principal.

In accordance with the law of 23 December 2005, interest payments made by Luxembourg paying agents to individual beneficial owners resident in Luxembourg are currently subject to a 20% withholding tax. Responsibility for withholding such tax will be assumed by the Luxembourg paying agent.

Income Taxation on Principal, Interest, Gains on Sales or Redemption

Luxembourg tax residency of the Noteholders

Noteholders will not be deemed to be resident, domiciled or carrying on business in Luxembourg solely by reason of holding, execution, performance, delivery, exchange and/or enforcement of the Notes.

Taxation of Luxembourg Non-Residents

Noteholders who are non-residents of Luxembourg and who do not have a permanent establishment, a permanent representative or a fixed base of business in Luxembourg with which the holding of the Notes is connected, will not be subject to taxes (income taxes and net wealth tax) or duties in Luxembourg with respect to payments of principal or interest (including accrued but unpaid interest), payments received upon redemption, repurchase or exchange of the Notes or capital gains realized upon disposal or repayment of the Notes.

Taxation of Luxembourg Residents

Noteholders who are residents of Luxembourg will not be liable for any Luxembourg income tax on repayment of principal.

Interest received by an individual resident in Luxembourg is, in principle, reportable and taxable at the progressive rate unless the interest has been subject to withholding tax (see above "Withholding Tax") or to the self-applied tax, if applicable. Indeed, in accordance with the Luxembourg law of 23 December 2005, Luxembourg resident individuals, acting in the framework of their private wealth, can opt to self-declare and pay a 20% tax on interest payments made by paying agents located in an EU Member State other than Luxembourg or a Member State of the European Economic Area other than an EU Member State.

The withholding tax or self-applied tax are the final tax liability for the Luxembourg individual resident taxpayers receiving the interest payment in the framework of their private wealth. Individual Luxembourg resident Noteholders receiving the interest as business income must include this interest in their taxable basis. If applicable, the 20% Luxembourg withholding tax levied will be credited against their final income tax liability.

Luxembourg resident individual Noteholders are not subject to taxation on capital gains upon the disposal of the Notes, unless the disposal of the Notes precedes the acquisition of the Notes or the Notes are disposed of within six months of the date of acquisition of these Notes. Upon the sale, redemption or exchange of the Notes, accrued but unpaid interest will be subject to the 20% withholding tax or the self-applied tax, if applicable. Individual Luxembourg resident Noteholders receiving the interest as business income must include the portion of the price corresponding to this interest in their taxable income. The 20% Luxembourg withholding tax levied will be credited against their final income tax liability.

Luxembourg resident corporate Noteholders, or non-resident Noteholders which have a permanent establishment, a permanent representative or a fixed base of business in Luxembourg with which the holding of the Notes is connected, must for income tax purposes include in their taxable income any interest (including accrued but unpaid interest) as well as the difference between the sale or redemption price and the lower of the cost or book value of the Notes sold or redeemed.

Luxembourg resident corporate Noteholders which are companies benefiting from a special tax regime (such as (a) family wealth management companies subject to the law of 11 May 2007, (b) undertakings for collective investment subject to the law of 17 December 2010 (c) specialized investment funds subject to the law of 13 February 2007, or (d) reserved alternative investment funds governed by the law of 23 July 2016, provided it is not foreseen in the incorporation documents that (i) the exclusive object is the investment in risk capital and that (ii) article 48 of the aforementioned law of 23 July 2016 applies) are tax exempt entities in Luxembourg, and are thus not subject to any Luxembourg tax (i.e., corporate income tax, municipal business tax and net wealth tax) other than the annual subscription tax calculated on their (paid up) share capital (and share premium) or net asset value.

Net Wealth Tax

Luxembourg net wealth tax will not be levied on the Notes held by a corporate Noteholder, unless (a) such Noteholder is a Luxembourg resident other than a corporate Noteholder governed by (i) the laws of 17 December 2010 and 13 February 2007 on undertakings for collective investment; (ii) the law of 22 March 2004 on securitization; (iii) the law of 15 June 2004 on the investment company in risk capital; (iv) the law of 11 May 2007 on family estate management companies or (v) the law of 23 July 2016 on reserved alternative investment funds, or (b) the Notes are attributable to an enterprise or part thereof which is carried on in Luxembourg through a permanent establishment or a permanent representative.

Other Taxes

Currently, no stamp, registration, transfer or similar taxes or duties will be payable in Luxembourg by Noteholders in connection with the issue of the Notes, nor will any of these taxes be payable as a consequence of a subsequent transfer or redemption of the Notes, unless the documents relating to the Notes are voluntarily registered or appended to a document that requires mandatory registration in Luxembourg.

There is no Luxembourg value added tax payable in respect of payments in consideration for the issuance of the Notes or in respect of the payment of interest or principal under the Notes or the transfer of the Notes. Luxembourg value added tax may, however, be payable in respect of fees charged for certain services rendered

to the Issuer, if for Luxembourg value added tax purposes such services are rendered or are deemed to be rendered in Luxembourg and an exemption from Luxembourg value added tax does not apply with respect to such services.

Noteholders not permanently resident in Luxembourg at the time of death will not be subject to inheritance or other similar taxes in Luxembourg in respect of the Notes. No Luxembourg gift tax is levied upon a gift or donation of the Notes, if the gift is not passed before a Luxembourg notary or recorded in a deed registered in Luxembourg.

Certain U.S. federal income tax considerations

The following is a description of certain U.S. federal income tax consequences that may be relevant to the ownership and disposition of the Notes by U.S. Holders, as defined below. This description addresses only the U.S. federal income tax considerations applicable to U.S. Holders that purchase Notes pursuant to this offering for the "issue price" (which will equal the first price to the public (not including bond houses, brokers or similar persons or organizations acting in the capacity of underwriters, placement agents or wholesalers) at which a substantial amount of the Notes is sold for money) and that will hold the Notes as capital assets (generally, assets held for investment).

This description does not describe all of the tax consequences that may be relevant to you in light of your particular circumstances, including alternative minimum tax and net investment income tax consequences, as well as tax considerations applicable to holders that may be subject to special tax rules, including:

- certain financial institutions;
- insurance companies;
- real estate investment trusts or regulated investment companies;
- dealers in securities or certain traders in securities that have elected to mark their positions to market for tax accounting purposes;
- individual retirement accounts and other tax-deferred accounts;
- tax-exempt entities;
- persons that will hold the Notes as part of straddles, hedging transactions or conversion transactions for U.S. federal income tax purposes;
- U.S. holders that are required to take certain amounts into income no later than the time such amounts are reflected on an applicable financial statement;
- persons that have ceased to be U.S. citizens or lawful permanent residents of the United States;
- persons holding the Notes in connection with a trade or business conducted outside of the United States;
- persons that have a "functional currency" other than the U.S. dollar; or
- partnerships or other entities or arrangements classified as partnerships for U.S. federal income tax purposes.

The U.S. federal income tax treatment of a partner in an entity or arrangement treated as a partnership for U.S. federal income tax purposes that holds Notes will depend on the status of the partner and the activities of the partnership. Prospective purchasers that are entities or arrangements treated as partnerships for U.S. federal income tax purposes should consult their tax advisers concerning the U.S. federal income tax consequences to them and their partners of the acquisition, ownership and disposition of Notes by the partnership.

This description is based on the Internal Revenue Code of 1986, as amended (the "Code"), existing, proposed and temporary U.S. Treasury Regulations and judicial and administrative interpretations thereof, in each case as of the date hereof. U.S. tax laws and the interpretation thereof are subject to change, which change could apply retroactively and could affect the tax consequences described below. This summary does not

address any aspect of state, local or non-U.S. taxation, or any taxes other than income taxes. You should consult your tax adviser with regard to the application of the U.S. federal tax laws to your particular situation, as well as any tax consequences arising under the laws of any state, local or non-U.S. taxing jurisdiction.

For purposes of this description, you are a "U.S. Holder" if you are a beneficial owner of the Notes that is for U.S. federal income tax purposes:

- a citizen or individual resident of the United States;
- a corporation or entity taxable as a corporation created or organized in or under the laws of the United States or any state thereof or the District of Columbia;
- an estate the income of which is subject to U.S. federal income tax without regard to its source; or
- a trust if a court within the United States is able to exercise primary supervision over the administration of the trust and or more U.S. persons have the authority to control all substantial decisions of the trust, or the trust has validly elected to be treated as a domestic trust for U.S. federal income tax purposes.

THE SUMMARY OF U.S. FEDERAL INCOME TAX CONSEQUENCES SET OUT BELOW IS FOR GENERAL INFORMATION ONLY. IT IS NOT INTENDED TO BE RELIED UPON BY PURCHASERS FOR THE PURPOSE OF AVOIDING PENALTIES THAT MAY BE IMPOSED UNDER THE CODE. ALL PROSPECTIVE PURCHASERS SHOULD CONSULT THEIR TAX ADVISERS AS TO THE PARTICULAR TAX CONSEQUENCES TO THEM OF OWNING THE NOTES, INCLUDING THE APPLICABILITY AND EFFECT OF STATE, LOCAL, FOREIGN AND OTHER TAX LAWS AND POSSIBLE CHANGES IN TAX LAW.

Potential Contingent Payment Debt Treatment

In certain circumstances, you may receive payments on the Notes other than the scheduled payments. For example, in the event of a Change of Control, we would generally be required to offer to repurchase the Notes at 101 per cent. of their principal amount plus accrued and unpaid interest (see "*Description of Notes—Repurchase of Notes upon a Change of Control*"). Additionally, if the Collateral Agents do not have a perfected first priority security interest on the Share Collateral within 60 days of the Issue Date, the amount of interest paid on the Notes will increase (see "*Description of Notes—Collateral—Share Pledge Agreement*"). The obligation to make these payments may implicate the provisions of the Treasury Regulations relating to "contingent payment debt instruments." If the Notes were deemed to be contingent payment debt instruments, you might be required to accrue interest income based upon a "comparable yield" (as defined in the Treasury Regulations) determined at the time of issuance of the Notes (which is not expected to differ significantly from the actual yield on the Notes), with adjustments to such accruals when any contingent payments are made that differ from the payments based on the comparable yield. In addition, any income on the sale, exchange, retirement or other taxable disposition of the Notes would be treated as interest income rather than as capital gain. We intend to take the position that the possibility of such payments does not result in the Notes being treated as contingent payment debt instruments under the applicable Treasury Regulations. Our position is not binding on the Internal Revenue Service ("IRS") and there is no assurance that the IRS will not take a contrary position. You are urged to consult your tax adviser regarding the possible application of the contingent payment debt instrument rules to the Notes. The remainder of this discussion assumes that the Notes will not be considered contingent payment debt instruments.

Payments of Interest

Interest paid on a Note (including any Additional Amounts and any amount withheld on account of foreign taxes) will be taxable to you as ordinary interest income at the time it accrues or is received, in accordance with your method of accounting for federal income tax purposes. It is expected, and this discussion assumes, that the Notes will be issued without original issue discount for U.S. federal income tax purposes.

Interest income with respect to a Note will constitute foreign-source income for U.S. federal income tax purposes, which may be relevant to you in calculating your foreign tax credit limitation. The limitation on foreign taxes eligible for credit is calculated separately with respect to specific classes of income. The rules

governing foreign tax credits are complex and, therefore, you should consult your own tax adviser regarding the availability of foreign tax credits in your particular circumstances.

Sale, Exchange, Retirement or Other Taxable Disposition

Upon the sale, exchange, retirement or other taxable disposition of a Note, you will recognize taxable gain or loss equal to the difference between the amount realized on the sale, exchange, retirement or other taxable disposition and your tax basis in the Note. For these purposes, the amount realized does not include any amount attributable to accrued but unpaid interest, which will be taxed as interest to the extent not previously included in income. Your tax basis in a Note generally will equal your cost for acquiring the Note. Your gain or loss will generally be capital gain or loss and will be long term capital gain or loss if at the time of sale, exchange, retirement or other taxable disposition the Note has been held for more than one year. Long-term capital gains recognized by non-corporate taxpayers are subject to reduced tax rates. The deductibility of capital losses is subject to limitations. Gain or loss, if any, will generally be U.S.-source income for purposes of computing your foreign tax credit limitation.

Substitution of the Issuer

The issuer may, subject to certain conditions, be replaced and substituted by the Company or any Wholly Owned Subsidiary of the Company as principal debtor (the "Substituted Issuer") in respect of the Notes (see "*Description of Notes—Substitution of the Issuer*"). Any such substitution might be treated for U.S. federal income tax purposes as a deemed disposition of Notes by you in exchange for new notes issued by the new obligor. As a result of this deemed disposition, you could be required to recognize capital gain or loss for U.S. federal income tax purposes equal to the difference, if any, between the issue price of the new notes (as determined for U.S. federal income tax purposes), and your tax basis in the Notes. The Substituted Issuer and the guarantors will have an obligation to indemnify you and hold you harmless against all taxes or duties which arise by reason of a law or regulation having legal effect or contemplated on the date such substitution becomes effective, which may be incurred or levied against you as a result of any substitution described under "*Description of Notes—Substitution of the Issuer*" and which would not have been so incurred or levied had such substitution not been made. U.S. Holders should consult their tax advisers concerning the U.S. federal income tax consequences to them of a substitution of the Issuer.

Backup Withholding and Information Reporting

In general, payments of principal and interest on, and the proceeds of a sale, redemption or other disposition of, the Notes, by a U.S. paying agent or other U.S. intermediary will be reported to the IRS and to the U.S. Holder as may be required under applicable regulations. Backup withholding will apply to these payments if you fail to provide an accurate taxpayer identification number or certification of exempt status or otherwise fail to comply with applicable certification requirements. Certain U.S. Holders are not subject to backup withholding. You should consult your tax adviser about these rules and any other reporting obligations that may apply to the ownership or disposition of Notes, including requirements related to the holding of certain "specified foreign financial assets."

CERTAIN ERISA CONSIDERATIONS

The following is a summary of certain considerations associated with the purchase of the Notes by or on behalf of (i) employee benefit plans that are subject to Title I of ERISA, (ii) plans, individual retirement accounts and other arrangements that are subject to Section 4975 of the Code, (iii) entities whose underlying assets are considered to include "plan assets" of any such plan, account or arrangement described in clauses (i) or (ii) (any plan, account, arrangement or entity described in clause (i), (ii) or (iii), a "Plan") or (iv) any other plan subject to Similar Law.

General fiduciary matters

ERISA and the Code impose certain duties on persons who are fiduciaries of a Plan subject to Title I of ERISA (an "ERISA Plan") and prohibit certain transactions involving the assets of any Plan and its fiduciaries or other interested parties. Under ERISA and the Code, any person who exercises any discretionary authority or control over the administration of a Plan or the management or disposition of the assets of a Plan, or who renders investment advice for a fee or other compensation to an ERISA Plan, is generally considered to be a fiduciary of the Plan.

Plan Asset Considerations

The U.S. Department of Labor (the "DOL") has promulgated a regulation describing what constitutes the assets of a Plan with respect to the Plan's investment in an entity for purposes of ERISA's fiduciary provisions and Section 4975 of the Code (the "Plan Asset Regulation"). Under the Plan Asset Regulation, subject to certain exceptions, if a Plan invests in an "equity interest" of an entity, that is neither a publicly-offered security nor a security issued by an investment company registered under the Investment Company Act, the Plan's assets include both the equity interest and an undivided interest in each of the entity's underlying assets, unless one of the exceptions to such treatment described in the Plan Asset Regulation applies. Under the Plan Asset Regulation there are two exceptions to the foregoing rule; either the entity qualifies as an "operating company" as defined under the Plan Asset Regulation or it is established that equity participation in the entity by "Benefit Plan Investors" (as defined below) is not "significant" (as described below). If the underlying assets of the entity are deemed to be "plan assets," the obligations and other responsibilities of Plan sponsors, Plan fiduciaries and Plan administrators, and of "parties in interest" and "disqualified persons" (as defined under ERISA and the Code), under Parts 1 and 4 of Subtitle B of Title I of ERISA and Section 4975 of the Code, as applicable, may be expanded, and there may be an increase in their liability under these and other provisions of ERISA and the Code (except to the extent (if any) that a favorable statutory or administrative exemption or exception applies); in addition, various providers of fiduciary or other services to the entity, and any other parties with authority or control with respect to the entity, could be deemed to be Plan fiduciaries or otherwise parties in interest or disqualified persons by virtue of their provision of such services (and there could be an improper delegation of authority to such providers).

Generally, equity participation by Benefit Plan Investors in an entity is "significant" under the Plan Asset Regulation if, immediately after the most recent acquisition of any equity interest in the entity, 25% or more of the value of any class of equity interests in the entity is held by Benefit Plan Investors. For these purposes, the value of any interests held by certain persons, other than Benefit Plan Investors, exercising control over the assets of the entity or providing investment advice with respect to such assets for a fee, directly or indirectly, or any affiliates of such person (any such person, a "Controlling Person") is excluded. Under ERISA, an entity that does not satisfy the 25% test will be deemed to hold plan assets only to the extent of the percentage of the equity interests in the entity held by Benefit Plan Investors. For purposes of the Plan Asset Regulation, an equity interest includes any interest in an entity other than an instrument that is treated as indebtedness under applicable local law and which has no substantial equity features. For purposes of the Plan Asset Regulation, as modified by ERISA, a "Benefit Plan Investor" is (i) an "employee benefit plan" as defined in ERISA and subject to Part 4 of Subtitle B of Title I of ERISA, (ii) a "plan" as defined in and subject to Section 4975 of the Code, or (iii) any entity whose underlying assets are deemed for purposes of ERISA or the Code to include "plan assets" by reason of such plan investment in the entity.

Certain governmental plans, church plans and non-U.S. plans (Non-ERISA Arrangement) are not subject to such provisions of ERISA or the Code, but may be subject to similar rules under other applicable laws or regulations similar to ERISA or the Plan Asset Regulation ("Similar Law").

No assurance can be given that the Notes will not be treated as equity interests for these purposes. The Issuer engages in limited activities and may not qualify as an "operating company" under the Plan Assets Regulation, notwithstanding any guarantee of Notes issued by it by the Guarantors. In addition, it is unlikely that the Issuer will monitor investments by Benefit Plan Investors to ensure that investments by Benefit Plan Investors will not be deemed to be "significant" under the Plan Asset Regulation. Accordingly, the Notes may not be purchased or held by Benefit Plan Investors but may be purchased by government plans, church plans or other non-U.S. plans that are not subject to ERISA, provided such purchase and holding of the Notes do not result in a violation of any Similar Law.

Representation

Accordingly, by acceptance of a note each purchaser and subsequent transferee of any Note will be deemed to have represented and warranted, on each day from the date on which the purchaser or transferee acquires such note through to and including the date on which the purchaser or transferee disposes of such Note that (i) no portion of the assets used by such purchaser or transferee to acquire or hold the Notes constitutes assets of any Plan or any plan subject to Similar Law or (ii) the acquisition and holding of the Notes by such purchaser or transferee will not constitute a violation of any applicable Similar Law.

The foregoing discussion is general in nature and is not intended to be all-inclusive. Due to the complexity of these rules and the penalties that may be imposed upon persons involved in non-exempt prohibited transactions, it is particularly important that fiduciaries, or other persons considering purchasing the Notes (and holding the Notes) on behalf of, or with the assets of, any Plan, consult with their counsel regarding the potential applicability of ERISA, Section 4975 of the Code and any Similar Law to such investment and whether an exemption would be applicable to the purchase and holding of the Notes.

Purchasers of the Notes have the exclusive responsibility for ensuring that their purchase and holding of the Notes complies with the fiduciary responsibility rules of ERISA and does not violate the prohibited transaction rules of ERISA or the Code and does not violate applicable Similar Law. None of the Transaction Parties is undertaking to provide impartial investment advice, or to give advice in a fiduciary capacity, in connection with the acquisition of any Notes by any Plan. The sale of any Notes to any Plan or plan subject to Similar Law is in no respect a representation by us or any of our affiliates or representatives that such an investment meets all relevant legal requirements with respect to investments by Plans or plans subject to Similar Law generally or any particular Plan or plan subject to Similar Law, or that such an investment is appropriate for Plans or plans subject to Similar Law generally or any particular Plan or plan subject to Similar Law.

PLAN OF DISTRIBUTION

Subject to the terms and conditions in the purchase agreement among the Issuer, the Guarantors and Morgan Stanley & Co. LLC, Itau BBA USA Securities, Inc., Banco BTG Pactual S.A. – Cayman Branch, Banco Safra S.A. (acting through its Cayman Islands Branch) and Santander Investment Securities Inc. as the Initial Purchasers, the Issuer has agreed to sell to the Initial Purchasers, and the Initial Purchasers have agreed to purchase from the Issuer, the principal amount of Notes set forth opposite the Initial Purchasers' names below:

Initial Purchasers	Principal Amount of Notes
Morgan Stanley & Co. LLC	U.S.$268,000,000
Itau BBA USA Securities, Inc.	U.S.$92,000,000
Banco BTG Pactual S.A. – Cayman Branch	U.S.$80,000,000
Banco Safra S.A. (acting through its Cayman Islands Branch)	U.S.$80,000,000
Santander Investment Securities Inc.	U.S.$80,000,000
Total	**U.S.$600,000,000**

Banco BTG Pactual S.A. – Cayman Branch and Banco Safra S.A., acting through its Cayman Islands Branch, are not broker-dealers registered with the SEC, and therefore may not make sales of any Notes in the United States or to U.S. persons except in compliance with applicable U.S. laws and regulations. To the extent that Banco BTG Pactual S.A. – Cayman Branch and Banco Safra S.A., acting through its Cayman Islands Branch, intend to sell the Notes in the United States, it will do so only through BTG Pactual US Capital, LLC and Safra Securities LLC, respectively, or one or more U.S. registered broker-dealers, or otherwise as permitted by applicable U.S. law.

Pursuant to the terms of the purchase agreement, the offering of the Notes by the Initial Purchasers are subject to, among other conditions, the delivery of certain certificates from our officers, legal opinions by our, the guarantors' and their legal counsel in Brazil, Luxembourg and in the United States and comfort letters from our independent auditors.

The Initial Purchasers initially propose to offer the Notes for resale at the issue price that appears on the cover of this Offering Memorandum. After the initial offering, the Initial Purchasers may change the offering price and any other selling terms. The Initial Purchasers may offer and sell Notes through certain of their affiliates.

The Initial Purchasers are offering the Notes subject to their acceptance of the Notes from us and subject to prior sale. The Initial Purchasers reserve the right to withdraw, cancel or modify offers to investors and to reject orders in whole or in part. In addition, the Initial Purchasers have advised us that they do not intend to confirm sales to any account over which they exercise discretionary authority.

No Sales of Similar Securities

In the purchase agreement, the Issuer and the Guarantors have agreed that:

- They will not offer or sell any of their debt securities (other than the Notes) for a period of 90 days after the date of this Offering Memorandum without the prior consent of the Initial Purchasers.
- They will indemnify the Initial Purchasers against certain liabilities, including liabilities under the Securities Act, or contribute to payments that the Initial Purchasers may be required to make in respect of those liabilities.

Notes Are Not Being Registered

The Notes (and the related Notes Guaranties) have not been registered under the Securities Act or the securities laws of any other place. In the purchase agreement, the Initial Purchasers have agreed that:

- The Notes may not be offered or sold within the United States or to U.S. persons except pursuant to an exemption from the registration requirements of the Securities Act or in transactions not subject to those registration requirements.
- During the initial distribution of the Notes, it will offer or sell Notes only to qualified institutional buyers in compliance with Rule 144A and outside the United States in compliance with Regulation S.

New Issue of Notes

The Notes are a new issue of securities, and there is currently no established trading market for the Notes. In addition, the Notes are subject to certain restrictions on resale and transfer as described under "Transfer Restrictions." Application will be made for the listing of the Notes on the Singapore Stock Exchange. There can be no assurance that the application will be approved. The offering and settlement of the Notes is not conditioned upon obtaining the listing. There can be no assurance that the prices at which the Notes will sell in the market after this offering will not be lower than the initial offering price or that an active trading market for the Notes after the completion of the offering will develop and continue after this offering. The Initial Purchasers may make a market in the Notes after completion of the offering, but will not be obligated to do so and may discontinue any market-making activities at any time without notice. No assurance can be given as to the liquidity of the trading market for the Notes or that an active public market for the Notes will develop. If an active public trading market for the Notes does not develop, the market price and liquidity of the Notes may be adversely affected. If the Notes are traded, they may trade at a discount from their initial offering price, depending on prevailing interest rates, the market for similar securities, our operating performance and financial condition, general economic conditions and other factors.

You should be aware that the laws and practices of certain countries require investors to pay stamp taxes and other charges in connection with purchases of securities.

Selling Restrictions

Brazil

The Notes have not been, and will not be, registered with the CVM. This Offering Memorandum is not addressed to Brazilian residents and it should not be forwarded or distributed to, nor read or consulted by, acted on or relied upon by Brazilian residents. Any investment to which this Offering Memorandum relates is available only to non-Brazilian residents and will be engaged in only with non-Brazilian residents. If you are a Brazilian resident and received this Offering Memorandum, please destroy any copies.

Canada

The Notes may be sold in Canada 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 Initial Purchasers are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

Chile

The offer of the Notes is not a public offer pursuant to General Rule No. 336 issued by the Superintendencia de Valores y Seguros de Chile (Chilean Securities and Insurance Superintendency or "SVS"). The commencement date of this offering is the one contained in the cover pages of this Offering Memorandum. The Notes will not be registered in the Registro de Valores (Securities Registry) or the Registro de Valores Extranjeros (Foreign Securities Registry), both kept by the SVS and will not be subject to the supervision of the SVS. As unregistered securities, the Issuer is not subject to any obligation to deliver/disclose public information concerning the Notes in Chile. The Notes shall not be allowed to be publicly offered in Chile unless they are registered in the Registro de Valores (Securities Registry) or the Registro de Valores Extranjeros (Foreign Securities Registry), both kept by the SVS. If the Notes are offered within Chile, they will be offered and sold only pursuant to General Rule 336 of the SVS, an exemption to the registration requirements, or in circumstances which do not constitute a public offer of securities under Chilean law.

La oferta de los bonos no es una oferta pública de conformidad a lo dispuesto en la Norma de Carácter General N°336 de la Superintendencia de Valores y Seguros o "SVS." La fecha de inicio de la presente oferta es la indicada en la portada de este Offering Memorandum. Los bonos no estarán inscritos en el Registro de Valores o en el Registro de Valores Extranjeros que lleva la SVS, y tales valores no estarán sujetos a la fiscalización de la SVS. Por tratarse de valores no inscritos, el emisor no está sujeto a obligación alguna de entregar en Chile información pública respecto de los bonos. Los bonos no podrán ser objeto de oferta pública en Chile mientras no sean inscritos en el Registro de Valores o el Registro de Valores Extranjeros que lleva la SVS. Si los bonos son ofrecidos dentro de Chile, serán ofrecidos y colocados sólo de acuerdo a la Norma de Carácter General N°336 de la SVS, una excepción a la obligación de inscripción, o en circunstancias que no constituyan una oferta pública de valores en Chile de conformidad a la ley chilena.

European Economic Area and United Kingdom

In relation to each Member State of the European Economic Area (each, a "Relevant Member State"), an offer of Notes which are the subject of the offering contemplated by this Offering Memorandum may not be made to the public in that Relevant Member State other than:

(a) to any legal entity which is a qualified investor as defined in the Prospectus Regulation;

(b) 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 Manager or Managers nominated by the Issuer for any such offer; or

(c) in any other circumstances falling within Article 1(4) of the Prospectus Regulation;

provided that no such offer of Notes shall require the Issuer or any Manager 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 an "offer of Notes to the public" in relation to any Notes in any Relevant Member 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, as amended.

United Kingdom

An offer of Notes which are the subject of the offering contemplated by this Offering Memorandum may not be made to the public in the United Kingdom except that an offer of such Notes may be made to the public in the United Kingdom:

(a) to any legal entity which is a qualified investor as defined in Article 2 of the UK Prospectus Regulation;

(b) to fewer than 150 natural or legal persons (other than qualified investors as defined in Article 2 of the UK Prospectus Regulation), in the United Kingdom, subject to obtaining the prior consent of the relevant Manager or Managers nominated by the Issuer for any such offer; or

(c) in any other circumstances falling within section 86 of the Financial Services and Markets Act 2000 (as amended, "FSMA");

provided that no such offer of Notes shall require the Issuer or any Manager to publish a prospectus pursuant to section 85 of the FSMA or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation.

For the purposes of this provision, the expression an "offer of Notes to the public" in relation to any Notes 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 "UK Prospectus Regulation" means Regulation (EU) 2017/1129 as it forms parts of domestic law by virtue of the European Union (Withdrawal) Act 2018.

Hong Kong

This Offering Memorandum has not been approved by or registered with the Securities and Futures Commission of Hong Kong or the Registrar of Companies of Hong Kong. No person may 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 and any rules made under that Ordinance, 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 or which do not constitute an offer to the public within the meaning of that Ordinance. No person may 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 the 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 Securities and Futures Ordinance and any rules made under that Ordinance.

WARNING: The contents of this document have not been reviewed by any regulatory authority in Hong Kong. You are advised to exercise caution in relation to the offer. If you are in any doubt about any of the contents of this document, you should obtain independent professional advice.

Japan

The securities have not been and will not be registered under the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended) (the "FIEA"). The securities may not be offered or sold directly or indirectly, in Japan or to or for the benefit of any resident of Japan (including any person resident in Japan or any corporation or other entity organized under the laws of Japan) or to others for reoffering or resale, directly or indirectly, in Japan or to or for the benefit of any resident of Japan, except pursuant to an exemption from the registration requirements of the FIEA and otherwise in compliance with any relevant laws and regulations of Japan.

Singapore

This Offering Memorandum has not been registered as such or as a prospectus with the monetary authority of Singapore. Accordingly, this Offering Memorandum and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the Notes may not be circulated or distributed, nor may the Notes be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under section 274 of the Securities and Futures Act, chapter 289 of Singapore (the "SFA"), (ii) to a relevant person, or any person pursuant to section 275(1a), 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 that is (i) a corporation (that 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 (ii) 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 (as defined in Section 239(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 under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), 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.

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 SFA, the Issuer has determined, and hereby notifies all relevant persons (as defined in Section 309A of the SFA) that the Notes are "prescribed capital markets products" (as defined in the Securities and Futures Capital Markets Products) Regulations 2018) 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).

Taiwan

The Notes have not been and will not be registered with the Financial Supervisory Commission of Taiwan pursuant to relevant securities laws and regulations and may not be sold, issued or offered within Taiwan through a public offering or in circumstances which constitutes an offer within the meaning of the Securities and Exchange Act of Taiwan that requires a registration or approval of the Financial Supervisory Commission of Taiwan. No person or entity in Taiwan has been authorized to offer, sell, give advice regarding or otherwise intermediate the offering and sale of the Notes in Taiwan.

Switzerland

This Offering Memorandum is not intended to constitute an offer or solicitation to purchase or invest in the Notes. The Notes may not be publicly offered, directly or indirectly, in Switzerland within the meaning of the Swiss Financial Services Act ("FinSA") and no application has or will be made to admit the Notes to trading on any trading venue (exchange or multilateral trading facility) in Switzerland. Neither this Offering Memorandum nor any other offering or marketing material relating to the Notes constitutes a prospectus pursuant to the FinSA, and neither this Offering Memorandum nor any other offering or marketing material relating to the Notes may be publicly distributed or otherwise made publicly available in Switzerland.

Price Stabilization and Short Positions

The Initial Purchasers have informed us that in connection with the offering of the Notes, the Initial Purchasers may engage in overallotment and stabilizing transactions. Overallotment involves sales in excess of the offering size, which creates a short position for the Initial Purchasers. Stabilizing transactions involve bids to purchase the Notes in the open market for the purpose of pegging, fixing or maintaining the price of the Notes. Stabilizing transactions may cause the price of the Notes to be higher than it would otherwise be in the absence of those transactions or to delay a decline in the price of the Notes. If the Initial Purchasers engage in stabilizing, it may discontinue them at any time.

The Initial Purchasers and/or their affiliates may enter into derivative and/or structured transactions with clients, at their request, in connection with the Notes, and the Initial Purchasers and/or their affiliates may also purchase some of the Notes to hedge their risk exposure in connection with such transactions. Also, the Initial

Purchasers and/or their affiliates may acquire the Notes for their own proprietary accounts. Such acquisitions may have an effect on demand for and the price of the Notes.

Neither we nor the Initial Purchasers make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of the Notes. The Initial Purchasers are not obligated to engage in these activities and, if commenced, any of the activities may be discontinued at any time.

Settlement

We expect that delivery of the Notes (including the Notes Guaranties) will be made against payment therefore on or about the closing date specified on the cover page of this Offering Memorandum, which will be the fifth business day following the date of pricing of the Notes (this settlement cycle being referred to as "T+5"). Under Rule 15c6-1 of the SEC under the Exchange Act, as of September 5, 2017, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade the Notes any date that is more than two business days before delivery of the Notes will be required, by virtue of the fact that the Notes initially will settle in T+5, to specify an alternate settlement cycle at the time of any such trade to prevent a failed settlement. Purchasers of the Notes who wish to trade the Notes on any date prior to two business days before delivery of the Notes should consult their own advisor.

Electronic Distribution

An offering memorandum in electronic format may be made available by e-mail or through online services maintained by the Initial Purchasers or their affiliates. In those cases, prospective investors may view offering terms online and may be allowed to place orders online. The Initial Purchasers may agree with us to allocate a specific amount of Notes for sale to online account holders. Any such allocation for online distributions will be made by the Initial Purchasers on the same basis as other allocations. Other than the offering memorandum in electronic format, the information on the Initial Purchasers' web sites and any information contained in any other web site maintained by the Initial Purchasers is not part of this Offering Memorandum, has not been approved and/or endorsed by us or the Initial Purchasers and should not be relied upon by investors.

Other Relationships

The Initial Purchasers and certain of their affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The Initial Purchasers and certain of their affiliates have performed, and may in the future perform, various financial advisory, investment banking and commercial banking services from time to time for us, the Guarantors and our affiliates for which they have received or will receive customary fees. In the ordinary course of their various business activities, the Initial Purchasers and their affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively trade securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of the Issuer (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the Issuer and the Guarantors. The Initial Purchasers and their affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

Itaú Unibanco S.A. (an affiliate of Itau BBA USA Securities, Inc.), Banco BTG Pactual S.A. and Banco Safra S.A. and, each of which are directly or through its affiliates acting as an Initial Purchaser in this offering, are expected to receive proceeds from the sale of the Notes offered hereby as repayment of certain credit facilities. See "*Use of Proceeds.*"

ENFORCEMENT OF JUDGMENTS

Enforcement of Judgments in Luxembourg

The Issuer is a company incorporated and established under the laws of Luxembourg under the form of a private limited liability company (*société à responsabilité limitée*) and it may be difficult for you to obtain or enforce judgments against it or its managers in the United States.

The Issuer is organized under the laws of Luxembourg. Most of its assets are located outside the United States. Furthermore none of the Issuer's managers resides in the United States. As a result, investors may find it difficult to effect service of process within the United States upon the Issuer or these persons (the appointment of an agent for the service of process against the Issuer could be overridden by Luxembourg statutory provisions allowing the valid service of process against the Issuer in accordance with applicable laws at its registered office) or to enforce outside the United States judgments obtained against the Issuer or these persons in U.S. courts, including judgments in actions predicated upon the civil liability provisions of the U.S. federal securities laws. Likewise, it may also be difficult for an investor to enforce in U.S. courts judgments obtained against the Issuer or these persons in courts located in jurisdictions outside the United States, including actions predicated upon the civil liability provisions of the U.S. federal securities laws. It may also be difficult for an investor to bring an original action in a Luxembourg court predicated upon the civil liability provisions of the U.S. federal securities laws against the Issuer or these persons. Luxembourg law, furthermore, does not recognize a shareholder's right to bring a derivative action on behalf of the Issuer. It may be possible for investors to effect service of process within Luxembourg upon the Issuer, provided that The Hague Convention on the Service Abroad of Judicial and Extrajudicial Documents in Civil or Commercial Matters of November 15, 1965 is complied with.

As there is no treaty in force governing the reciprocal recognition and enforcement of judgments in civil and commercial matters between the United States and Luxembourg, courts in Luxembourg will not automatically recognize and enforce a final judgment rendered by a U.S. court. A valid, enforceable and conclusive judgment against an Issuer incorporated in Luxembourg with respect to the Notes obtained from a court of competent jurisdiction in the United States remains in full force and effect after all appeals as may be taken in the relevant state or federal jurisdiction with respect thereto have been taken, may be entered and enforced through a court of competent jurisdiction of Luxembourg, subject to compliance with the enforcement procedures (*exequatur*) set out in the relevant provisions of the Luxembourg New Code of Civil Procedure (*Nouveau Code de Procédure Civile*) and Luxembourg case-law, being:

- the judgment of the U.S. court is enforceable (*exécutoire*) in the United States;
- the U.S. court had full jurisdiction over the subject matter leading to the judgment (that is, its jurisdiction was in compliance both with Luxembourg private international law rules and with the applicable domestic U.S. federal or state jurisdictional rules);
- the U.S. court has applied to the dispute the substantive law which would have been applied by Luxembourg courts or, at least, the order must not contravene the principles underlying those rules (based on case law and legal doctrine, it is not certain that this condition would still be required for an exequatur to be granted by a Luxembourg court);
- the judgment must not have been obtained subsequent to a breach of Luxembourg law (*fraude à la loi*) and must have been granted in compliance with the rights of the defendant to appear, and if the defendant appeared, to present its defense;
- the U.S. court has acted in accordance with its own procedural laws; and
- the considerations of the foreign order, as well as the judgment, do not contravene international public policy as understood under the laws of Luxembourg or have been given proceedings of a penal, criminal or tax nature (which would include awards of damages made under civil liabilities provisions of the U.S. federal securities laws, or other laws, to the extent that the same would be classified by Luxembourg courts as being of a penal or punitive nature (for example, fines or punitive damages)) or rendered subsequent to an evasion of Luxembourg law (*fraude à la loi*).

Ordinarily an award of monetary damages would not be considered as a penalty, but if the monetary damages include punitive damages such punitive damages may be considered as a penalty.

If an original action is brought in Luxembourg, without prejudice to specific conflict of law rules, Luxembourg courts may refuse to apply the designated law (i) if the choice of such foreign law was not made bona fide, (ii) if the foreign law was not pleaded and proved, or (iii) if pleaded and proved, such foreign law as contrary to mandatory Luxembourg laws or incompatible with Luxembourg public policy rules. In an action brought in Luxembourg on the basis of U.S. federal or state securities laws, Luxembourg courts may not have the requisite power to grant the remedies sought. Also, an exequatur may be refused in respect of punitive damages.

In practice, Luxembourg courts now tend not to review the merits of a foreign judgment, although there is no clear statutory prohibition of such review.

Further, in the event of any proceedings being brought in a Luxembourg court in respect of a monetary obligation expressed to be payable in a currency other than Euro, a Luxembourg court would have power to give judgment expressed as an order to pay a currency other than Euro. However, enforcement of the judgment against any party in Luxembourg would be available only in Euro and for such purposes all claims or debts would be converted into Euros.

Subject to the foregoing, purchasers of the Notes may be able to enforce judgments in civil and commercial matters obtained from U.S. federal or state courts in Luxembourg. We cannot, however, assure you that attempts to enforce judgments in Luxembourg will be successful.

Registration in Luxembourg

The registration of the Notes, the Indenture, the Notes Guaranties and the transaction documents (and any document in connection therewith) with the *Administration de l'Enregistrement, des Domaines et de la TVA* in Luxembourg may be required in the case of legal proceedings before Luxembourg courts or in the case that the Notes, the Indenture, the Notes Guaranties and the transaction documents (and any document in connection therewith) must be produced before an official Luxembourg authority (*autorité constituée*). In such case, either a nominal registration duty or an ad valorem duty (or, for instance, 0.24% of the amount of the payment obligation mentioned in the document so registered) will be payable depending on the nature of the document to be registered.

The Luxembourg courts or the official Luxembourg authority may require that the Notes, the pledge agreements, the Indenture, the Notes Guaranties and the transaction documents (and any document in connection therewith) and any judgment obtained in a foreign court be translated into French or German.

Insolvency Proceedings in Luxembourg

The Issuer is incorporated under the laws of Luxembourg, and as such any insolvency proceedings applicable to such companies are in principle governed by Luxembourg law. The insolvency laws of Luxembourg may be different from the ones you may be familiar with, such as the laws of the United States or other jurisdictions.

The following is a brief description of certain aspects of insolvency law in Luxembourg. In the event that the Issuer incorporated under the laws of Luxembourg experiences financial difficulty, Luxembourg insolvency laws should be applicable, however, it is not possible to predict with certainty in which jurisdiction or jurisdictions insolvency or similar proceedings would be commenced, or the outcome of such proceedings, described in further detail below.

The Issuer is incorporated under the laws of Luxembourg and has its registered office in Luxembourg. Accordingly, Luxembourg courts should have, in principle, jurisdiction to open main insolvency proceedings with respect to the Issuer, as entity having its registered office and central administration (*administration centrale*) and center of main interest ("COMI"), as used in article 3(1) of Regulation (EU) 2015/848 on insolvency proceedings (recast) (the "EU Regulation"), in Luxembourg, such proceedings to be governed by Luxembourg insolvency laws. According to the EU Regulation, there is a rebuttable presumption that a

company has its COMI in the jurisdiction in which it has the place of its registered office. As a result, there is a rebuttable presumption that the COMI of the Issuer is in Luxembourg and consequently that any "main insolvency proceedings" (as defined in the EU Regulation) would be opened by a Luxembourg court and be governed by Luxembourg law.

However, the determination of where the Issuer has its COMI is a question of fact, which may change from time to time.

Under Luxembourg insolvency laws, the following types of proceedings (the "Insolvency Proceedings") may be opened against the Issuer:

- bankruptcy proceedings (*faillite*), the opening of which is initiated by the Issuer, by any of its creditors or by Luxembourg courts ex officio. The managers of the Issuer have the obligation to file for bankruptcy within one month in case it is in a state of cessation of payment (*cessation de paiement*). Following such a request, the Luxembourg courts having jurisdiction may open bankruptcy proceedings, if the Issuer (i) is in default of payment (*cessation des paiements*) and (ii) has lost its commercial creditworthiness (*ébranlement de crédit*). If a court finds that these conditions are satisfied, it may also open ex officio bankruptcy proceedings, absent a request made by such Issuer. The main effects of such proceedings are (i) the suspension of all measures of enforcement against the Issuer, except, subject to certain limited exceptions, for secured creditors and (ii) the payment of the Issuer's creditors in accordance with their ranking upon the realization of its assets. Security interests falling within the scope of the Luxembourg Collateral Law (such as the Luxembourg Pledge Agreements) will, however, be enforceable notwithstanding the bankruptcy proceedings;
- controlled management proceedings (*gestion controlée*), the opening of which may only be requested by the Issuer and not by its creditors. Security interests falling within the scope of the Luxembourg Collateral Law (such as the Luxembourg Pledge Agreements) will, however, be enforceable notwithstanding the controlled management proceedings; and
- composition proceedings (*concordat préventif de la faillite*), the obtaining of which is requested by the Issuer only after having received a prior consent from a majority of its creditors holding 75% at least of the claims against the Issuer. The obtaining of such composition proceedings will trigger a provisional stay on enforcement of claims by creditors. Security interests falling within the scope of the Luxembourg Collateral Law (such as the Luxembourg Pledge Agreements) will, however, be enforceable notwithstanding the composition proceedings.

In addition to these proceedings, the ability of the holders of Notes to receive payment on the Notes may be affected by a decision of a Court to grant a stay on payments (*sursis de paiement*) or to put the relevant Guarantor into judicial liquidation (*liquidation judiciaire*). Judicial liquidation proceedings may be opened at the request of the public prosecutor against companies pursuing an activity violating criminal laws or that are in serious breach or violation of the commercial code or of the Luxembourg Companies Act. The management of such liquidation proceedings will generally follow similar rules as those applicable to bankruptcy proceedings.

The Issuer's liabilities in respect of the Notes will, in the event of a liquidation of the Issuer following bankruptcy or judicial liquidation proceedings, rank after the cost of liquidation (including any debt incurred for the purpose of such liquidation) and those of the concerned obligor's debts that are entitled to priority under Luxembourg law. For example, preferential debts under Luxembourg law include, among others:

- certain amounts owed to the Luxembourg tax authorities;
- value-added tax and other taxes and duties owed to the Luxembourg Customs and Excise;
- social security contributions; and
- remuneration owed to employees.

For the avoidance of doubt, the above list is not exhaustive.

Assets in the form of shares or receivables over which a security interest has been granted and perfected will in principle not be available for distribution to unsecured creditors (except after enforcement and to the extent a surplus is realized), and subject to application of the relevant priority rule and liens and privileges arising mandatorily by law.

Favorable rules apply in relation to security interests over claims or financial instruments securing monetary claims (or claims for the delivery of financial instruments) pursuant to the Luxembourg Collateral Law. Article 20 of the Luxembourg Collateral Law provides that Luxembourg law financial collateral arrangements (pledges, security assignments and repo agreements) over claims and financial instruments falling within the scope of the Luxembourg Collateral Law, as well as valuation and enforcement measures agreed upon by the parties are valid and enforceable even if entered into during the pre-bankruptcy preference period (*période suspecte*) against third parties, commissioners, receivers, liquidators and other similar persons notwithstanding the insolvency proceedings (save in the case of fraud).

Article 24 of the Luxembourg Collateral Law provides that foreign law security interests over claims or financial instruments granted by a Luxembourg pledgor will be valid and enforceable as a matter of Luxembourg law notwithstanding any Luxembourg insolvency proceedings, if such foreign law security interests are similar in nature to a Luxembourg security interest falling within the scope of the Luxembourg Collateral Law. If article 24 applies, Luxembourg preference period rules are disapplied (save in the case of fraud).

Article 21(2) of the Luxembourg Collateral Law provides that where a financial collateral arrangement has been entered into after the opening of liquidation proceedings or the coming into force of reorganization measures or the entry into force of such measures, such arrangement is enforceable against third parties, administrators, insolvency receivers, liquidators and other similar persons if the collateral-taker proves that it was unaware of the fact that such proceedings had been opened or that such measures had been taken or that it could not reasonably be aware of such proceedings, measures or arrangements. Following a judgment of the European Court of Justice dated November 10, 2016 in Case C 156/15, any assets becoming part of the estate after the commencement of the insolvency proceedings may not be considered as being subject to the financial collateral security interests falling within the scope, and benefiting from the regime established by, the Luxembourg Collateral Law.

During insolvency proceedings, all enforcement measures by unsecured creditors are suspended. In the event of controlled management proceedings, the ability of secured creditors to enforce their security interest may also be limited, automatically causing the rights of secured creditors to be frozen until a final decision has been taken by the court as to the petition for controlled management, and may be affected thereafter by a reorganization order given by the relevant Luxembourg court subject to the exceptions under the Luxembourg law of August 5, 2005 on financial collateral arrangements, as amended (the "Luxembourg Collateral Law"). A reorganization order requires the prior approval of more than 50% of the creditors representing more than 50% of the relevant Guarantor's liabilities in order to take effect. Furthermore, declarations of default and subsequent acceleration (such as acceleration upon the occurrence of an event of default) may not be enforceable during controlled management proceedings.

Luxembourg insolvency laws may also affect transactions entered into or payments made by the Issuer during the period before bankruptcy, the so-called "suspect period" (*période suspecte*), which is a maximum of six months, as from the date on which the Commercial Court formally adjudicates a person bankrupt, and, as for specific payments and transactions, during an additional period of ten days before the commencement of such period preceding the judgment declaring bankruptcy, except that in certain specific situations the court may set the start of the suspect period at an earlier date, if the bankruptcy judgment was preceded by another insolvency proceedings (e.g., a suspension of payments or controlled management proceedings) under Luxembourg law.

In particular:

- pursuant to article 445 of the Luxembourg code of commerce, specified transactions (such as, in particular, the granting of a security interest for antecedent debts; the payment of debts which have not fallen due, whether payment is made in cash or by way of assignment, sale, set-off or by any

other means; the payment of debts which have fallen due by any means other than in cash or by bill of exchange; the sale of assets or entering into transactions generally without consideration or with substantially inadequate consideration) entered into during the suspect period (or the ten days preceding it) will be set aside or declared null and void, if so requested by the insolvency receiver;

- pursuant to article 446 of the Luxembourg code of commerce, payments made for matured debts for considerations, as well as other transactions concluded during the suspect period, are subject to cancellation by the court upon proceedings instituted by the insolvency receiver if they were concluded with the knowledge of the bankrupt's cessation of payments;
- regardless of the suspect period, article 448 of the Luxembourg code of commerce and article 1167 of the Luxembourg Civil Code (*action paulienne*) give any creditor the right to challenge any fraudulent payments and transactions made prior to the bankruptcy.

In principle, a bankruptcy order rendered by a Luxembourg court does not result in automatic termination of contracts except for *intuitu personae* contracts, that is, contracts for which the identity of the company or its solvency were crucial. The contracts, therefore, subsist after the bankruptcy order. However, the insolvency receiver may choose to terminate certain contracts as to avoid worsening the financial situation of the company. As of the date of adjudication of bankruptcy, no interest on any unsecured claim will accrue vis-à-vis the bankruptcy estate.

The bankruptcy receiver also decides whether or not to continue performance under on-going contracts (i.e., contracts existing before the bankruptcy order). The bankruptcy receiver may elect to continue the business of the debtor, provided that the bankruptcy receiver obtains the authorization of the court and such continuation does not cause any prejudice to the creditors. However, two exceptions apply:

- the parties to an agreement may contractually agree that the occurrence of a bankruptcy constitutes an early termination or acceleration event; and
- *intuitu personae contract*s are automatically terminated as of the bankruptcy judgment since the debtor is no longer responsible for the management of the company. Parties can agree to continue to perform under such contracts.

The bankruptcy receiver may elect not to perform the obligations of the bankrupt party which are still to be performed after the bankruptcy under any agreement validly entered into by the bankrupt party prior to the bankruptcy. The counterparty to that agreement may make a claim for damages in the bankruptcy and such claim will rank *pari passu* with claims of all other unsecured creditors and/or seek a court order to have the relevant contract dissolved. The counterparty may not require specific performance of the contract.

After having converted all available assets of the company into cash and after having determined all the company's liabilities, the insolvency receiver will distribute the proceeds of the sale to the creditors further to their priority ranking as set forth by law, after deduction of the receiver fees and the bankruptcy administration costs.

Any international aspects of Luxembourg bankruptcy, controlled management and composition proceedings may be subject to the EU Regulation. Insolvency proceedings may hence have a material adverse effect on the Issuer's obligations under the Notes.

Enforcement of Judgments in Brazil

PetroRio is a corporation (*sociedade anônima*) organized under the laws of Brazil. All of our officers and a majority of our directors are Brazilian residents and all of our assets are located in Brazil. As a result, it may not be possible, or it may be difficult for these persons to be summoned to court in a lawsuit filed in the United States or to enforce judgments obtained in United States courts against us or them, including those predicated upon the civil liability provisions of the federal securities laws of the United States.

In addition, any claims under the Novo Mercado listing rules must be submitted to arbitration proceedings conducted in accordance with the rules of the Market Arbitration Chamber of B3, as provided in our bylaws.

We understand that a judgment of a United States court for civil liabilities based on the federal securities laws of the United States may be enforced in Brazil, subject to certain requirements described below. A judgment issued by an United States court against us, the directors and officers or certain advisors named herein would be enforceable in Brazil, without retrial or reconsideration of the merits, upon recognition (*homologação*) of that judgment by the STJ. Pursuant to articles 963 and 964 of the Brazilian Code of Civil Procedure (*Código de Processo Civil*, Law No. 13,105, dated March 16, 2016, as amended), such recognition will only be available if the foreign decision:

- fulfills all formalities required for its enforceability under the laws of the United States;
- is issued by a competent court, with jurisdiction over the matter, after proper service of process on the parties (which service of process, if made in Brazil, must comply with Brazilian Law), or after sufficient evidence of the parties' absence has been given, as established pursuant to applicable laws;
- is final and binding and, therefore, not subject to appeal (*res judicata*);
- is not contrary to Brazilian national sovereignty, public policy or good morals or does not violate human dignity;
- does not violate a final and non-appealable decision issued by a Brazilian court;
- does not violate the exclusive jurisdiction of Brazilian courts pursuant to the provisions of article 23 of the Brazilian Code of Civil Procedure; and
- is authenticated by a Brazilian consulate in the United States or, if the place of signing is a contracting state to the Convention Abolishing the Requirement of Legalization for Foreign Public Documents, dated October 5, 1961, apostilled, and, in either case, is accompanied by a sworn translation into Portuguese, unless an exemption is provided by an international treaty to which Brazil is a signatory.

The recognition process may be time consuming and may also give rise to difficulties in enforcing the foreign judgment in Brazil. Accordingly, we cannot assure you that: (i) recognition of any judgment would be obtained, (ii) the recognition process would be conducted in a timely manner, or (iii) Brazilian courts would enforce any penalty established by the foreign final judgement in the event the defendant refuses to comply with it.

Original actions may be brought in connection with this Offering Memorandum predicated solely on the federal securities laws of the United States in Brazilian courts and, subject to applicable law, Brazilian courts may enforce liabilities in such actions against us or the directors and officers and certain advisors named herein, provided that provisions of the federal securities laws of the United States do not contravene Brazilian public policy, good morals or national sovereignty and that Brazilian courts can assert jurisdiction over the matter being litigated.

We have been further advised that the ability of a creditor to satisfy a judgment by attaching certain assets of ours or of any of the persons named above is, limited by provisions of Brazilian Law to the extent the assets are located in Brazil.

In addition, a plaintiff who resides outside Brazil during the course of litigation in Brazil must post a bond to guarantee the payment of the court expenses and the defendant's legal fees, if the plaintiff does not own real property in Brazil that could secure such payment. This bond of guarantee must have a value sufficient to satisfy the payment of court fees and defendant attorney's fees, as determined by the Brazilian judge. This requirement does not apply (i) when an exemption is provided by an international agreement or treaty to which Brazil is a signatory; (ii) in the case of claims for collection on a *título executivo extrajudicial* (an instrument which may be enforced in Brazilian courts without a review on the merits; (iii) in the case of enforcement of judgments (including judgments confirmed by the STJ); or (iv) counterclaims, pursuant to article 83 of the Brazilian Code of Civil Procedure.

If proceedings are brought in the courts of Brazil seeking to enforce our obligations under the Notes, payment shall be made in *Reais*. Any judgment rendered in Brazilian courts in respect of any payment obligations under the Notes would be expressed in *Reais*.

If the Notes or the Indenture were to be declared void by a court of competent jurisdiction, a judgment obtained outside Brazil seeking to enforce the guarantee may not be recognized by the STJ in Brazil.

We have appointed Cogency Global Inc. as our authorized agent upon which service of process may be served in any action that may be instituted in any U.S. federal or state court in the Borough of Manhattan, The City of New York, New York, arising out of or based upon the Indenture governing the Notes. See "*Description of Notes*."

Enforceability of Judgments in the Bahamas

Overview of the Bahamian Legal System

The Commonwealth of The Bahamas ("The Bahamas") is a former colony of the United Kingdom that gained its independence in 1973, when it opted to remain a Member of the Commonwealth. As such, the common law of The Bahamas is based on English common law. Since the 1799 Declaration, Parliament has added further statutes which often mirrored the provision of English Statutes at the time. The present status of Bahamian law then is a mixture of old statute law from the colonial period, and statutes passed more recently by the Bahamian Parliament.

The Supreme Court of The Bahamas (the "Bahamas Supreme Court") determines civil and commercial matters in The Bahamas. Its jurisdiction is derived both from the Constitution of The Bahamas and the Supreme Court Act.

The Court of Appeal (Civil Side) hears appeals from the Bahamas Supreme Court in civil and commercial matters. Her Majesty's Judicial Committee of the Privy Council (the "JCPC") is the highest court in The Bahamas per the Constitution and as such its decisions are binding on all other levels of Bahamian jurisprudence. Given that the JCPC is drawn from the old House of Lords, whilst these decisions are technically not binding, they are highly persuasive. Other than this, Bahamian courts often draw from all other common law jurisdictions, particularly in cases where there is a similar statutory context.

Recognition and Enforcement of a Foreign Judgment in The Bahamas

Where a person obtains a judgment in their favor from a superior court outside the jurisdiction of The Bahamas (such person, a "Judgment Creditor"), that judgment has no direct operation in The Bahamas. As a result, such foreign judgment cannot be immediately enforced by execution in The Bahamas. The judgment must first be registered or given recognition by the Bahamas Supreme Court pursuant to either statutory or common law requirements.

The statutory enforcement of judgments in The Bahamas is governed by the Reciprocal Enforcement of Judgments Act, 1924 ("REJA") and the associated subsidiary legislation. The applicability of REJA is limited, and under REJA the Bahamas Supreme Court will only enforce judgments from a superior court of a country to which REJA has been extended within twelve-months of the date of the judgment or such longer period as the court may allow. Registration under REJA is not automatic. The court will only allow a judgment to be registered where "in all the circumstances of the case it thinks it is just and convenient" to do so. The countries to which REJA applies is as follows: (i) the United Kingdom, (ii) Barbados, (iii) Bermuda, (iv) Jamaica, (v) the Leeward Islands, (vi) St. Lucia, Trinidad and Tobago, (viii) Guyana, (ix) Belize and (x) Australia. REJA does not apply to judgments emanating from the courts of jurisdictions other than those listed above.

In the case of a judgment which is obtained in the United States of America or other country to which REJA does not apply, such judgment must be given recognition by the Bahamas Supreme Court pursuant to the common law requirements. More specifically, the Judgment Creditor may commence an action by way of a Writ of Summons in the Bahamas Supreme Court relying on the foreign judgment debt as the cause of action.

The common law requirements for the recognition and enforcement of a foreign judgment are:

(i) the foreign court had jurisdiction to give the judgment in accordance with principles of jurisdiction recognized by Bahamian law;

(ii) the judgment is for a debt or definite sum of money other than a sum payable in respect of taxes or other charges of a like nature or in respect of a fine or other penalty; and

(iii) the foreign judgment is final and conclusive on the merits.

It should be noted that the Bahamian Court will not recognize and enforce a foreign judgment where:

(i) the rules of natural justice have not been complied with in the foreign proceedings;

(ii) the foreign judgment has been obtained by fraud; or

(iii) the foreign judgment is contrary to public policy in The Bahamas.

Once a foreign judgment is recognized in The Bahamas, a party may then enforce the judgment by any one or more of the enforcement mechanisms as set out in Order 45, Rule 1(1) of the Rules of the Bahamas Supreme Court, 1978.

In certain circumstances a foreign judgment granting specific performance may also be recognized for the purpose of enforcement by the Bahamas Supreme Court. So long as the foreign judgment grants specific performance of the agreement in question and does not purport to dispose of any property rights or interest, in relation to which the foreign court has no jurisdiction, the foreign judgment granting specific performance may be recognized in The Bahamas.

TRANSFER RESTRICTIONS

The Notes (including the Notes Guaranties thereon) have not been registered under the Securities Act. As a result, the Notes may not be offered or sold within the United States or to, or for the account or benefit of, U.S. persons, except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act. Accordingly, the Initial Purchasers are initially offering the Notes only to qualified institutional buyers in compliance with Rule 144A and outside the United States in compliance with Regulation S.

The Notes are subject to restrictions on transfer as summarized below. By purchasing Notes, you will be deemed to have made the following acknowledgements, representations to and agreements with us and the Initial Purchasers:

(1) You acknowledge that:

(d) the Notes are being offered in a transaction not involving a public offering the United States within the meaning of the Securities Act, have not been registered, and will not be registered, under the Securities Act or any other securities laws, and are being offered for resale in transactions that do not require registration under the Securities Act or any other securities laws; and

(e) unless so registered, the Notes may not be offered, sold or otherwise transferred except under an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act or any other applicable securities laws, and in each case in compliance with the conditions for transfer set forth in paragraph 4 below.

(2) You represent that you are not an affiliate (as defined in Rule 144 under the Securities Act) of ours, that you are not acting on our behalf and that either:

(a) you are a qualified institutional buyer (as defined in Rule 144A under the Securities Act) and are purchasing Notes for your own account or for the account of another qualified institutional buyer, and you are aware that the Initial Purchasers are selling the Notes to you in reliance on Rule 144A; or

(b) you are not a U.S. person (as defined in Regulation S under the Securities Act) or purchasing Notes for the account or benefit of a U.S. person, other than a distributor, and you are purchasing Notes in an offshore transaction in accordance with Regulation S.

(3) You acknowledge that neither we nor the Initial Purchasers nor any person representing us or the Initial Purchasers have made any representation to you with respect to us or the offering of the Notes, other than the information contained in this Offering Memorandum. Accordingly, you acknowledge that no representation or warranty is made by the Initial Purchasers as to the accuracy or completeness of such materials. You represent that you are relying only on this Offering Memorandum in making your investment decision with respect to the Notes. You agree that you have had access to such financial and other information concerning us and the Notes as you have deemed necessary in connection with your decision to purchase Notes, including an opportunity to ask questions of and request information from us.

(4) You represent that you are purchasing Notes for your own account or for one or more investor accounts in respect to which you exercise sole investment discretion and for which you are acting as a fiduciary or agent, in each case not with a view to, or for offer or sale in connection with, any distribution of the Notes in violation of the Securities Act, subject to any requirement of law that the disposition of your property or the property of that investor account or accounts be at all times within your or their control and subject to your or their ability to resell the Notes pursuant to Rule 144A or any other available exemption from registration under the Securities Act. You agree on your own behalf and on behalf of any investor account for which you are purchasing Notes, and each subsequent holder of the Notes by its acceptance of the Notes will agree, that until the end of the Resale Restriction Period (as defined below), the Notes may be offered, sold or otherwise transferred only:

(a) to us or any of our subsidiaries;

(b) under a registration statement that has been declared effective under the Securities Act;

(c) for so long as the Notes are eligible for resale under Rule 144A, to a person the seller reasonably believes is a qualified institutional buyer that is purchasing for its own account or for the account of another qualified institutional buyer and to whom notice is given that the transfer is being made in reliance on Rule 144A;

(d) through offers and sales to non-U.S. persons that occur outside the United States within the meaning of Regulation S under the Securities Act; or

(e) under the exemption from registration provided by Rule 144 (if available) or any other available exemption from the registration requirements of the Securities Act,

subject in each of the above cases to any requirement of law that the disposition of the seller's property or the property of an investor account or accounts be at all times within the seller or account's control and to compliance with any applicable state securities laws.

You also acknowledge that to the extent that you hold the Notes through an interest in a global note, the Resale Restriction Period (as defined below) may continue until six months after we, or any of our affiliates, was the owner of such note or an interest in such global note, and so may continue indefinitely. You will, and each subsequent holder is required to, notify any purchaser of Notes from you or it of the restrictions set forth above.

(5) You also acknowledge that the above restrictions on resale will apply from the Issue Date until the date that is six months (in the case of Rule 144A Notes) after the later of the Issue Date, the issue date of any additional Notes and the last date that we or any of our affiliates was the owner of the Notes or any predecessor of the Notes or 40 days (in the case of Regulation S Notes) after the later of the Issue Date and when the Notes or any predecessor of the Notes are first offered to persons other than distributors (as defined in Rule 902 of Regulation S) in reliance on Regulation S (the "Resale Restriction Period"), and will not apply after the applicable Resale Restriction Period ends;

(a) we and the Trustee reserve the right to require in connection with any offer, sale or other transfer of Notes under clause (e) above the delivery of an opinion of counsel, certifications and/or other information satisfactory to us and the Trustee; and

(b) you understand that each note will, at all times, contain a legend substantially to the following effect:

THIS NOTE (INCLUDING THE NOTE GUARANTIES THEREON) HAS NOT BEEN REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY STATE OR OTHER JURISDICTION. NEITHER THIS NOTE NOR ANY INTEREST OR PARTICIPATION HEREIN MAY BE REOFFERED, SOLD, ASSIGNED, TRANSFERRED, PLEDGED, ENCUMBERED OR OTHERWISE DISPOSED OF IN THE ABSENCE OF SUCH REGISTRATION OR UNLESS SUCH TRANSACTION IS EXEMPT FROM, OR NOT SUBJECT TO, SUCH REGISTRATION. THE HOLDER OF THIS NOTE, BY ITS ACCEPTANCE HEREOF, AGREES ON ITS OWN BEHALF AND ON BEHALF OF ANY INVESTOR ACCOUNT FOR WHICH IT HAS PURCHASED NOTES, TO OFFER, SELL OR OTHERWISE TRANSFER SUCH NOTE, PRIOR TO THE DATE (THE "RESALE RESTRICTION TERMINATION DATE") THAT IS IN THE CASE OF RULE 144A NOTES: SIX MONTHS AFTER THE LATER OF THE ORIGINAL ISSUE DATE HEREOF, THE ORIGINAL ISSUE DATE OF THE ISSUANCE OF ANY ADDITIONAL NOTES AND THE LAST DATE ON WHICH THE ISSUER OR ANY AFFILIATE OF THE ISSUER WAS THE OWNER OF THIS NOTE (OR ANY PREDECESSOR OF SUCH SECURITY), IN THE CASE OF REGULATION S NOTES: 40 DAYS AFTER THE LATER OF THE ORIGINAL ISSUE DATE HEREOF AND THE DATE ON WHICH THIS NOTE (OR ANY PREDECESSOR OF SUCH NOTE) WAS FIRST OFFERED TO PERSONS OTHER THAN DISTRIBUTORS (AS DEFINED IN RULE 902 OF REGULATION S) IN RELIANCE ON REGULATION S, ONLY (A) TO THE ISSUER OR ANY SUBSIDIARY THEREOF, (B) PURSUANT

TO A REGISTRATION STATEMENT THAT HAS BEEN DECLARED EFFECTIVE UNDER THE SECURITIES ACT, (C) FOR SO LONG AS THE SECURITIES ARE ELIGIBLE FOR RESALE PURSUANT TO RULE 144A UNDER THE SECURITIES ACT ("RULE 144A"), TO A PERSON IT REASONABLY BELIEVES IS A "QUALIFIED INSTITUTIONAL BUYER" AS DEFINED IN RULE 144A THAT PURCHASES FOR ITS OWN ACCOUNT OR FOR THE ACCOUNT OF A QUALIFIED INSTITUTIONAL BUYER TO WHOM NOTICE IS GIVEN THAT THE TRANSFER IS BEING MADE IN RELIANCE ON RULE 144A, (D) PURSUANT TO OFFERS AND SALES TO NON-U.S. PERSONS THAT OCCUR OUTSIDE THE UNITED STATES WITHIN THE MEANING OF REGULATION S UNDER THE SECURITIES ACT OR (E) PURSUANT TO ANOTHER AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT, SUBJECT TO THE ISSUER'S AND THE TRUSTEE'S RIGHT PRIOR TO ANY SUCH OFFER, SALE OR TRANSFER PURSUANT TO CLAUSE (E) TO REQUIRE THE DELIVERY OF AN OPINION OF COUNSEL, CERTIFICATION AND/ OR OTHER INFORMATION SATISFACTORY TO EACH OF THEM. THIS LEGEND WILL BE REMOVED UPON THE REQUEST OF THE HOLDER AND AT THE SOLE DISCRETION OF THE ISSUER AFTER THE RESALE RESTRICTION TERMINATION DATE. IN THE CASE OF REGULATION S NOTES: BY ITS ACQUISITION HEREOF, THE HOLDER HEREOF REPRESENTS THAT IT IS NOT A U.S. PERSON NOR IS IT PURCHASING FOR THE ACCOUNT OF A U.S. PERSON AND IS ACQUIRING THIS NOTE IN AN OFFSHORE TRANSACTION IN ACCORDANCE WITH REGULATION S UNDER THE SECURITIES ACT.

BY ITS ACQUISITION OF THIS NOTE, THE HOLDER THEREOF WILL BE DEEMED TO HAVE REPRESENTED AND WARRANTED THAT EITHER (A) NO PORTION OF THE ASSETS USED BY SUCH HOLDER TO ACQUIRE OR HOLD THIS NOTE CONSTITUTES THE ASSETS OF AN EMPLOYEE BENEFIT PLAN THAT IS SUBJECT TO TITLE I OF THE U.S. EMPLOYEE RETIREMENT INCOME SECURITY ACT OF 1974, AS AMENDED ("ERISA"), OF A PLAN, INDIVIDUAL RETIREMENT ACCOUNT OR OTHER ARRANGEMENT THAT IS SUBJECT TO SECTION 4975 OF THE U.S. INTERNAL REVENUE CODE OF 1986, AS AMENDED (THE "CODE") OR PROVISIONS UNDER ANY OTHER FEDERAL, STATE, LOCAL, NON-U.S. OR OTHER LAWS OR REGULATIONS THAT ARE SIMILAR TO SUCH PROVISIONS OF ERISA OR THE CODE ("SIMILAR LAWS"), OR OF AN ENTITY WHOSE UNDERLYING ASSETS ARE CONSIDERED TO INCLUDE "PLAN ASSETS" OF ANY SUCH PLAN, ACCOUNT OR ARRANGEMENT, OR (B) THE ACQUISITION AND HOLDING OF THIS NOTE WILL NOT CONSTITUTE A NON-EXEMPT PROHIBITED TRANSACTION UNDER SECTION 406 OF ERISA OR SECTION 4975 OF THE CODE OR A SIMILAR VIOLATION UNDER ANY APPLICABLE SIMILAR LAWS.

(6) You represent and warrant that either (a) no portion of the assets used by you to acquire or hold the Notes constitutes assets of any employee benefit plan subject to Title I of the U.S. Employee Retirement Income Security Act of 1974, as amended ("ERISA"), any 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 provisions under any other federal, state, local, non-U.S. or other laws or regulations that are similar to such provisions of ERISA or the Code ("Similar Laws"), or an entity whose underlying assets are considered to include "plan assets" of any such plan, account or arrangement or (b) the acquisition and holding of the Notes by you will not constitute a nonexempt prohibited transaction under Section 406 of ERISA or Section 4975 of the Code or a similar violation under any applicable Similar Law.

(7) You acknowledge that: (a) no securities commission or similar regulatory authority has reviewed or passed on the merits of the Notes, (b) there is no government or other insurance covering the Notes, (c) there are risks associated with the purchase of the Notes and (d) there are restrictions on your ability to resell the Notes and it is your responsibility to find out what those restrictions are and to comply with them before selling the Notes.

(8) You acknowledge that we, the Initial Purchasers and others will rely upon the truth and accuracy of the above acknowledgments, representations and agreements. You agree that if any of the acknowledgments,

representations or agreements you are deemed to have made by your purchase of Notes is no longer accurate, you will promptly notify us and the Initial Purchasers. If you are purchasing any Notes as a fiduciary or agent for one or more investor accounts, you represent that you have sole investment discretion with respect to each of those accounts and that you have full power to make the above acknowledgments, representations and agreements on behalf of each account.

(9) You have reviewed and acknowledged the terms referenced in this Offering Memorandum and, in particular, the terms set forth under the heading “Transfer Restrictions.”

WHERE YOU CAN FIND MORE INFORMATION

PetroRio is subject to the informational requirements under the rules and regulations of the CVM and files annual financial statements and other information with the CVM.

You may read and copy any reports or other information that we file with the CVM on the CVM's website (www.cvm.gov.br), which information is in Portuguese. None of this information nor the website listed below is incorporated in this Offering Memorandum and should not be relied upon in determining whether to make an investment in the Notes. You may obtain documents from us by requesting them in writing at the following address or by telephone:

Praia de Botafogo, 370, 13th floor
Botafogo, Rio de Janeiro, RJ
Attention: Mr. Roberto Bernardes Monteiro
Phone: +55-21 3721-2129
E-mail: ri@petroriosa.com.br

We are not currently required to file periodic reports under Section 13 or 15 of the Exchange Act with the SEC. To permit compliance with Rule 144A in connection with any resales or other transfers of Notes that are "restricted securities" within the meaning of the Securities Act, we have undertaken to furnish, upon the request of a holder of such Notes or any beneficial interest therein, to such holder or to a prospective purchaser designated by him, the information required to be delivered under Rule 144A(d)(4) under the Securities Act if, at the time of the request, we are neither a reporting company under Section 13 or 15(d) of the Exchange Act nor exempt from reporting pursuant to Rule 12g3-2(b) thereunder.

LEGAL MATTERS

Certain legal matters relating to this offering will be passed upon for us by Linklaters LLP, New York, New York and for the Initial Purchasers by Simpson Thacher & Bartlett LLP, New York, New York. Certain legal matters with respect to Brazilian law will be passed upon for us by Cescon, Barrieu, Flesch & Barreto Advogados, São Paulo, Brazil and for the Initial Purchasers by Stocche Forbes Advogados, São Paulo, Brazil. Certain legal matters with respect to Luxembourg law will be passed upon for us by Linklaters LLP, Luxembourg. Certain legal matters with respect to Bahamian law will be passed upon for the Bahamian Collateral Agent by Higgs & Johnson.

INDEPENDENT AUDITORS

The individual and consolidated financial statements of Petro Rio S.A. as of and for the years ended December 31, 2020 (includes 2019 results for comparison purposes) and 2019 (includes 2018 results for comparisons), included in this Offering Memorandum, have been audited by Ernst & Young Auditores Independentes S.S., independent auditors, as stated in their report appearing herein.

With respect to the unaudited individual and consolidated interim financial information of Petro Rio S.A. as of March 31, 2021 and for the three-month periods ended March 31, 2021 and 2020, included in this Offering Memorandum, Ernst & Young Auditores Independentes S.S. reported that they have applied limited procedures in accordance with professional standards for a review of such information. However, their report dated April 30, 2021, included in this Offering Memorandum, states that they did not audit and do not express an opinion on that interim financial information. Accordingly, the degree of reliance on their report on such information should be restricted in light of the limited nature of the review procedures applied.

The individual financial statements of the Issuer as of and for the years ended December 31, 2020 (includes 2019 results for comparison purposes) and 2019 (includes 2018 results for comparison purposes), included in this Offering Memorandum, have been audited by Ernst & Young, Luxembourg, Société Anonyme – Cabinet de revision agréé, as stated in their report appearing herein.

INDEPENDENT RESERVES ENGINEERS

The reserves information included in this Offering Memorandum regarding estimated quantities of proved, probable and possible reserves, contingent resources, the future net revenues from those reserves and contingent resources and their present value are derived from the D&M Reserves Reports, copies of which are attached hereto as Annex A and Annex B. These estimates and the reports of the independent reserves engineers are presented in reliance upon the authority of DeGolyer and MacNaughton as an expert in these matters.

LISTING AND GENERAL INFORMATION

Clearing

We have applied to have the Notes accepted into DTC's book-entry settlement system. The Notes have been accepted for clearance through the clearing systems of Euroclear System and Clearstream Banking, *société anonyme*. The securities codes are:

	ISIN Number	CUSIP Number
Rule 144A Global Note	US71677WAA09	71677W AA0
Regulation S Global Note	USL75833AA88	L75833 AA8

We intend to apply to list the Notes on the Singapore Stock Exchange. The Notes are not yet listed. If such listing of the Notes is obtained and it subsequently becomes impracticable or unduly burdensome, in our good faith determination, to maintain, due to changes in listing requirements occurring subsequent to the date of this Offering Memorandum, we may de-list the Notes from the Singapore Stock Exchange; and, in the event of any such de-listing, we will use our best efforts to obtain an alternative admission to listing, trading and/or quotation of the Notes by another listing authority, exchange or system. In these circumstances, there can be no assurance that we would be successful in obtaining such alternative admission to listing, trading and/or quotation of the Notes. For information regarding the notice requirements associated with any delisting decision, see *Description of Notes—Certain covenants—Notices*."

For so long as the Notes are listed on the Singapore Stock Exchange and the rules of the Singapore Stock Exchange so require, the Notes will be traded in a minimum board lot size of U.S.$200,000. The Singapore Stock Exchange assumes no responsibility for the correctness of any statements made, reports contained or opinions expressed in this Offering Memorandum.

For so long as the Notes are listed on the Singapore Stock Exchange and the rules of the Singapore Stock Exchange so require, a paying agent in Singapore will be appointed and maintained where the Notes may be presented or surrendered for payment or redemption, in the event that the global note is exchanged for individual definitive Notes. In addition, in the event that the global Notes are exchanged for definitive certificated Notes, announcement of such exchange shall be made through the Singapore Stock Exchange and such announcement will include all material information with respect to the delivery of the definitive certificated Notes.

Annex A
2021 D&M RESERVES REPORT

DeGolyer and MacNaughton
5001 Spring Valley Road
Suite 800 East
Dallas, Texas 75244

This is a digital representation of a DeGolyer and MacNaughton report.

This file is intended to be a manifestation of certain data in the subject report and as such are subject to the same conditions thereof. The information and data contained in this file may be subject to misinterpretation; therefore, the signed and bound copy of this report should be considered the only authoritative source of such information.

DeGolyer and MacNaughton
5001 Spring Valley Road
Suite 800 East
Dallas, Texas 75244

REPORT
as of
JANUARY 1, 2021
on
RESERVES and REVENUE
and
CONTINGENT RESOURCES and POTENTIAL REVENUE
of
CERTAIN FIELDS
in
BRAZIL
for
PETRORIO S.A.

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REPORT
as of
JANUARY 1, 2021
on
RESERVES and REVENUE
and
CONTINGENT RESOURCES and POTENTIAL REVENUE
of
CERTAIN FIELDS
in
BRAZIL
for
PETRORIO S.A.

FOREWORD

Scope of Investigation

This report presents estimates, as of January 1, 2021, of the extent of the proved, probable, and possible oil, condensate, and gas reserves and the value of the proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves of the Frade, Manati, Polvo, and Tubarão Martelo fields in which PetroRio S.A. (PetroRio) has represented it holds an interest. This report also presents estimates of the extent and potential value of the oil and gas contingent resources of the Wahoo field in which PetroRio has represented it holds an interest. In addition, this report presents estimates of the extent and potential value of the recategorized recoverable resources, as described herein, associated with the potential extension of the life of the Frade field with the tie-in of the Wahoo field. PetroRio's working interest and the concession expiration date for each field are shown in Table 1 of this report.

Estimates of reserves and contingent resources presented in this report have been prepared in accordance with the Petroleum Resources Management System (PRMS) approved in March 2007 and revised in June 2018 by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, the Society of Petroleum Evaluation Engineers, the Society of Exploration Geophysicists, the Society of Petrophysicists and Well Log Analysts, and the European Association of

Geoscientists & Engineers. The reserves definitions are discussed in detail in the Definition of Reserves section of this report. The contingent resources definitions are discussed in detail in the Definition of Contingent Resources section of this report.

PetroRio has represented that it holds a 100-percent working interest in the Frade field, located in license block FR, and a 10-percent working interest in the Manati field, located in license block BCAM-40. PetroRio has also represented that it holds a 100-percent working interest in the Polvo field, located in license block BM-C-8, and an 80-percent working interest in the Tubarão Martelo field, located in license block BM-C-39. In addition, PetroRio has represented that its working interest in the Tubarão Martelo field will become 100 percent once the field is connected to the neighboring Polvo field, which is scheduled to occur in July 2021. Following the connection of the Tubarão Martelo field with the Polvo field, PetroRio will hold a net interest of 95 percent of the combined oil production from the two fields. The remaining 5-percent net interest is held by Dommo Energia, formerly OGX Petróleo e Gás Participações S.A. (OGX), until 30 million barrels of oil have been produced, at which point PetroRio's net interest increases to 96 percent for the lives of the fields. PetroRio has further represented that it has reached an agreement to purchase a 64.3-percent working interest in the Wahoo field from BP and Total, and that the Sales and Purchase Agreement to acquire BP's 35.7-percent working interest and Total's 28.6-percent working interest in the Wahoo field is expected to be finalized in the first quarter of 2021. For the purposes of this report and at the request of PetroRio, the evaluated working interest for the Wahoo field is 64.3 percent.

Reserves estimated in this report are expressed as gross reserves and net reserves. Gross reserves are defined as the total estimated petroleum remaining to be produced from these properties after December 31, 2020. Net reserves are defined as that portion of the gross reserves attributable to the evaluated interests after deducting all interests held by others, including royalties paid in kind. PetroRio has represented that its government royalty obligations are paid in cash; therefore, net reserves have not been reduced in consideration of these royalty obligations.

This report presents values for proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves that were estimated using prices, expenses, and costs provided by PetroRio. Prices, expenses, and costs were provided in United States dollars (U.S.$), and all monetary values in this report are expressed in U.S.$. A detailed explanation of the forecast price,

expense, and cost assumptions is included in the Valuation of Reserves section of this report.

Values for proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves in this report are expressed in terms of future gross revenue, future net revenue, and present worth. Future gross revenue is defined as that revenue which will accrue to the evaluated interests from the production and sale of the estimated net reserves. Future net revenue is calculated by deducting royalties paid in cash, operating expenses, capital costs, abandonment costs, and the special participation fee (SPF) from future gross revenue. Operating expenses include field operating expenses, transportation and processing expenses, and an allocation of overhead that directly relates to production activities. Capital costs include drilling and completion costs, facilities costs, and field maintenance costs. Abandonment costs are represented by PetroRio to be inclusive of those costs associated with the removal of equipment, plugging of wells, and reclamation and restoration costs associated with the abandonment. At the request of PetroRio, future Brazilian income taxes were not taken into account in the preparation of these estimates. Present worth is defined as future net revenue discounted at a specified arbitrary discount rate compounded monthly over the expected period of realization. Present worth should not be construed as fair market value because no consideration was given to additional factors that influence the prices at which properties are bought and sold. In this report, present worth values using a nominal discount rate of 10 percent are reported in detail and values using nominal discount rates of 5, 15, and 20 percent are reported as totals.

Contingent resources estimated in this report are expressed as gross contingent resources and net contingent resources. Gross contingent resources are defined as the total estimated petroleum that is potentially recoverable from known accumulations after December 31, 2020. Net contingent resources are defined as that portion of the gross contingent resources attributable to the interests held by PetroRio after deducting all interests held by others, including royalties paid in kind. PetroRio has represented that its government royalty obligations are paid in cash; therefore, net contingent resources have not been reduced in consideration of these royalty obligations.

The contingent resources estimated herein are those quantities of petroleum that are potentially recoverable from known accumulations but which are not currently considered to be commercially recoverable. Because of the uncertainty of commerciality, the contingent resources estimated herein cannot be classified as reserves. The contingent resources estimates

in this report are provided as a means of comparison to other contingent resources and do not provide a means of direct comparison to reserves. A detailed explanation of the contingent resources estimated herein is included in the Estimation of Contingent Resources section of this report.

Contingent resources quantities should not be confused with those quantities that are associated with reserves due to the additional risks involved. The quantities that might actually be recovered should they be developed may differ significantly from the estimates presented herein. There is no certainty that it will be commercially viable to produce any portion of the contingent resources evaluated herein.

This report presents potential values for contingent resources that were estimated using prices, expenses, and costs provided by PetroRio. Prices, expenses, and costs were provided in U.S.$, and all monetary values in this report are expressed in U.S.$. A detailed explanation of the forecast price, expense, and cost assumptions is included in the Valuation of Contingent Resources section of this report.

Potential values for contingent resources in this report are expressed in terms of potential future gross revenue, potential future net revenue, and potential present worth. At the request of PetroRio, potential future gross revenue is defined as that revenue which will accrue from the production and sale of the estimated gross contingent resources; therefore, potential values presented herein do not reflect PetroRio's working interest. Potential future net revenue is calculated by deducting royalties paid in cash, operating expenses, capital costs, abandonment costs, and the SPF from potential future gross revenue. Operating expenses include field operating expenses, transportation and processing expenses, and an allocation of overhead that directly relates to production activities. Capital costs include drilling and completion costs, facilities costs, and field maintenance costs. Abandonment costs are represented by PetroRio to be inclusive of those costs associated with the removal of equipment, plugging of wells, and reclamation and restoration costs associated with the abandonment. At the request of PetroRio, future Brazilian income taxes were not taken into account in the preparation of these estimates. Potential present worth is defined as potential future net revenue discounted at a specified arbitrary rate compounded monthly over the expected period of realization. Potential present worth should not be construed as fair market value because no consideration was given to additional factors that influence the prices at which properties are bought and sold. In this report, potential present worth values using a nominal discount rate of 10 percent are reported in

detail and values using nominal discount rates of 5, 15, and 20 percent are reported as totals.

Recategorized recoverable resources estimated in this report are associated with the potential extension of the economic life of the Frade field with the tie-in of the Wahoo field. For the purposes of this report, 1C(R), 2C(R), and 3C(R) recategorized recoverable resources are defined as the portion of the technical forecasts associated with proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves, respectively, that would become economically viable with the development of the contingent resources of the Wahoo field as presented herein. Estimates of the extent and potential value of recategorized recoverable resources were based on definitions and assumptions similar to those utilized to estimate the extent and potential value of the contingent resources estimated herein.

Estimates of reserves and revenue and contingent resources and potential revenue and recategorized recoverable resources should be regarded only as estimates that may change as further production history and additional information become available. Not only are such estimates based on that information which is currently available, but such estimates are also subject to the uncertainties inherent in the application of judgmental factors in interpreting such information.

Authority

This report was authorized by Mr. Milton Rangel, Head of Finance, PetroRio S.A.

Source of Information

Information used in the preparation of this report was obtained from PetroRio. In the preparation of this report we have relied, without independent verification, upon information furnished by PetroRio with respect to the property interests being evaluated, production from such properties, current costs of operation and development, current prices for production, agreements relating to current and future operations and sale of production, and various other information and data that were accepted as represented. A field examination was not considered necessary for the purposes of this report.

GEOLOGY

Frade Field

The Frade field is located offshore Brazil in the northern part of the Campos Basin about 370 kilometers northeast of the city of Rio de Janeiro (Figure 1). The field was discovered in 1986 by Petróleo Brasileiro S.A. (Petrobras) in water depths of about 1,200 meters.

Over a period of 80 million years, extending from the lower Cretaceous through the Miocene, rivers from mainland Brazil flooded the Campos Basin region with clastic sediments, which accumulated above a thick layer of lower Cretaceous salt. Subsequent deposition of younger sediment masses activated salt movement in many areas of the basin. In the area of the Frade field, this salt movement uplifted and deformed Oligocene-Miocene turbidite sandstones and shales and created structures that later became the hydrocarbon traps in the field.

The producing reservoirs of the Frade field are in the Oligo-Miocene turbidite reservoirs of the Carapebus Formation. There are five reservoir compartments in the field separated by faulting. The sandstone reservoirs have average porosities estimated between 29 and 34 percent, average estimated permeabilities between 1.2 and 3.8 darcys, and oil gravities ranging between 16 and 24 degrees API.

Manati Field

The Manati field is located offshore Brazil in the Camamu Basin about 65 kilometers southwest of the city of Salvador, Bahia State (Figure 1). The field was discovered in 2000 by Petrobras in water depths of about 40 meters.

The productive reservoirs in the Manati field are a thick sequence of upper Jurassic-age eolian and fluvial sandstones of the Sergi Formation. These were deposited before the start of rifting in this region. The Sergi Formation is overlain by Cretaceous-age shales of the Itaipe Formation and sealed laterally by lacustrine sediments of the Morro do Barro Formation, which were deposited in the Tinharé Canyon and are the source rocks for petroleum in the Manati field.

The Manati field structure is a four-way dipping feature that was later shaped by faulting and erosion. The western, northern, and eastern edges are the intersection of the north/south-trending Mutá regional fault with the Tinharé Canyon. The canyon formed after deposition of the field sandstones and replaced them with a thick shale section on the west side of the structure. Structural dip is to the north and south, away from a crest in the center of the field. Other faults cross parts of the field and intersect the Mutá fault, but do not appear to compartmentalize the reservoirs. The southern field limit is a water contact.

A total of nine wells were drilled in the area to discover and delineate the field. Currently, six wells are producing gas from the multiple Sergi Formation sandstones in the field.

Polvo Field

The Polvo field is located offshore Brazil in the Campos Basin about 100 kilometers east of the city of Cabo Frio, Rio de Janeiro State (Figure 1).

In the Campos Basin, regional dip is toward the southeast, reflecting basinward dip caused by the opening of the Atlantic Ocean during the early Cretaceous. This structural configuration is present in the Polvo field.

Basement rocks in the Campos Basin are Precambrian granites. As the basin began to open and fill, basalts of the Cabiúnas Formation flowed onto the granite basement. The earliest sediments in the basin are lacustrine shales and carbonates of the Lagoa Feia Formation, which is the primary hydrocarbon source formation for the basin. After the original rifting period, a massive sequence of continental and marine sediments accumulated in the basin. The lower part of this sequence is made up of conglomerates and carbonates, which are subsequently covered by a thick evaporite section, composed predominantly of salt and anhydrite. Above the evaporites are mudstones and oolitic grainstones, deposited during Albian time when a broad carbonate platform developed in the region. In the Polvo field, the Albian carbonates are the Quissamã members of the Macaé Formation. These carbonates accumulated in shallow water on northeast-trending local structural highs atop basement or salt uplifts.

As basin subsidence continued, coastal rivers flooded sands into the basin. These sands were deposited in environments

ranging from deepwater turbidites to shallow-water deltaic and bay-lagoon settings. This style of sedimentation continued from the Cenomanian until the Miocene. In the Polvo field, the sandstones were deposited in coastal plain, lagoon, and bay deltaic environments.

The initial drilling campaign identified several areas of Quissamã carbonate accumulation. After further evaluation, three of these areas were targeted for additional development, as follows: the Devonian-7 (Dev-7) and Dev-4&5 shoal areas, in the western part of the field, and the Dev-3 shoal area, referred to herein as the East Quissamã. Six platform wells were drilled and completed as producers from the Quissamã accumulation.

The Turonian and Maastrichtian sandstones were found to be well developed and productive in separate accumulations east of the Quissamã wells. This part of the field was originally known as the Guarajuba field. Currently, five wells produce from the Maastrichtian reservoir, three wells produce from the Turonian reservoir, and one well produces from the Turonian East reservoir.

The Eocene-age reservoirs are the marine sandstones of the Embore Formation. These clastic reservoirs were originally associated with a variety of sub-environments, deepwater turbidities, and submarine fans deposited in a slope basin. This formation was affected by salt tectonics, which contributed to the generation of normal faults and, together with the top of the salt dome, work as seals for this field. The trap system is a combination of the structure and the stratigraphic, with lateral seals from the Oligocene canyon fill deposits.

These Eocene sandstone reservoirs were tested in six wells located at the edge of local horst-graven system. Five of the wells are located in the central part of the field, while the 1-Dev-6 well tested oil in the northern part of the field. One well began producing from the Eocene reservoir in March 2020.

Productive reservoir volumes were estimated using standard volumetric methods based on geological mapping utilizing seismic data and well logs. Structure maps were drawn for each reservoir. Isopach maps of the sandstone reservoirs were drawn using limits based on stratigraphy and structural oil/water contacts (OWC). In many of the sandstone reservoirs, the productive sands were often cut by overlying erosional unconformities that formed

the northern, western, and eastern limits. The southern downdip limit was often an estimated OWC.

Tubarão Martelo Field

The Tubarão Martelo field is located offshore Brazil in the Campos Basin about 100 kilometers southeast of Rio de Janeiro (Figure 1).

The producing reservoirs of the Tubarão Martelo field are in the Albo-Cenomanian Imbetiba and Quissama Formations of the Macaé Group. The Imbetiba Formation is the uppermost section of the Macaé Group and can be described as a very clean limestone consisting of mainly oolitic/oncolitic packstones and grainstones, peloidal packstones, peloidal wackestones, and peloidal/bioclastic mudstones. These high-energy shoal facies are typically deposited on structurally positive features, and are likely the result of salt movement and/or basement-involved faulting.

The high-energy shoals are the primary targets in the Imbetiba Formation in the Tubarão Martelo field. The reservoir features primary porosity, likely resulting from rapid deposition, low compaction, and a lack of calcite cement precipitated early in the burial process.

The Quissama Formation is the lowermost section of the Macaé Group and is predominantly below the OWC in the Tubarão Martelo field. The Quissama Formation is a secondary reservoir in the Tubarão Martelo field. Reservoir quality in the Quissama Formation is more variable than in the overlying Imbetiba Formation.

The structural configuration of the Tubarão Martelo field is a southward-dipping monocline with northeast-to-southwest, up-to-the-basin antithetic faults trending across the northern portion of the field and a down-to-the-basin normal fault forming the southern closure of the field. The down-to-the-basin normal fault on the southern flank of the field creates a local horst block. Structural dip in the Tubarão Martelo field creates a four-way closure.

Low, best, and high original oil in place (OOIP) quantities were estimated for the Tubarão Martelo field. The low quantities were areally limited to the crestal portions of the Tubarão Martelo field based on the reduction of the net-to-gross ratio seen in wells drilled on the flanks of the

field. For volumetric estimation purposes, the Imbetiba and Quissama reservoir section was subdivided into four units to account for variations in petrophysical properties. The uppermost unit represents the Imbetiba Formation and is referred to as Zone 1. The unit underlying Zone 1 is referred to as Zone 2, which represents a low-porosity interval encountered in each of the non-horizontal wells. The unit underlying Zone 2 is referred to as Zone 3, which represents the upper portion of the Quissima Formation. The lowermost reservoir unit in the field is referred to as Zone 4, which represents the lower portion of the Quissama Formation. The majority of the oil in place in the Tubarão Martelo field is contained in Zone 1.

Wahoo Field

The Wahoo field is located offshore Brazil in the Campos Basin, approximately 100 kilometers due north of Rio de Janeiro (Figure 1), in water depths of approximately 1,000 to 1,500 meters.

The structure in this region is associated with the initial rifting phase of the separation of Africa from South America. The lowermost section of the syn-rift deposit is composed for the basalts of the Cabiúnas Formation, which accumulated at the earliest stages of rifting.

As rifting progressed, continental (lacustrine) sediments of the Lagoa Feia Group were deposited in the area. The Coqueiros sediments act as the hydrocarbon source rock for the pre-salt reservoirs. The Macaé Group sediments were deposited in the area, filling half grabens that resulted from the syn-depositional rift faulting. The lower section of the Macaé Group is made up of lacustrine sediments, but there is a transition to deeper water environments recorded in accumulations of carbonates in the upper part of the formation.

The producing reservoirs of the Wahoo field are the Early Cretaceous pre-salt Barremian-Aptian Macabú Formation. The Macabú Formation is made up primarily of microbial carbonates (stromatolites) and is divided into major zones denoted, from top to base, as the MA100, MA200, and MA300 zones. The upper, post-rift sections of the Macabú carbonates are often referred to as sag sediments because of the slower, more uniform subsidence of the area related to crustal cooling that occurred as the more active rifting and sea-floor spreading areas moved further east. There is some faulting in these younger sediments but without the fault-block rotation and with smaller displacements than are observed in faulting associated with the earlier phase of rifting.

The Wahoo field can be described as a north-south structural high with multiple north-south transpressional trend faults. These structural highs are associated with carbonate buildups constructed by microbial activity generating closure on four sides. The field limits are formed by structural dip. Due to the tectonic stress and the fault interpretation, the Top Macabu reservoir in the Wahoo field could be compartmentalized in at least two segments (East and West). The OWC was identified in the discovery well at an estimated depth of 4,840 meters true vertical depth subsea (TVDSS). Additionally, a pressure gradient plot from well data shows a potential OWC at an estimated depth of 4,850 meters TVDSS.

Five wells have been drilled in the Wahoo field. The Wahoo-1-APL-1-ESS discovery well was drilled in 2008, south of the structural high on the west flank of the field. This well found approximately 100 meters of gross thickness and 59 meters of net pay. In 2009, the APL-2DA-ESS and 1-APL-2-ESS wells were drilled on the north part of the structure defining the northern limit of the field. The drilling campaign was completed with the 3-APL-6-ESS and 3-APL-7-ESS wells, which are located in the central and northwest parts of the field, respectively.

A structural interpretation was provided by PetroRio and was accepted as the structural framework used in the geocelular model constructed to estimate the OOIP. Effective porosity (PHIE) and water saturation (S_w) petrophysical properties were propagated in the three-dimensional (3–D) model. The net-to-gross properties were defined as ≥ 5 percent, ≥ 3 percent, and ≥ 2 percent PHIE for the 1C, 2C, and 3C scenarios, respectively. The average PHIE ranges between 10 and 11 percent and the average S_w ranges between 17 and 20 percent for the estimated OOIP associated with contingent resources. The estimated OWC observed in the discovery well (4,840 meters TVDSS) was used for estimating the OOIP associated with the 1C and 2C categories, while the estimated OWC observed on the pressure gradient plot (4,850 meters TVDSS) was used for the 3C category.

DEFINITION of RESERVES

Estimates of proved, probable, and possible reserves presented in this report have been prepared in accordance with the PRMS approved in March 2007 and revised in June 2018 by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, the Society of Petroleum Evaluation Engineers, the Society of Exploration Geophysicists, the Society of Petrophysicists and Well Log Analysts, and the European Association of Geoscientists & Engineers. The petroleum reserves are defined as follows:

Reserves are those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions. Reserves must satisfy four criteria: discovered, recoverable, commercial, and remaining (as of the evaluation's effective date) based on the development project(s) applied. Reserves are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by development and production status.

> *Proved Reserves* are those quantities of petroleum that, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable from a given date forward from known reservoirs and under defined economic conditions, operating methods, and government regulations. If deterministic methods are used, the term "reasonable certainty" is intended to express a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability (P90) that the quantities actually recovered will equal or exceed the estimate.
>
> *Probable Reserves* are those additional Reserves which analysis of geoscience and engineering data indicate are less likely to be recovered than Proved Reserves but more certain to be recovered than Possible Reserves. It is equally likely that actual remaining quantities recovered will be greater than or less than the sum of the estimated Proved plus Probable Reserves (2P). In this context, when probabilistic methods are used, there should be at least a 50% probability [P50] that the actual quantities recovered will equal or exceed the 2P estimate.

Possible Reserves are those additional reserves that analysis of geoscience and engineering data indicates are less likely to be recoverable than Probable Reserves. The total quantities ultimately recovered from the project have a low probability to exceed the sum of Proved plus Probable plus Possible (3P), which is equivalent to the high-estimate scenario. When probabilistic methods are used, there should be at least a 10% probability (P10) that the actual quantities recovered will equal or exceed the 3P estimate.

Once projects satisfy commercial maturity, the associated quantities are classified as Reserves. These quantities may be allocated to the following subdivisions based on the funding and operational status of wells and associated facilities within the reservoir development plan:

Developed Reserves are quantities expected to be recovered from existing wells and facilities. Reserves are considered developed only after the necessary equipment has been installed, or when the costs to do so are relatively minor compared to the cost of a well. Where required facilities become unavailable, it may be necessary to reclassify Developed Reserves as Undeveloped. Developed Reserves may be further sub-classified as Producing or Non-Producing.

Developed Producing Reserves are expected quantities to be recovered from completion intervals that are open and producing at the effective date of the estimate. Improved recovery Reserves are considered producing only after the improved recovery project is in operation.

Developed Non-Producing Reserves include shut-in and behind-pipe reserves. Shut-in Reserves are expected to be recovered from (1) completion intervals that are open at the time of the estimate but which have not yet started producing, (2) wells which were shut-in for market conditions or pipeline connections, or (3) wells not capable of production for mechanical reasons. Behind-pipe Reserves are expected to be recovered from zones in existing wells that will require additional completion work or future re-completion before start of production with minor cost to access these reserves. In all cases, production can be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.

> *Undeveloped Reserves* are quantities expected to be recovered through future significant investments. Undeveloped Reserves are to be produced (1) from new wells on undrilled acreage in known accumulations, (2) from deepening existing wells to a different (but known) reservoir, (3) from infill wells that will increase recovery, or (4) where a relatively large expenditure (e.g., when compared to the cost of drilling a new well) is required to (a) recomplete an existing well or (b) install production or transportation facilities for primary or improved recovery projects.

The extent to which probable and possible reserves ultimately may be recategorized as proved reserves is dependent upon future drilling, testing, and well performance. The degree of risk to be applied in evaluating probable and possible reserves is influenced by economic and technological factors as well as the time element. Estimates of probable and possible reserves in this report have not been adjusted in consideration of these additional risks to make them comparable to estimates of proved reserves.

ESTIMATION of RESERVES

Estimates of reserves were prepared by the use of appropriate geologic, petroleum engineering, and evaluation principles and techniques that are in accordance with practices generally recognized by the petroleum industry and in accordance with definitions established by the PRMS. The method or combination of methods used in the analysis of each reservoir was tempered by experience with similar reservoirs, stage of development, quality and completeness of basic data, and production history.

Based on the current stage of field development, production performance, the development plans provided by PetroRio, and analyses of areas offsetting existing wells with test or production data, reserves were categorized as proved, probable, or possible.

The undeveloped reserves estimates were based on opportunities identified in the plan of development provided by PetroRio. Developed non-producing reserves include those quantities associated with behind-pipe zones and include minor remaining capital expenditure as compared to the cost of a new well.

PetroRio has represented that its senior management is committed to the development plan provided by PetroRio and that PetroRio has the financial capability to execute the development plan, including the drilling and completion of wells and the installation of equipment and facilities.

When applicable, the volumetric method was used to estimate the OOIP. Structure maps were prepared to delineate each reservoir, and isopach maps were constructed to estimate reservoir volume. Electrical logs, radioactivity logs, core analyses, and other available data were used to prepare these maps as well as to estimate representative values for porosity and water saturation.

Estimates of ultimate recovery were obtained after applying recovery factors to OOIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, and the production histories. When applicable, material balance and other engineering methods were used to estimate recovery factors based on an analysis of reservoir performance, including production rate, reservoir pressure, and reservoir fluid properties.

When applicable, material balance was used to estimate original gas in place (OGIP) based on an analysis of reservoir performance, including production rate, reservoir pressure, and reservoir fluid properties. Estimates of ultimate recovery were obtained after applying recovery factors to OGIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, and the production histories.

For depletion-type reservoirs or those whose performance disclosed a reliable decline in producing-rate trends or other diagnostic characteristics, reserves were estimated by the application of appropriate decline curves or other performance relationships. In the analyses of production-decline curves, reserves were estimated only to the limits of economic production as defined in the Definition of Reserves section of this report or the expiration of the concession, as appropriate.

In certain cases, reserves were estimated by incorporating elements of analogy with similar wells or reservoirs for which more complete data were available.

For cases where history-matched dynamic models were available and applicable, model results were used to estimate recovery factors and reserves production forecasts.

Data provided by PetroRio from wells drilled through December 31, 2020, and made available for this evaluation were used to prepare the reserves estimates herein. These reserves estimates were based on consideration of monthly production data available through December 2020. Cumulative production, as of December 31, 2020, was deducted from the estimated gross ultimate recovery to estimate gross reserves.

Oil and condensate reserves estimated herein are to be recovered by normal field separation and are expressed in thousands of barrels (10^3bbl). In these estimates, 1 barrel equals 42 United States gallons.

Gas quantities estimated herein are expressed as sales gas. Sales gas is defined as the total gas to be produced from the reservoirs, measured at the point of delivery, after reduction for fuel usage, flare, and shrinkage resulting from field separation and processing. Gas reserves estimated herein are reported as sales gas. Gas quantities are expressed at a temperature

base of 20 degrees Celsius (°C) and at a pressure base of 1 atmospheres (atm). Gas quantities included in this report are expressed in millions of cubic feet ($10^6 ft^3$).

Gas quantities are identified by the type of reservoir from which the gas will be produced. Nonassociated gas is gas at initial reservoir conditions with no oil present in the reservoir. Associated gas is both gas-cap gas and solution gas. Gas-cap gas is gas at initial reservoir conditions and is in communication with an underlying oil zone. Solution gas is gas dissolved in oil at initial reservoir conditions. Gas quantities estimated herein include both associated and nonassociated gas.

Frade Field

The Frade field was discovered by Petrobras in 1986, and Chevron and its partners began development activities in 2008. First oil was achieved in June 2009 using a subsea gathering system connected to a floating production, storage, and offloading vessel (FPSO). A total of 11 horizontal production wells and 5 vertical water injection wells have been drilled since 2008, as well as several pilot boreholes. Water injection started in July 2010, but was suspended in November 2011 due to a pressure kick that occurred when drilling one of the wells. Production was suspended in March 2012 due to oil seeps interpreted to be associated with fractures connecting to the sea floor that are believed to have been opened by localized higher pressures near the injection wells. Production was restarted in April 2013 and nine wells were on production at the end of December 2020. Water injection is expected to recommence only through new horizontal injection wells and after the water injection filtration system has been upgraded, as per the current development plan provided by PetroRio.

As represented by PetroRio, the original concession expiration date for the Frade field is August 31, 2025. However, PetroRio has also represented that the Agência Nacional do Petróleo, Gás Natural e Biocombistíveis (ANP) has approved an extension provided that certain activities will be carried out in the field, including, among other things, drilling at least five wells and one contingent water injection well and carrying out certain modifications to the water injection filtration system. PetroRio has represented that it plans to comply with the ANP's requirements for the extension of the concession, and that its development plan includes drilling four horizontal production wells and three horizontal water injection wells, as well as the other investments and activities required by the ANP. Based on PetroRio's representations, reserves presented herein

for the Frade field were estimated to the economic limit as defined in the Definition of Reserves section of this report and with one license extension.

Proved developed producing reserves were estimated for existing wells by the application of appropriate decline curves or other performance relationships, primarily the semi-logarithmic plots of oil rate versus time trends and the Cartesian plot of oil rate versus cumulative oil trends. Proved developed non-producing reserves were estimated for the MUP3 well to reroute the subsea flowlines due to hydrate issues in the MUP3 subsea production flow lines. PetroRio has represented that production from this well will commence in March 2021 at a nominal cost. Proved undeveloped reserves were estimated for future production wells based on analogy with historical performance of nearby wells producing from the same reservoir and considering the estimated drainage areas. Probable reserves were estimated for future water injection wells based on analogy, material-balance, and reservoir simulation methods.

Probable and possible reserves were also estimated for the Frade field for wells, as applicable, associated with incremental recovery above quantities estimated for proved and probable reserves, respectively.

Manati Field

The Manati field was discovered by Petrobras with the drilling of the 1-BAS-128 well. Production commenced in 2007 from a production platform, which is connected by a subsea pipeline to an onshore gas processing facility. The Manati field is located in license block BCAM-40 and is operated by Petrobras.

For the Manati field, the material-balance method was used to estimate the OGIP. Proved developed producing reserves were estimated for active producing wells using the material-balance method by integrating updated production, pressure, fluid properties, well productivities, and considering the gas production rate plateau strategy provided by PetroRio. PetroRio has represented that the development plan for the Manati field does not consider any additional drilling locations or the installation of new production facilities. Proved developed non-producing and proved undeveloped reserves were estimated to be zero.

Probable and possible reserves were estimated for the Manati field considering more favorable behavior than that used to estimate proved reserves.

Polvo Field

The Polvo field was discovered by Petrobras with the drilling of the 1-RJS-486A well. In 2000, during the ANP's second licensing round, license block BM-C-8 containing the Polvo field was awarded to Devon Energy do Brasil Ltda. (Devon) and its partners. Devon continued field delineation drilling and development. A portion of license block BM-C-8 was relinquished following declaration of commerciality and the establishment of the Polvo Development Area ring fence. In 2011, BP acquired Devon's interest in the Polvo field, and in 2013 PetroRio acquired BP's interest. PetroRio has represented that the concession for license block BM-C-8 expires on July 1, 2032, and that PetroRio will apply for an extension with the ANP to ensure that the Polvo field can be produced to its economic limit. Based on PetroRio's representations, reserves presented herein for the Polvo field were estimated to the economic limit as defined in the Definitions of Reserves section of this report and with one license extension.

Production commenced from the Polvo field in August 2007. The average gravity of the oil produced from the Polvo field is 21 degrees API. The producing gas-oil ratio in the field is approximately 100 cubic feet per barrel, and all produced gas is either used as fuel or flared. Water depth in the Polvo field ranges from 90 to 250 meters. The field was developed with a drilling/production platform and a FPSO, both in a water depth of approximately 100 meters. A multiphase pipeline transports the produced fluids from the platform to the Polvo FPSO. All producing wells are horizontal/highly deviated and are completed with electric submersible pumps (ESP). PetroRio has represented that it intends to decommission the Polvo FPSO in July 2021 and connect all active producing wells in the Polvo field to the OSX-3 FPSO in the neighboring Tubarão Martelo field.

For the Polvo field, the volumetric method was used to estimate the OOIP. Proved developed producing reserves were estimated using performance-based methods, primarily decline-curve analysis of oil rate production versus time trends of individual wells. Proved developed non-producing reserves were estimated to be zero. Proved undeveloped reserves were estimated for the extension of the field life after the Polvo field is connected to the Tubarão Martelo FPSO and for two future production wells (Pol-B and Pol-C). Probable undeveloped reserves were estimated for one future well location (Pol-A). Reserves for the future Pol-A, Pol-B, and Pol-C well locations planned to target an Eocene reservoir were estimated based on analogy and numerical simulation. A 3–D sector model was developed for the Eocene undeveloped well locations to run in a black-oil simulator

to aid in estimating ultimate oil recovery, potential production profiles, and recovery factors. PetroRio has represented that production from the Pol-B and Pol-C wells is scheduled to start in 2021 and production from the Pol-A well is scheduled to start in 2022.

Probable and possible reserves were also estimated for the Polvo field for wells, as applicable, associated with incremental recovery above quantities estimated for proved and probable reserves, respectively.

No gas reserves were estimated for the Polvo field, since PetroRio has represented that there are no plans for gas sales.

Tubarão Martelo Field

The Tubarão Martelo field was discovered in 2010 by OGX with the drilling of the 1-OGX-25-RJS well in license block BM-C-39. Approval for the Tubarão Martelo development plan was granted by the ANP in July 2013 and initial oil production commenced in December 2013. PetroRio has represented that in February 2020 it acquired the interest previously held by OGX in the Tubarão Martelo field and that the concession for license block BM-C-39 expires on April 30, 2039. PetroRio has represented that it will apply for an extension with the ANP to ensure that the Tubarão Martelo field can be produced to its economic limit. Based on PetroRio's representations, reserves presented herein for the Tubarão Martelo field were estimated to the economic limit as defined in the Definitions of Reserves section of this report and with one license extension.

For the Tubarão Martelo field, the volumetric method was used to estimate the OOIP. Proved developed producing reserves were estimated using performance-based methods, primarily decline-curve analysis of oil rate production versus time trends of individual wells. Proved developed non-producing reserves were estimated to be zero. Proved undeveloped reserves were estimated for the extension of the field life in consideration of the capital associated with the connection of the Polvo field to the Tubarão Martelo FPSO and for one well, 7-TMBT-10H, based on analogy with historical performance of nearby wells producing from the same reservoir and considering the estimated drainage areas. Probable undeveloped reserves were estimated for two future well location, Pepe and Joatinga, based on analogy with historical performance of nearby wells producing from the same reservoir and considering the estimated drainage areas.

Probable and possible reserves were also estimated for the Tubarão Martelo field for wells, as applicable, associated with incremental recovery above quantities estimated for proved and probable reserves, respectively.

No gas reserves were estimated for the Tubarão Martelo field, since PetroRio has represented that there are no plans for gas sales.

Production forecasts of the proved developed producing, proved developed, total proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves were prepared by field. These forecasts were prepared using the development plan for each field, including, as appropriate, the drilling of additional wells and the installation of new production facilities and pipelines. The sales gas reserves estimated herein are those quantities of gas forecast to be produced after the fuel requirements for the FPSOs have been met.

Table 2 presents a summary of the gross and net reserves for the Frade, Manati, Polvo, and Tubarão Martelo fields evaluated herein.

VALUATION of RESERVES

Revenue values in this report were estimated using forecast prices, expenses, and costs provided by PetroRio.

In this report, values for proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves were based on projections of estimated future production and revenue prepared for these properties with no risk adjustment applied to the probable and possible reserves. Probable and possible reserves involve substantially higher risk than proved reserves. Revenue values associated with proved-plus-probable and proved-plus-probable-plus-possible reserves have not been adjusted to account for such risks; this adjustment would be necessary in order to make values associated with probable and possible reserves comparable to values associated with proved reserves.

Future net revenue was estimated in accordance with the government of Brazil's Petroleum Law n n° 9,478, the Petroleum Law of 1997. The fiscal terms outlined in the Petroleum Law of 1997 and assessable to PetroRio as well as other economic assumptions used in this evaluation are presented as follows:

Brazilian Fiscal Terms

The Petroleum Law of 1997 affords the Brazilian government three elements of government take: 1) petroleum levies consisting of royalties, a special participation fee, and surface rentals; 2) direct taxes, which are levied through the financial transaction tax, the corporate income tax, and two social contribution taxes; and 3) indirect taxes, which are levies on equipment and services used by companies engaged in exploration and production activities. Indirect tax levies for which PetroRio may be responsible were not included in the estimates of operating expenses and capital costs. Certain indirect levies are eligible for reimbursement from sales of refined products. The reimbursement of the indirect levies from refined product sales was not accounted for in this evaluation.

Royalties

The federal royalty rate in Brazil varies by field between 5 and 10 percent. PetroRio provided federal royalty rates of 7.5 percent for the Manati field and 10 percent for the Frade and Tubarão Martelo fields. The federal royalty rates for the Polvo field were updated in 2019 to incur a royalty rate of 10 percent on a portion of the oil production equal to or under a field baseline oil production forecast; any additional oil production volumes in the year will have a reduced royalty rate of 5 percent. PetroRio has represented that these royalties are paid in cash.

Oil royalties are assessed on a valuation as determined by the ANP. Gas royalties are levied on a valuation, as determined by the ANP, of the total gas production less gas injected.

Special Participation Fee

The SPF is a tax assessed at the field level on a sliding-scale basis that varies depending on the location of the field (onshore or offshore), water depth, level of production, and number of years on production. The tax basis for the SPF is similar to the tax basis for corporation income tax (CIT) with some exceptions. The depreciation methods are different for the SPF and the CIT. An annual provision for abandonment costs is also deductible for the SPF. In years in which the SPF is paid, an additional 1-percent research and development fee is assessed.

Surface Rental Fees

Rental fees are payable to the ANP and vary by field, depending on stage of activity (exploration or development), geological characteristics, and the location of the sedimentary basin. The surface rental fees are included herein in the estimates of field operating expenses.

Corporate Income Tax

At the request of PetroRio, Brazilian income taxes were not considered in this evaluation.

Social Contribution Taxes

Two social contribution taxes are levied on the market value of oil and gas sales. The Contribution for the Worker's Social Integration Program (PIS) is assessed at a rate of 1.65 percent and the Contribution for Social Security Funding (COFINS) is levied at a 7.6-percent rate. At the Request of PetroRio, these taxes were not considered in the estimates of future net revenue included herein.

Product Prices

PetroRio provided the following sales price forecasts for the Frade, Polvo, and Tubarão Martelo fields, expressed in United States dollars per barrel (U.S.$/bbl) and United States dollars per thousand cubic feet (U.S.$/$10^3$ft^3):

Year	Frade Field Oil Price (U.S.$/bbl)	Frade Field Sales Gas Price (U.S.$/$10^3$ft^3)	Polvo and Tubarão Martelo Fields Oil Price (U.S.$/bbl)
2021	62.00	1.14	60.00
2022 Forward	60.00	1.14	58.00

For the Manati field, PetroRio provided the following sales price forecasts, expressed in United States dollars per barrel (U.S.$/bbl) and United States dollars per thousand cubic feet (U.S.$/$10^3$ft^3):

Year	Manati Field Condensate Price (U.S.$/bbl)	Manati Field Sales Gas Price (U.S.$/$10^3$ft^3)
2021	51.85	4.85
2022	56.85	4.90
2023	61.85	4.95
2024	64.35	5.00
2025	65.65	5.05
2026	67.05	5.10
2027	68.35	5.15
2028	69.75	5.20
2029 Forward	71.15	5.25

Operating Expenses, Capital Costs, and Abandonment Costs

Operating expenses for the fields evaluated herein were provided by PetroRio and were represented to include all costs associated with the operation and maintenance of the equipment and personnel and included surface rental fees. Future capital expenditures, provided by PetroRio, were estimated using 2020 values and were not adjusted for inflation. Abandonment costs, which are those costs associated with the removal of equipment, plugging of wells, and reclamation and restoration associated with the abandonment, were based on information provided by PetroRio. Abandonment costs for the Frade, Polvo, and Tubarão Martel fields were included in the year following cessation of production. As represented by PetroRio, the abandonment costs associated with the Polvo field reflect the remaining balance payable to the abandonment fund. For the Manati field, abandonment costs were included as a yearly accrual to an abandonment fund, which PetroRio has represented is fully funded. Estimates of operating expenses, capital costs, and abandonment costs were considered, as appropriate, in determining the economic viability of the developed non-producing and undeveloped reserves estimated herein.

As represented by PetroRio, the owners of the Manati field reimburse the third-party operator of the compression facility through annual tariff payments until the contractual amount has been reached. These yearly payments were not included in the determination of the economic limit presented in this report.

Exchange Rate

Prices, expenses, costs, and revenue included herein were estimated in U.S.$. Certain operating costs paid in Brazilian reais were converted to U.S.$ by PetroRio.

Summaries of future net revenue for the proved developed producing, proved developed, total proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves are presented by field or group of fields in Tables 3 through 7. Projections of future net revenue for the Frade, Manati, Polvo, and Tubarão Martelo fields are presented in Tables 8 through 24.

DEFINITION of CONTINGENT RESOURCES

Estimates of contingent resources presented in this report have been prepared in accordance with the PRMS approved in March 2007 and revised in June 2018 by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, the Society of Petroleum Evaluation Engineers, the Society of Exploration Geophysicists, the Society of Petrophysicists and Well Log Analysts, and the European Association of Geoscientists & Engineers. Because of the lack of commerciality or sufficient development drilling, the contingent resources estimated herein cannot be classified as reserves. The petroleum contingent resources are classified as follows:

> *Contingent Resources* are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations by application of development projects, but which are not currently considered to be commercially recoverable owing to one or more contingencies.

Contingent Resources are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by the economic status.

> *Economically Viable Contingent Resources* are those quantities associated with technically feasible projects where cash flows are positive under reasonably forecast conditions but are not Reserves because it does not meet the other commercial criteria.
>
> *Economically Not Viable Contingent Resources* are those quantities for which development projects are not expected to yield positive cash flows under reasonable forecast conditions. May also be subject to additional unsatisfied contingencies.

Where evaluations are incomplete and it is premature to clearly define the associated cash flows, it is acceptable to note that the project economic status is “undetermined.”

The estimation of petroleum resources 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 quantities. 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.

1C (Low), 2C (Best), and 3C (High) Estimates – Estimates of contingent resources in this report are expressed using the terms 1C (low) estimate, 2C (best) estimate, and 3C (high) estimate to reflect the range of uncertainty.

ESTIMATION of CONTINGENT RESOURCES

Estimates of contingent resources were prepared by the use of appropriate geologic, petroleum engineering, and evaluation principles and techniques that are in accordance with practices generally recognized by the petroleum industry and in accordance with definitions established by the PRMS. The method or combination of methods used in the analysis of each reservoir was tempered by experience with similar reservoirs, stage of development, quality and completeness of basic data, and production history.

Based on the current stage of field development, production performance, the development plans provided by PetroRio, and analyses of areas offsetting existing wells with test or production data, contingent resources were categorized as 1C, 2C, or 3C.

The volumetric method was used to estimate the OOIP. Structure maps were prepared to delineate each reservoir, and isopach maps were constructed to estimate reservoir volume. Electrical logs, radioactivity logs, core analyses, and other available data were used to prepare these maps as well as to estimate representative values for porosity and water saturation.

Estimates of ultimate recovery were obtained after applying recovery factors to OOIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, and the production histories. When applicable, numerical simulation and other engineering methods were used to estimate recovery factors based on an analysis of reservoir performance, including production rate, reservoir pressure, and reservoir fluid properties.

In certain cases, contingent resources were estimated by incorporating elements of analogy with similar wells or reservoirs for which more complete data were available.

Data provided by PetroRio from wells drilled through December 31, 2020, and made available for this evaluation were used to prepare the contingent resources estimates herein. The development status represents the status applicable on December 31, 2020.

Oil contingent resources estimated herein are to be recovered by normal field separation and are expressed in thousands of barrels (10^3bbl). In these estimates, 1 barrel equals 42 United States gallons.

Gas quantities associated with contingent resources estimated herein are expressed as marketable gas contingent resources. Marketable gas is defined as the total gas to be produced from the reservoirs after reduction for injection, flare, and shrinkage resulting from field separation and processing. Marketable gas includes fuel. Gas quantities are expressed at a temperature base of 20 °C and at a pressure base of 1 atm. Gas quantities included in this report are expressed in thousands of cubic feet (10^3ft^3).

Gas quantities are identified by the type of reservoir from which the gas will be produced. Nonassociated gas is gas at initial reservoir conditions with no oil present in the reservoir. Associated gas is both gas-cap gas and solution gas. Gas-cap gas is gas at initial reservoir conditions and is in communication with an underlying oil zone. Solution gas is gas dissolved in oil at initial reservoir conditions. Gas quantities associated with contingent resources estimated herein are associated gas.

The development plan provided by PetroRio and evaluated herein for the Wahoo field consists of the subsea development of four vertical production wells at the crest of the structure and two vertical water injection wells connected to the Frade field FPSO located approximately 35 kilometers to the south. Due to synergies between the Frade and Wahoo fields, the development of the Wahoo field would potentially extend the economic limit of the Frade field. The contingent resources estimated herein have an economic status of Economically Viable, and the key contingency is the approval of the development plan by all interest holders and the ANP.

Recategorized recoverable resources estimated in this report are associated with the potential extension of the economic life of the Frade field with the tie-in of the Wahoo field. For the purposes of this report, 1C(R), 2C(R), and 3C(R) recategorized recoverable resources are defined as the portion of the technical forecasts associated with proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves, respectively, that would become economically viable with the development of the contingent resources of the Wahoo field as presented herein. Estimates of recategorized recoverable resources were based on definitions and assumptions similar to those utilized to estimate the contingent resources reported herein.

The estimated gross and net contingent resources for the Wahoo field and the recategorized recoverable resources for the Frade field extension are summarized in Table 25.

At the request of PetroRio, an alternative development plan for the Wahoo field was also considered that utilizes horizonal wells instead of vertical wells. The contingent resources estimated herein using the alternative development plan have an economic status of Economically Viable, and the key contingency is the approval of the development plan by all interest holders and the ANP. The results of this analysis are presented in Table 29.

VALUATION of CONTINGENT RESOURCES

Potential revenue values in this report were estimated using forecast prices, expenses, and costs provided by PetroRio. At the request of PetroRio, estimates of potential revenue presented herein are associated with gross contingent resources and do not reflect PetroRio's working interest.

The estimated potential present worth of the contingent resources evaluated in this report is to be used for comparison and ranking of these contingent resources against other contingent resources only. The estimated potential present worth for the contingent resources cannot be compared directly to, equated with, or aggregated with the present worth estimates that could be realized from reserves, nor are these potential present worth estimates an assessment of the fair market value of the properties evaluated herein.

At the request of PetroRio, deterministic methodologies were used to estimate potential present worth that could be realized should the contingent resources estimated herein be developed. Deterministic models incorporated various economic factors and development options based on the potential contingent resources quantities estimated. PetroRio provided conceptual development plans as well as estimates of operating expenses, capital costs, and abandonment costs associated with the potential development and prices for potential production.

Based on information provided by PetroRio, the same price and cost assumptions described in the Valuation of Reserves section of this report were used to estimate the potential future net revenue of contingent resources, unless noted otherwise.

The development plan provided by PetroRio and evaluated herein for the Wahoo field consists of four vertical production wells and two vertical water injection wells connecting to the Frade field FPSO. Expenses associated with the tie-in and operating cost for the Frade and Wahoo field combined development were provided by PetroRio. Due to synergies between the Frade and Wahoo fields, the development of the Wahoo field would potentially extend the economic limit of the Frade field.

Recategorized recoverable resources estimated in this report are associated with the potential extension of the economic

life of the Frade field with the tie-in of the Wahoo field. For the purposes of this report, 1C(R), 2C(R), and 3C(R) recategorized recoverable resources are defined as the portion of the technical forecasts associated with proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves, respectively, that would become economically viable with the development of the contingent resources of the Wahoo field as presented herein. Estimates of the extent and potential value of recategorized recoverable resources were based on definitions and assumptions similar to those utilized to estimate the extent and potential value of the contingent resources estimated herein.

The economic assumptions used for estimating the potential revenue for the Frade and Wahoo fields evaluated herein are the same as those discussed under the Valuation of Reserves section of this report, except as follows:

Product Prices

PetroRio provided the following sales price forecasts for the Wahoo field, expressed in United States dollars per barrel (U.S.$/bbl):

Year	Wahoo Field Oil Price (U.S.$/bbl)
2021	63.25
2022 Forward	61.25

Projections of the estimated potential future net revenue from the gross contingent resources plus gross recategorized recoverable resources for the Wahoo and Frade fields considering the proposed tie-in of the Wahoo field are presented in Tables 26 through 28. Projections of the estimated potential future net revenue from the gross contingent resources plus gross recategorized recoverable resources for the Wahoo and Frade fields considering the proposed tie-in of the Wahoo field and the Wahoo field alternative development plan are presented in Tables 30 through 32.

At the request of PetroRio, projections of the estimated potential future net revenue from the Wahoo field gross contingent resources plus the Frade field gross reserves and recategorized recoverable resources considering the proposed tie-in of the Wahoo field are presented in Tables A1 through A6 in the appendix to this report.

SUMMARY and CONCLUSIONS

PetroRio has represented that it holds an interest in certain fields in Brazil evaluated herein. The estimated gross and net proved, probable, and possible reserves, as of January 1, 2021, of the properties evaluated herein are summarized as follows, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

	Gross Reserves			Net Reserves		
	Oil (10^3bbl)	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**
Proved						
Developed Producing	68,647	337	139,264	63,795	34	13,927
Developed Non-Producing	525	0	0	525	0	0
Total Proved Developed	**69,172**	**337**	**139,264**	**64,320**	**34**	**13,927**
Undeveloped	52,486	0	2,653	54,269	0	2,653
Total Proved	**121,658**	**337**	**141,917**	**118,589**	**34**	**16,580**
Probable	88,659	16	12,087	86,672	1	5,823
Proved plus Probable	**210,317**	**353**	**154,004**	**205,261**	**35**	**22,403**
Possible	116,474	50	25,077	113,694	6	6,657
Proved plus Probable plus Possible	**326,791**	**403**	**179,081**	**318,955**	**41**	**29,060**

Note: Probable and possible reserves have not been risk adjusted to make them comparable to proved reserves.

The estimated future revenue attributable to PetroRio's interest in the proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves, as of January 1, 2021, of the properties evaluated under the economic assumptions described herein is summarized as follows, expressed in thousands of United States dollars (10^3U.S.$):

	Proved Developed Producing (10^3U.S.$)	**Proved Developed (10^3U.S.$)**	**Total Proved (10^3U.S.$)**	**Proved plus Probable (10^3U.S.$)**	**Proved plus Probable plus Possible (10^3U.S.$)**
Future Gross Revenue	3,856,516	3,888,214	7,089,393	12,205,516	18,908,378
Royalties Paid in Cash	368,810	371,979	662,832	1,140,246	1,786,859
Operating Expenses	1,556,146	1,556,146	2,075,458	3,291,267	5,087,416
Capital Costs	159,875	159,875	696,075	1,074,975	1,306,475
Abandonment Costs	272,151	272,151	272,151	272,151	272,150
SPF	356	356	356	418	555
Future Net Revenue	1,499,178	1,527,707	3,382,521	6,426,459	10,454,923
Present Worth at 10 Percent	1,259,788	1,280,914	2,337,888	3,643,824	5,002,253

Notes:
1. Values for probable and possible reserves have not been risk adjusted to make them comparable to values for proved reserves.
2. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.

The estimated gross and net 1C, 2C, and 3C contingent resources, as of January 1, 2021, of the Wahoo field evaluated herein are summarized as follows, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

Wahoo Field
Contingent Resources

	Gross		Net	
	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C	125,594	159,672	80,757	102,669
2C	167,751	198,849	107,864	127,860
3C	235,888	228,135	151,676	146,691

Notes:
1. Application of any risk factor to contingent resources quantities does not equate contingent resources with reserves.
2. The contingent resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources evaluated herein.

The estimated gross and net recategorized recoverable resources, as of January 1, 2021, associated with the Frade field extension following the connection of the Wahoo field to the Frade field are summarized as follows, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

Frade Field Extension
Recategorized Recoverable Resources

	Gross		Net	
	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C(R)	6,646	2,626	6,646	2,626
2C(R)	10,443	3,351	10,443	3,351
3C(R)	11,007	3,789	11,007	3,789

Notes:
1. Application of any risk factor to recategorized recoverable resources quantities does not equate recategorized recoverable resources with reserves.
2. The recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce the recategorized recoverable resources evaluated herein.
3. This table is for presentation purposes only and is provided at the request of PetroRio.

The estimated gross and net contingent resources plus recategorized recoverable resources, as of January 1, 2021, of the Wahoo and Frade fields evaluated herein are summarized as follows, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

	Wahoo and Frade Fields Contingent Resources plus Recategorized Recoverable Resources			
	Gross		Net	
	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C+1C(R)	132,240	162,298	87,403	105,295
2C+2C(R)	178,194	202,200	118,307	131,211
3C+3C(R)	246,895	231,924	162,683	150,480

Notes:
1. Application of any risk factor to contingent resources or recategorized recoverable resources quantities does not equate contingent resources or recategorized recoverable resources with reserves.
2. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce the contingent resources or recategorized recoverable resources evaluated herein.
3. This table is for presentation purposes only and is provided at the request of PetroRio.

The estimated potential future net revenue and potential present worth attributable to the Economically Viable gross contingent resources of the Wahoo field plus the gross recategorized recoverable resources of the Frade field, as of January 1, 2021, evaluated under the economic assumptions described herein are summarized as follows, expressed in thousands of United States dollars (10^3U.S.$):

	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
1C+1C(R)	4,891,174	1,804,716
2C+2C(R)	7,832,315	3,078,112
3C+3C(R)	11,508,626	3,894,016

Notes:
1. At the request of PetroRio, estimates of potential future net revenue and potential present worth presented herein are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect PetroRio's working interest.
2. Estimates of potential values associated with contingent resources and recategorized recoverable resources do not provide a direct comparison to the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.

Wahoo Field Alternative Development Plan

The estimated gross and net 1C, 2C, and 3C contingent resources, as of January 1, 2021, of the Wahoo field considering the Wahoo field alternative development plan evaluated herein are summarized as follows, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

Wahoo Field
Contingent Resources
Wahoo Field Alternative Development Plan

	Gross		Net	
	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C	136,300	179,373	87,641	115,337
2C	179,966	216,541	115,718	139,236
3C	236,161	274,040	151,852	176,208

Notes:
1. Application of any risk factor to contingent resources quantities does not equate contingent resources with reserves.
2. The contingent resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources evaluated herein.

The estimated gross and net recategorized recoverable resources, as of January 1, 2021, associated with the Frade field extension following the connection of the Wahoo field to the Frade field and considering the Wahoo field alternative development plan are summarized as follows, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

Frade Field Extension
Recategorized Recoverable Resources
Wahoo Field Alternative Development Plan

	Gross		Net	
	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C(R)	6,685	2,635	6,685	2,635
2C(R)	11,450	3,620	11,450	3,620
3C(R)	9,075	3,074	9,075	3,074

Notes:
1. Application of any risk factor to recategorized recoverable resources quantities does not equate recategorized recoverable resources with reserves.
2. The recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce the recategorized recoverable resources evaluated herein.
3. This table is for presentation purposes only and is provided at the request of PetroRio.

The estimated gross and net contingent resources plus recategorized recoverable resources, as of January 1, 2021, of the Wahoo and Frade fields considering the Wahoo field alternative development plan evaluated herein are summarized as follows, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

Wahoo and Frade Fields
Contingent Resources plus
Recategorized Recoverable Resources
Wahoo Field Alternative Development Plan

	Gross		Net	
	Oil (10^3bbl)	**Marketable Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Marketable Gas (10^6ft^3)**
1C+1C(R)	142,985	182,008	94,326	117,972
2C+2C(R)	191,416	220,161	127,168	142,856
3C+3C(R)	245,236	277,114	160,927	179,282

Notes:
1. Application of any risk factor to contingent resources or recategorized recoverable resources quantities does not equate contingent resources or recategorized recoverable resources with reserves.
2. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce the contingent resources or recategorized recoverable resources evaluated herein.
3. This table is for presentation purposes only and is provided at the request of PetroRio.

The estimated potential future net revenue and potential present worth attributable to the Economically Viable gross contingent resources of the Wahoo field plus the gross recategorized recoverable resources of the Frade field, as of January 1, 2021, considering the Wahoo field alternative development plan evaluated under the economic assumptions described herein are summarized as follows, expressed in thousands of United States dollars (10^3U.S.$):

	Wahoo Field Alternative Development Plan	
	Potential Future Net Revenue (10^3U.S.$)	**Potential Present Worth at 10 Percent (10^3U.S.$)**
1C+1C(R)	5,383,891	2,065,518
2C+2C(R)	8,392,656	3,445,293
3C+3C(R)	11,588,632	4,325,514

Notes:
1. At the request of PetroRio, estimates of potential future net revenue and potential present worth presented herein are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect PetroRio's working interest.
2. Estimates of potential values associated with contingent resources and recategorized recoverable resources do not provide a direct comparison to the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.

While the oil and gas industry may be subject to regulatory changes from time to time that could affect an industry participant's ability to recover its reserves, we are not aware of any such governmental actions which would restrict the recovery of the January 1, 2021, estimated reserves.

DeGolyer and MacNaughton is an independent petroleum engineering consulting firm that has been providing petroleum consulting services throughout the world since 1936. Our fees were not contingent on the results of our evaluation. This report has been prepared at the request of PetroRio. DeGolyer and MacNaughton has used all assumptions, procedures, data, and methods that it considers necessary to prepare this report.

Submitted,

DeGolyer and MacNaughton

DeGOLYER and MacNAUGHTON
Texas Registered Engineering Firm F-716

SIGNED: April 7, 2021

Federico Dordoni

Federico Dordoni, P.E.
Senior Vice President
DeGolyer and MacNaughton

TABLE 1
LIST OF FIELDS EVALUATED
as of
JANUARY 1, 2021
for
PETRORIO S.A.
in
BRAZIL

Field	Working Interest	Concession Expiration Date	Extension of the Concession Expiration Date
Frade	100.00%	August 31, 2025	August 31, 2052
Manati	10.00%	November 1, 2029	Not Applicable
Polvo	95.00 – 100.00%	July 1, 2032	July 1, 2059
Tubarão Martelo	80.00 – 100.00%	April 30, 2039	April 30, 2066
Wahoo	64.30%	March 30, 2023	March 30, 2050

Notes:

1. PetroRio has represented that it holds a 100-percent working interest in the Polvo field and an 80-percent working interest in the Tubarão Martelo field. In addition, PetroRio has represented that its working interest in the Tubarão Martelo field will become 100 percent once the field is connected to the neighboring Polvo field, which is scheduled to occur in July 2021. Following the connection of the Tubarão Martelo field with the Polvo field, PetroRio will hold a net interest of 95 percent of the combined oil production from the two fields. The remaining 5-percent net interest is held by Dommo Energia, formerly OGX Petróleo e Gás Participações S.A. (OGX), until 30 million barrels of oil have been produced, at which point PetroRio's net interest increases to 96 percent for the lives of the fields.
2. In certain cases, the estimated economic limits occur after the expiration dates of the concession agreements for the Frade, Polvo, Tubarão Martelo, and Wahoo fields. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extensions. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extensions for those fields.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 2
SUMMARY of GROSS and NET RESERVES
as of
JANUARY 1, 2021
for
CERTAIN FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Gross Reserves

	Proved Developed Producing			Proved Developed			Proved Undeveloped			Total Proved			Probable			Possible		
Field	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**
Frade	31,182	0	0	31,707	0	0	23,965	0	2,653	55,672	0	2,653	39,010	0	5,128	45,649	0	4,609
Manati	0	337	139,264	0	337	139,264	0	0	0	0	337	139,264	0	16	6,959	0	50	20,468
Polvo	13,217	0	0	13,217	0	0	21,718	0	0	34,935	0	0	25,327	0	0	33,965	0	0
Tubarão Martelo	24,248	0	0	24,248	0	0	6,803	0	0	31,051	0	0	24,322	0	0	36,860	0	0
Total	**68,647**	**337**	**139,264**	**69,172**	**337**	**139,264**	**52,486**	**0**	**2,653**	**121,658**	**337**	**141,917**	**88,659**	**16**	**12,087**	**116,474**	**50**	**25,077**

Net Reserves

	Proved Developed Producing			Proved Developed			Proved Undeveloped			Total Proved			Probable			Possible		
Field	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**	**Oil (10^3bbl)**	**Condensate (10^3bbl)**	**Sales Gas (10^6ft^3)**
Frade	31,182	0	0	31,707	0	0	23,965	0	2,653	55,672	0	2,653	39,010	0	5,128	45,649	0	4,609
Manati	0	34	13,927	0	34	13,927	0	0	0	0	34	13,927	0	1	695	0	6	2,048
Polvo	13,217	0	0	13,217	0	0	20,257	0	0	33,474	0	0	24,334	0	0	32,658	0	0
Tubarão Martelo	19,396	0	0	19,396	0	0	10,047	0	0	29,443	0	0	23,328	0	0	35,387	0	0
Total	**63,795**	**34**	**13,927**	**64,320**	**34**	**13,927**	**54,269**	**0**	**2,653**	**118,589**	**34**	**16,580**	**86,672**	**1**	**5,823**	**113,694**	**6**	**6,657**

Note: Probable and possible reserves have not been risk adjusted to make them comparable to proved reserves.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 3
SUMMARY of FUTURE NET REVENUE from PROVED DEVELOPED PRODUCING RESERVES
as of
JANUARY 1, 2021
for
CERTAIN FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

Field	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
Frade	1,882,176	192,304	613,283	20,000	178,516	0	878,073	734,785
Manati	70,638	5,567	30,845	375	535	356	32,960	27,703
Polvo	773,790	56,498	444,810	0	13,600	0	258,882	225,089
Tubarão Martelo	1,129,912	114,441	467,208	139,500	79,500	0	329,263	272,211
Total	**3,856,516**	**368,810**	**1,556,146**	**159,875**	**272,151**	**356**	**1,499,178**	**1,259,788**

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 4
SUMMARY of FUTURE NET REVENUE from PROVED DEVELOPED RESERVES
as of
JANUARY 1, 2021
for
CERTAIN FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

Field	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
Frade	1,913,874	195,473	613,283	20,000	178,516	0	906,602	755,911
Manati	70,638	5,567	30,845	375	535	356	32,960	27,703
Polvo	773,790	56,498	444,810	0	13,600	0	258,882	225,089
Tubarão Martelo	1,129,912	114,441	467,208	139,500	79,500	0	329,263	272,211
Total	**3,888,214**	**371,979**	**1,556,146**	**159,875**	**272,151**	**356**	**1,527,707**	**1,280,914**

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 5
SUMMARY of FUTURE NET REVENUE from TOTAL PROVED RESERVES
as of
JANUARY 1, 2021
for
CERTAIN FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

Field	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
Frade	3,355,125	344,814	893,063	372,200	178,516	0	1,566,532	1,077,468
Manati	70,638	5,567	30,845	375	535	356	32,960	27,703
Polvo and Tubarão Martelo	3,663,630	312,451	1,151,550	323,500	93,100	0	1,783,029	1,232,717
Total	**7,089,393**	**662,832**	**2,075,458**	**696,075**	**272,151**	**356**	**3,382,521**	**2,337,888**

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 6
SUMMARY of FUTURE NET REVENUE from PROVED-plus-PROBABLE RESERVES
as of
JANUARY 1, 2021
for
CERTAIN FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

Field	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
Frade	5,702,090	585,151	1,479,343	611,600	178,516	0	2,847,480	1,552,496
Manati	74,116	5,845	31,004	375	535	418	35,939	30,123
Polvo and Tubarão Martelo	6,429,310	549,250	1,780,920	463,000	93,100	0	3,543,040	2,061,205
Total	**12,205,516**	**1,140,246**	**3,291,267**	**1,074,975**	**272,151**	**418**	**6,426,459**	**3,643,824**

Note: The values associated with probable reserves have not been risk adjusted to make them comparable to the values associated with proved reserves.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 7
SUMMARY of FUTURE NET REVENUE from PROVED-plus-PROBABLE-plus-POSSIBLE RESERVES
as of
JANUARY 1, 2021
for
CERTAIN FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

Field	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
Frade	8,446,571	865,512	2,360,011	641,600	178,516	0	4,400,932	2,050,339
Manati	84,819	6,683	37,395	375	534	555	39,277	32,698
Polvo and Tubarão Martelo	10,376,988	914,664	2,690,010	664,500	93,100	0	6,014,714	2,919,216
Total	**18,908,378**	**1,786,859**	**5,087,416**	**1,306,475**	**272,150**	**555**	**10,454,923**	**5,002,253**

Note: The values associated with probable and possible reserves have not been risk adjusted to make them comparable to the values associated with proved reserves.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 8
PROJECTION of FUTURE NET REVENUE from PROVED DEVELOPED PRODUCING RESERVES
as of
JANUARY 1, 2021
for the
FRADE FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

	Gross Production		Net Production		Product Prices		Future Gross Revenue	Royalties Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Future Net Revenue	Present Worth at 10 Percent
	Oil	Sales Gas	Oil	Sales Gas	Oil	Sales Gas								
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3$ft^3)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	5,628	0	5,628	0	62.00	-	348,936	35,680	59,909	5,000	0	0	248,347	235,402
2022	4,825	0	4,825	0	60.00	-	289,500	29,610	59,909	0	0	0	199,981	171,590
2023	4,139	0	4,139	0	60.00	-	248,340	25,390	59,909	10,000	0	0	153,041	118,867
2024	3,563	0	3,563	0	60.00	-	213,780	21,847	59,909	0	0	0	132,024	92,823
2025	3,053	0	3,053	0	60.00	-	183,180	18,712	59,909	0	0	0	104,559	66,545
2026	2,627	0	2,627	0	60.00	-	157,620	16,094	59,909	5,000	0	0	76,617	44,140
2027	2,261	0	2,261	0	60.00	-	135,660	13,847	60,261	0	0	0	61,552	32,099
2028	1,954	0	1,954	0	60.00	-	117,240	11,962	62,472	0	0	0	42,806	20,207
2029	1,681	0	1,681	0	60.00	-	100,860	10,286	64,625	0	0	0	25,949	11,089
2030	1,451	0	1,451	0	60.00	-	87,060	8,876	66,471	0	0	0	11,713	4,531
2031	0	0	0	0	-	-	0	0	0	0	178,516	0	(178,516)	(62,508)
2032	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2033	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2034	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2035	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2036	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2037	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2038	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2039	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2040	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2041	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2042	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2043	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2046	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2047	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2048	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2049	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2050	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2051	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2052	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2053	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2054	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2055	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**31,182**	**0**	**31,182**	**0**			**1,882,176**	**192,304**	**613,283**	**20,000**	**178,516**	**0**	**878,073**	**734,785**

Present Worth (10^3U.S.$) at:	
5 Percent	**806,415**
15 Percent	**668,052**
20 Percent	**608,048**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
4. The estimated economic limit for the Frade field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 9
PROJECTION of FUTURE NET REVENUE from PROVED DEVELOPED RESERVES
as of
JANUARY 1, 2021
for the
FRADE FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

	Gross Production		Net Production		Product Prices		Future	Royalties					Future	Present
	Oil	Sales Gas	Oil	Sales Gas	Oil	Sales Gas	Gross Revenue	Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Net Revenue	Worth at 10 Percent
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3$ft^3)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	5,727	0	5,727	0	62.00	-	355,074	36,293	59,909	5,000	0	0	253,872	240,639
2022	4,930	0	4,930	0	60.00	-	295,800	30,240	59,909	0	0	0	205,651	176,455
2023	4,222	0	4,222	0	60.00	-	253,320	25,888	59,909	10,000	0	0	157,523	122,348
2024	3,628	0	3,628	0	60.00	-	217,680	22,237	59,909	0	0	0	135,534	95,291
2025	3,104	0	3,104	0	60.00	-	186,240	19,018	59,909	0	0	0	107,313	68,298
2026	2,666	0	2,666	0	60.00	-	159,960	16,328	59,909	5,000	0	0	78,723	45,353
2027	2,292	0	2,292	0	60.00	-	137,520	14,033	60,261	0	0	0	63,226	32,972
2028	1,978	0	1,978	0	60.00	-	118,680	12,106	62,472	0	0	0	44,102	20,819
2029	1,699	0	1,699	0	60.00	-	101,940	10,394	64,625	0	0	0	26,921	11,504
2030	1,461	0	1,461	0	60.00	-	87,660	8,936	66,471	0	0	0	12,253	4,740
2031	0	0	0	0	-	-	0	0	0	0	178,516	0	(178,516)	(62,508)
2032	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2033	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2034	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2035	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2036	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2037	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2038	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2039	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2040	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2041	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2042	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2043	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2046	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2047	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2048	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2049	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2050	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2051	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2052	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2053	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2054	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2055	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**31,707**	**0**	**31,707**	**0**			**1,913,874**	**195,473**	**613,283**	**20,000**	**178,516**	**0**	**906,602**	**755,911**

Present Worth (10^3U.S.$) at:	
5 Percent	**830,795**
15 Percent	**686,586**
20 Percent	**624,486**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
4. The estimated economic limit for the Frade field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 10
PROJECTION of FUTURE NET REVENUE from TOTAL PROVED RESERVES
as of
JANUARY 1, 2021
for the
FRADE FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

	Gross Production		Net Production		Product Prices		Future Gross Revenue	Royalties Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Future Net Revenue	Present Worth at 10 Percent
Year	Oil (10^3bbl)	Sales Gas (10^6ft^3)	Oil (10^3bbl)	Sales Gas (10^6ft^3)	Oil (U.S.$/bbl)	Sales Gas (U.S.$/$10^3ft^3$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	5,890	0	5,890	0	62.00	-	365,180	37,370	59,909	79,700	0	0	188,201	178,391
2022	6,848	1,217	6,848	1,217	60.00	1.14	412,267	42,386	59,909	40,000	0	0	269,972	231,644
2023	5,850	626	5,850	626	60.00	1.14	351,714	36,196	59,909	232,500	0	0	23,109	17,949
2024	4,852	0	4,852	0	60.00	-	291,120	29,988	59,909	0	0	0	201,223	141,475
2025	5,481	383	5,481	383	60.00	1.14	329,297	33,899	59,909	0	0	0	235,489	149,873
2026	5,525	427	5,525	427	60.00	1.14	331,987	34,178	59,909	5,000	0	0	232,900	134,176
2027	4,583	0	4,583	0	60.00	-	274,980	28,332	60,261	0	0	0	186,387	97,201
2028	3,822	0	3,822	0	60.00	-	229,320	23,612	62,472	0	0	0	143,236	67,617
2029	3,179	0	3,179	0	60.00	-	190,740	19,627	64,625	10,000	0	0	96,488	41,232
2030	2,654	0	2,654	0	60.00	-	159,240	16,375	66,471	0	0	0	76,394	29,551
2031	2,218	0	2,218	0	60.00	-	133,080	13,677	68,056	0	0	0	51,347	17,979
2032	1,870	0	1,870	0	60.00	-	112,200	11,524	69,454	5,000	0	0	26,222	8,311
2033	1,572	0	1,572	0	60.00	-	94,320	9,682	70,618	0	0	0	14,020	4,023
2034	1,328	0	1,328	0	60.00	-	79,680	7,968	71,652	0	0	0	60	16
2035	0	0	0	0	-	-	0	0	0	0	178,516	0	(178,516)	(41,970)
2036	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2037	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2038	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2039	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2040	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2041	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2042	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2043	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2046	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2047	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2048	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2049	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2050	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2051	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2052	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2053	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2054	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2055	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**55,672**	**2,653**	**55,672**	**2,653**			**3,355,125**	**344,814**	**893,063**	**372,200**	**178,516**	**0**	**1,566,532**	**1,077,468**

Present Worth (10^3U.S.$) at:	
5 Percent	1,296,126
15 Percent	904,448
20 Percent	768,453

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
4. The estimated economic limit for the Frade field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 11
PROJECTION of FUTURE NET REVENUE from PROVED-plus-PROBABLE RESERVES
as of
JANUARY 1, 2021
for the
FRADE FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

	Gross Production		Net Production		Product Prices		Future	Royalties					Future	Present
	Oil	Sales Gas	Oil	Sales Gas	Oil	Sales Gas	Gross Revenue	Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Net Revenue	Worth at 10 Percent
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3$ft^3)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	6,150	10	6,150	10	62.00	1.14	381,311	39,015	59,909	126,700	0	0	155,687	147,572
2022	7,266	1,384	7,266	1,384	60.00	1.14	437,538	44,951	59,909	152,700	0	0	179,978	154,426
2023	6,680	999	6,680	999	60.00	1.14	401,939	41,303	59,909	280,200	0	0	20,527	15,943
2024	6,024	530	6,024	530	60.00	1.14	362,044	37,207	59,909	17,000	0	0	247,928	174,313
2025	7,446	1,407	7,446	1,407	60.00	1.14	448,364	46,039	59,909	0	0	0	342,416	217,925
2026	7,951	1,720	7,951	1,720	60.00	1.14	479,021	49,176	59,909	5,000	0	0	364,936	210,243
2027	6,922	1,076	6,922	1,076	60.00	1.14	416,547	42,782	60,261	0	0	0	313,504	163,492
2028	6,074	553	6,074	553	60.00	1.14	365,070	37,515	62,472	0	0	0	265,083	125,137
2029	5,329	102	5,329	102	60.00	1.14	319,856	32,891	64,625	10,000	0	0	212,340	90,738
2030	4,711	0	4,711	0	60.00	-	282,660	29,057	66,471	0	0	0	187,132	72,386
2031	4,180	0	4,180	0	60.00	-	250,800	25,764	68,056	0	0	0	156,980	54,967
2032	3,730	0	3,730	0	60.00	-	223,800	22,975	69,454	5,000	0	0	126,371	40,055
2033	3,332	0	3,332	0	60.00	-	199,920	20,511	70,618	0	0	0	108,791	31,214
2034	2,995	0	2,995	0	60.00	-	179,700	18,425	71,652	0	0	0	89,623	23,277
2035	2,702	0	2,702	0	60.00	-	162,120	16,612	72,557	10,000	0	0	62,951	14,800
2036	2,452	0	2,452	0	60.00	-	147,120	15,066	73,389	0	0	0	58,665	12,485
2037	2,219	0	2,219	0	60.00	-	133,140	13,627	73,389	0	0	0	46,124	8,886
2038	2,020	0	2,020	0	60.00	-	121,200	12,397	73,389	5,000	0	0	30,414	5,304
2039	1,843	0	1,843	0	60.00	-	110,580	11,305	73,389	0	0	0	25,886	4,086
2040	1,691	0	1,691	0	60.00	-	101,460	10,367	73,389	0	0	0	17,704	2,530
2041	1,545	0	1,545	0	60.00	-	92,700	9,468	73,389	0	0	0	9,843	1,273
2042	1,420	0	1,420	0	60.00	-	85,200	8,698	73,389	0	0	0	3,113	365
2043	0	0	0	0	-	-	0	0	0	0	178,516	0	(178,516)	(18,921)
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2046	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2047	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2048	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2049	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2050	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2051	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2052	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2053	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2054	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2055	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**94,682**	**7,781**	**94,682**	**7,781**			**5,702,090**	**585,151**	**1,479,343**	**611,600**	**178,516**	**0**	**2,847,480**	**1,552,496**

Present Worth (10^3U.S.$) at:	
5 Percent	**2,078,603**
15 Percent	**1,190,690**
20 Percent	**937,468**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
4. Probable reserves and the values associated with probable reserves have not been risk adjusted to make them comparable to proved reserves and the values associated with proved reserves.
5. The estimated economic limit for the Frade field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 12
PROJECTION of FUTURE NET REVENUE from PROVED-plus-PROBABLE-plus-POSSIBLE RESERVES
as of
JANUARY 1, 2021
for the
FRADE FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

	Gross Production		Net Production		Product Prices		Future Gross Revenue	Royalties Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Future Net Revenue	Present Worth at 10 Percent
	Oil	Sales Gas	Oil	Sales Gas	Oil	Sales Gas								
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3ft^3$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	6,293	85	6,293	85	62.00	1.14	390,263	39,927	59,909	126,700	0	0	163,727	155,193
2022	7,544	1,513	7,544	1,513	60.00	1.14	454,365	46,663	59,909	152,700	0	0	195,093	167,395
2023	7,690	1,613	7,690	1,613	60.00	1.14	463,239	47,573	59,909	280,200	0	0	75,557	58,685
2024	7,799	1,603	7,799	1,603	60.00	1.14	469,767	48,224	59,909	17,000	0	0	344,634	242,304
2025	8,877	2,235	8,877	2,235	60.00	1.14	535,168	54,908	59,909	0	0	0	420,351	267,526
2026	8,610	2,035	8,610	2,035	60.00	1.14	518,920	53,238	59,909	5,000	0	0	400,773	230,889
2027	7,736	1,466	7,736	1,466	60.00	1.14	465,831	47,799	60,261	0	0	0	357,771	186,578
2028	7,014	1,000	7,014	1,000	60.00	1.14	421,980	43,308	62,472	0	0	0	316,200	149,268
2029	6,361	590	6,361	590	60.00	1.14	382,333	39,250	64,625	10,000	0	0	268,458	114,718
2030	5,816	250	5,816	250	60.00	1.14	349,245	35,863	66,471	0	0	0	246,911	95,510
2031	5,342	0	5,342	0	60.00	-	320,520	32,920	68,056	0	0	0	219,544	76,874
2032	4,940	0	4,940	0	60.00	-	296,400	30,425	69,454	5,000	0	0	191,521	60,705
2033	4,559	0	4,559	0	60.00	-	273,540	28,062	70,618	0	0	0	174,860	50,170
2034	4,234	0	4,234	0	60.00	-	254,040	26,047	71,652	0	0	0	156,341	40,605
2035	3,944	0	3,944	0	60.00	-	236,640	24,251	72,557	10,000	0	0	129,832	30,524
2036	3,689	0	3,689	0	60.00	-	221,340	22,672	73,389	0	0	0	125,279	26,662
2037	3,435	0	3,435	0	60.00	-	206,100	21,101	73,389	0	0	0	111,610	21,501
2038	3,223	0	3,223	0	60.00	-	193,380	19,790	73,389	5,000	0	0	95,201	16,602
2039	3,030	0	3,030	0	60.00	-	181,800	18,597	73,389	0	0	0	89,814	14,178
2040	2,861	0	2,861	0	60.00	-	171,660	17,553	73,389	0	0	0	80,718	11,534
2041	2,692	0	2,692	0	60.00	-	161,520	16,509	73,389	10,000	0	0	61,622	7,971
2042	2,543	0	2,543	0	60.00	-	152,580	15,590	73,389	0	0	0	63,601	7,447
2043	2,405	0	2,405	0	60.00	-	144,300	14,739	73,389	0	0	0	56,172	5,954
2044	2,284	0	2,284	0	60.00	-	137,040	13,992	73,389	5,000	0	0	44,659	4,285
2045	2,159	0	2,159	0	60.00	-	129,540	13,223	73,389	0	0	0	42,928	3,728
2046	2,049	0	2,049	0	60.00	-	122,940	12,545	73,389	0	0	0	37,006	2,909
2047	1,946	0	1,946	0	60.00	-	116,760	11,911	73,389	10,000	0	0	21,460	1,527
2048	1,855	0	1,855	0	60.00	-	111,300	11,351	73,389	0	0	0	26,560	1,711
2049	1,761	0	1,761	0	60.00	-	105,660	10,773	73,389	0	0	0	21,498	1,254
2050	1,676	0	1,676	0	60.00	-	100,560	10,251	73,389	5,000	0	0	11,920	629
2051	1,597	0	1,597	0	60.00	-	95,820	9,765	73,389	0	0	0	12,666	605
2052	1,527	0	1,527	0	60.00	-	91,620	9,335	73,389	0	0	0	8,896	385
2053	1,453	0	1,453	0	60.00	-	87,180	8,881	73,389	0	0	0	4,910	192
2054	1,387	0	1,387	0	60.00	-	83,220	8,476	73,389	0	0	0	1,355	48
2055	0	0	0	0	-	-	0	0	0	0	178,516	0	(178,516)	(5,727)
Total	**140,331**	**12,390**	**140,331**	**12,390**			**8,446,571**	**865,512**	**2,360,011**	**641,600**	**178,516**	**0**	**4,400,932**	**2,050,339**

Present Worth (10^3U.S.$) at:	
5 Percent	**2,917,381**
15 Percent	**1,516,325**
20 Percent	**1,167,933**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
4. Probable and possible reserves and the values associated with probable and possible reserves have not been risk adjusted to make them comparable to proved reserves and the values associated with proved reserves.
5. The estimated economic limit for the Frade field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 13
PROJECTION of FUTURE NET REVENUE from PROVED DEVELOPED PRODUCING RESERVES
as of
JANUARY 1, 2021
for the
MANATI FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

	Gross Production		Net Production		Product Prices		Future	Royalties					Future	Present Worth
	Condensate	Sales Gas	Condensate	Sales Gas	Condensate	Sales Gas	Gross Revenue	Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Net Revenue	at 10 Percent
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3$ft^3)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	92	37,929	9	3,793	51.85	4.85	18,863	1,488	6,341	252	107	356	10,319	9,781
2022	87	35,948	9	3,595	56.85	4.90	18,128	1,428	6,456	80	107	0	10,057	8,629
2023	69	28,581	7	2,858	61.85	4.95	14,580	1,149	6,050	43	107	0	7,231	5,616
2024	52	21,425	5	2,143	64.35	5.00	11,037	871	6,014	0	107	0	4,045	2,844
2025	37	15,381	4	1,538	65.65	5.05	8,030	631	5,984	0	107	0	1,308	833
2026	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2027	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2028	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2029	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2030	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2031	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2032	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2033	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2034	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2035	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2036	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2037	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2038	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2039	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2040	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2041	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2042	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2043	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**337**	**139,264**	**34**	**13,927**			**70,638**	**5,567**	**30,845**	**375**	**535**	**356**	**32,960**	**27,703**

Present Worth (10^3U.S.$) at:	
5 Percent	30,162
15 Percent	25,535
20 Percent	23,616

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Abandonment costs are allocated annually into an abandonment sinking fund.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 14
PROJECTION of FUTURE NET REVENUE from PROVED DEVELOPED RESERVES
as of
JANUARY 1, 2021
for the
MANATI FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

	Gross Production		Net Production		Product Prices		Future	Royalties					Future Net	Present Worth
	Condensate	Sales Gas	Condensate	Sales Gas	Condensate	Sales Gas	Gross Revenue	Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Revenue	at 10 Percent
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3$ft^3)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	92	37,929	9	3,793	51.85	4.85	18,863	1,488	6,341	252	107	356	10,319	9,781
2022	87	35,948	9	3,595	56.85	4.90	18,128	1,428	6,456	80	107	0	10,057	8,629
2023	69	28,581	7	2,858	61.85	4.95	14,580	1,149	6,050	43	107	0	7,231	5,616
2024	52	21,425	5	2,143	64.35	5.00	11,037	871	6,014	0	107	0	4,045	2,844
2025	37	15,381	4	1,538	65.65	5.05	8,030	631	5,984	0	107	0	1,308	833
2026	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2027	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2028	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2029	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2030	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2031	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2032	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2033	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2034	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2035	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2036	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2037	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2038	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2039	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2040	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2041	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2042	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2043	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**337**	**139,264**	**34**	**13,927**			**70,638**	**5,567**	**30,845**	**375**	**535**	**356**	**32,960**	**27,703**

Present Worth (10^3U.S.$) at:	
5 Percent	30,162
15 Percent	25,535
20 Percent	23,616

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Abandonment costs are allocated annually into an abandonment sinking fund.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 15
PROJECTION of FUTURE NET REVENUE from TOTAL PROVED RESERVES
as of
JANUARY 1, 2021
for the
MANATI FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

	Gross Production		Net Production		Product Prices		Future	Royalties						
	Condensate	Sales Gas	Condensate	Sales Gas	Condensate	Sales Gas	Gross Revenue	Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Future Net Revenue	Present Worth at 10 Percent
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3$ft^3)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	92	37,929	9	3,793	51.85	4.85	18,863	1,488	6,341	252	107	356	10,319	9,781
2022	87	35,948	9	3,595	56.85	4.90	18,128	1,428	6,456	80	107	0	10,057	8,629
2023	69	28,581	7	2,858	61.85	4.95	14,580	1,149	6,050	43	107	0	7,231	5,616
2024	52	21,425	5	2,143	64.35	5.00	11,037	871	6,014	0	107	0	4,045	2,844
2025	37	15,381	4	1,538	65.65	5.05	8,030	631	5,984	0	107	0	1,308	833
2026	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2027	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2028	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2029	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2030	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2031	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2032	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2033	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2034	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2035	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2036	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2037	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2038	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2039	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2040	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2041	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2042	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2043	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**337**	**139,264**	**34**	**13,927**			**70,638**	**5,567**	**30,845**	**375**	**535**	**356**	**32,960**	**27,703**

Present Worth (10^3U.S.$) at:	
5 Percent	**30,162**
15 Percent	**25,535**
20 Percent	**23,616**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Abandonment costs are allocated annually into an abandonment sinking fund.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 16
PROJECTION of FUTURE NET REVENUE from PROVED-plus-PROBABLE RESERVES
as of
JANUARY 1, 2021
for the
MANATI FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

	Gross Production		Net Production		Product Prices		Future	Royalties					Future	Present Worth
	Condensate	Sales Gas	Condensate	Sales Gas	Condensate	Sales Gas	Gross Revenue	Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Net Revenue	at 10 Percent
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3$ft^3)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	96	39,822	10	3,982	51.85	4.85	19,832	1,562	6,413	252	107	418	11,080	10,503
2022	91	37,745	9	3,774	56.85	4.90	19,005	1,499	6,526	80	107	0	10,793	9,261
2023	73	30,011	7	3,001	61.85	4.95	15,288	1,207	6,057	43	107	0	7,874	6,116
2024	54	22,497	5	2,250	64.35	5.00	11,572	914	6,020	0	107	0	4,531	3,186
2025	39	16,148	4	1,615	65.65	5.05	8,419	663	5,988	0	107	0	1,661	1,057
2026	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2027	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2028	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2029	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2030	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2031	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2032	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2033	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2034	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2035	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2036	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2037	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2038	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2039	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2040	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2041	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2042	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2043	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**353**	**146,223**	**35**	**14,622**			**74,116**	**5,845**	**31,004**	**375**	**535**	**418**	**35,939**	**30,123**

Present Worth (10^3U.S.$) at:	
5 Percent	**32,839**
15 Percent	**27,730**
20 Percent	**25,618**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Abandonment costs are allocated annually into an abandonment sinking fund.
4. Probable reserves and the values associated with probable reserves have not been risk adjusted to make them comparable to proved reserves and the values associated with proved reserves.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 17
PROJECTION of FUTURE NET REVENUE from PROVED-plus-PROBABLE-plus-POSSIBLE RESERVES
as of
JANUARY 1, 2021
for the
MANATI FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

	Gross Production		Net Production		Product Prices		Future	Royalties					Future Net	Present Worth
	Condensate	Sales Gas	Condensate	Sales Gas	Condensate	Sales Gas	Gross Revenue	Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Revenue	at 10 Percent
Year	(10^3bbl)	(10^6ft^3)	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(U.S.$/$10^3ft^3$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	101	41,816	10	4,182	51.85	4.85	20,802	1,640	6,585	252	89	555	11,681	11,072
2022	96	39,633	10	3,963	56.85	4.90	19,988	1,574	6,709	80	89	0	11,536	9,898
2023	76	31,510	8	3,151	61.85	4.95	16,092	1,267	6,206	43	89	0	8,487	6,592
2024	57	23,621	6	2,362	64.35	5.00	12,196	960	6,025	0	89	0	5,122	3,601
2025	41	16,956	4	1,696	65.65	5.05	8,828	696	5,992	0	89	0	2,051	1,305
2026	32	13,155	3	1,316	67.05	5.10	6,913	546	5,878	0	89	0	400	230
2027	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2028	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2029	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2030	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2031	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2032	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2033	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2034	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2035	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2036	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2037	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2038	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2039	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2040	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2041	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2042	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2043	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2044	0	0	0	0	-	-	0	0	0	0	0	0	0	0
2045	0	0	0	0	-	-	0	0	0	0	0	0	0	0
Total	**403**	**166,691**	**41**	**16,670**			**84,819**	**6,683**	**37,395**	**375**	**534**	**555**	**39,277**	**32,698**

Present Worth (10^3U.S.$) at:	
5 Percent	**35,762**
15 Percent	**30,019**
20 Percent	**27,663**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Abandonment costs are allocated annually into an abandonment sinking fund.
4. Probable and possible reserves and the values associated with probable and possible reserves have not been risk adjusted to make them comparable to proved reserves and the values associated with proved reserves.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 18
PROJECTION of FUTURE NET REVENUE from PROVED DEVELOPED PRODUCING RESERVES
as of
JANUARY 1, 2021
for the
POLVO FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Oil Production (10^3bbl)	Net Oil Production (10^3bbl)	Oil Price (U.S.$/bbl)	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
2021	3,602	3,602	60.00	216,120	16,403	88,962	0	0	0	110,755	104,982
2022	3,022	3,022	58.00	175,276	12,869	88,962	0	0	0	73,445	63,018
2023	2,555	2,555	58.00	148,190	10,430	88,962	0	0	0	48,798	37,901
2024	2,179	2,179	58.00	126,382	9,004	88,962	0	0	0	28,416	19,979
2025	1,859	1,859	58.00	107,822	7,792	88,962	0	0	0	11,068	7,044
2026	0	0	-	0	0	0	0	13,600	0	(13,600)	(7,835)
2027	0	0	-	0	0	0	0	0	0	0	0
2028	0	0	-	0	0	0	0	0	0	0	0
2029	0	0	-	0	0	0	0	0	0	0	0
2030	0	0	-	0	0	0	0	0	0	0	0
2031	0	0	-	0	0	0	0	0	0	0	0
2032	0	0	-	0	0	0	0	0	0	0	0
2033	0	0	-	0	0	0	0	0	0	0	0
2034	0	0	-	0	0	0	0	0	0	0	0
2035	0	0	-	0	0	0	0	0	0	0	0
2036	0	0	-	0	0	0	0	0	0	0	0
2037	0	0	-	0	0	0	0	0	0	0	0
2038	0	0	-	0	0	0	0	0	0	0	0
2039	0	0	-	0	0	0	0	0	0	0	0
2040	0	0	-	0	0	0	0	0	0	0	0
2041	0	0	-	0	0	0	0	0	0	0	0
2042	0	0	-	0	0	0	0	0	0	0	0
2043	0	0	-	0	0	0	0	0	0	0	0
2044	0	0	-	0	0	0	0	0	0	0	0
2045	0	0	-	0	0	0	0	0	0	0	0
Total	**13,217**	**13,217**		**773,790**	**56,498**	**444,810**	**0**	**13,600**	**0**	**258,882**	**225,089**

Present Worth (10^3U.S.$) at:	
5 Percent	**241,142**
15 Percent	**210,561**
20 Percent	**197,405**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 19
PROJECTION of FUTURE NET REVENUE from PROVED DEVELOPED PRODUCING RESERVES
as of
JANUARY 1, 2021
for the
POLVO FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Oil Production (10^3bbl)	Net Oil Production (10^3bbl)	Oil Price (U.S.$/bbl)	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
2021	3,602	3,602	60.00	216,120	16,403	88,962	0	0	0	110,755	104,982
2022	3,022	3,022	58.00	175,276	12,869	88,962	0	0	0	73,445	63,018
2023	2,555	2,555	58.00	148,190	10,430	88,962	0	0	0	48,798	37,901
2024	2,179	2,179	58.00	126,382	9,004	88,962	0	0	0	28,416	19,979
2025	1,859	1,859	58.00	107,822	7,792	88,962	0	0	0	11,068	7,044
2026	0	0	-	0	0	0	0	13,600	0	(13,600)	(7,835)
2027	0	0	-	0	0	0	0	0	0	0	0
2028	0	0	-	0	0	0	0	0	0	0	0
2029	0	0	-	0	0	0	0	0	0	0	0
2030	0	0	-	0	0	0	0	0	0	0	0
2031	0	0	-	0	0	0	0	0	0	0	0
2032	0	0	-	0	0	0	0	0	0	0	0
2033	0	0	-	0	0	0	0	0	0	0	0
2034	0	0	-	0	0	0	0	0	0	0	0
2035	0	0	-	0	0	0	0	0	0	0	0
2036	0	0	-	0	0	0	0	0	0	0	0
2037	0	0	-	0	0	0	0	0	0	0	0
2038	0	0	-	0	0	0	0	0	0	0	0
2039	0	0	-	0	0	0	0	0	0	0	0
2040	0	0	-	0	0	0	0	0	0	0	0
2041	0	0	-	0	0	0	0	0	0	0	0
2042	0	0	-	0	0	0	0	0	0	0	0
2043	0	0	-	0	0	0	0	0	0	0	0
2044	0	0	-	0	0	0	0	0	0	0	0
2045	0	0	-	0	0	0	0	0	0	0	0
Total	**13,217**	**13,217**		**773,790**	**56,498**	**444,810**	**0**	**13,600**	**0**	**258,882**	**225,089**

Present Worth (10^3U.S.$) at:	
5 Percent	241,142
15 Percent	210,561
20 Percent	197,405

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 20
PROJECTION of FUTURE NET REVENUE from PROVED DEVELOPED PRODUCING RESERVES
as of
JANUARY 1, 2021
for the
TUBARÃO MARTELO FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Oil Production (10^3bbl)	Net Oil Production (10^3bbl)	Oil Price (U.S.$/bbl)	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
2021	3,090	2,472	60.00	148,320	15,016	33,372	15,500	0	0	84,432	80,031
2022	2,789	2,231	58.00	129,398	13,105	33,372	15,500	0	0	67,421	57,849
2023	2,518	2,014	58.00	116,812	11,831	33,372	15,500	0	0	56,109	43,580
2024	2,279	1,823	58.00	105,734	10,709	33,372	15,500	0	0	46,153	32,449
2025	2,051	1,641	58.00	95,178	9,641	33,372	15,500	0	0	36,665	23,335
2026	1,853	1,482	58.00	85,956	8,706	33,372	15,500	0	0	28,378	16,349
2027	1,674	1,339	58.00	77,662	7,867	33,372	15,500	0	0	20,923	10,911
2028	1,516	1,213	58.00	70,354	7,126	33,372	15,500	0	0	14,356	6,777
2029	1,368	1,094	58.00	63,452	6,427	33,372	15,500	0	0	8,153	3,484
2030	1,236	989	58.00	57,362	5,811	33,372	0	0	0	18,179	7,032
2031	1,118	894	58.00	51,852	5,252	33,372	0	0	0	13,228	4,632
2032	1,014	811	58.00	47,038	4,765	33,372	0	0	0	8,901	2,821
2033	914	731	58.00	42,398	4,295	33,372	0	0	0	4,731	1,357
2034	828	662	58.00	38,396	3,890	33,372	0	0	0	1,134	295
2035	0	0	-	0	0	0	0	79,500	0	(79,500)	(18,691)
2036	0	0	-	0	0	0	0	0	0	0	0
2037	0	0	-	0	0	0	0	0	0	0	0
2038	0	0	-	0	0	0	0	0	0	0	0
2039	0	0	-	0	0	0	0	0	0	0	0
2040	0	0	-	0	0	0	0	0	0	0	0
2041	0	0	-	0	0	0	0	0	0	0	0
2042	0	0	-	0	0	0	0	0	0	0	0
2043	0	0	-	0	0	0	0	0	0	0	0
2044	0	0	-	0	0	0	0	0	0	0	0
2045	0	0	-	0	0	0	0	0	0	0	0
Total	**24,248**	**19,396**		**1,129,912**	**114,441**	**467,208**	**139,500**	**79,500**	**0**	**329,263**	**272,211**

Present Worth (10^3U.S.$) at:	
5 Percent	**239,743**
15 Percent	**189,319**
20 Percent	**167,721**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 21
PROJECTION of FUTURE NET REVENUE from PROVED DEVELOPED PRODUCING RESERVES
as of
JANUARY 1, 2021
for the
TUBARÃO MARTELO FIELD
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Oil Production (10^3bbl)	Net Oil Production (10^3bbl)	Oil Price (U.S.$/bbl)	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
2021	3,090	2,472	60.00	148,320	15,016	33,372	15,500	0	0	84,432	80,031
2022	2,789	2,231	58.00	129,398	13,105	33,372	15,500	0	0	67,421	57,849
2023	2,518	2,014	58.00	116,812	11,831	33,372	15,500	0	0	56,109	43,580
2024	2,279	1,823	58.00	105,734	10,709	33,372	15,500	0	0	46,153	32,449
2025	2,051	1,641	58.00	95,178	9,641	33,372	15,500	0	0	36,665	23,335
2026	1,853	1,482	58.00	85,956	8,706	33,372	15,500	0	0	28,378	16,349
2027	1,674	1,339	58.00	77,662	7,867	33,372	15,500	0	0	20,923	10,911
2028	1,516	1,213	58.00	70,354	7,126	33,372	15,500	0	0	14,356	6,777
2029	1,368	1,094	58.00	63,452	6,427	33,372	15,500	0	0	8,153	3,484
2030	1,236	989	58.00	57,362	5,811	33,372	0	0	0	18,179	7,032
2031	1,118	894	58.00	51,852	5,252	33,372	0	0	0	13,228	4,632
2032	1,014	811	58.00	47,038	4,765	33,372	0	0	0	8,901	2,821
2033	914	731	58.00	42,398	4,295	33,372	0	0	0	4,731	1,357
2034	828	662	58.00	38,396	3,890	33,372	0	0	0	1,134	295
2035	0	0	-	0	0	0	0	79,500	0	(79,500)	(18,691)
2036	0	0	-	0	0	0	0	0	0	0	0
2037	0	0	-	0	0	0	0	0	0	0	0
2038	0	0	-	0	0	0	0	0	0	0	0
2039	0	0	-	0	0	0	0	0	0	0	0
2040	0	0	-	0	0	0	0	0	0	0	0
2041	0	0	-	0	0	0	0	0	0	0	0
2042	0	0	-	0	0	0	0	0	0	0	0
2043	0	0	-	0	0	0	0	0	0	0	0
2044	0	0	-	0	0	0	0	0	0	0	0
2045	0	0	-	0	0	0	0	0	0	0	0
Total	**24,248**	**19,396**		**1,129,912**	**114,441**	**467,208**	**139,500**	**79,500**	**0**	**329,263**	**272,211**

Present Worth (10^3U.S.$) at:	
5 Percent	**239,743**
15 Percent	**189,319**
20 Percent	**167,721**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 22
PROJECTION of FUTURE NET REVENUE from TOTAL PROVED RESERVES
as of
JANUARY 1, 2021
for the
POLVO and TUBARÃO MARTELO FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Oil Production (10^3bbl)	Net Oil Production (10^3bbl)	Oil Price (U.S.$/bbl)	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
2021	7,745	7,222	60.00	433,320	37,756	102,600	87,700	0	0	205,264	194,565
2022	7,756	7,368	58.00	427,344	36,820	69,930	65,300	0	0	255,294	219,050
2023	7,416	7,045	58.00	408,610	34,376	69,930	15,500	0	0	288,804	224,314
2024	6,458	6,135	58.00	355,830	30,296	69,930	15,500	0	0	240,104	168,812
2025	5,613	5,389	58.00	312,562	26,609	69,930	15,500	0	0	200,523	127,620
2026	4,908	4,712	58.00	273,296	23,543	69,930	15,500	0	0	164,323	94,668
2027	4,304	4,132	58.00	239,656	20,889	69,930	15,500	0	0	133,337	69,535
2028	3,792	3,640	58.00	211,120	18,615	69,930	15,500	0	0	107,075	50,547
2029	3,330	3,197	58.00	185,426	16,538	69,930	15,500	0	0	83,458	35,664
2030	2,938	2,821	58.00	163,618	14,758	69,930	15,500	0	0	63,430	24,536
2031	2,597	2,493	58.00	144,594	10,991	69,930	15,500	0	0	48,173	16,868
2032	2,297	2,205	58.00	127,890	9,851	69,930	15,500	0	0	32,609	10,336
2033	2,028	1,947	58.00	112,926	8,699	69,930	15,500	0	0	18,797	5,393
2034	1,798	1,726	58.00	100,108	7,813	69,930	0	0	0	22,365	5,809
2035	1,589	1,525	58.00	88,450	6,903	69,930	0	0	0	11,617	2,731
2036	1,417	1,360	58.00	78,880	7,994	69,930	0	0	0	956	204
2037	0	0	-	0	0	0	0	93,100	0	(93,100)	(17,935)
2038	0	0	-	0	0	0	0	0	0	0	0
2039	0	0	-	0	0	0	0	0	0	0	0
2040	0	0	-	0	0	0	0	0	0	0	0
2041	0	0	-	0	0	0	0	0	0	0	0
2042	0	0	-	0	0	0	0	0	0	0	0
2043	0	0	-	0	0	0	0	0	0	0	0
2044	0	0	-	0	0	0	0	0	0	0	0
2045	0	0	-	0	0	0	0	0	0	0	0
Total	**65,986**	**62,917**		**3,663,630**	**312,451**	**1,151,550**	**323,500**	**93,100**	**0**	**1,783,029**	**1,232,717**

Present Worth (10^3U.S.$) at:	
5 Percent	**1,473,556**
15 Percent	**1,045,299**
20 Percent	**898,274**

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 23
PROJECTION of FUTURE NET REVENUE from PROVED-plus-PROBABLE RESERVES
as of
JANUARY 1, 2021
for the
POLVO and TUBARÃO MARTELO FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Oil Production (10^3bbl)	Net Oil Production (10^3bbl)	Oil Price (U.S.$/bbl)	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
2021	8,442	7,864	60.00	471,840	40,634	102,600	87,700	0	0	240,906	228,349
2022	9,292	8,828	58.00	512,024	43,579	69,930	65,300	0	0	333,215	285,908
2023	9,852	9,359	58.00	542,822	45,073	69,930	15,500	0	0	412,319	320,248
2024	8,922	8,565	58.00	496,770	41,246	69,930	15,500	0	0	370,094	260,205
2025	8,052	7,730	58.00	448,340	37,226	69,930	15,500	0	0	325,684	207,276
2026	7,301	7,009	58.00	406,522	33,755	69,930	15,500	0	0	287,337	165,537
2027	6,632	6,367	58.00	369,286	30,664	69,930	15,500	0	0	253,192	132,040
2028	6,050	5,808	58.00	336,864	27,973	69,930	15,500	0	0	223,461	105,489
2029	5,498	5,278	58.00	306,124	25,421	69,930	15,500	0	0	195,273	83,445
2030	5,017	4,817	58.00	279,386	23,485	69,930	15,500	0	0	170,471	65,941
2031	4,585	4,402	58.00	255,316	19,135	69,930	15,500	0	0	150,751	52,786
2032	4,207	4,038	58.00	234,204	17,553	69,930	15,500	0	0	131,221	41,592
2033	3,843	3,690	58.00	214,020	16,040	69,930	15,500	0	0	112,550	32,293
2034	3,526	3,384	58.00	196,272	14,711	69,930	15,500	0	0	96,131	24,967
2035	3,233	3,104	58.00	180,032	13,494	69,930	15,500	0	0	81,108	19,069
2036	2,974	2,855	58.00	165,590	16,773	69,930	15,500	0	0	63,387	13,490
2037	2,730	2,621	58.00	152,018	15,398	69,930	15,500	0	0	51,190	9,862
2038	2,514	2,414	58.00	140,012	14,182	69,930	15,500	0	0	40,400	7,045
2039	2,319	2,227	58.00	129,166	13,084	69,930	15,500	0	0	30,652	4,839
2040	2,147	2,061	58.00	119,538	12,109	69,930	15,500	0	0	21,999	3,144
2041	1,979	1,899	58.00	110,142	11,157	69,930	15,500	0	0	13,555	1,753
2042	1,826	1,753	58.00	101,674	10,300	69,930	15,500	0	0	5,944	696
2043	1,684	1,617	58.00	93,786	9,501	69,930	0	0	0	14,355	1,522
2044	1,565	1,502	58.00	87,116	8,712	69,930	0	0	0	8,474	813
2045	1,445	1,387	58.00	80,446	8,045	69,930	0	0	0	2,471	215
2046	0	0	-	0	0	0	0	93,100	0	(93,100)	(7,319)
2047	0	0	-	0	0	0	0	0	0	0	0
2048	0	0	-	0	0	0	0	0	0	0	0
2049	0	0	-	0	0	0	0	0	0	0	0
2050	0	0	-	0	0	0	0	0	0	0	0
2051	0	0	-	0	0	0	0	0	0	0	0
2052	0	0	-	0	0	0	0	0	0	0	0
2053	0	0	-	0	0	0	0	0	0	0	0
2054	0	0	-	0	0	0	0	0	0	0	0
2055	0	0	-	0	0	0	0	0	0	0	0
2056	0	0	-	0	0	0	0	0	0	0	0
2057	0	0	-	0	0	0	0	0	0	0	0
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
Total	**115,635**	**110,579**		**6,429,310**	**549,250**	**1,780,920**	**463,000**	**93,100**	**0**	**3,543,040**	**2,061,205**

Present Worth (10^3U.S.$) at:	
5 Percent	2,652,698
15 Percent	1,654,740
20 Percent	1,364,871

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
4. Probable reserves and the values associated with probable reserves have not been risk adjusted to make them comparable to proved reserves and the values associated with proved reserves.
5. The estimated economic limit for the Polvo and Tubarão Martelo fields occurs after the expiration date of the concession agreements. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extensions. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extensions for the Polvo and Tubarão Martelo fields.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 24
PROJECTION of FUTURE NET REVENUE from PROVED-plus-PROBABLE-plus-POSSIBLE RESERVES
as of
JANUARY 1, 2021
for the
POLVO and TUBARÃO MARTELO FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

DEGOLYER AND MACNAUGHTON
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Oil Production (10^3bbl)	Net Oil Production (10^3bbl)	Oil Price (U.S.$/bbl)	Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Future Net Revenue (10^3U.S.$)	Present Worth at 10 Percent (10^3U.S.$)
2021	9,035	8,398	60.00	503,880	45,955	102,600	87,700	0	0	267,625	253,675
2022	10,502	9,977	58.00	578,666	46,900	69,930	65,300	0	0	396,536	340,239
2023	11,892	11,416	58.00	662,128	53,609	69,930	15,500	0	0	523,089	406,282
2024	11,033	10,592	58.00	614,336	49,743	69,930	15,500	0	0	479,163	336,889
2025	10,198	9,790	58.00	567,820	45,979	69,930	15,500	0	0	436,411	277,747
2026	9,469	9,090	58.00	527,220	42,694	69,930	15,500	0	0	399,096	229,922
2027	8,804	8,452	58.00	490,216	39,699	69,930	15,500	0	0	365,087	190,393
2028	8,220	7,891	58.00	457,678	37,066	69,930	15,500	0	0	335,182	158,229
2029	7,642	7,337	58.00	425,546	34,465	69,930	15,500	0	0	305,651	130,612
2030	7,134	6,849	58.00	397,242	32,175	69,930	15,500	0	0	279,637	108,168
2031	6,668	6,402	58.00	371,316	30,076	69,930	15,500	0	0	255,810	89,572
2032	6,256	6,006	58.00	348,348	28,217	69,930	15,500	0	0	234,701	74,391
2033	5,844	5,610	58.00	325,380	26,357	69,930	15,500	0	0	213,593	61,284
2034	5,480	5,260	58.00	305,080	24,714	69,930	15,500	0	0	194,936	50,629
2035	5,143	4,938	58.00	286,404	23,201	69,930	15,500	0	0	177,773	41,795
2036	4,845	4,651	58.00	269,758	27,317	69,930	15,500	0	0	157,011	33,415
2037	4,543	4,361	58.00	252,938	25,614	69,930	15,500	0	0	141,894	27,335
2038	4,276	4,105	58.00	238,090	24,112	69,930	15,500	0	0	128,548	22,417
2039	4,027	3,866	58.00	224,228	22,708	69,930	15,500	0	0	116,090	18,326
2040	3,807	3,655	58.00	211,990	21,470	69,930	15,500	0	0	105,090	15,017
2041	3,581	3,438	58.00	199,404	20,195	69,930	15,500	0	0	93,779	12,130
2042	3,376	3,241	58.00	187,978	19,038	69,930	15,500	0	0	83,510	9,778
2043	3,184	3,056	58.00	177,248	17,952	69,930	15,500	0	0	73,866	7,829
2044	3,019	2,898	58.00	168,084	16,808	69,930	15,500	0	0	65,846	6,318
2045	2,848	2,734	58.00	158,572	15,857	69,930	15,500	0	0	57,285	4,975
2046	2,696	2,588	58.00	150,104	15,010	69,930	15,500	0	0	49,664	3,904
2047	2,553	2,451	58.00	142,158	14,216	69,930	15,500	0	0	42,512	3,025
2048	2,427	2,330	58.00	135,140	13,514	69,930	15,500	0	0	36,196	2,332
2049	2,296	2,204	58.00	127,832	12,783	69,930	15,500	0	0	29,619	1,727
2050	2,171	2,085	58.00	120,930	12,093	69,930	15,500	0	0	23,407	1,236
2051	2,058	1,976	58.00	114,608	11,461	69,930	15,500	0	0	17,717	847
2052	1,904	1,828	58.00	106,024	10,602	69,930	15,500	0	0	9,992	432
2053	1,790	1,719	58.00	99,702	9,970	69,930	15,500	0	0	4,302	168
2054	1,703	1,635	58.00	94,830	9,483	69,930	15,500	0	0	(83)	(3)
2055	1,620	1,556	58.00	90,248	9,025	69,930	15,500	0	0	(4,207)	(135)
2056	1,547	1,485	58.00	86,130	8,613	69,930	0	0	0	7,587	220
2057	1,469	1,410	58.00	81,780	8,178	69,930	0	0	0	3,672	97
2058	1,400	1,344	58.00	77,952	7,795	69,930	0	0	0	227	5
2059	0	0	-	0	0	0	0	93,100	0	(93,100)	(2,006)
2060	0	0	-	0	0	0	0	0	0	0	0
Total	**186,460**	**178,624**		**10,376,988**	**914,664**	**2,690,010**	**664,500**	**93,100**	**0**	**6,014,714**	**2,919,216**

Present Worth (10^3U.S.$) at:	
5 Percent	4,023,614
15 Percent	2,242,005
20 Percent	1,795,525

Notes:
1. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
2. SPF = Special Participation Fee.
3. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
4. Probable and possible reserves and the values associated with probable and possible reserves have not been risk adjusted to make them comparable to proved reserves and the values associated with proved reserves.
5. The estimated economic limit for the Polvo and Tubarão Martelo fields occurs after the expiration date of the concession agreements. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extensions. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extensions for the Polvo and Tubarão Martelo fields.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

TABLE 25
SUMMARY of GROSS and NET
CONTINGENT RESOURCES and
RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO FIELD and FRADE FIELD EXTENSION
in
BRAZIL
for
PETRORIO S.A.

Wahoo Field
Contingent Resources

	Gross		Net	
Category	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C	125,594	159,672	80,757	102,669
2C	167,751	198,849	107,864	127,860
3C	235,888	228,135	151,676	146,691

Frade Field Extension
Recategorized Recoverable Resources

	Gross		Net	
Category	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C(R)	6,646	2,626	6,646	2,626
2C(R)	10,443	3,351	10,443	3,351
3C(R)	11,007	3,789	11,007	3,789

Wahoo and Frade Fields
Contingent Resources plus
Recategorized Recoverable Resources

	Gross		Net	
Category	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C+1C(R)	132,240	162,298	87,403	105,295
2C+2C(R)	178,194	202,200	118,307	131,211
3C+3C(R)	246,895	231,924	162,683	150,480

Notes:
1. Application of any risk factor to contingent resources and recategorized recoverable resources quantities does not equate contingent resources or recategorized recoverable resources with reserves.
2. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
3. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 26
PROJECTION of POTENTIAL FUTURE NET REVENUE from GROSS 1C CONTINGENT RESOURCES
plus
1C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO FIELD and FRADE FIELD EXTENSION
in
BRAZIL
for
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	0	0	-	0	0	0	0	0	0	0	0
2022	0	0	-	0	0	0	128,700	0	0	(128,700)	(110,428)
2023	0	0	-	0	0	0	237,200	0	0	(237,200)	(184,233)
2024	6,323	5,058	61.25	387,284	40,458	8,500	264,800	0	0	73,526	51,694
2025	13,119	10,520	61.25	803,539	83,952	8,500	33,000	0	0	678,087	431,558
2026	12,507	12,990	61.25	766,054	81,048	8,500	123,600	0	0	552,906	318,534
2027	11,420	16,401	61.25	699,475	75,557	8,500	0	0	0	615,418	320,941
2028	9,232	17,614	61.25	565,460	62,570	8,500	0	0	0	494,390	233,386
2029	7,466	18,940	61.25	457,293	52,207	8,500	0	0	0	396,586	169,470
2030	5,479	14,979	61.25	335,589	38,682	8,500	0	0	0	288,407	111,561
2031	4,228	10,243	61.25	258,965	29,400	8,500	0	0	0	221,065	77,406
2032	3,656	7,147	61.25	223,930	24,837	8,500	0	0	0	190,593	60,411
2033	3,441	5,092	61.25	210,761	22,818	8,500	0	0	0	179,443	51,485
2034	3,494	3,959	61.25	214,008	22,755	8,500	0	0	0	182,753	47,465
2035	4,622	3,954	60.95	281,711	29,523	68,409	10,000	0	0	173,779	40,856
2036	4,438	3,563	60.98	270,629	28,281	68,409	0	0	0	173,939	37,017
2037	4,180	3,317	61.01	255,022	26,637	68,409	0	0	0	159,976	30,819
2038	3,888	3,139	61.05	237,362	24,810	68,409	5,000	0	0	139,143	24,265
2039	3,691	2,878	61.07	225,409	23,525	68,409	0	0	0	133,475	21,070
2040	3,522	2,638	61.08	215,124	22,415	68,409	0	0	0	124,300	17,762
2041	3,295	2,420	61.10	201,325	20,960	68,409	10,000	0	0	101,956	13,188
2042	3,084	2,241	61.11	188,463	19,613	68,409	0	0	0	100,441	11,760
2043	2,870	2,076	61.12	175,414	18,251	68,409	0	0	0	88,754	9,407
2044	2,641	1,909	61.14	161,471	16,800	68,409	5,000	0	0	71,262	6,837
2045	2,398	1,731	61.15	146,638	15,256	68,409	0	0	0	62,973	5,469
2046	2,185	1,576	61.16	133,635	13,903	68,409	0	0	0	51,323	4,035
2047	1,981	1,440	61.17	121,178	12,610	68,409	10,000	0	0	30,159	2,146
2048	1,825	1,325	61.18	111,654	11,619	68,409	0	0	0	31,626	2,037
2049	1,675	1,208	61.19	102,493	10,662	68,409	0	0	0	23,422	1,366
2050	1,541	1,114	61.19	94,294	9,810	68,409	5,000	0	0	11,075	585
2051	1,432	1,037	61.20	87,638	9,119	68,409	0	0	0	10,110	483
2052	1,341	946	61.21	82,083	8,532	68,409	0	0	0	5,142	222
2053	1,266	843	61.21	77,492	8,038	68,409	0	0	0	1,045	41
2054	0	0	-	0	0	0	0	110,000	0	(110,000)	(3,899)
2055	0	0	-	0	0	0	0	0	0	0	0
2056	0	0	-	0	0	0	0	0	0	0	0
2057	0	0	-	0	0	0	0	0	0	0	0
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
2061	0	0	-	0	0	0	0	0	0	0	0
2062	0	0	-	0	0	0	0	0	0	0	0
2063	0	0	-	0	0	0	0	0	0	0	0
2064	0	0	-	0	0	0	0	0	0	0	0
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**132,240**	**162,298**		**8,091,393**	**864,648**	**1,393,271**	**832,300**	**110,000**	**0**	**4,891,174**	**1,804,716**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	2,895,677
15 Percent	1,165,361
20 Percent	768,334

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 27
PROJECTION of POTENTIAL FUTURE NET REVENUE from GROSS 2C CONTINGENT RESOURCES
plus
2C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO FIELD and FRADE FIELD EXTENSION
in
BRAZIL
for
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	0	0	-	0	0	0	0	0	0	0	0
2022	0	0	-	0	0	0	128,700	0	0	(128,700)	(110,428)
2023	0	0	-	0	0	0	237,200	0	0	(237,200)	(184,233)
2024	8,792	7,037	61.25	538,510	56,258	8,500	264,800	0	0	208,952	146,909
2025	18,538	14,881	61.25	1,135,453	118,635	8,500	33,000	0	0	975,318	620,726
2026	17,432	17,178	61.25	1,067,710	112,646	8,500	123,600	0	0	822,964	474,116
2027	16,872	21,813	61.25	1,033,410	110,801	8,500	0	0	0	914,109	476,708
2028	15,473	27,593	61.25	947,721	104,209	8,500	0	0	0	835,012	394,183
2029	11,992	26,335	61.25	734,510	82,458	8,500	0	0	0	643,552	275,004
2030	9,444	19,202	61.25	578,445	64,412	8,500	0	0	0	505,533	195,549
2031	8,536	12,959	61.25	522,830	56,715	8,500	0	0	0	457,615	160,235
2032	8,401	8,928	61.25	514,561	54,510	8,500	0	0	0	451,551	143,124
2033	7,699	6,538	61.25	471,564	49,392	8,500	0	0	0	413,672	118,690
2034	7,009	5,337	61.25	429,301	44,755	8,500	0	0	0	376,046	97,667
2035	5,726	4,115	61.25	350,718	36,479	8,500	0	0	0	305,739	71,880
2036	4,280	3,070	61.25	262,150	27,265	8,500	0	0	0	226,385	48,179
2037	3,493	2,650	61.25	213,946	22,301	8,500	0	0	0	183,145	35,282
2038	2,932	2,369	61.25	179,585	18,769	8,500	0	0	0	152,316	26,562
2039	2,508	2,065	61.25	153,615	16,068	8,500	0	0	0	129,047	20,371
2040	2,172	1,798	61.25	133,035	13,918	8,500	0	0	0	110,617	15,806
2041	1,899	1,589	61.25	116,314	12,175	8,500	10,000	0	0	85,639	11,077
2042	1,695	1,453	61.25	103,819	10,879	8,500	0	0	0	84,440	9,887
2043	2,835	1,804	60.67	171,999	17,817	68,409	0	0	0	85,773	9,091
2044	2,598	1,655	60.67	157,621	16,328	68,409	5,000	0	0	67,884	6,513
2045	2,390	1,529	60.68	145,025	15,025	68,409	0	0	0	61,591	5,349
2046	2,226	1,438	60.68	135,074	13,999	68,409	0	0	0	52,666	4,140
2047	2,073	1,360	60.69	125,810	13,046	68,409	10,000	0	0	34,355	2,445
2048	1,937	1,285	60.69	117,557	12,195	68,409	0	0	0	36,953	2,381
2049	1,803	1,204	60.69	109,424	11,354	68,409	0	0	0	29,661	1,730
2050	1,688	1,131	60.69	102,445	10,631	68,409	5,000	0	0	18,405	972
2051	1,575	1,062	60.70	95,603	9,924	68,409	0	0	0	17,270	825
2052	1,479	1,004	60.71	89,790	9,322	68,409	0	0	0	12,059	522
2053	1,387	937	60.72	84,219	8,742	68,409	0	0	0	7,068	277
2054	1,310	881	60.72	79,543	8,256	68,409	0	0	0	2,878	102
2055	0	0	-	0	0	0	0	110,000	0	(110,000)	(3,529)
2056	0	0	-	0	0	0	0	0	0	0	0
2057	0	0	-	0	0	0	0	0	0	0	0
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
2061	0	0	-	0	0	0	0	0	0	0	0
2062	0	0	-	0	0	0	0	0	0	0	0
2063	0	0	-	0	0	0	0	0	0	0	0
2064	0	0	-	0	0	0	0	0	0	0	0
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**178,194**	**202,200**		**10,901,307**	**1,159,284**	**982,408**	**817,300**	**110,000**	**0**	**7,832,315**	**3,078,112**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**4,801,493**
15 Percent	**2,038,939**
20 Percent	**1,381,696**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 28
PROJECTION of POTENTIAL FUTURE NET REVENUE from GROSS 3C CONTINGENT RESOURCES
plus
3C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO FIELD and FRADE FIELD EXTENSION
in
BRAZIL
for
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	0	0	-	0	0	0	0	0	0	0	0
2022	0	0	-	0	0	0	128,700	0	0	(128,700)	(110,428)
2023	0	0	-	0	0	0	237,200	0	0	(237,200)	(184,233)
2024	10,451	8,355	61.25	640,124	66,870	8,500	264,800	0	0	299,954	210,891
2025	22,209	17,858	61.25	1,360,301	142,138	8,500	33,000	0	0	1,176,663	748,868
2026	22,208	24,922	61.25	1,360,240	144,547	8,500	123,600	0	0	1,083,593	624,267
2027	18,910	31,881	61.25	1,158,238	126,727	8,500	0	0	0	1,023,011	533,500
2028	13,999	22,912	61.25	857,439	93,580	8,500	0	0	0	755,359	356,581
2029	13,166	16,144	61.25	806,418	86,163	8,500	0	0	0	711,755	304,149
2030	12,553	13,362	61.25	768,871	81,457	8,500	0	0	0	678,914	262,616
2031	9,822	9,280	61.25	601,598	63,334	8,500	0	0	0	529,764	185,498
2032	8,895	7,140	61.25	544,819	56,924	8,500	0	0	0	479,395	151,950
2033	8,442	6,417	61.25	517,073	53,902	8,500	0	0	0	454,671	130,453
2034	8,119	5,983	61.25	497,289	51,775	8,500	0	0	0	437,014	113,502
2035	7,897	5,524	61.25	483,691	50,258	8,500	0	0	0	424,933	99,903
2036	7,663	5,159	61.25	469,359	48,700	8,500	0	0	0	412,159	87,715
2037	7,183	4,691	61.25	439,959	45,600	8,500	0	0	0	385,859	74,334
2038	6,283	4,039	61.25	384,834	39,865	8,500	0	0	0	336,469	58,675
2039	5,569	3,574	61.25	341,101	35,332	8,500	0	0	0	297,269	46,926
2040	5,086	3,266	61.25	311,518	32,269	8,500	0	0	0	270,749	38,688
2041	4,545	2,929	61.25	278,381	28,840	8,500	0	0	0	241,041	31,178
2042	3,838	2,494	61.25	235,078	24,361	8,500	0	0	0	202,217	23,677
2043	3,277	2,221	61.25	200,716	20,831	8,500	0	0	0	171,385	18,165
2044	2,960	2,240	61.25	181,300	18,896	8,500	0	0	0	153,904	14,766
2045	2,694	2,247	61.25	165,008	17,269	8,500	0	0	0	139,239	12,093
2046	2,485	2,078	61.25	152,206	15,931	8,500	0	0	0	127,775	10,045
2047	2,319	1,915	61.25	142,039	14,859	8,500	0	0	0	118,680	8,446
2048	2,183	1,804	61.25	133,709	13,988	8,500	0	0	0	111,221	7,165
2049	2,055	1,700	61.25	125,869	13,168	8,500	0	0	0	104,201	6,076
2050	1,953	1,608	61.25	119,621	12,512	8,500	0	0	0	98,609	5,205
2051	1,864	1,532	61.25	114,170	11,941	8,500	0	0	0	93,729	4,479
2052	1,790	1,467	61.25	109,638	11,466	8,500	0	0	0	89,672	3,879
2053	1,697	1,380	61.25	103,941	10,866	8,500	10,000	0	0	74,575	2,920
2054	1,579	1,299	61.25	96,714	10,116	8,500	0	0	0	78,098	2,768
2055	2,793	1,646	60.75	169,675	17,530	68,409	0	0	0	83,736	2,687
2056	2,598	1,550	60.75	157,829	16,313	68,409	5,000	0	0	68,107	1,978
2057	2,416	1,459	60.75	146,772	15,176	68,409	0	0	0	63,187	1,661
2058	2,247	1,375	60.75	136,505	14,121	68,409	0	0	0	53,975	1,284
2059	2,090	1,294	60.75	126,968	13,139	68,409	10,000	0	0	35,420	763
2060	1,943	1,219	60.75	118,037	12,221	68,409	0	0	0	37,407	729
2061	1,807	1,148	60.75	109,775	11,370	68,409	0	0	0	29,996	530
2062	1,681	1,081	60.75	102,121	10,582	68,409	5,000	0	0	18,130	290
2063	1,563	1,018	60.75	94,952	9,843	68,409	0	0	0	16,700	242
2064	1,454	959	60.75	88,331	9,161	68,409	0	0	0	10,761	141
2065	1,352	903	60.75	82,134	8,522	68,409	0	0	0	5,203	62
2066	1,257	851	60.75	76,363	7,927	68,409	0	0	0	27	0
2067	0	0	-	0	0	0	0	110,000	0	(110,000)	(1,068)
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**246,895**	**231,924**		**15,110,724**	**1,590,390**	**1,084,408**	**817,300**	**110,000**	**0**	**11,508,626**	**3,894,016**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**6,370,198**
15 Percent	**2,532,777**
20 Percent	**1,711,125**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. The estimated economic limit for the Wahoo field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

TABLE 29
SUMMARY of GROSS and NET
CONTINGENT RESOURCES and
RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO FIELD and FRADE FIELD EXTENSION
in
BRAZIL
for
PETRORIO S.A.

WAHOO FIELD ALTERNATIVE DEVELOPMENT PLAN

Wahoo Field
Contingent Resources

	Gross		Net	
Category	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C	136,300	179,373	87,641	115,337
2C	179,966	216,541	115,718	139,236
3C	236,161	274,040	151,852	176,208

Frade Field Extension
Recategorized Recoverable Resources

	Gross		Net	
Category	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C(R)	6,685	2,635	6,685	2,635
2C(R)	11,450	3,620	11,450	3,620
3C(R)	9,075	3,074	9,075	3,074

Wahoo and Frade Fields
Contingent Resources plus
Recategorized Recoverable Resources

	Gross		Net	
Category	Oil (10^3bbl)	Marketable Gas (10^6ft^3)	Oil (10^3bbl)	Marketable Gas (10^6ft^3)
1C+1C(R)	142,985	182,008	94,326	117,972
2C+2C(R)	191,416	220,161	127,168	142,856
3C+3C(R)	245,236	277,114	160,927	179,282

Notes:
1. Application of any risk factor to contingent resources and recategorized recoverable resources quantities does not equate contingent resources or recategorized recoverable resources with reserves.
2. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
3. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 30
PROJECTION of POTENTIAL FUTURE NET REVENUE from GROSS 1C CONTINGENT RESOURCES
plus
1C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO FIELD and FRADE FIELD EXTENSION
in
BRAZIL
for
PETRORIO S.A.

DEGOLYER AND MACNAUGHTON F-716 TEXAS REGISTERED ENGINEERING FIRM

WAHOO FIELD ALTERNATIVE DEVELOPMENT PLAN

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	0	0	-	0	0	0	0	0	0	0	0
2022	0	0	-	0	0	0	129,384	0	0	(129,384)	(111,015)
2023	0	0	-	0	0	0	243,926	0	0	(243,926)	(189,457)
2024	8,496	6,783	61.25	520,380	54,358	8,500	281,828	0	0	175,694	123,526
2025	18,057	15,824	61.25	1,105,991	116,011	8,500	33,000	0	0	948,480	603,645
2026	18,036	45,737	61.25	1,104,705	126,113	8,500	123,600	0	0	846,492	487,671
2027	10,760	44,037	61.25	659,050	80,966	8,500	0	0	0	569,584	297,038
2028	5,066	13,891	61.25	310,293	35,780	8,500	0	0	0	266,013	125,576
2029	4,350	6,776	61.25	266,438	28,961	8,500	0	0	0	228,977	97,847
2030	4,390	4,307	61.25	268,888	28,362	8,500	0	0	0	232,026	89,752
2031	4,420	3,782	61.25	270,725	28,366	8,500	0	0	0	233,859	81,886
2032	4,343	3,333	61.25	266,009	27,741	8,500	0	0	0	229,768	72,828
2033	4,388	3,072	61.25	268,765	27,927	8,500	0	0	0	232,338	66,662
2034	4,338	2,907	61.25	265,703	27,565	8,500	0	0	0	229,638	59,642
2035	5,356	3,172	60.99	326,662	33,751	68,409	10,000	0	0	214,502	50,430
2036	5,101	2,893	61.02	311,263	32,116	68,409	0	0	0	210,738	44,849
2037	4,749	2,651	61.04	289,879	29,895	68,409	0	0	0	191,575	36,906
2038	4,383	2,404	61.07	267,670	27,589	68,409	5,000	0	0	166,672	29,065
2039	4,082	2,199	61.08	249,329	25,685	68,409	0	0	0	155,235	24,505
2040	3,802	2,023	61.10	232,302	23,922	68,409	0	0	0	139,971	20,001
2041	3,475	1,860	61.11	212,357	21,872	68,409	10,000	0	0	112,076	14,497
2042	3,132	1,734	61.12	191,428	19,736	68,409	0	0	0	103,283	12,093
2043	2,764	1,614	61.12	168,936	17,446	68,409	0	0	0	83,081	8,806
2044	2,499	1,471	61.13	152,764	15,780	68,409	5,000	0	0	63,575	6,100
2045	2,306	1,339	61.15	141,012	14,559	68,409	0	0	0	58,044	5,041
2046	2,129	1,227	61.15	130,188	13,438	68,409	0	0	0	48,341	3,800
2047	1,918	1,142	61.17	117,324	12,123	68,409	10,000	0	0	26,792	1,907
2048	1,780	1,068	61.18	108,900	11,255	68,409	0	0	0	29,236	1,883
2049	1,663	992	61.19	101,759	10,515	68,409	0	0	0	22,835	1,332
2050	1,581	925	61.20	96,757	9,992	68,409	5,000	0	0	13,356	705
2051	1,512	872	61.20	92,534	9,552	68,409	0	0	0	14,573	696
2052	1,433	823	61.21	87,714	9,053	68,409	0	0	0	10,252	443
2053	1,368	645	61.21	83,735	8,594	68,409	0	0	0	6,732	264
2054	1,308	505	61.20	80,050	8,178	68,409	0	0	0	3,463	123
2055	0	0	-	0	0	0	0	110,000	0	(110,000)	(3,529)
2056	0	0	-	0	0	0	0	0	0	0	0
2057	0	0	-	0	0	0	0	0	0	0	0
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
2061	0	0	-	0	0	0	0	0	0	0	0
2062	0	0	-	0	0	0	0	0	0	0	0
2063	0	0	-	0	0	0	0	0	0	0	0
2064	0	0	-	0	0	0	0	0	0	0	0
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**142,985**	**182,008**		**8,749,510**	**937,201**	**1,461,680**	**856,738**	**110,000**	**0**	**5,383,891**	**2,065,518**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**3,238,735**
15 Percent	**1,373,990**
20 Percent	**939,389**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 31
PROJECTION of POTENTIAL FUTURE NET REVENUE from GROSS 2C CONTINGENT RESOURCES
plus
2C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO FIELD and FRADE FIELD EXTENSION
in
BRAZIL
for
PETRORIO S.A.

DEGOLYER AND MACNAUGHTON
F-716
TEXAS REGISTERED ENGINEERING FIRM

WAHOO FIELD ALTERNATIVE DEVELOPMENT PLAN

	Gross Production		Weighted Average	Potential Future	Royalties					Potential Future	Potential Present
	Oil	Marketable Gas	Oil Price	Gross Revenue	Paid in Cash	Operating Expenses	Capital Costs	Abandonment Costs	SPF	Net Revenue	Worth at 10 Percent
Year	(10^3bbl)	(10^6ft^3)	(U.S.$/bbl)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)	(10^3U.S.$)
2021	0	0	-	0	0	0	0	0	0	0	0
2022	0	0	-	0	0	0	129,384	0	0	(129,384)	(111,015)
2023	0	0	-	0	0	0	243,926	0	0	(243,926)	(189,457)
2024	10,472	8,370	61.25	641,410	67,004	8,500	281,828	0	0	284,078	199,729
2025	22,254	17,789	61.25	1,363,058	142,390	8,500	33,000	0	0	1,179,168	750,463
2026	22,255	23,093	61.25	1,363,119	144,210	8,500	123,600	0	0	1,086,809	626,119
2027	22,239	41,913	61.25	1,362,139	150,548	8,500	0	0	0	1,203,091	627,412
2028	18,851	45,960	61.25	1,154,624	131,181	8,500	0	0	0	1,014,943	479,123
2029	10,471	24,169	61.25	641,349	72,401	8,500	0	0	0	560,448	239,492
2030	7,113	9,574	61.25	435,671	46,841	8,500	0	0	0	380,330	147,118
2031	6,685	5,864	61.25	409,456	42,951	8,500	0	0	0	358,005	125,356
2032	6,240	4,700	61.25	382,200	39,827	8,500	0	0	0	333,873	105,825
2033	5,821	4,027	61.25	356,536	37,031	8,500	0	0	0	311,005	89,233
2034	5,317	3,484	61.25	325,666	33,758	8,500	0	0	0	283,408	73,607
2035	4,761	3,074	61.25	291,611	30,212	8,500	0	0	0	252,899	59,457
2036	4,350	2,665	61.25	266,438	27,555	8,500	0	0	0	230,383	49,030
2037	3,926	2,445	61.25	240,468	24,883	8,500	0	0	0	207,085	39,894
2038	3,219	2,257	61.25	197,164	20,488	8,500	0	0	0	168,176	29,327
2039	2,787	1,998	61.25	170,704	17,754	8,500	0	0	0	144,450	22,802
2040	2,414	1,714	61.25	147,858	15,372	8,500	0	0	0	123,986	17,717
2041	2,094	1,470	61.25	128,258	13,329	8,500	10,000	0	0	96,429	12,473
2042	1,930	1,354	61.25	118,213	12,284	8,500	0	0	0	97,429	11,408
2043	3,079	1,711	60.72	186,957	19,281	68,409	0	0	0	99,267	10,521
2044	2,836	1,545	60.72	172,202	17,749	68,409	5,000	0	0	81,044	7,776
2045	2,604	1,424	60.73	158,141	16,301	68,409	0	0	0	73,431	6,377
2046	2,420	1,328	60.73	146,967	15,151	68,409	0	0	0	63,407	4,985
2047	2,254	1,236	60.73	136,885	14,111	68,409	10,000	0	0	44,365	3,157
2048	2,112	1,155	60.73	128,262	13,221	68,409	0	0	0	46,632	3,004
2049	1,968	1,069	60.74	119,536	12,319	68,409	0	0	0	38,808	2,263
2050	1,852	968	60.74	112,490	11,580	68,409	5,000	0	0	27,501	1,452
2051	1,742	902	60.75	105,827	10,891	68,409	0	0	0	26,527	1,268
2052	1,642	851	60.76	99,768	10,268	68,409	0	0	0	21,091	912
2053	1,546	680	60.77	93,950	9,628	68,409	0	0	0	15,913	623
2054	1,463	552	60.78	88,921	9,081	68,409	0	0	0	11,431	405
2055	1,386	450	60.78	84,241	8,578	68,409	0	0	0	7,254	233
2056	1,313	370	60.79	79,817	8,108	68,409	0	0	0	3,300	96
2057	0	0	-	0	0	0	0	110,000	0	(110,000)	(2,892)
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
2061	0	0	-	0	0	0	0	0	0	0	0
2062	0	0	-	0	0	0	0	0	0	0	0
2063	0	0	-	0	0	0	0	0	0	0	0
2064	0	0	-	0	0	0	0	0	0	0	0
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**191,416**	**220,161**		**11,709,906**	**1,246,286**	**1,119,226**	**841,738**	**110,000**	**0**	**8,392,656**	**3,445,293**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**5,241,552**
15 Percent	**2,344,357**
20 Percent	**1,631,853**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE 32
PROJECTION of POTENTIAL FUTURE NET REVENUE from GROSS 3C CONTINGENT RESOURCES
plus
3C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO FIELD and FRADE FIELD EXTENSION
in
BRAZIL
for
PETRORIO S.A.

DEGOLYER AND MACNAUGHTON
F-716
TEXAS REGISTERED ENGINEERING FIRM

WAHOO FIELD ALTERNATIVE DEVELOPMENT PLAN

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	0	0	-	0	0	0	0	0	0	0	0
2022	0	0	-	0	0	0	129,384	0	0	(129,384)	(111,015)
2023	0	0	-	0	0	0	243,926	0	0	(243,926)	(189,457)
2024	10,536	8,434	61.25	645,330	67,417	8,500	281,828	0	0	287,585	202,194
2025	22,419	17,939	61.25	1,373,164	143,452	8,500	33,000	0	0	1,188,212	756,219
2026	22,420	18,361	61.25	1,373,225	143,602	8,500	123,600	0	0	1,097,523	632,292
2027	22,421	23,229	61.25	1,373,286	145,273	8,500	0	0	0	1,219,513	635,976
2028	22,350	30,424	61.25	1,368,938	147,299	8,500	0	0	0	1,213,139	572,685
2029	19,578	34,629	61.25	1,199,153	131,758	8,500	0	0	0	1,058,895	452,489
2030	18,836	45,833	61.25	1,153,705	131,045	8,500	0	0	0	1,014,160	392,295
2031	11,932	27,567	61.25	730,835	82,511	8,500	0	0	0	639,824	224,036
2032	7,549	11,142	61.25	462,376	50,048	8,500	0	0	0	403,828	127,998
2033	7,161	7,265	61.25	438,611	46,346	8,500	0	0	0	383,765	110,109
2034	6,879	5,757	61.25	421,339	44,103	8,500	0	0	0	368,736	95,769
2035	6,142	4,882	61.25	376,198	39,289	8,500	0	0	0	328,409	77,210
2036	5,693	4,302	61.25	348,696	36,341	8,500	0	0	0	303,855	64,666
2037	5,304	3,797	61.25	324,870	33,786	8,500	0	0	0	282,584	54,439
2038	4,909	3,408	61.25	300,676	31,233	8,500	0	0	0	260,943	45,505
2039	4,194	2,956	61.25	256,883	26,699	8,500	0	0	0	221,684	34,994
2040	3,590	2,686	61.25	219,888	22,907	8,500	0	0	0	188,481	26,933
2041	3,167	2,475	61.25	193,979	20,244	8,500	0	0	0	165,235	21,373
2042	2,849	2,274	61.25	174,501	18,228	8,500	0	0	0	147,773	17,302
2043	2,669	2,082	61.25	163,476	17,060	8,500	0	0	0	137,916	14,618
2044	2,459	1,916	61.25	150,614	15,717	8,500	0	0	0	126,397	12,127
2045	2,281	1,782	61.25	139,711	14,581	8,500	0	0	0	116,630	10,129
2046	2,117	1,653	61.25	129,666	13,532	8,500	0	0	0	107,634	8,462
2047	1,924	1,446	61.25	117,845	12,279	8,500	0	0	0	97,066	6,908
2048	1,789	1,258	61.25	109,576	11,388	8,500	0	0	0	89,688	5,778
2049	1,680	1,194	61.25	102,900	10,698	8,500	0	0	0	83,702	4,881
2050	1,585	1,144	61.25	97,081	10,099	8,500	0	0	0	78,482	4,143
2051	1,523	1,070	61.25	93,284	9,694	8,500	0	0	0	75,090	3,588
2052	1,455	990	61.25	89,119	9,251	8,500	0	0	0	71,368	3,087
2053	1,113	681	61.25	68,171	7,050	8,500	10,000	0	0	42,621	1,669
2054	1,035	469	61.25	63,394	6,500	8,500	0	0	0	48,394	1,715
2055	2,288	746	60.59	138,630	14,118	68,409	0	0	0	56,103	1,800
2056	2,128	622	60.59	128,936	13,106	68,409	5,000	0	0	42,421	1,232
2057	1,979	531	60.59	119,908	12,172	68,409	0	0	0	39,327	1,034
2058	1,841	462	60.59	111,546	11,313	68,409	0	0	0	31,824	757
2059	1,712	410	60.59	103,730	10,513	68,409	10,000	0	0	14,808	319
2060	1,592	369	60.59	96,459	9,772	68,409	0	0	0	18,278	356
2061	1,480	336	60.59	89,673	9,082	68,409	0	0	0	12,182	215
2062	1,377	308	60.59	83,432	8,449	68,409	0	0	0	6,574	105
2063	1,280	285	60.59	77,555	7,853	68,409	0	0	0	1,293	19
2064	0	0	-	0	0	0	0	110,000	0	(110,000)	(1,440)
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**245,236**	**277,114**		**15,010,359**	**1,595,808**	**879,181**	**836,738**	**110,000**	**0**	**11,588,632**	**4,325,514**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**6,837,141**
15 Percent	**2,866,027**
20 Percent	**1,952,319**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. The estimated economic limit for the Wahoo field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.
8. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

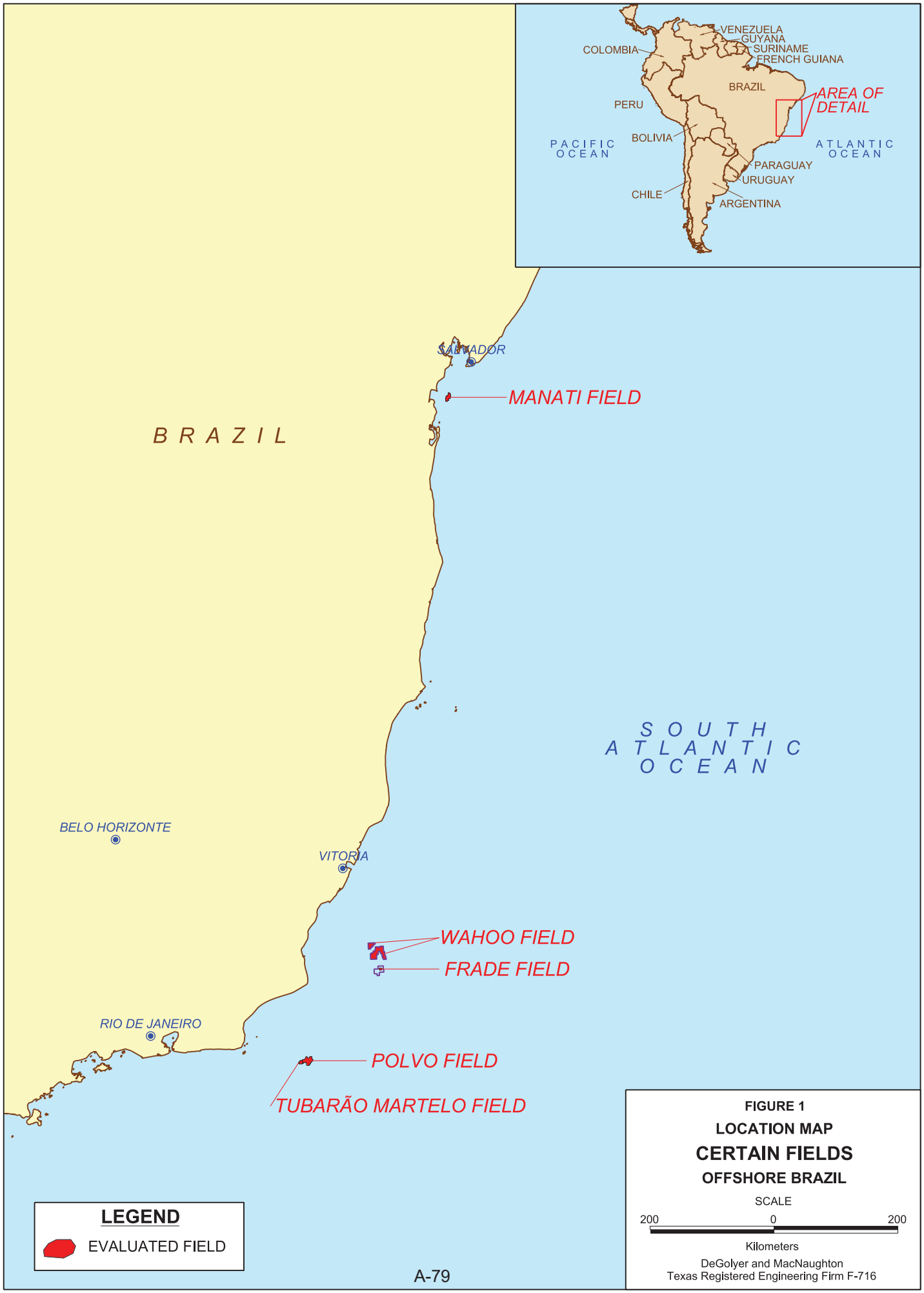
VENEZUELA
GUYANA
SURINAME
FRENCH GUIANA
COLOMBIA
BRAZIL
AREA OF DETAIL
PERU
BOLIVIA
PACIFIC OCEAN
ATLANTIC OCEAN
PARAGUAY
URUGUAY
CHILE
ARGENTINA
SALVADOR
MANATI FIELD
BRAZIL
SOUTH ATLANTIC OCEAN
BELO HORIZONTE
VITORIA
WAHOO FIELD
FRADE FIELD
RIO DE JANEIRO
POLVO FIELD
TUBARÃO MARTELO FIELD
LEGEND
EVALUATED FIELD
FIGURE 1
LOCATION MAP
CERTAIN FIELDS
OFFSHORE BRAZIL
SCALE
200
0
200
Kilometers
DeGolyer and MacNaughton
Texas Registered Engineering Firm F-716

TABLE A1
PROJECTION of POTENTIAL FUTURE NET REVENUE from the WAHOO FIELD GROSS 1C CONTINGENT RESOURCES
plus the
FRADE FIELD GROSS PROVED RESERVES and 1C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO and FRADE FIELDS
in
BRAZIL
for
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	5,890	2,492	62.00	365,180	37,370	59,909	84,700	0	0	183,201	173,652
2022	6,848	3,795	60.00	410,880	42,386	59,909	168,700	0	0	139,885	120,025
2023	5,850	3,204	60.00	351,000	36,196	59,909	479,700	0	0	(224,805)	(174,606)
2024	11,176	7,618	60.71	678,495	70,455	68,409	264,800	0	0	274,831	193,227
2025	18,600	13,481	60.88	1,132,368	117,847	68,409	33,000	0	0	913,112	581,136
2026	18,032	15,995	60.87	1,097,608	115,231	68,409	128,600	0	0	785,368	452,457
2027	16,003	18,840	60.89	974,423	103,886	68,409	0	0	0	802,128	418,310
2028	13,055	19,602	60.88	794,788	86,183	68,409	0	0	0	640,196	302,216
2029	10,645	20,557	60.88	648,068	71,837	68,409	10,000	0	0	497,822	212,730
2030	8,133	16,299	60.84	494,812	55,056	68,409	0	0	0	371,347	143,644
2031	6,445	11,323	60.82	391,985	43,071	68,409	0	0	0	280,505	98,219
2032	5,526	8,036	60.83	336,147	36,363	68,409	5,000	0	0	226,375	71,752
2033	5,012	5,823	60.86	305,030	32,495	68,409	0	0	0	204,126	58,567
2034	4,822	4,562	60.91	293,708	30,931	68,409	0	0	0	194,368	50,482
2035	4,622	3,954	60.95	281,711	29,523	68,409	10,000	0	0	173,779	40,856
2036	4,438	3,563	60.98	270,629	28,281	68,409	0	0	0	173,939	37,017
2037	4,180	3,317	61.01	255,022	26,637	68,409	0	0	0	159,976	30,819
2038	3,888	3,139	61.05	237,362	24,810	68,409	5,000	0	0	139,143	24,265
2039	3,691	2,878	61.07	225,409	23,525	68,409	0	0	0	133,475	21,070
2040	3,522	2,638	61.08	215,124	22,415	68,409	0	0	0	124,300	17,762
2041	3,295	2,420	61.10	201,325	20,960	68,409	10,000	0	0	101,956	13,188
2042	3,084	2,241	61.11	188,463	19,613	68,409	0	0	0	100,441	11,760
2043	2,870	2,076	61.12	175,414	18,251	68,409	0	0	0	88,754	9,407
2044	2,641	1,909	61.14	161,471	16,800	68,409	5,000	0	0	71,262	6,837
2045	2,398	1,731	61.15	146,638	15,256	68,409	0	0	0	62,973	5,469
2046	2,185	1,576	61.16	133,635	13,903	68,409	0	0	0	51,323	4,035
2047	1,981	1,440	61.17	121,178	12,610	68,409	10,000	0	0	30,159	2,146
2048	1,825	1,325	61.18	111,654	11,619	68,409	0	0	0	31,626	2,037
2049	1,675	1,208	61.19	102,493	10,662	68,409	0	0	0	23,422	1,366
2050	1,541	1,114	61.19	94,294	9,810	68,409	5,000	0	0	11,075	585
2051	1,432	1,037	61.20	87,638	9,119	68,409	0	0	0	10,110	483
2052	1,341	946	61.21	82,083	8,532	68,409	0	0	0	5,142	222
2053	1,266	843	61.21	77,492	8,038	68,409	0	0	0	1,045	41
2054	0	0	-	0	0	0	0	288,516	0	(288,516)	(10,226)
2055	0	0	-	0	0	0	0	0	0	0	0
2056	0	0	-	0	0	0	0	0	0	0	0
2057	0	0	-	0	0	0	0	0	0	0	0
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
2061	0	0	-	0	0	0	0	0	0	0	0
2062	0	0	-	0	0	0	0	0	0	0	0
2063	0	0	-	0	0	0	0	0	0	0	0
2064	0	0	-	0	0	0	0	0	0	0	0
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**187,912**	**190,982**		**11,443,527**	**1,209,671**	**2,231,997**	**1,219,500**	**288,516**	**0**	**6,493,843**	**2,920,950**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**4,259,418**
15 Percent	**2,086,057**
20 Percent	**1,540,427**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. Contingent resources and recategorized recoverable resources should not be aggregated with reserves due to the additional risks involved.
8. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE A2
PROJECTION of POTENTIAL FUTURE NET REVENUE from the WAHOO FIELD GROSS 2C CONTINGENT RESOURCES
plus the
FRADE FIELD GROSS PROVED-plus-PROBABLE RESERVES and 2C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO and FRADE FIELDS
in
BRAZIL
for
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	6,150	2,588	62.00	381,300	39,015	59,909	126,700	0	0	155,676	147,562
2022	7,266	3,962	60.00	435,960	44,951	59,909	235,454	0	0	95,646	82,067
2023	6,680	3,577	60.00	400,800	41,303	59,909	432,720	0	0	(133,132)	(103,403)
2024	14,816	10,145	60.74	899,924	93,462	68,409	187,266	0	0	550,787	387,246
2025	25,984	18,866	60.89	1,582,166	164,669	68,409	21,219	0	0	1,327,869	845,101
2026	25,383	21,476	60.86	1,544,809	161,826	68,409	84,475	0	0	1,230,099	708,670
2027	23,794	25,467	60.89	1,448,817	153,591	68,409	0	0	0	1,226,817	639,785
2028	21,547	30,723	60.90	1,312,212	141,729	68,409	0	0	0	1,102,074	520,254
2029	17,321	29,015	60.87	1,054,329	115,356	68,409	10,000	0	0	860,564	367,738
2030	14,155	21,514	60.83	861,049	93,463	68,409	0	0	0	699,177	270,454
2031	12,716	14,960	60.84	773,641	82,480	68,409	0	0	0	622,752	218,058
2032	12,131	10,669	60.87	738,414	77,490	68,409	5,000	0	0	587,515	186,220
2033	11,031	8,054	60.87	671,457	69,900	68,409	0	0	0	533,148	152,970
2034	10,004	6,666	60.88	609,044	63,184	68,409	0	0	0	477,451	124,004
2035	8,428	5,284	60.85	512,844	53,092	68,409	10,000	0	0	381,343	89,655
2036	6,732	4,105	60.79	409,238	42,328	68,409	0	0	0	298,501	63,527
2037	5,712	3,563	60.76	347,061	35,925	68,409	0	0	0	242,727	46,760
2038	4,952	3,180	60.74	300,784	31,166	68,409	5,000	0	0	196,209	34,216
2039	4,351	2,788	60.72	264,193	27,373	68,409	0	0	0	168,411	26,585
2040	3,863	2,446	60.70	234,484	24,285	68,409	0	0	0	141,790	20,261
2041	3,444	2,167	60.69	209,016	21,643	68,409	10,000	0	0	108,964	14,094
2042	3,115	1,972	60.68	189,018	19,576	68,409	0	0	0	101,033	11,830
2043	2,835	1,804	60.67	171,999	17,817	68,409	0	0	0	85,773	9,091
2044	2,598	1,655	60.67	157,621	16,328	68,409	5,000	0	0	67,884	6,513
2045	2,390	1,529	60.68	145,025	15,025	68,409	0	0	0	61,591	5,349
2046	2,226	1,438	60.68	135,074	13,999	68,409	0	0	0	52,666	4,140
2047	2,073	1,360	60.69	125,810	13,046	68,409	10,000	0	0	34,355	2,445
2048	1,937	1,285	60.69	117,557	12,195	68,409	0	0	0	36,953	2,381
2049	1,803	1,204	60.69	109,424	11,354	68,409	0	0	0	29,661	1,730
2050	1,688	1,131	60.69	102,445	10,631	68,409	5,000	0	0	18,405	972
2051	1,575	1,062	60.70	95,603	9,924	68,409	0	0	0	17,270	825
2052	1,479	1,004	60.71	89,790	9,322	68,409	0	0	0	12,059	522
2053	1,387	950	60.72	84,219	8,747	68,409	0	0	0	7,063	277
2054	1,310	905	60.72	79,543	8,264	68,409	0	0	0	2,870	102
2055	0	0	-	0	0	0	0	288,516	0	(288,516)	(9,256)
2056	0	0	-	0	0	0	0	0	0	0	0
2057	0	0	-	0	0	0	0	0	0	0	0
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
2061	0	0	-	0	0	0	0	0	0	0	0
2062	0	0	-	0	0	0	0	0	0	0	0
2063	0	0	-	0	0	0	0	0	0	0	0
2064	0	0	-	0	0	0	0	0	0	0	0
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**272,876**	**248,514**		**16,594,670**	**1,744,459**	**2,300,406**	**1,147,834**	**288,516**	**0**	**11,113,455**	**4,878,745**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**7,213,185**
15 Percent	**3,423,926**
20 Percent	**2,478,114**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. Contingent resources and recategorized recoverable resources should not be aggregated with reserves due to the additional risks involved.
8. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE A3
PROJECTION of POTENTIAL FUTURE NET REVENUE from the WAHOO FIELD GROSS 3C CONTINGENT RESOURCES
plus the
FRADE FIELD GROSS PROVED-plus-PROBABLE-plus-POSSIBLE RESERVES and 3C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO and FRADE FIELDS
in
BRAZIL
for
PETRORIO S.A.

DeGolyer and MacNaughton
F-716
TEXAS REGISTERED ENGINEERING FIRM

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	6,293	2,663	62.00	390,166	39,927	59,909	126,700	0	0	163,630	155,101
2022	7,544	4,091	60.00	452,640	46,663	59,909	235,454	0	0	110,614	94,910
2023	7,690	4,191	60.00	461,400	47,573	59,909	432,720	0	0	(78,802)	(61,205)
2024	18,250	12,536	60.72	1,108,140	115,101	68,409	187,266	0	0	737,364	518,424
2025	31,086	22,671	60.89	1,892,827	197,036	68,409	21,219	0	0	1,606,163	1,022,217
2026	30,818	29,535	60.90	1,876,816	197,783	68,409	84,475	0	0	1,526,149	879,227
2027	26,646	35,926	60.89	1,622,475	174,534	68,409	0	0	0	1,379,532	719,426
2028	21,013	26,491	60.83	1,278,221	136,882	68,409	0	0	0	1,072,930	506,496
2029	19,527	19,312	60.84	1,188,023	125,407	68,409	10,000	0	0	984,207	420,574
2030	18,369	16,191	60.85	1,117,754	117,313	68,409	0	0	0	932,032	360,526
2031	15,164	11,818	60.81	922,123	96,254	68,409	0	0	0	757,460	265,226
2032	13,835	9,434	60.80	841,168	87,343	68,409	5,000	0	0	680,416	215,666
2033	13,001	8,487	60.81	790,591	81,962	68,409	0	0	0	640,220	183,691
2034	12,353	7,865	60.82	751,309	77,821	68,409	0	0	0	605,079	157,152
2035	11,841	7,239	60.83	720,288	74,505	68,409	10,000	0	0	567,374	133,391
2036	11,352	6,731	60.84	690,656	71,368	68,409	0	0	0	550,879	117,237
2037	10,618	6,126	60.85	646,105	66,706	68,409	0	0	0	510,990	98,440
2038	9,506	5,359	60.83	578,250	59,658	68,409	5,000	0	0	445,183	77,633
2039	8,599	4,793	60.81	522,905	53,930	68,409	0	0	0	400,566	63,232
2040	7,947	4,396	60.80	483,178	49,821	68,409	0	0	0	364,948	52,149
2041	7,237	3,974	60.79	439,937	45,353	68,409	10,000	0	0	316,175	40,897
2042	6,381	3,464	60.75	387,646	39,949	68,409	0	0	0	279,288	32,701
2043	5,682	3,123	60.72	345,011	35,569	68,409	0	0	0	241,033	25,547
2044	5,244	3,083	60.71	318,363	32,891	68,409	5,000	0	0	212,063	20,346
2045	4,853	3,032	60.69	294,529	30,490	68,409	0	0	0	195,630	16,990
2046	4,534	2,812	60.69	275,168	28,479	68,409	0	0	0	178,280	14,016
2047	4,265	2,603	60.68	258,800	26,770	68,409	10,000	0	0	153,621	10,932
2048	4,038	2,450	60.68	245,026	25,341	68,409	0	0	0	151,276	9,745
2049	3,816	2,305	60.67	231,517	23,940	68,409	0	0	0	139,168	8,115
2050	3,629	2,177	60.67	220,171	22,762	68,409	5,000	0	0	124,000	6,545
2051	3,461	2,067	60.67	209,979	21,705	68,409	0	0	0	119,865	5,727
2052	3,317	1,973	60.67	201,242	20,799	68,409	0	0	0	112,034	4,846
2053	3,150	1,856	60.67	191,111	19,746	68,409	10,000	0	0	92,956	3,640
2054	2,966	1,747	60.66	179,918	18,589	68,409	0	0	0	92,920	3,293
2055	2,793	1,646	60.75	169,675	17,530	68,409	0	0	0	83,736	2,687
2056	2,598	1,550	60.75	157,829	16,313	68,409	5,000	0	0	68,107	1,978
2057	2,416	1,459	60.75	146,772	15,176	68,409	0	0	0	63,187	1,661
2058	2,247	1,375	60.75	136,505	14,121	68,409	0	0	0	53,975	1,284
2059	2,090	1,294	60.75	126,968	13,139	68,409	10,000	0	0	35,420	763
2060	1,943	1,219	60.75	118,037	12,221	68,409	0	0	0	37,407	729
2061	1,807	1,148	60.75	109,775	11,370	68,409	0	0	0	29,996	530
2062	1,681	1,081	60.75	102,121	10,582	68,409	5,000	0	0	18,130	290
2063	1,563	1,018	60.75	94,952	9,843	68,409	0	0	0	16,700	242
2064	1,454	959	60.75	88,331	9,161	68,409	0	0	0	10,761	141
2065	1,352	903	60.75	82,134	8,522	68,409	0	0	0	5,203	62
2066	1,257	851	60.75	76,363	7,927	68,409	0	0	0	27	0
2067	0	0	-	0	0	0	0	288,516	0	(288,516)	(2,802)
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**387,226**	**297,024**		**23,542,915**	**2,455,875**	**3,121,314**	**1,177,834**	**288,516**	**0**	**16,499,376**	**6,190,418**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**9,662,611**
15 Percent	**4,239,406**
20 Percent	**3,034,967**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. The estimated economic limit for the Wahoo field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.
8. Contingent resources and recategorized recoverable resources should not be aggregated with reserves due to the additional risks involved.
9. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE A4
PROJECTION of POTENTIAL FUTURE NET REVENUE from the WAHOO FIELD GROSS 1C CONTINGENT RESOURCES
plus the
FRADE FIELD GROSS PROVED RESERVES and 1C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO and FRADE FIELDS
in
BRAZIL
for
PETRORIO S.A.

WAHOO FIELD ALTERNATIVE DEVELOPMENT PLAN

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	5,890	2,492	62.00	365,180	37,370	59,909	84,700	0	0	183,201	173,652
2022	6,848	3,795	60.00	410,880	42,386	59,909	169,384	0	0	139,201	119,439
2023	5,850	3,204	60.00	351,000	36,196	59,909	486,426	0	0	(231,531)	(179,830)
2024	13,348	9,343	60.80	811,558	84,351	68,409	281,828	0	0	376,970	265,039
2025	23,538	18,785	60.96	1,434,876	149,912	68,409	33,000	0	0	1,183,555	753,255
2026	23,560	48,742	60.96	1,436,218	160,292	68,409	128,600	0	0	1,078,917	621,573
2027	15,344	46,476	60.88	934,143	109,309	68,409	0	0	0	756,425	394,476
2028	8,889	15,880	60.71	539,651	59,396	68,409	0	0	0	411,846	194,420
2029	7,529	8,393	60.72	457,161	48,587	68,409	0	0	0	340,165	145,360
2030	7,044	5,628	60.78	428,134	44,738	68,409	0	0	0	314,987	121,842
2031	6,638	4,861	60.83	403,790	42,042	68,409	0	0	0	293,339	102,713
2032	6,212	4,222	60.87	378,124	39,256	68,409	5,000	0	0	265,459	84,140
2033	5,960	3,803	60.92	363,083	37,609	68,409	0	0	0	257,065	73,757
2034	5,666	3,511	60.96	345,399	35,741	68,409	0	0	0	241,249	62,658
2035	5,356	3,172	60.99	326,662	33,751	68,409	10,000	0	0	214,502	50,430
2036	5,101	2,893	61.02	311,263	32,116	68,409	0	0	0	210,738	44,849
2037	4,749	2,651	61.04	289,879	29,895	68,409	0	0	0	191,575	36,906
2038	4,383	2,404	61.07	267,670	27,589	68,409	5,000	0	0	166,672	29,065
2039	4,082	2,199	61.08	249,329	25,685	68,409	0	0	0	155,235	24,505
2040	3,802	2,023	61.10	232,302	23,922	68,409	0	0	0	139,971	20,001
2041	3,475	1,860	61.11	212,357	21,872	68,409	10,000	0	0	112,076	14,497
2042	3,132	1,734	61.12	191,428	19,736	68,409	0	0	0	103,283	12,093
2043	2,764	1,614	61.12	168,936	17,446	68,409	0	0	0	83,081	8,806
2044	2,499	1,471	61.13	152,764	15,780	68,409	5,000	0	0	63,575	6,100
2045	2,306	1,339	61.15	141,012	14,559	68,409	0	0	0	58,044	5,041
2046	2,129	1,227	61.15	130,188	13,438	68,409	0	0	0	48,341	3,800
2047	1,918	1,142	61.17	117,324	12,123	68,409	10,000	0	0	26,792	1,907
2048	1,780	1,068	61.18	108,900	11,255	68,409	0	0	0	29,236	1,883
2049	1,663	992	61.19	101,759	10,515	68,409	0	0	0	22,835	1,332
2050	1,581	925	61.20	96,757	9,992	68,409	5,000	0	0	13,356	705
2051	1,512	872	61.20	92,534	9,552	68,409	0	0	0	14,573	696
2052	1,433	823	61.21	87,714	9,053	68,409	0	0	0	10,252	443
2053	1,368	645	61.21	83,735	8,594	68,409	0	0	0	6,732	264
2054	1,308	505	61.20	80,050	8,178	68,409	0	0	0	3,463	123
2055	0	0	-	0	0	0	0	288,516	0	(288,516)	(9,256)
2056	0	0	-	0	0	0	0	0	0	0	0
2057	0	0	-	0	0	0	0	0	0	0	0
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
2061	0	0	-	0	0	0	0	0	0	0	0
2062	0	0	-	0	0	0	0	0	0	0	0
2063	0	0	-	0	0	0	0	0	0	0	0
2064	0	0	-	0	0	0	0	0	0	0	0
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**198,657**	**210,694**		**12,101,760**	**1,282,236**	**2,300,406**	**1,233,938**	**288,516**	**0**	**6,996,664**	**3,186,684**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**4,610,713**
15 Percent	**2,297,695**
20 Percent	**1,713,394**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. Contingent resources and recategorized recoverable resources should not be aggregated with reserves due to the additional risks involved.
8. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE A5
PROJECTION of POTENTIAL FUTURE NET REVENUE from the WAHOO FIELD GROSS 2C CONTINGENT RESOURCES
plus the
FRADE FIELD GROSS PROVED-plus-PROBABLE RESERVES and 2C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO and FRADE FIELDS
in
BRAZIL
for
PETRORIO S.A.

WAHOO FIELD ALTERNATIVE DEVELOPMENT PLAN

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	6,150	2,588	62.00	381,300	39,015	59,909	126,700	0	0	155,676	147,562
2022	7,266	3,962	60.00	435,960	44,951	59,909	282,084	0	0	49,016	42,057
2023	6,680	3,577	60.00	400,800	41,303	59,909	524,126	0	0	(224,538)	(174,398)
2024	16,496	11,477	60.79	1,002,792	104,204	68,409	298,828	0	0	531,351	373,581
2025	29,700	21,774	60.94	1,809,918	188,439	68,409	33,000	0	0	1,520,070	967,424
2026	30,206	27,390	60.92	1,840,150	193,382	68,409	128,600	0	0	1,449,759	835,218
2027	29,161	45,567	60.95	1,777,363	193,320	68,409	0	0	0	1,515,634	790,403
2028	24,925	49,091	60.95	1,519,179	168,707	68,409	0	0	0	1,282,063	605,222
2029	15,800	26,850	60.83	961,114	105,294	68,409	10,000	0	0	777,411	332,205
2030	11,824	11,886	60.75	718,308	75,896	68,409	0	0	0	574,003	222,034
2031	10,865	7,865	60.77	660,266	68,716	68,409	0	0	0	523,141	183,179
2032	9,970	6,441	60.78	605,977	62,801	68,409	5,000	0	0	469,767	148,898
2033	9,153	5,543	60.79	556,411	57,537	68,409	0	0	0	430,465	123,508
2034	8,312	4,813	60.80	505,370	52,183	68,409	0	0	0	384,778	99,935
2035	7,463	4,244	60.80	453,750	46,826	68,409	10,000	0	0	328,515	77,235
2036	6,802	3,699	60.80	413,562	42,621	68,409	0	0	0	302,532	64,384
2037	6,145	3,359	60.80	373,616	38,510	68,409	0	0	0	266,697	51,378
2038	5,239	3,068	60.77	318,374	32,887	68,409	5,000	0	0	212,078	36,983
2039	4,630	2,721	60.75	281,273	29,058	68,409	0	0	0	183,806	29,015
2040	4,105	2,361	60.74	249,338	25,741	68,409	0	0	0	155,188	22,175
2041	3,639	2,049	60.72	220,960	22,797	68,409	10,000	0	0	119,754	15,490
2042	3,350	1,873	60.72	203,412	20,982	68,409	0	0	0	114,021	13,351
2043	3,079	1,711	60.72	186,957	19,281	68,409	0	0	0	99,267	10,521
2044	2,836	1,545	60.72	172,202	17,749	68,409	5,000	0	0	81,044	7,776
2045	2,604	1,424	60.73	158,141	16,301	68,409	0	0	0	73,431	6,377
2046	2,420	1,328	60.73	146,967	15,151	68,409	0	0	0	63,407	4,985
2047	2,254	1,236	60.73	136,885	14,111	68,409	10,000	0	0	44,365	3,157
2048	2,112	1,155	60.73	128,262	13,221	68,409	0	0	0	46,632	3,004
2049	1,968	1,069	60.74	119,536	12,319	68,409	0	0	0	38,808	2,263
2050	1,852	968	60.74	112,490	11,580	68,409	5,000	0	0	27,501	1,452
2051	1,742	902	60.75	105,827	10,891	68,409	0	0	0	26,527	1,268
2052	1,642	851	60.76	99,768	10,268	68,409	0	0	0	21,091	912
2053	1,546	803	60.77	93,950	9,670	68,409	10,000	0	0	5,871	230
2054	1,463	764	60.78	88,921	9,153	68,409	0	0	0	11,359	403
2055	1,386	727	60.78	84,241	8,673	68,409	0	0	0	7,159	230
2056	1,313	693	60.79	79,817	8,219	68,409	0	0	0	3,189	93
2057	0	0	-	0	0	0	0	288,516	0	(288,516)	(7,585)
2058	0	0	-	0	0	0	0	0	0	0	0
2059	0	0	-	0	0	0	0	0	0	0	0
2060	0	0	-	0	0	0	0	0	0	0	0
2061	0	0	-	0	0	0	0	0	0	0	0
2062	0	0	-	0	0	0	0	0	0	0	0
2063	0	0	-	0	0	0	0	0	0	0	0
2064	0	0	-	0	0	0	0	0	0	0	0
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**286,098**	**267,374**		**17,403,157**	**1,831,757**	**2,437,224**	**1,463,338**	**288,516**	**0**	**11,382,322**	**5,041,925**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**7,414,923**
15 Percent	**3,553,788**
20 Percent	**2,576,746**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. Contingent resources and recategorized recoverable resources should not be aggregated with reserves due to the additional risks involved.
8. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

TABLE A6
PROJECTION of POTENTIAL FUTURE NET REVENUE from the WAHOO FIELD GROSS 3C CONTINGENT RESOURCES
plus the
FRADE FIELD GROSS PROVED-plus-PROBABLE-plus-POSSIBLE RESERVES and 3C(R) RECATEGORIZED RECOVERABLE RESOURCES
as of
JANUARY 1, 2021
for the
WAHOO and FRADE FIELDS
in
BRAZIL
for
PETRORIO S.A.

WAHOO FIELD ALTERNATIVE DEVELOPMENT PLAN

Year	Gross Production Oil (10^3bbl)	Gross Production Marketable Gas (10^6ft^3)	Weighted Average Oil Price (U.S.$/bbl)	Potential Future Gross Revenue (10^3U.S.$)	Royalties Paid in Cash (10^3U.S.$)	Operating Expenses (10^3U.S.$)	Capital Costs (10^3U.S.$)	Abandonment Costs (10^3U.S.$)	SPF (10^3U.S.$)	Potential Future Net Revenue (10^3U.S.$)	Potential Present Worth at 10 Percent (10^3U.S.$)
2021	6,293	2,663	62.00	390,166	39,927	59,909	126,700	0	0	163,630	155,101
2022	7,544	4,091	60.00	452,640	46,663	59,909	282,084	0	0	63,984	54,900
2023	7,690	4,191	60.00	461,400	47,573	59,909	524,126	0	0	(170,208)	(132,200)
2024	18,335	12,615	60.72	1,113,301	115,644	68,409	298,828	0	0	630,420	443,234
2025	31,296	22,751	60.90	1,905,926	198,373	68,409	33,000	0	0	1,606,144	1,022,205
2026	31,030	22,974	60.90	1,889,727	196,830	68,409	128,600	0	0	1,495,888	861,793
2027	30,157	27,273	60.93	1,837,466	193,074	68,409	0	0	0	1,575,983	821,875
2028	29,364	34,002	60.95	1,789,736	190,602	68,409	0	0	0	1,530,725	722,607
2029	25,939	37,797	60.94	1,580,723	170,999	68,409	10,000	0	0	1,331,315	568,901
2030	24,652	48,662	60.96	1,502,786	166,921	68,409	0	0	0	1,267,456	490,274
2031	17,274	30,105	60.86	1,051,296	115,426	68,409	0	0	0	867,461	303,743
2032	12,489	13,436	60.76	758,832	80,478	68,409	5,000	0	0	604,945	191,745
2033	11,720	9,335	60.76	712,107	74,403	68,409	0	0	0	569,295	163,341
2034	11,113	7,638	60.77	675,337	70,146	68,409	0	0	0	536,782	139,414
2035	10,086	6,597	60.76	612,825	63,539	68,409	10,000	0	0	470,877	110,705
2036	9,382	5,874	60.76	570,050	59,014	68,409	0	0	0	442,627	94,199
2037	8,739	5,232	60.76	530,982	54,888	68,409	0	0	0	407,685	78,539
2038	8,132	4,729	60.75	494,019	51,019	68,409	5,000	0	0	369,591	64,451
2039	7,224	4,174	60.73	438,714	45,299	68,409	0	0	0	325,006	51,304
2040	6,451	3,815	60.70	391,576	40,462	68,409	0	0	0	282,705	40,397
2041	5,859	3,519	60.68	355,524	36,756	68,409	10,000	0	0	240,359	31,090
2042	5,392	3,244	60.66	327,079	33,817	68,409	0	0	0	224,853	26,328
2043	5,074	2,984	60.66	307,789	31,799	68,409	0	0	0	207,581	22,001
2044	4,743	2,759	60.65	287,663	29,710	68,409	5,000	0	0	184,544	17,706
2045	4,440	2,567	60.64	269,242	27,802	68,409	0	0	0	173,031	15,028
2046	4,166	2,387	60.64	252,626	26,079	68,409	0	0	0	158,138	12,432
2047	3,870	2,133	60.62	234,599	24,189	68,409	10,000	0	0	132,001	9,394
2048	3,644	1,904	60.61	220,863	22,738	68,409	0	0	0	129,716	8,356
2049	3,441	1,799	60.61	208,559	21,471	68,409	0	0	0	118,679	6,921
2050	3,261	1,713	60.61	197,649	20,351	68,409	5,000	0	0	103,889	5,484
2051	3,120	1,605	60.61	189,103	19,459	68,409	0	0	0	101,235	4,837
2052	2,982	1,496	60.61	180,739	18,586	68,409	0	0	0	93,744	4,055
2053	2,566	1,392	60.60	155,500	16,026	68,409	10,000	0	0	61,065	2,391
2054	2,422	1,297	60.59	146,749	15,119	68,409	0	0	0	63,221	2,241
2055	2,288	1,209	60.59	138,630	14,277	68,409	0	0	0	55,944	1,795
2056	2,128	1,128	60.59	128,936	13,279	68,409	5,000	0	0	42,248	1,227
2057	1,979	1,052	60.59	119,908	12,351	68,409	0	0	0	39,148	1,029
2058	1,841	981	60.59	111,546	11,490	68,409	0	0	0	31,647	753
2059	1,712	915	60.59	103,730	10,686	68,409	10,000	0	0	14,635	315
2060	1,592	853	60.59	96,459	9,938	68,409	0	0	0	18,112	353
2061	1,480	796	60.59	89,673	9,240	68,409	0	0	0	12,024	212
2062	1,377	742	60.59	83,432	8,597	68,409	5,000	0	0	1,426	23
2063	1,280	693	60.59	77,555	7,993	68,409	0	0	0	1,153	17
2064	0	0	-	0	0	0	0	288,516	0	(288,516)	(3,777)
2065	0	0	-	0	0	0	0	0	0	0	0
2066	0	0	-	0	0	0	0	0	0	0	0
2067	0	0	-	0	0	0	0	0	0	0	0
2068	0	0	-	0	0	0	0	0	0	0	0
2069	0	0	-	0	0	0	0	0	0	0	0
2070	0	0	-	0	0	0	0	0	0	0	0
Total	**385,567**	**347,122**		**23,443,162**	**2,463,033**	**2,916,087**	**1,483,338**	**288,516**	**0**	**16,292,188**	**6,416,739**

Potential Present Worth (10^3U.S.$) at:	
5 Percent	**9,890,312**
15 Percent	**4,397,023**
20 Percent	**3,124,668**

Notes:
1. At the request of PetroRio, the potential values presented in this table are associated with gross contingent resources and gross recategorized recoverable resources and do not reflect Petrorio's working interest.
2. Estimates of contingent resources and recategorized recoverable resources and associated potential values do not provide a direct comparison to reserves and the values associated with reserves.
3. The contingent resources and recategorized recoverable resources evaluated herein have an economic status of Economically Viable. However, in order to reclassify contingent resources or recategorized recoverable resources as reserves, certain contingencies need to be resolved; therefore, there is no certainty that it will be commercially viable to produce any portion of the contingent resources or recategorized recoverable resources evaluated herein.
4. Future social contribution taxes and corporate incomes taxes were not taken into account in the preparation of these estimates.
5. SPF = Special Participation Fee.
6. Operating expenses and capital costs do not include the indirect taxation that may be applicable to these expenditures.
7. The estimated economic limit for the Wahoo field occurs after the expiration date of the concession agreement. PetroRio has represented that it expects to meet the conditions required by the ANP to obtain the concession extension. Based on this representation, and at PetroRio's request, the reserves estimated herein considered the potential concession extension for the Frade field.
8. Contingent resources and recategorized recoverable resources should not be aggregated with reserves due to the additional risks involved.
9. This table is for presentation purposes only and is provided at the request of PetroRio.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.

Annex B
2020 D&M RESERVES REPORT

DeGolyer and MacNaughton
5001 Spring Valley Road
Suite 800 East
Dallas, Texas 75244

This is a digital representation of a DeGolyer and MacNaughton report.

This file is intended to be a manifestation of certain data in the subject report and as such are subject to the same conditions thereof. The information and data contained in this file may be subject to misinterpretation; therefore, the signed and bound copy of this report should be considered the only authoritative source of such information.

DeGolyer and MacNaughton
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Suite 800 East
Dallas, Texas 75244

REPORT
as of
APRIL 30, 2020
on
RESERVES and REVENUE
of
CERTAIN FIELDS
in
BRAZIL
with interests attributable to
PETRORIO S.A.

PRMS CASE

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PETRORIO S.A.

PRMS CASE

FOREWORD

Scope of Investigation

This report presents estimates, as of April 30, 2020, of the extent of the proved, probable, and possible oil, condensate, and gas reserves and the value of the proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves of the Polvo, Tubarão Martelo, Frade, and Manati fields in Brazil in which PetroRio S.A. (PetroRio) has represented it holds an interest. The fields evaluated, PetroRio's working interests, and the concession expiration dates are shown in Table 1 of this report.

Estimates of reserves presented in this report have been prepared in accordance with the Petroleum Resources Management System (PRMS) approved in March 2007 and revised in June 2018 by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, the Society of Petroleum Evaluation Engineers, the Society of Exploration Geophysicists, the Society of Petrophysicists and Well Log Analysts, and the European Association of Geoscientists & Engineers. These reserves definitions are discussed in detail in the Definition of Reserves section of this report.

Reserves estimated in this report are expressed as gross reserves and net reserves. Gross reserves are defined as the total estimated petroleum remaining to be produced from these properties after April 30, 2020. Net reserves are defined as that portion of the gross reserves attributable to the interests held by PetroRio after deducting all interests held by others, including royalties paid in kind. PetroRio has advised that its government royalty obligation is paid in cash; therefore, net reserves have not been reduced in consideration of this royalty obligation.

PetroRio has represented that it holds a 10-percent working interest in the Manati field, located in license block BCAM-40, that it holds a 100-percent working interest in the Polvo field, located in license block BM-C-8, and that it will hold a 100-percent working interest in the Tubarão Martelo field, located in license block BM-C-39, once the field is connected with the neighboring Polvo field. The connection of the Polvo and Tubarão Martelo fields is scheduled for March 2021. Under the terms of purchase, PetroRio will hold an 80-percent working interest in the Tubarão Martelo field until the field is connected with the Polvo field. Following the connection of the Polvo and Tubarão Martelo fields, PetroRio will hold a 100-percent working interest in both fields, but it will hold a net interest of 95 percent until 30 million barrels of oil are produced following the connection of the two fields. PetroRio's net interest will increase to 96 percent after 30 million barrels of oil are produced from the two fields. PetroRio has represented that it holds a 70-percent working interest in the Frade field and that it has executed a Sales and Purchase Agreement with Petrobras to acquire Petrobras' 30-percent working interest in the Frade field. PetroRio is awaiting the final regulatory approval by the ANP to complete the acquisition. For the purposes of this report, the "evaluated working interest" for the Frade field is 100 percent, which includes PetroRio's current interest plus Petrobras' working interest.

This report presents values for proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves that were estimated using prices, expenses, and costs provided by PetroRio. Prices, expenses, and costs were provided in United States dollars (U.S.$), and all monetary values in this report are expressed in U.S.$. A detailed explanation of the forecast price, expense, and cost assumptions is included in the Valuation of Reserves section of this report.

Values for proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves in this report are expressed in terms

of estimated future gross revenue, future net revenue, and present worth. Future gross revenue is defined as that revenue which will accrue to the evaluated interests from the production and sale of the estimated net reserves. Future net revenue is calculated by deducting royalties paid in cash, operating expenses, capital costs, abandonment costs, and the special participation fee (SPF) from the future gross revenue. Operating expenses include field operating expenses, transportation and processing expenses, and an allocation of overhead that directly relates to production activities. Capital costs include drilling and completion costs, facilities and pipeline costs, and well workover expenses. Abandonment costs are represented by PetroRio to be inclusive of those costs associated with the removal of equipment, plugging of wells, and reclamation and restoration associated with the abandonment. At the request of PetroRio, future income taxes were not taken into account in the preparation of these estimates. Present worth is defined as the future net revenue discounted at a specified arbitrary discount rate compounded monthly over the expected period of realization. Present worth should not be construed as fair market value because no consideration was given to additional factors that influence the prices at which properties are bought and sold. In this report, present worth values using a nominal discount rate of 10 percent are reported in detail and values using nominal discount rates of 5, 15, and 20 percent are reported as totals.

Estimates of reserves and revenue should be regarded only as estimates that may change as further production history and additional information become available. Not only are such estimates based on that information which is currently available, but such estimates are also subject to the uncertainties inherent in the application of judgmental factors in interpreting such information.

Authority

This report was authorized by Mr. Milton Rangel, Head of Finance, PetroRio S.A.

Source of Information

Information used in the preparation of this report was obtained from PetroRio. In the preparation of this report we have relied, without independent verification, upon information furnished by PetroRio with respect to the property interests being evaluated, production from such properties, current costs of operation and development, current prices for production, agreements relating to current and future

operations and sale of production, and various other information and data that were accepted as represented. A field examination of the properties was not considered necessary for the purposes of this report.

GEOLOGY

Manati Field

The Manati field is located in the Camamu Basin, offshore northeast Brazil (Figure 1). The field lies about 65 kilometers southwest of the city of Salvador, Bahia State. The field, discovered in 2000 by Petrobras, is within license block BCAM-40. Water depth over the field is about 40 meters.

The productive reservoirs in the Manati field are a thick sequence of upper Jurassic-age eolian and fluvial sandstones of the Sergi Formation. These were deposited before the start of rifting in this region. The Sergi is overlain by Cretaceous-age shales of the Itaipe Formation and sealed laterally by lacustrine sediments of the Morro do Barro Formation, which were deposited in the Tinharé Canyon and are the source rocks for petroleum in the Manati field.

The field structure is a four-way dipping feature that was later shaped by faulting and erosion. The western, northern, and eastern edges are the intersection of the north/south-trending Mutá regional fault with the Tinharé Canyon. The canyon formed after deposition of the field sandstones and replaced them with a thick shale section on the west side of the structure. The present structural dip is to the north and south, away from a crest in the center of the field. Other faults cross parts of the field and intersect the Mutá fault, but do not appear to compartmentalize the reservoirs. The southern field limit is a water contact.

A total of nine wells were drilled in the area to discover and delineate the field. Currently, six wells are producing gas from the multiple Sergi Formation sandstones in the field.

Polvo Field

The Polvo field is located in the Campos Basin, offshore Brazil (Figure 1). The field lies about 100 kilometers east of the city of Cabo Frio, Rio de Janeiro State.

In the Campos Basin, regional dip is toward the southeast, reflecting basinward dip caused by the opening of the Atlantic Ocean during the early Cretaceous. This structural configuration is also present in the Polvo field.

Basement rocks in the Campos Basin are Precambrian granites. As the basin began to open and fill, basalts of the Cabiúnas Formation flowed onto the granite basement. The earliest sediments in the basin are lacustrine shales and carbonates of the Lagoa Feia Formation, which is the primary hydrocarbon source formation for the basin. After the original rifting period, a massive sequence of continental and marine sediments accumulated in the basin. The lower part of this sequence is made up of conglomerates and carbonates, which are subsequently covered by a thick evaporite section, composed predominantly of salt and anhydrite. Above the evaporites are mudstones and oolitic grainstones, deposited during Albian time when a broad carbonate platform developed in the region. In the Polvo field, the Albian carbonates are the Quissamã members of the Macaé Formation. These carbonates accumulated in shallow water on northeast-trending local structural highs atop basement or salt uplifts.

As basin subsidence continued, coastal rivers flooded sands into the basin. These sands were deposited in environments ranging from deepwater turbidites to shallow-water deltaic and bay-lagoon settings. This style of sedimentation continued from the Cenomanian until the Miocene. In the Polvo field, the sandstones were deposited in coastal plain, lagoon, and bay-deltaic environments.

The initial drilling campaign identified several areas of Quissamã carbonate accumulation. After further evaluation, three of these areas were targeted for additional development, as follows: the Dev-7 and Dev-4&5 shoal areas, in the western part of the field, and the Dev-3 shoal area, referred to as the East Quissamã herein. Six platform wells have been drilled and completed as producers from the Quissamã accumulation.

The Turonian and Maastrichtian sandstones were found to be well developed and productive in separate accumulations east of the Quissamã wells. This part of the field was originally known as the Guarajuba field. At present, six wells produce from the Maastrichtian reservoir, four produce from the Turonian reservoir, and one produces from the Turonian East reservoir.

The Eocene-age reservoirs in this field are the marine sandstones of the Embore Formation, These clastic reservoirs were originally associated with a variety of sub-environments, deepwater turbidities, and submarine fans deposited in a slope basin. This formation was affected by salt

tectonics, which contributed to the generation of normal faults and, together with the top of the salt dome, work as seals for this field. The trap system is a combination of the structure and the stratigraphic, with lateral seals from the Oligocene canyon fill deposits.

These Eocene sandstone reservoirs were tested in six wells located at the edge of local horst-graven system. Five of the wells are located in the central part of the field, while the 1-Dev-6 well tested oil in the northern part.

Productive reservoir volumes were estimated using standard volumetric methods based on geological mapping utilizing seismic data and well logs. Structure maps were drawn for each reservoir. Isopach maps of the sandstone reservoirs were drawn using limits based on stratigraphy and structural oil/water contacts (OWC). In many of the sandstone reservoirs, the productive sands were often cut by overlying erosional unconformities that formed the northern, western, and eastern limits. The southern downdip limit was often an estimated OWC.

Tubarão Martelo Field

The producing reservoirs of the Tubarão Martelo field are in the Albo-Cenomanian Imbetiba and Quissama Formations of the Macaé Group.

The Imbetiba Formation is the uppermost section of the Macaé Group and can be described as a very clean limestone made up of mainly oolitic/oncolitic packstones and grainstones, peloidal packstones, peloidal wackestones, and peloidal/bioclastic mudstones. These high-energy shoal facies are typically deposited on structurally positive features, and are likely the result of salt movement and/or basement-involved faulting.

The high-energy shoals are the primary targets in the Imbetiba Formation in the Tubarão Martelo field. The reservoir features primary porosity, likely resulting from rapid deposition, low compaction, and a lack of calcite cement precipitated early in the burial process.

The Quissama Formation is the lowermost section of the Macaé Group and is predominantly below the OWC in the Tubarão Martelo field. The Quissama Formation is a secondary reservoir in the Tubarão

Martelo field. Reservoir quality in the Quissama Formation is more variable than in the overlying Imbetiba Formation.

The structural configuration of the Tubarão Martelo field is a southward-dipping monocline with northeast to southwest, up-to-the-basin antithetic faults trending across the northern portion of the field and a down-to-the-basin normal fault forming the southern closure of the field. The down-to-the-basin normal fault on the southern flank of the field creates a local horst block. Structural dip closes the structure to the west. In this evaluation, the oil accumulation was limited to the east by the Tubarão Martelo ring-fence boundary.

Low, best, and high original oil in place (OOIP) quantities were estimated for the Tubarão Martelo field. The low quantities were areally limited to the crestal portions of the Tubarão Martelo field based on the reduction of the net-to-gross ratio seen in wells drilled on the flanks of the field. For volumetric estimation purposes, the Imbetiba and Quissama reservoir section was subdivided into four units to account for variations in petrophysical properties. The uppermost unit represents the Imbetiba Formation and is referred to as Zone 1. The unit underlying Zone 1 is referred to as Zone 2, which represents a low-porosity interval encountered in each of the non-horizontal wells. The unit underlying Zone 2 is referred to as Zone 3, which represents the upper portion of the Quissima Formation. The lowermost reservoir unit in the field is named Zone 4, which represents the lower portion of the Quissama Formation. The vast majority of the oil in place in the Tubarão Martelo field is contained in Zone 1.

Frade Field

The Frade field is located in the northern area of the Campos Basin (Figure 1). The field was discovered in 1986 by Petrobras and is about 370 kilometers northwest of the city of Rio de Janeiro. Water depth over the field is about 1,200 meters.

Over a period of 80 million years, extending from the lower Cretaceous through the Miocene, rivers from mainland Brazil flooded the Campos Basin region with clastic sediments, which accumulated above a thick layer of lower Cretaceous salt. Subsequent deposition of younger sediment masses activated salt movement in many areas of the basin. In the area of the Frade field, this salt movement uplifted and deformed Oligocene-Miocene turbidite sandstones and shales and created structures that later became the hydrocarbon traps in the field.

The producing reservoirs of the Frade field are in the Oligo-Miocene turbidite reservoirs of the Carapebus Formation. In the field, there are five reservoir compartments separated by faulting. The sandstone reservoirs have average porosities estimated between 29 and 34 percent and average estimated permeabilities between 1.2 and 3.8 darcys.

DEFINITION of RESERVES

Estimates of proved, probable, and possible reserves presented in this report have been prepared in accordance with the PRMS approved in March 2007 and revised in June 2018 by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, the Society of Petroleum Evaluation Engineers, the Society of Exploration Geophysicists, the Society of Petrophysicists and Well Log Analysts, and the European Association of Geoscientists & Engineers. The petroleum reserves are defined as follows:

Reserves are those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions. Reserves must satisfy four criteria: discovered, recoverable, commercial, and remaining (as of the evaluation's effective date) based on the development project(s) applied. Reserves are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by development and production status.

> *Proved Reserves* are those quantities of petroleum that, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable from a given date forward from known reservoirs and under defined economic conditions, operating methods, and government regulations. If deterministic methods are used, the term "reasonable certainty" is intended to express a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability (P90) that the quantities actually recovered will equal or exceed the estimate.
>
> *Probable Reserves* are those additional Reserves which analysis of geoscience and engineering data indicate are less likely to be recovered than Proved Reserves but more certain to be recovered than Possible Reserves. It is equally likely that actual remaining quantities recovered will be greater than or less than the sum of the estimated Proved plus Probable Reserves (2P). In this context, when probabilistic methods are used, there should be at least a 50% probability that the actual quantities recovered will equal or exceed the 2P estimate.

Possible Reserves are those additional reserves that analysis of geoscience and engineering data indicates are less likely to be recoverable than Probable Reserves. The total quantities ultimately recovered from the project have a low probability to exceed the sum of Proved plus Probable plus Possible (3P), which is equivalent to the high-estimate scenario. When probabilistic methods are used, there should be at least a 10% probability that the actual quantities recovered will equal or exceed the 3P estimate.

Once projects satisfy commercial maturity, the associated quantities are classified as Reserves. These quantities may be allocated to the following subdivisions based on the funding and operational status of wells and associated facilities within the reservoir development plan:

Developed Reserves are quantities expected to be recovered from existing wells and facilities. Reserves are considered developed only after the necessary equipment has been installed, or when the costs to do so are relatively minor compared to the cost of a well. Where required facilities become unavailable, it may be necessary to reclassify Developed Reserves as Undeveloped. Developed Reserves may be further sub-classified as Producing or Non-Producing.

Developed Producing Reserves are expected quantities to be recovered from completion intervals that are open and producing at the effective date of the estimate. Improved recovery Reserves are considered producing only after the improved recovery project is in operation.

Developed Non-Producing Reserves include shut-in and behind-pipe reserves. Shut-in Reserves are expected to be recovered from (1) completion intervals that are open at the time of the estimate but which have not yet started producing, (2) wells which were shut-in for market conditions or pipeline connections, or (3) wells not capable of production for mechanical reasons. Behind-pipe Reserves are expected to be recovered from zones in existing wells that will require additional completion work or future re-completion before start of production with minor cost to access these reserves. In all cases, production can

be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.

Undeveloped Reserves are quantities expected to be recovered through future significant investments. Undeveloped Reserves are to be produced (1) from new wells on undrilled acreage in known accumulations, (2) from deepening existing wells to a different (but known) reservoir, (3) from infill wells that will increase recovery, or (4) where a relatively large expenditure (e.g., when compared to the cost of drilling a new well) is required to (a) recomplete an existing well or (b) install production or transportation facilities for primary or improved recovery projects.

The extent to which probable and possible reserves ultimately may be recategorized as proved reserves is dependent upon future drilling, testing, and well performance. The degree of risk to be applied in evaluating probable and possible reserves is influenced by economic and technological factors as well as the time element. Estimates of probable and possible reserves in this report have not been adjusted in consideration of these additional risks to make them comparable to estimates of proved reserves.

ESTIMATION of RESERVES

Estimates of reserves were prepared by the use of appropriate geologic, petroleum engineering, and evaluation principles and techniques that are in accordance with practices generally recognized by the petroleum industry and in accordance with definitions established by the PRMS. The method or combination of methods used in the analysis of each reservoir was tempered by experience with similar reservoirs, stage of development, quality and completeness of basic data, and production history.

Based on the current stage of field development, production performance, the development plans provided by PetroRio, and the analyses of areas offsetting existing wells with test or production data, reserves were categorized as proved, probable, or possible.

The proved undeveloped reserves estimates were based on opportunities identified in the plan of development provided by PetroRio. Proved developed non-producing reserves include those quantities associated with behind-pipe zones and include minor remaining capital expenditure as compared to the cost of a new well.

PetroRio has represented that its senior management is committed to the development plan provided by PetroRio and that PetroRio has the financial capability to execute the development plan, including the drilling and completion of wells and the installation of equipment and facilities.

Reserves were limited to the economic limit as defined in the Definition of Reserves section of this report or the expiration date of the production concession license, whichever occurs first.

Data provided by PetroRio from wells drilled through April 2020, and made available for this evaluation were used to prepare the reserves estimates herein. These reserves estimates were based on consideration of monthly production data available only through March 31, 2020. Estimated cumulative production, as of April 30, 2020, was deducted from the estimated gross ultimate recovery to estimate gross reserves. This required that production be estimated for up to 1 month.

Oil reserves estimated herein are to be recovered by normal field separation. Condensate reserves were estimated by applying a constant condensate-gas ratio to the sales gas forecast. The condensate-gas ratio was estimated based on production history. Oil and condensate reserves estimated herein are expressed in thousands of barrels (10^3bbl). In these estimates, 1 barrel equals 42 United States gallons.

Gas quantities estimated herein are expressed as sales gas. Sales gas is defined as the total gas to be produced from the reservoirs, measured at the point of delivery, after reduction for fuel usage, flare, and shrinkage resulting from field separation and processing. Gas reserves estimated herein are reported as sales gas. Gas quantities are expressed at a temperature base of 20 degrees Celsius (°C) and at a pressure base of 1 atmosphere (atm). Gas quantities included in this report are expressed in millions of cubic feet (10^6ft^3).

Gas quantities are identified by the type of reservoir from which the gas will be produced. Nonassociated gas is gas at initial reservoir conditions with no crude oil present in the reservoir. Associated gas includes both gas-cap gas and solution gas. Gas-cap gas is gas at initial reservoir conditions and is in communication with an underlying crude oil zone. Solution gas is gas dissolved in crude oil at initial reservoir conditions. Gas quantities estimated herein are nonassociated gas.

Manati Field

The Manati field was discovered in 1990 by Petrobras with the drilling of the 1-BAS-128 well in a water depth of approximately 40 meters. In 2007, production commenced from a production platform, which is connected with a subsea pipeline to an onshore gas processing facility. The Manati field is located in license block BCAM-40, and the terms of the production concession license expire in 2029. Petrobras is the operator of the field.

For the Manati field, the material-balance method was used to estimate the original gas in place (OGIP). Estimates of ultimate recovery were obtained after applying recovery factors to the OGIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, analogs, and well production histories. Reservoir performance parameters, such as cumulative production, producing rate, reservoir pressure, gas-oil ratio behavior, and water

production, were considered in estimating recovery efficiencies used in estimating gross ultimate recovery.

Proved developed producing reserves were estimated for current active producing wells using the material-balance method by integrating updated production, pressure, fluid properties, well productivities, and considering the gas production rate plateau strategy provided by PetroRio. Proved developed non-producing reserves were estimated to be zero; therefore, proved developed reserves equal proved developed producing reserves. PetroRio has represented that the development plan for the Manati field does not consider additional drilling locations or the installation of new production facilities. Proved undeveloped reserves were estimated to be zero.

Probable and possible reserves were estimated for the Manati field considering more favorable behavior than that used to estimate proved reserves.

Reserves were estimated to the economic limit as defined in the Definition of Reserves section of this report, which occurs prior to the expiration date of the concession.

Polvo Field

The Polvo field was discovered in 1993 by Petrobras with the drilling of the 1-RJS-486A well. In 2000, during the Agência Nacional de Petróleo's (ANP) second licensing round, license block BM-C-8 containing the Polvo field was awarded to Devon Energy do Brasil Ltda. (Devon) and partners. Devon continued field delineation drilling and development. A portion of license block BM-C-8 was relinquished following declaration of commerciality and the establishment of the Polvo Development Area ring fence. In 2011, BP acquired Devon's interest in the Polvo field, and in 2013 PetroRio acquired BP's interest in the field. PetroRio has represented that the production concession license for license block BM-C-8 continues through July 1, 2032, and that PetroRio will apply for a license extension to the regulatory agency in Brazil (ANP) which would ensure the Polvo field produces to the field's economic limit. Based on PetroRio's representations, reserves evaluated herein were estimated to the economic limit as defined in the Definitions of Reserves section of this report and within one license extension for the Polvo field.

Production commenced in the Polvo field in August 2007. The average gravity of the produced Polvo crude is 21 degrees API. The producing gas-oil ratio in the field is approximately 100 cubic feet per barrel, and all produced gas is either used as fuel or flared. The water depth in the Polvo field ranges from 90 to 250 meters. The field was developed with a drilling/production platform and a floating, production, storage, and offloading vessel (FPSO), both in a water depth of approximately 100 meters. A multiphase pipeline transports the produced fluids from the platform to the Polvo FPSO. All producing wells are horizontal/highly deviated and are completed with electric submersible pumps (ESP). In March 2021, PetroRio intends to decommission the Polvo FPSO and connect all producing wells in the Polvo field to OSX-3 FPSO in the neighboring Tubarão Martelo field.

For the Polvo field, the volumetric method was used to estimate the OOIP. Structure maps were prepared to delineate each reservoir, and isopach maps were constructed to estimate reservoir volume. Electrical logs, radioactivity logs, core analyses, and other available data were used to prepare these maps as well as to estimate representative values for porosity and water saturation.

Estimates of ultimate recovery were obtained after applying recovery factors to OOIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, analogs, and well production histories. Reservoir performance parameters such as cumulative production, oil producing rate, reservoir pressure, gas-oil ratio behavior, and water production were considered in estimating recovery efficiencies used in estimating gross ultimate recovery.

Proved developed producing reserves were estimated by analysis of individual-well oil rate versus time decline-curve analysis. Proved developed non-producing reserves were estimated to be zero; therefore, proved developed reserves equal proved developed producing reserves. Proved undeveloped reserves were estimated for the extension of the field life after the Polvo field is connected to the Tubarão Martelo FPSO and for two future production well locations, the PoL-B and Pol-C wells. Probable undeveloped reserves were estimated for one future well location, Pol-A. The Pol-A, Pol-B, and Pol-C future well locations will target an Eocene reservoir and its reserves were estimated based upon analogy and numerical simulation. A three-dimensional sector model was developed for the Eocene undeveloped well locations to run in a black-oil simulator to aid in estimating ultimate

oil recovery, potential production profiles, and recovery factors. Production from the future well locations is scheduled to start in 2021.

Probable and possible reserves were estimated for incremental recoveries above quantities estimated for proved and proved-plus-probable reserves, respectively.

No gas reserves were estimated for the Polvo field, since PetroRio has represented that there are no plans for gas sales.

Tubarão Martelo Field

The Tubarão Martelo field was discovered in 2010 by OGX with the drilling of the 1-OGX-25-RJS well in license block BM-C-39. Approval for the Tubarão Martelo development plan was issued by the ANP in July 2013. Initial oil production in the field began in December 2013. PetroRio has represented in February 2020 it acquired the interest previously held by OGX in the Tubarão Martelo field and that the production concession license for license block BM-C-39 continues through April 2039. PetroRio has represented that it will apply to the ANP for a license extension which would ensure that the Tubarão Martelo field produces to the field's economic limit. Based on PetroRio's representations, reserves evaluated herein were estimated to the economic limit as defined in the Definitions of Reserves section of this report and within one license extension for Tubarão Martelo field.

For the Tubarão Martelo field, the volumetric method was used to estimate the OOIP. Structure maps were prepared to delineate each reservoir, and isopach maps were constructed to estimate reservoir volume. Electrical logs, radioactivity logs, core analyses, and other available data were used to prepare these maps as well as to estimate representative values for porosity and water saturation.

Estimates of ultimate recovery were obtained after applying recovery factors to OOIP. These recovery factors were based on consideration of the type of energy inherent in the reservoirs, analyses of the petroleum, the structural positions of the properties, analogs, and well production histories. Reservoir performance parameters such as cumulative production, oil producing rate, reservoir pressure, gas-oil ratio behavior, and water production were considered in estimating recovery efficiencies used in estimating gross ultimate recovery.

Proved developed producing reserves were estimated by analysis of individual-well oil rate versus time decline-curve analysis. Proved developed non-producing reserves were estimated for activation of two wells, 7-TMBT-4H and 7-TMBT-2H, based upon analogy with historical performance of nearby wells in the same reservoir and considering the estimated drainage areas. Proved undeveloped reserves were estimated for the extension of the field life in consideration of the capital associated with the connection of the Polvo field to the Tubarão Martelo FPSO and for one well, 7-TMBT-10H, based upon analogy with historical performance of nearby wells in the same reservoir and considering the estimated drainage areas.

Probable and possible reserves were estimated for incremental recoveries above quantities estimated for proved and proved-plus-probable reserves, respectively.

No gas reserves were estimated for the Tubarão Martelo field, since PetroRio has represented that there are no plans for gas sales.

Frade Field

The Frade field is located offshore in the Campos Basin, Brazil, at a water depth of approximately 1,200 meters, and produces from Miocene- and Oligocene-age turbidite sandstone reservoirs with average estimated porosities between 29 and 34 percent, average estimated permeabilities between 1.2 and 3.8 darcys, and oil gravities ranging between 16 and 24 degrees API. The Frade field was discovered by Petrobras in 1986, and Chevron and its partners began development activities in 2008. First oil was achieved in June 2009 using a subsea gathering system connected to a FPSO. A total of 11 horizontal production wells and 5 vertical water injection wells have been drilled since 2008, as well as several pilot boreholes. Water injection started in July 2010, but was suspended in November 2011 due to a pressure kick that occurred when drilling one of the field wells. Production was suspended in the field in March 2012 due to oil seeps interpreted to be associated with fractures connecting to the sea floor that are believed to have been opened by localized higher pressures near the injection wells. Production restarted in April 2013, and 10 wells were on production at the end of July 2019. Water injection is expected to recommence only through new horizontal injection wells and after the water injection filtration system has been upgraded, as per the current development plan for the Frade field provided by PetroRio.

As represented by PetroRio, the original concession expiration date is August 2025. However, PetroRio has also represented that the regulatory agency in Brazil (ANP) has approved an extension, provided that certain activities will be carried out in the field, including, among other things, drilling at least five wells and one contingent water injection well and carrying out certain modifications to the water injection filtration system. PetroRio has represented that it plans to comply with the ANP's requirements for the extension of the concession, and that its development plan includes drilling four horizontal production wells and three horizontal water injection wells, as well as the other investments and activities required by the ANP. Based on PetroRio's representations, reserves evaluated herein were estimated to the economic limit as defined in the Definition of Reserves section of this report and within one license extension.

Proved developed producing reserves were estimated for the existing wells by the application of appropriate decline curves or other performance relationships, primarily the semi-logarithmic plots of oil rate versus time and the Cartesian plot of oil rate versus cumulative oil. Proved undeveloped reserves were estimated for the future production wells based upon analogy with historical performance of nearby wells in the same reservoir and considering the estimated drainage areas. Probable reserves were estimated for the future water injection wells based upon analogy, material-balance, and reservoir simulation methods.

Probable and possible reserves were estimated for incremental recoveries above quantities estimated for proved and proved-plus-probable reserves, respectively.

Production forecasts of the proved developed, total proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves were estimated for this evaluation. These forecasts were prepared using the development plan for the field, including, as appropriate, the drilling of additional wells and the installation of new production facilities and pipelines. The sales gas reserves estimated herein are those quantities of gas forecast to be produced after the fuel requirements for the FPSO have been met.

Table 2 presents a summary of the gross and net reserves for the Polvo, Tubarão Martelo, Frade, and Manati fields evaluated herein.

VALUATION of RESERVES

Revenue values in this report were estimated using forecast prices, expenses, and costs provided by PetroRio.

In this report, revenue values for proved developed, total proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves were based on projections of estimated future production and revenue prepared for these properties with no risk adjustment applied to the probable and possible reserves. Probable and possible reserves involve substantially higher risk than proved reserves. Revenue values associated with proved-plus-probable and proved-plus-probable-plus-possible reserves have not been adjusted to account for such risks; this adjustment would be necessary in order to make values associated with probable and possible reserves comparable to values associated with proved reserves.

PetroRio has represented that it holds a 100-percent working interest in the Polvo field, a 100-percent evaluated working interest in the Frade field, and a 10-percent working interest in the Manati field. PetroRio has also represented that it holds an 80-percent working interest in the Tubarão Martelo field until the field is connected to the neighboring Polvo field, after which PetroRio will hold a 100-percent working interest in the field. Following the connection of the Tubarão Martel field with the Polvo field, PetroRio will hold a net interestof 95 percent from the combined oil production from the two fields. The remaining 5-percent net interest is held by Dommo Energia, formerly OGX Petróleo e Gas SA, until 30 million barrels of oil are produced, and then PetroRio's net interest increases to 96 percent for the lives of the fields.

Estimates of future net revenue have been made in accordance with the Government of Brazil's Petroleum Law n° 9,478, the Petroleum Law of 1997. The fiscal terms outlined in the Petroleum Law of 1997 and assessable to PetroRio as well as other economic assumptions used in this evaluation are presented as follows:

Brazilian Fiscal Terms

The Petroleum Law of 1997 affords the Brazilian Government three elements of government take: 1) petroleum levies consisting of royalties, a special participation fee, and surface

rentals; 2) direct taxes, which are levied through the financial transaction tax, the corporate income tax, and two social contribution taxes; and 3) indirect taxes, which are levies on equipment and services used by companies engaged in exploration and production activities. Indirect tax levies for which PetroRio may be responsible for have not been included in the estimates of operating expenses and capital costs. Certain indirect levies are eligible for reimbursement from sales of refined products. The reimbursement of the indirect levies from refined product sales has not been accounted for in this evaluation.

Royalties

The federal royalty rate in Brazil varies by field between 5 and 10 percent. PetroRio provided federal royalty rates of 7.5 percent for the Manati field and 10 percent for the Tubarão Martelo and Frade fields. The federal royalty rates for the Polvo field were updated in 2019 to incur a royalty rate of 10 percent on a portion of the oil production equal or under a field baseline oil production forecast; any additional oil production volumes in the year will have a reduced royalty rate of 5 percent. PetroRio has advised that these royalties are paid in cash.

Oil royalty is assessed on the market value of the oil (and condensate), which is defined as the greater of the sales price or the market valuation as determined by the ANP. Gas royalty is levied on the market value of the gas production less gas injected.

Special Participation Fee

The SPF is a tax assessed at the field level on a sliding-scale basis that varies depending on the location of the field (onshore or offshore), water depth, level of production, and number of years on production. The tax basis for the SPF is similar to the tax basis for corporate income tax (CIT), with some exceptions. Drilling costs are depreciated using a units-of-production basis for SPF, but expensed for CIT. An annual provision for

abandonment costs is also deductible for SPF, but expensed in the year incurred for CIT. In years in which the SPF is paid, there is an additional 1-percent research and development fee assessed.

Surface Rental Fees

Rental fees are payable to the ANP and vary by field, depending on stage of activity (exploration or development), geological characteristics, and location of sedimentary basin. The surface rental fees are included herein in the estimates of field operating expenses.

Corporate Income Tax

As advised by PetroRio, income taxes have not been considered in this evaluation.

Social Contribution Taxes

Two social contribution taxes are levied on the market value of oil and gas sales. The Contribution for the Worker's Social Integration Program (PIS) is assessed at a rate of 1.65 percent and the Contribution for Social Security Funding (COFINS) is levied at a 7.6-percent rate. At the Request of PetroRio, these taxes have not been considered in the estimates of future net revenue included herein.

Product Prices

PetroRio provided the following sales price forecast for the Polvo, Tubarão Martelo, Frade, and Manati fields. Prices are expressed in United States dollars per barrel (U.S.$/bbl) and United States dollars per thousand cubic feet (U.S.$/$10^3$ft^3).

Year	Polvo and Tubaro Martelo Fields Oil Sales Price (U.S.$/bbl)	Frade Field Oil Sales Price (U.S.$/bbl)	Manati Field Condensate Sales Price (U.S.$/bbl)	Manati Field Gas Sales Price (U.S.$/$10^3$ft^3)
2020	35.00	38.50	40.00	6.69
2021	45.00	48.50	50.00	6.95
2022 to 2032	55.00	58.50	60.00	7.23-8.42
2033 Forward	57.00	60.50	62.00	-

Operating Expenses, Capital Costs, and Abandonment Costs

Operating expenses for the fields were provided by PetroRio and were represented to include all costs associated with the operation and maintenance of equipment and personnel and include surface rental fees.

Abandonment costs, which are those costs associated with the removal of equipment, plugging of wells, and reclamation and restoration associated with the abandonment, were based on information provided by PetroRio. For the Polvo and Tubarão Martel fields, abandonment costs were included in the year following cessation of production. Abandonment costs for the Frade field were included in the last year of production and the following year. For the Manati field, abandonment costs were included as a yearly accrual to an abandonment fund, which PetroRio has represented is fully funded. As represented by PetroRio, the Manati field owners reimburse the third-party operator of the compression facility through annual tariff payments until the contractual amount has been reached. These yearly payments have not been included in the determination of the economic limit presented in this report.

Exchange Rate

All costs and revenues included herein were estimated in U.S.$. Certain operating costs paid in Brazilian reais were converted to U.S.$ by PetroRio.

A summary of future net revenue for the proved developed, total proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves are presented by field in Table 3.

Projections of future net revenue for the proved developed, total proved, proved-plus-probable, and proved-plus-probable-plus-possible reserves for the Polvo, Tubarão Martelo, Frade, and Manati fields are shown in Tables 4 through 16.

SUMMARY and CONCLUSIONS

PetroRio has represented that it holds interests in the Polvo, Tubarão Martelo, Frade, and Manati fields located in Brazil. The estimated gross and net proved developed, proved undeveloped, total proved, probable, and possible reserves, as of April 30, 2020, of the properties evaluated herein are summarized as follows, expressed in thousands of barrels (10^3bbl) and millions of cubic feet (10^6ft^3):

	Gross Reserves			Net Reserves		
	Oil (10^3bbl)	Condensate (10^3bbl)	Sales Gas (10^6ft^3)	Oil (10^3bbl)	Condensate (10^3bbl)	Sales Gas (10^6ft^3)
Proved						
Developed	66,523	500	155,453	62,275	50	15,593
Undeveloped	47,110	0	5,312	48,603	0	5,312
Total Proved	113,633	500	160,765	110,878	50	20,905
Probable	78,718	40	20,931	76,833	4	7,053
Possible	87,654	0	7,838	85,536	0	4,751

Notes:
1. Net proved undeveloped reserves are higher than the gross proved undeveloped reserves due to the net interest in the Tubarão Martelo field, which will increase from 80 percent to 95 percent once the Polvo field is connected.
2. Probable and possible reserves have not been risk adjusted to make them comparable to proved reserves.

The estimated future net revenue attributable to PetroRio's interest in the proved developed, total proved, proved-plus-probable, and proved-plus-probable-plus-possible net reserves, as of April 30, 2020, of the properties evaluated under the economic assumptions described herein is summarized as follows, expressed in thousands of United States dollars (10^3U.S.$):

	Proved Developed (10^3U.S.$)	Total Proved (10^3U.S.$)	Proved plus Probable (10^3U.S.$)	Proved plus Probable plus Possible (10^3U.S.$)
Future Gross Revenue	3,403,023	6,143,899	10,544,879	15,462,931
Royalties Paid in Cash	340,498	608,446	979,275	1,408,183
Operating Expenses	1,493,431	2,012,517	3,135,888	4,159,343
Capital Costs	112,044	657,245	1,073,645	1,222,645
Abandonment Costs	413,549	458,549	488,549	488,549
SPF	1,155	1,155	1,489	4,968
Future Net Revenue	1,038,945	2,405,987	4,866,033	8,179,236
Present Worth at 10 Percent	927,051	1,768,198	2,890,795	4,090,016

Notes:
1. Values for probable and possible reserves have not been risk adjusted to make them comparable to values for proved reserves.
2. Future social contribution tax expenses were not taken into account in the preparation of these estimates.
3. Future corporate income taxes were not taken into account in the preparation of these estimates.

While the oil and gas industry may be subject to regulatory changes from time to time that could affect an industry participant's ability to recover its reserves, we are not aware of any such governmental actions which would restrict the recovery of the April 30, 2020, estimated reserves.

DeGolyer and MacNaughton is an independent petroleum engineering consulting firm that has been providing petroleum consulting services throughout the world since 1936. Our fees were not contingent on the results of our evaluation. This report has been prepared at the request of PetroRio. DeGolyer and MacNaughton has used all assumptions, procedures, data, and methods that it considers necessary to prepare this report.

Submitted,

DeGolyer and MacNaughton

DeGOLYER and MacNAUGHTON
Texas Registered Engineering Firm F-716

SIGNED: May 15, 2020

Federico Dordoni, P.E.

Federico Dordoni, P.E.
Vice President
DeGolyer and MacNaughton

TABLE 1
WORKING INTERESTS and CONTRACT EXPIRATION DATES
as of
APRIL 30, 2020
for the
CERTAIN FIELDS
with interests attributable to
PETRORIO S.A.
in
BRAZIL

PRMS CASE

Field	Working Interest	Concession Expiration Date	Extension of the Concession Expiration Date
Polvo	100.00%	July 1, 2032	July 1, 2059
Tubarão Martelo	80.00-100.00%	April 30, 2039	April 30, 2066
Frade	100.00%	August 31, 2025	August 31, 2052
Manati	10.00%	November 1, 2029	Not Applicable

Notes:

1. Petrorio has represented their working interest in the Tubarão Martelo is 80% until the field is connected to the Polvo field scheduled in March 2021 at which time Petrorio will hold 100% working interest in the Tubarão Martelo field.
2. PetroRio has represented that it holds a 70-percent working interest in the Frade field and that it has executed a Sales and Purchase Agreement with Petrobras to acquire Petrobas' 30-percent working interest in the Frade field. PetroRio is awaiting the final regulatory approval by the ANP to complete the acquisition.
3. Projected forecasts and estimated economic limits occur beyond the expiration of the concession agreements for the Polvo, Tubarão Martelo, and Frade fields. PetroRio has represented that it will meet the conditions required by the National Petroleum Agency (ANP) to obtain concession extensions. Based on this representation, and at PetroRio's reques the reserves evaluated herein consider the potential concession extensions for those fields.

These data accompany the report of DeGolyer and MacNaughton and are subject to its specific conditions.