

# **HANWHA CHEMICAL CORPORATION AND SUBSIDIARIES**

**Consolidated Financial Statements  
as of and for the year ended  
december 31, 2018**

**ATTACHMENT: INDEPENDENT AUDITORS' REPORT**

**HANWHA CHEMICAL CORPORATION**

# **Contents**

## **Independent Auditors' Audit Report**

Consolidated Statements of Financial Position

Consolidated Statements of Comprehensive Income

Consolidated Statements of Changes in Equity

Consolidated Statements of Cash Flows

Notes to the Consolidated Financial Statements

## Independent Auditor's Report

English Translation of Independent Auditors' Report Originally Issued in Korean on March 18, 2019.

### To the Shareholders and the Directors of Hanwha Chemical Corporation:

#### Report on Consolidated Financial Statements

##### Our Opinion

We have audited the accompanying consolidated financial statements of Hanwha Chemical Corporation (the "Group") and its subsidiaries, which comprise the consolidated statement of financial position as of December 31, 2018 and the consolidated statement of comprehensive income, consolidated statement of changes in shareholders' equity and consolidated statement of cash flows, for the year then ended, and a summary of significant accounting policies and other explanatory information.

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Hanwha Chemical Corporation as of December 31, respectively, and its financial performance and its cash flows for the years then ended in accordance with Korean International Financial Reporting Standards ("K-IFRS").

##### Basis for Audit Opinion

We conducted our audit in accordance with the Korean Standards on Auditing ("KSAs"). Our responsibilities under those standards are further described in the *our Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the Group in accordance with the ethical requirements, including those related to independence, that are relevant to our audit of the consolidated financial statements in the Republic of Korea as required by prevailing audit regulations. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

##### Our Key Audit Matters

The key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our audit opinion thereon, and we do not provide a separate opinion on these matters.

- Valuation of Impairment to CGU('cash-generated units') of Polysilicon.

[Consolidated financial statement risk]

The polysilicon CGU started commercial production in 2014 and has continued to occur operating losses for 2018. As of December 31, 2018, the affected carrying amount of the CGU is KRW 514,085 million, and the recoverable amount is KRW 405,265 million. (See Note 16).

The Group conducts an impairment test on a polysilicon CGU when there are indications that the asset may be impaired, and recognizes an impairment loss if the estimated value of use on the basis of determining recoverable amount is less than the carrying amount.

The group's management estimates the sales volume by considering the market size and market share in the future, and the unit price by considering the unit price and market conditions in the past.

Based on this, the Group calculate recoverable amount by applying discount rate and long-term growth rate to the forecast future cash flows. As the impact of future errors in estimating future cash flows on consolidated financial statements is significant, therefore we have decided to assess the impairment of the polysilicon CGU as a key audit matter.

## [Our audit approach]

We performed the following audit procedures for the key assumptions and future cash flow estimation models used by the Group's management of the consolidation entity to estimate the value in use of the polysilicon CGU.

- Understanding the design of internal control of the Group related to measuring value in use and the recognition of impairment losses
- Ask questions about the sales volume and unit price assumptions applied to estimate future cash flows and independently verify the feasibility of the assumptions.
- Retrospective review of the conformity assessment of assumptions related to estimate future cash flows used to measure value in use and comparative analysis with historical average data.
- Identify the rationality and mathematical accuracy of the model for estimating future cash flows
- Confirmation of independence, objectivity and qualification of external valuation experts on consolidation
- Validate the discount rate by using the auditors' internal valuation experts and independently verify assumptions by comparing them to external market data.

## **Responsibilities of Management and Audit Committee for the Financial Statements**

Management is responsible for the preparation of the accompanying consolidated financial statements in accordance with K-IFRS, and for such internal control as they determine is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management of the Group is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

The audit committee's responsibilities include overseeing the Group's financial reporting process.

## **Our Responsibilities for the Audit of the Financial Statements**

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with KSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with KSAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.

# Deloitte.

- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We are solely responsible for our audit opinion.

We communicate with the audit committee of the Group regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the the audit committee the Group with a statement that we have complied with relevant ethical requirements, including those related to independence, and to communicate with them all matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with the audit committee, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

The engagement partner on the audit resulting in this independent auditor's report is Han Suk Kim.

Deloitte Idnjin LLC

March 18, 2019

## Notice to Readers

This report is effective as of March 18, 2019, the auditors' report date. Certain subsequent events or circumstances may have occurred between the auditors' report date and the time the auditors' report is read. Such events or circumstances could significantly affect the financial statements and may result in modifications to the auditors' report.

# **HANWHA CHEMICAL CORPORATION AND ITS SUBSIDIARIES(The “Group”)**

CONSOLIDATED FINANCIAL STATEMENTS  
AS OF AND FOR THE YEARS ENDED  
DECEMBER 31, 2018, AND DECEMBER 31, 2017

"The accompanying consolidated financial statements, including all footnote disclosures,  
have been prepared by and are responsibility of the Group."

**Chang Bum, Kim**

**President and Chief Executive Officer**

**HANWHA CHEMICAL CORPORATION**

Main Office Address: 86, Cheonggyecheon-ro, Jung-gu, Seoul  
(Phone Number) 02-729-2700

**HANWHA CHEMICAL CORPORATION AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF FINANCIAL POSITION**

**AS OF DECEMBER 31, 2018 AND 2017**

|                                                   |                | In Korean won               |                             |
|---------------------------------------------------|----------------|-----------------------------|-----------------------------|
|                                                   | Note           | December 31, 2018           | December 31, 2017           |
| <b>Assets</b>                                     |                |                             |                             |
| Current assets:                                   |                |                             |                             |
| Cash and cash equivalents                         | 5, 6, 8        | ₩ 1,024,121,436,014         | ₩ 804,983,081,320           |
| Other financial assets                            | 5, 6, 10, 39   | 414,808,360,144             | 370,508,335,591             |
| Trade receivables and other receivables           | 5, 6, 7, 9, 39 | 1,758,577,996,403           | 1,706,780,802,682           |
| Other current assets                              | 11             | 315,226,423,470             | 186,578,903,026             |
| Inventories                                       | 12             | 1,467,462,398,605           | 1,143,758,174,436           |
| Current income tax assets                         |                | 14,094,159,291              | 7,724,630,179               |
| Assets classified as held-for-sale current assets | 18             | 18,179,898,678              | 2,133,140,038               |
|                                                   |                | <u>5,012,470,672,605</u>    | <u>4,222,467,067,272</u>    |
| Non-current assets:                               |                |                             |                             |
| FVTPL—financial assets                            | 5,6,13         | 81,613,807                  | -                           |
| AFS financial assets                              | 5,6,13         | -                           | 240,996,854,973             |
| FVTOCI—financial assets                           | 5,6,13         | 80,230,460,838              | -                           |
| Other financial assets                            | 5,6,10,39      | 87,323,080,168              | 63,654,877,410              |
| Long-term trade receivables and other receivables | 5,6,10,39      | 2,921,411,467               | 11,540,802,420              |
| Investments in associates and joint ventures      | 14,39          | 2,622,361,268,060           | 2,682,319,452,285           |
| Investment property                               | 15             | 190,335,564,744             | 349,947,326,890             |
| Property, plant and equipment                     | 16             | 6,684,051,915,938           | 5,588,231,454,920           |
| Intangible assets                                 | 17             | 479,383,485,027             | 422,049,606,582             |
| Other non-current assets                          | 11             | 18,723,912,745              | 26,364,928,595              |
| Deferred income tax assets                        | 36             | 53,592,062,158              | 41,915,528,393              |
|                                                   |                | <u>10,219,004,774,952</u>   | <u>9,427,020,832,468</u>    |
| <b>Total assets</b>                               |                | <u>₩ 15,231,475,447,557</u> | <u>₩ 13,649,487,899,740</u> |
| Current liabilities:                              |                |                             |                             |
| Trade payables and other payables                 | 4,5,6,19,39    | ₩ 1,479,737,842,444         | ₩ 1,631,912,989,217         |
| Short-term borrowings                             | 4,5,6,7,20     | 2,893,481,175,738           | 2,641,415,544,664           |
| Other financial liabilities                       | 4,5,6, 21      | 162,279,076,435             | 154,756,644,168             |
| Provisions                                        | 24             | 51,093,882,970              | 49,718,075,735              |
| Other current liabilities                         | 22             | 439,889,081,262             | 329,059,425,416             |
| Current income tax liabilities                    |                | 106,034,504,019             | 87,327,541,511              |
|                                                   |                | <u>5,132,515,562,868</u>    | <u>4,894,190,220,711</u>    |
| Non-current liabilities                           |                |                             |                             |
| Long-term trade payables and other payables       | 4,5,6,19,39    | 329,899,474                 | 23,136,851,237              |
| Long-term borrowings                              | 4,5,6,20       | 2,995,061,206,364           | 1,775,961,515,451           |
| Other financial liabilities                       | 4,5,6,9,21     | 13,906,976,339              | 45,092,188,413              |
| Net defined benefit liabilities                   | 23             | 371,701,051,264             | 304,696,117,972             |
| Long-term employee benefits                       |                | 18,269,569,977              | 15,726,451,910              |
| Provisions                                        | 24             | 64,501,260,084              | 31,690,006,963              |
| Other non-current liabilities                     | 22             | 23,551,309,575              | 1,140,218                   |
| Deferred tax liabilities                          | 236            | 384,542,249,561             | 371,520,244,487             |
|                                                   |                | <u>3,871,863,522,638</u>    | <u>2,567,824,516,651</u>    |
| <b>Total liabilities</b>                          |                | <u>9,004,379,085,506</u>    | <u>7,462,014,737,362</u>    |

(Continued)

**HANWHA CHEMICAL CORPORATION AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF FINANCIAL POSITION (CONTINUED)**

**AS OF DECEMBER 31, 2018 AND 2017**

|                                             | Note | In Korean won               |                             |
|---------------------------------------------|------|-----------------------------|-----------------------------|
|                                             |      | December 31, 2018           | December 31, 2017           |
| <b>Equity</b>                               |      |                             |                             |
| Capital stock                               | 25   | 821,170,655,000             | 829,665,480,000             |
| Capital surplus                             | 25   | 856,962,112,699             | 828,953,856,912             |
| Capital adjustments                         | 26   | (3,433,353,389)             | (3,180,842,934)             |
| Accumulated other comprehensive income      | 27   | (81,251,788,132)            | (5,005,499,799)             |
| Retained earnings                           | 28   | <u>4,496,527,139,705</u>    | <u>4,364,715,483,645</u>    |
| Equity attributable to owner of the Company |      | 6,089,974,765,883           | 6,015,148,477,824           |
| Non-controlling interests                   | 45   | 137,121,596,168             | 172,324,684,554             |
| <b>Total equity</b>                         |      | <u>6,227,096,362,051</u>    | <u>6,187,473,162,378</u>    |
| <b>Total liabilities and equity</b>         |      | <u>₩ 15,231,475,447,557</u> | <u>₩ 13,649,487,899,740</u> |

(Concluded)

See accompanying notes to consolidated financial statements.

**HANWHA CHEMICAL CORPORATION AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME**

**FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017**

|                                                                                             |                | In Korean won            |                          |
|---------------------------------------------------------------------------------------------|----------------|--------------------------|--------------------------|
|                                                                                             | Note           | 2018                     | 2017                     |
| Revenue                                                                                     | 30, 39, 41, 42 | ₩ 9,046,041,904,194      | ₩ 9,341,813,226,373      |
| Cost of sales                                                                               | 31, 33, 39     | <u>7,458,561,971,983</u> | <u>7,386,273,362,233</u> |
| <b>Gross profit</b>                                                                         |                | <u>1,587,479,932,211</u> | <u>1,955,539,864,140</u> |
| Selling and administrative expenses                                                         | 32,33          | <u>1,233,134,184,245</u> | <u>1,199,128,873,623</u> |
| <b>Operating income</b>                                                                     | 41             | <u>354,345,747,966</u>   | <u>756,410,990,517</u>   |
| Other non-operating income                                                                  | 34             | 468,471,808,313          | 484,366,379,060          |
| Other non-operating expenses                                                                | 34             | (816,688,903,721)        | (636,244,071,504)        |
| Financial income                                                                            | 35             | 24,644,540,547           | 17,055,963,234           |
| Financial expenses                                                                          | 35             | (160,253,873,771)        | (148,823,554,720)        |
| Share of profit of associates and joint ventures                                            | 14             | <u>417,813,808,099</u>   | <u>593,087,179,674</u>   |
| Non-operating income                                                                        |                | <u>(66,012,620,533)</u>  | <u>309,441,895,744</u>   |
| <b>Income before income tax expense</b>                                                     |                | <u>288,333,127,433</u>   | <u>1,065,852,886,261</u> |
| Income tax expenses                                                                         | 36             | <u>127,888,137,367</u>   | <u>231,318,707,138</u>   |
| <b>Net income</b>                                                                           |                | <u>160,444,990,066</u>   | <u>834,534,179,123</u>   |
| <b>Other comprehensive Income (loss)</b>                                                    |                | (85,137,321,445)         | (43,150,646,650)         |
| Items that are or may be reclassified to profit or loss:                                    |                |                          |                          |
| Gain (loss) on valuation of available-for-sale financial assets                             |                | -                        | 17,252,132,866           |
| Share of other comprehensive loss of associates and joint ventures                          |                | 8,623,766,919            | (12,969,823,004)         |
| Gain (loss) on valuation of FVTOCI—financial assets(debt instrument)                        |                | 41,473,263               | -                        |
| Gain on valuation of cash flow hedges                                                       |                | (426,459,559)            | 207,747,342              |
| Currency translation adjustments                                                            |                | 3,727,706,502            | (59,053,846,881)         |
| Items that will not be reclassified to profit or loss:                                      |                |                          |                          |
| Gain (loss) on valuation of FVTOCI—financial assets(equity instrument)                      |                | (71,688,240,421)         | -                        |
| Remeasurement of net defined benefit liabilities                                            |                | (19,895,878,178)         | 9,636,563,395            |
| Share of remeasurements of net defined benefit liabilities of associates and joint ventures |                | <u>(5,519,689,971)</u>   | <u>1,776,579,632</u>     |
| <b>Total comprehensive income</b>                                                           |                | <u>75,307,668,621</u>    | <u>791,383,532,473</u>   |
| <b>Net income attributable to:</b>                                                          |                |                          |                          |
| Owners of the Company                                                                       |                | 186,679,515,032          | 824,697,350,081          |
| Non-controlling interests                                                                   |                | (26,234,524,966)         | 9,836,829,042            |
| <b>Total comprehensive income attributable to:</b>                                          |                |                          |                          |
| Owners of the Company                                                                       |                | 108,083,092,876          | 787,227,224,753          |
| Non-controlling interests                                                                   |                | (32,775,424,255)         | 4,156,307,720            |
| <b>Earnings per share attributable to the owners of the Company:</b>                        | 37             |                          |                          |
| Basic and diluted earnings per common share                                                 |                | 1,136                    | 5,021                    |
| Basic and diluted earnings per preferred share                                              |                | 1,186                    | 5,071                    |

See accompanying notes to the consolidated financial statements.

**HANWHA CHEMICAL CORPORATION AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY**

**FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017**

|                                                                                                | In Korean won            |                              |                                 |                                                     |                                |                           |
|------------------------------------------------------------------------------------------------|--------------------------|------------------------------|---------------------------------|-----------------------------------------------------|--------------------------------|---------------------------|
|                                                                                                | Capital stock            | Consolidated capital surplus | Consolidated capital adjustment | Consolidated accumulated other comprehensive income | Consolidated retained earnings | Non-controlling interests |
|                                                                                                | <u>₩ 829,665,480,000</u> | <u>₩ 828,447,138,477</u>     | <u>₩ (3,196,563,656)</u>        | <u>₩ 43,624,934,648</u>                             | <u>₩3,586,395,957,168</u>      | <u>₩ 183,389,762,292</u>  |
| <b>Balance at January 1, 2017</b>                                                              |                          |                              |                                 |                                                     |                                | <u>₩5,468,326,708,929</u> |
| <b>Total comprehensive income (loss):</b>                                                      |                          |                              |                                 |                                                     |                                |                           |
| Net income                                                                                     | -                        | -                            | -                               | -                                                   | 824,697,350,081                | 9,836,829,042             |
| Other comprehensive income (loss)                                                              |                          |                              |                                 |                                                     |                                |                           |
| Items subsequently reclassified to net income (loss):                                          |                          |                              |                                 |                                                     |                                |                           |
| Gain on valuation of available-for-sale financial assets                                       | -                        | -                            | -                               | 15,951,312,056                                      | -                              | 1,300,820,810             |
| Share of other comprehensive income (loss) of associates and joint ventures                    | -                        | -                            | -                               | (13,094,435,597)                                    | -                              | 124,612,593               |
| Gain (loss) on valuation of cash flow hedges                                                   | -                        | -                            | -                               | 207,753,045                                         | -                              | (5,703)                   |
| Currency translation adjustments                                                               | -                        | -                            | -                               | (51,695,063,951)                                    | -                              | (7,358,782,930)           |
| Items not subsequently reclassified to net income (loss):                                      |                          |                              |                                 |                                                     |                                |                           |
| Remeasurement of net defined benefit liabilities                                               | -                        | -                            | -                               | -                                                   | 9,405,984,987                  | 230,578,408               |
| Share of remeasurements of net defined benefit liabilities of associates and joint ventures    | -                        | -                            | -                               | -                                                   | 1,754,324,132                  | 22,255,500                |
| <b>Transactions with shareholders:</b>                                                         |                          |                              |                                 |                                                     |                                |                           |
| Dividends paid                                                                                 | -                        | -                            | -                               | -                                                   | (57,538,132,700)               | (10,480,000,000)          |
| <b>Changes in scope of consolidation</b>                                                       |                          |                              |                                 |                                                     |                                |                           |
| Proceeds from disposal of subsidiaries                                                         | -                        | -                            | -                               | -                                                   | -                              | (452,818,108)             |
| <b>Changes in ownership interests in subsidiaries that do not result in a loss of control:</b> |                          |                              |                                 |                                                     |                                |                           |
| Changes in ownership interests in subsidiaries                                                 | -                        | (12,529,548)                 | -                               | -                                                   | -                              | (4,288,567,350)           |
| Others                                                                                         | -                        | 519,247,983                  | 15,720,722                      | -                                                   | (23)                           | -                         |
| <b>Balance at December 31, 2017</b>                                                            | <u>₩ 829,665,480,000</u> | <u>₩ 828,953,856,912</u>     | <u>₩ (3,180,842,934)</u>        | <u>₩ (5,005,499,799)</u>                            | <u>₩4,364,715,483,645</u>      | <u>₩ 172,324,684,554</u>  |
|                                                                                                |                          |                              |                                 |                                                     |                                | <u>₩6,187,473,162,378</u> |

(Continued)

**HANWHA CHEMICAL CORPORATION AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY(CONTINUED)**

**FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017**

|                                                                                                | In Korean won        |                   |                      |                                        |                     |                           |                     |
|------------------------------------------------------------------------------------------------|----------------------|-------------------|----------------------|----------------------------------------|---------------------|---------------------------|---------------------|
|                                                                                                | Consolidated capital |                   | Consolidated capital |                                        | Consolidated        |                           | Total               |
|                                                                                                | Capital stock        | Surplus           | Adjustment           | accumulated other comprehensive income | retained earnings   | Non-controlling interests |                     |
| <b>Balance at January 1, 2018</b>                                                              | ₩ 829,665,480,000    | ₩ 828,953,856,912 | ₩ (3,180,842,934)    | ₩ (5,005,499,799)                      | ₩ 4,364,715,483,645 | ₩ 172,324,684,554         | ₩ 6,187,473,162,378 |
| Effect of changes in accounting policies                                                       | -                    | -                 | -                    | (23,006,843,755)                       | (13,969,620,309)    | (1,248,693,580)           | (38,225,157,644)    |
| <b>Revised Balance at January 1, 2018</b>                                                      | 829,665,480,000      | 828,953,856,912   | (3,180,842,934)      | (28,012,343,554)                       | 4,350,745,863,336   | 171,075,990,974           | 6,149,248,004,734   |
| <b>Total comprehensive Income (loss):</b>                                                      |                      |                   |                      |                                        |                     |                           |                     |
| Net income                                                                                     | -                    | -                 | -                    | -                                      | 186,679,515,032     | (26,234,524,966)          | 160,444,990,066     |
| Other comprehensive income (loss)                                                              |                      |                   |                      |                                        |                     |                           |                     |
| Items subsequently reclassified to net income (loss):                                          |                      |                   |                      |                                        |                     |                           |                     |
| Gain (loss) on valuation of FVTOCI—financial assets (debt instrument)                          | -                    | -                 | -                    | 26,557,471                             | -                   | 14,915,792                | 41,473,263          |
| Share of other comprehensive income (loss) of associates and joint ventures                    | -                    | -                 | -                    | 8,758,161,188                          | -                   | (134,394,269)             | 8,623,766,919       |
| Gain (loss) on valuation of cash flow hedges                                                   | -                    | -                 | -                    | (426,276,212)                          | -                   | (183,347)                 | (426,459,559)       |
| Currency translation adjustments                                                               | -                    | -                 | -                    | 1,701,776,552                          | -                   | 2,025,929,950             | 3,727,706,502       |
| Items not subsequently reclassified to net income (loss):                                      |                      |                   |                      |                                        |                     |                           |                     |
| Gain (loss) on valuation of FVTOCI—financial assets (equity instrument)                        | -                    | -                 | -                    | (63,299,663,577)                       | -                   | (8,388,576,844)           | (71,688,240,421)    |
| Remeasurement of net defined benefit liabilities                                               | -                    | -                 | -                    | -                                      | (19,861,636,259)    | (34,241,919)              | (19,895,878,178)    |
| Share of remeasurements of net defined benefit liabilities of associates and joint ventures    | -                    | -                 | -                    | -                                      | (5,495,341,319)     | (24,348,652)              | (5,519,689,971)     |
| Gain (loss) on disposal of FVTOCI                                                              | -                    | -                 | -                    | -                                      | 41,911,906,326      | -                         | 41,911,906,326      |
| <b>Transactions with shareholders:</b>                                                         |                      |                   |                      |                                        |                     |                           |                     |
| Dividends paid                                                                                 | -                    | -                 | -                    | -                                      | (57,538,132,700)    | (3,320,000,000)           | (60,858,132,700)    |
| Retirement of treasury stock                                                                   | (8,494,825,000)      | 8,494,825,000     | -                    | -                                      | -                   | -                         | -                   |
| <b>Changes in scope of consolidation</b>                                                       |                      |                   |                      |                                        |                     |                           |                     |
| Proceeds from acquisition of subsidiaries                                                      | -                    | 17,182,530,664    | (56,919,841)         | -                                      | -                   | -                         | 17,125,610,823      |
| <b>Changes in ownership interests in subsidiaries that do not result in a loss of control:</b> |                      |                   |                      |                                        |                     |                           |                     |
| Changes in ownership interests in subsidiaries                                                 | -                    | 1,538,195,185     | -                    | -                                      | -                   | 2,139,445,135             | 3,677,640,320       |
| Others                                                                                         | -                    | 792,704,938       | (195,590,614)        | -                                      | 84,965,289          | 1,584,314                 | 683,663,927         |
| <b>Balance at December 31, 2018</b>                                                            | ₩ 821,170,655,000    | ₩ 856,962,112,699 | ₩ (3,433,353,389)    | ₩ (81,251,788,132)                     | ₩ 4,496,527,139,705 | ₩ 137,121,596,168         | ₩ 6,227,096,362,051 |

(Concluded)

See accompanying notes to consolidated financial statements.

# HANWHA CHEMICAL CORPORATION AND SUBSIDIARIES

## CONSOLIDATED STATEMENTS OF CASH FLOWS

FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

|                                                                                    |      | In Korean won              |                            |
|------------------------------------------------------------------------------------|------|----------------------------|----------------------------|
|                                                                                    | Note | 2018                       | 2017                       |
| <b>Cash flows from operating activities:</b>                                       |      |                            |                            |
| Cash generated from operating activities                                           | 40   | ₩ 811,318,064,126          | ₩ 1,068,111,015,187        |
| Income taxes paid                                                                  |      | (84,613,823,907)           | (151,879,151,920)          |
| <b>Net cash provided by operating activities</b>                                   |      | <u>726,704,240,219</u>     | <u>916,231,863,267</u>     |
| <b>Cash flows from investing activities:</b>                                       |      |                            |                            |
| Interest received                                                                  |      | 34,683,068,778             | 24,579,651,575             |
| Dividends received                                                                 |      | 447,207,234,133            | 208,245,064,975            |
| Proceeds from disposal of AFS financial assets                                     |      | -                          | 18,510,811,561             |
| Proceeds from disposal of FVTOCI—financial assets                                  |      | 10,146,897,608             | -                          |
| Proceeds from disposal of other financial assets                                   |      | 1,496,445,022,540          | 433,109,787,470            |
| Proceeds from disposal of investment in associates and joint ventures              |      | -                          | 2,272,494,915              |
| Proceeds from disposal of investment in subsidiaries                               |      | 17,769,342,585             | -                          |
| Proceeds from government grants                                                    |      | 66,000,000                 | 1,600,000                  |
| Proceeds from disposal of investment property                                      |      | 4,200,000,000              | 1,925,905,641              |
| Proceeds from disposal of plant, property and equipment                            |      | 56,019,821,618             | 24,380,712,404             |
| Proceeds from disposal of intangible assets                                        |      | 20,165,845,439             | 28,086,424,542             |
| Proceeds from disposal of assets classified as held-for-sale current assets        |      | 1,482,819,883              | 80,138,574,000             |
| Acquisition of AFS financial assets                                                |      | -                          | (10,282,946,000)           |
| Acquisition of FVTOCI—financial assets                                             |      | (3,000,004,000)            | -                          |
| Acquisition of other financial assets                                              |      | (1,503,199,681,298)        | (531,577,263,313)          |
| Acquisition of investment in associates and joint ventures                         |      | (26,366,953,765)           | (177,203,417,254)          |
| Acquisition of investment property                                                 |      | (328,629,740)              | (40,541,163)               |
| Acquisition of property, plant and equipment                                       |      | (720,057,804,179)          | (492,370,108,930)          |
| Acquisition of intangible assets                                                   |      | (19,475,689,881)           | (12,069,637,291)           |
| Acquisition of investment in subsidiaries                                          |      | (360,746,050,837)          | (892,090,930)              |
| Proceeds from other receivables (investing activities)                             |      | 110,344,157,950            | -                          |
| <b>Net cash provided by (used in) investing activities</b>                         |      | <u>(434,644,603,166)</u>   | <u>(403,184,977,798)</u>   |
| <b>Cash flows from financing activities:</b>                                       |      |                            |                            |
| Increase in borrowings                                                             |      | 2,098,367,020,889          | 1,795,980,797,510          |
| Increase in other financial liabilities                                            |      | 25,000,000                 | 42,000,000                 |
| Changes in non-controlling interests                                               |      | (3,458,105,739)            | (10,853,327,679)           |
| Repayment of borrowings                                                            |      | (1,923,943,863,446)        | (2,249,383,916,904)        |
| Decrease in other financial liabilities                                            |      | (206,903,693)              | (185,985,078)              |
| Payment of interest                                                                |      | (182,830,040,409)          | (163,701,983,494)          |
| Payment of dividends                                                               |      | (57,538,132,700)           | (57,538,132,700)           |
| <b>Net cash used in financing activities</b>                                       |      | <u>₩ (69,585,025,098)</u>  | <u>₩ (685,640,548,345)</u> |
| <b>Net increase (decrease) in cash and cash equivalents</b>                        |      | ₩ 222,474,611,955          | ₩ (172,593,662,876)        |
| Cash and cash equivalents at January 1                                             |      | 804,983,081,320            | 1,012,313,392,800          |
| Effects of exchange rate changes on the balance of cash held in foreign currencies |      | <u>(3,336,257,261)</u>     | <u>(34,736,648,604)</u>    |
| <b>Cash and cash equivalents at December 31</b>                                    |      | <u>₩ 1,024,121,436,014</u> | <u>₩ 804,983,081,320</u>   |

See accompanying notes to consolidated financial statements.

# **HANWHA CHEMICAL CORPORATION AND SUBSIDIARIES**

## **NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

### **AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017**

#### **1. GENERAL:**

Hanwha Chemical Corporation (the “Company”) was incorporated on April 27, 1974, under the laws of the Republic of Korea. The Company is mainly engaged in the manufacturing and commercialization of synthetic resins, such as caustic soda, PVC(“Polyvinyl chloride”), and LLDPE(“Linear low-density polyethylene”), and other petrochemical products. The Company’s headquarters is located at Janggyo-dong, Jung-gu, Seoul and its manufacturing facilities are located in Ulsan and the petrochemical complex in Yeosu, Jeolla Namdo, Republic of Korea. The consolidated financial statements as of ended December 31, 2018, represent ownership interests of the Company and its subsidiaries (the “Group”) in associates and joint ventures.

The Company listed its stocks on the Korea Stock Exchange on June 19, 1974. The Company changed its name from Hanwha Petrochemical Co., Ltd. to Hanwha Chemical Corporation on March 19, 2010.

The Company’s Global Depositary Receipts (GDR) are listed on the Singapore Stock Exchange (Singapore Exchange Securities Trading Limited) and listed 21,656,060 shares on April 30, 2014.

#### (1) Details of subsidiaries

As of December,31 2018, and December 31, 2017, the Company's consolidated subsidiaries are as follows.

| Company                                                                                           | Locations         | Closing Month | Main business                                                             | Percentage of ownership |                   |
|---------------------------------------------------------------------------------------------------|-------------------|---------------|---------------------------------------------------------------------------|-------------------------|-------------------|
|                                                                                                   |                   |               |                                                                           | December 31, 2018       | December 31, 2017 |
| Gyeonggi Yongin Techno Valley Co., Ltd.                                                           | Republic of Korea | December      | Real estate industry                                                      | 75.00%                  | 75.00%            |
| Gimhae Techno Valley Co.,Ltd.                                                                     | Republic of Korea | December      | Real estate industry                                                      | 80.00%                  | 80.00%            |
| Seosan Techno Valley                                                                              | Republic of Korea | December      | Real estate development and sales                                         | 65.00%                  | 65.00%            |
| Asan Techno Valley                                                                                | Republic of Korea | December      | Real estate industry                                                      | 100.00%                 | 100.00%           |
| H-Valley Co., Ltd. (formerly, Gyeonggi hwaseong bio valley Co.,Ltd.)                              | Republic of Korea | December      | Real estate industry                                                      | 51.00%                  | 51.00%            |
| Water Solar Corp.                                                                                 | Republic of Korea | December      | Solar photovoltaic power business                                         | 100.00%                 | -                 |
| Hanwha Galleria Co., Ltd.                                                                         | Republic of Korea | December      | Department store, wholesale and retail                                    | 100.00%                 | 100.00%           |
| Hanwha Galleria Timeworld Co., Ltd.                                                               | Republic of Korea | December      | Department store                                                          | 70.65%                  | 70.65%            |
| Hanwha City Development Co., Ltd.                                                                 | Republic of Korea | December      | Real estate industry                                                      | 100.00%                 | 100.00%           |
| Hanwha B&B Co Ltd.                                                                                | Republic of Korea | December      | Restaurant business                                                       | 100.00%                 | 100.00%           |
| Yungam Techno Solar Power Corp.                                                                   | Republic of Korea | December      | Solar photovoltaic power business                                         | 100.00%                 | -                 |
| Yungam Hae-oreum Solar Power Corp.                                                                | Republic of Korea | December      | Solar photovoltaic power business                                         | 100.00%                 | -                 |
| NHL Development Co.Ltd.                                                                           | Republic of Korea | December      | Sea transportation                                                        | 100.00%                 | 100.00%           |
| Hi-pass Solar Power Corp.                                                                         | Republic of Korea | December      | Solar photovoltaic power business                                         | 100.00%                 | -                 |
| Haesarang Solar Power Corp.                                                                       | Republic of Korea | December      | Solar photovoltaic power business                                         | 100.00%                 | -                 |
| Hanbando Solar Power Corp.                                                                        | Republic of Korea | December      | Solar photovoltaic power business                                         | 100.00%                 | -                 |
| Hanwha Compound Corporation                                                                       | Republic of Korea | December      | Manufacture and sale of packaging materials                               | 100.00%                 | 100.00%           |
| Hanwha Chemical Overseas Holdings, Co., Ltd.                                                      | Republic of Korea | December      | Holding company                                                           | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Corp.                                                                              | Republic of Korea | December      | Manufacture and sale of solar cell and solar photovoltaic power generator | 100.00%                 | 100.00%           |
| Hanwha Q CELLS & Advanced Materilas Corporation (formerly, Hanwha Advanced Materials Corporation) | Republic of Korea | December      | Solar photovoltaic power business / Synthetic resin processing            | 100.00%                 | 100.00%           |
| Hanwha Chemical (Shanghai) Co.,Ltd.                                                               | China             | December      | Trade                                                                     | 100.00%                 | 100.00%           |
| Avenir el Divisadero SpA                                                                          | Chile             | December      | EPC construction                                                          | 100.00%                 | 100.00%           |
| Eagle Petroleum, LLC                                                                              | USA               | December      | Oil and gas exploration                                                   | 100.00%                 | -                 |
| Eagle Petroleum Monterey, LLC                                                                     | USA               | December      | Oil and gas exploration                                                   | 100.00%                 | -                 |
| Fotovoltaica De Los Andes SpA                                                                     | Chile             | December      | Solar photovoltaic power business                                         | 100.00%                 | 100.00%           |

| Company                                             | Locations | Closing Month | Main business                                   | Percentage of ownership |                   |
|-----------------------------------------------------|-----------|---------------|-------------------------------------------------|-------------------------|-------------------|
|                                                     |           |               |                                                 | December 31, 2018       | December 31, 2017 |
| Fotovoltaica Del Desierto SPA                       | Chile     | December      | Solar photovoltaic power business               | 100.00%                 | 100.00%           |
| Fotovoltaica Sol del Norte SpA                      | Chile     | December      | Solar photovoltaic power business               | 100.00%                 | 100.00%           |
| Garnet Solar Power Generation Station 1, LLC        | USA       | December      | Solar photovoltaic power business               | 100.00%                 | 50.00%            |
| Hale Ka Lae, LLC                                    | USA       | December      | Real estate development                         | -                       | 100.00%           |
| Hanwha Advanced Materials America LLC               | USA       | December      | Manufacture of automobile parts                 | 100.00%                 | 100.00%           |
| Hanwha Advanced Materials Beijing Co., Ltd.         | China     | December      | Manufacture of automobile parts                 | 100.00%                 | 100.00%           |
| Hanwha Advanced Materials Chongqing Co., Ltd.       | China     | December      | Manufacture of automobile parts                 | 100.00%                 | 100.00%           |
| Hanwha Advanced Materials Europe, s.r.o.            | Czech     | December      | Manufacture of automobile parts                 | 100.00%                 | 100.00%           |
| Hanwha Advanced Materials Germany GmbH              | Germany   | December      | Manufacture of automobile parts                 | 100.00%                 | 100.00%           |
| Hanwha Advanced Materials Holdings USA Inc.         | USA       | December      | Holding company                                 | 100.00%                 | 100.00%           |
| Hanwha Advanced Materials Holdings USA LLC          | USA       | December      | Holding company                                 | 100.00%                 | 100.00%           |
| Hanwha Advanced Materials Mexico S. De R.L. De C.V. | Mexico    | December      | Manufacture of automobile parts                 | 100.00%                 | 100.00%           |
| Hanwha Advanced Materials Shanghai Co., Ltd.        | China     | December      | Manufacture of automobile parts                 | 100.00%                 | 100.00%           |
| Hanwha America Development Inc.                     | USA       | December      | Holding company                                 | 100.00%                 | 100.00%           |
| Hanwha America Development LLC                      | USA       | December      | Real estate development                         | 100.00%                 | 100.00%           |
| Hanwha AZDEL, Inc.                                  | USA       | December      | Manufacture of automobile parts                 | 100.00%                 | 100.00%           |
| Hanwha Chemical (Ningbo) Co., Ltd.                  | China     | December      | Manufacture of compound                         | 100.00%                 | 100.00%           |
| Hanwha Chemical (Thailand) Co., Ltd.                | Thailand  | December      | Manufacture of compound                         | 99.99%                  | 99.99%            |
| HANWHA CHEMICAL INDIA PRIVATE LIMITED               | India     | March         | Trade                                           | 99.99%                  | 99.99%            |
| Hanwha Chemical Malaysia Sdn. Bhd.                  | Malaysia  | December      | Trade                                           | 100.00%                 | 100.00%           |
| Hanwha Development Services LLC                     | USA       | December      | Real estate development                         | -                       | 100.00%           |
| Hanwha Hawaii LLC                                   | USA       | December      | Real estate development                         | -                       | 100.00%           |
| Hanwha Holdings(USA), Inc.                          | USA       | December      | Holding company                                 | 80.00%                  | 80.00%            |
| Hanwha International Corp.                          | USA       | December      | Holding company                                 | 100.00%                 | 100.00%           |
| Hanwha International LLC                            | USA       | December      | Trade                                           | 100.00%                 | 100.00%           |
| Hanwha Machinery Americas, Inc.                     | USA       | December      | Sales of machine tools                          | 100.00%                 | 100.00%           |
| Hanwha Parcel O LLC                                 | USA       | December      | Real estate development                         | 100.00%                 | 100.00%           |
| Hanwha Property USA LLC                             | USA       | December      | Real estate development                         | 100.00%                 | 100.00%           |
| Hanwha PVPLUS LLC                                   | USA       | December      | Asset securitization                            | 100.00%                 | 100.00%           |
| Hanwha Q CELLS America Inc.                         | USA       | December      | Sales of solar products                         | 100.00%                 | 100.00%           |
| Hanwha Q CELLS America Project Holdings             | USA       | December      | Investment in solar power projects              | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Americas Holdings. Corp.             | USA       | December      | Solar photovoltaic power business               | 100.00%                 | -                 |
| Hanwha Q CELLS Australia Holdings Pty Ltd           | Australia | December      | Solar photovoltaic power business               | 100.00%                 | -                 |
| Hanwha Q CELLS Australia Pty Ltd.                   | Australia | December      | Sales of solar products                         | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Canada, Corp.                        | Canada    | December      | Sales of solar products                         | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Canada, Inc                          | Canada    | December      | Solar photovoltaic power business               | 100.00%                 | -                 |
| Hanwha Q CELLS Chile SpA                            | Chile     | December      | Manufacture and sales of solar power facilities | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Co., Ltd. (*1)                       | England   | December      | Manufacture and sales of solar products         | 93.85%                  | 93.94%            |
| Hanwha Q CELLS (Qidong) Co., Ltd.                   | China     | December      | Manufacture of silicon ingot                    | 100.00%                 | 100.00%           |
| Hanwha Q CELLS EPC USA, LLC                         | USA       | December      | Solar photovoltaic power business               | 100.00%                 | -                 |
| Hanwha Q CELLS France SAS                           | France    | December      | Solar photovoltaic power business               | 100.00%                 | 100.00%           |
| Hanwha Q CELLS GmbH                                 | Germany   | December      | Sales of solar products                         | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Hong Kong Limited                    | Hong Kong | December      | Investment and international procurement        | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Investment Co., Ltd.                 | England   | December      | Holding company                                 | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Malaysia Sdn. Bhd.                   | Malaysia  | December      | Manufacture of solar products                   | 100.00%                 | 100.00%           |
| Hanwha Q CELLS (Nantong) Co., Ltd.                  | China     | December      | Manufacture and sales of solar products         | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Peru S.A.C                           | Peru      | December      | Solar photovoltaic power business               | 99.99%                  | 99.99%            |

| Company                                             | Locations | Closing Month | Main business                                               | Percentage of ownership |                   |
|-----------------------------------------------------|-----------|---------------|-------------------------------------------------------------|-------------------------|-------------------|
|                                                     |           |               |                                                             | December 31, 2018       | December 31, 2017 |
| Hanwha Q CELLS PR Solar Holdings LLC                | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | 50.00%            |
| Hanwha Q CELLS Servicios Comerciales, S DE RL DE CV | Mexico    | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HANWHA Q CELLS SOLAR POWER SDN. BHD.                | Malaysia  | December      | Sales of solar products                                     | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Solar Technology Australia Pty Ltd.  | Australia | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| Hanwha Q CELLS Technology Co., Ltd.                 | China     | December      | Manufacture of silicon ingot                                | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Technology (Shanghai) Co., Ltd.      | China     | December      | Sales of solar products                                     | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Til Til Dos SpA                      | Chile     | December      | EPC construction                                            | -                       | 100.00%           |
| Hanwha Q CELLS Til Til Uno SPA                      | Chile     | December      | Manufacture and sales of solar power system                 | 100.00%                 | 100.00%           |
| Hanwha Q CELLS Turkey                               | Turkey    | December      | Construction and sales of solar power generation facilities | 100.00%                 | 100.00%           |
| Hanwha Q CELLS USA Corp.                            | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| Hanwha Q CELLS USA, INC.                            | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| Hanwha Resources (USA) Corporation                  | USA       | December      | Oil and gas exploration                                     | 80.00%                  | -                 |
| Hanwha Riverside LLC                                | USA       | December      | Real estate development                                     | 100.00%                 | 100.00%           |
| Hanwha Solar Electric Power Engineering Co., Ltd.   | China     | December      | Construction of solar power generation facilities           | 100.00%                 | 100.00%           |
| Hanwha Solar Engineering R&D center Co., Ltd.       | China     | December      | Research and Development                                    | 100.00%                 | 100.00%           |
| Hanwha Solar Holdings Co., Ltd.                     | England   | December      | Holding company                                             | 100.00%                 | 100.00%           |
| Hanwha Solarone(beipiao)Co.,Ltd                     | China     | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| Hanwha SolarOne (Laiyang) Co., Ltd.                 | China     | December      | Solar photovoltaic power business                           | 100.00%                 | 100.00%           |
| Hanwha SolarOne (Rugao) Co., Ltd.                   | China     | December      | Solar photovoltaic power business                           | 100.00%                 | 100.00%           |
| Hanwha SolarOne GmbH                                | Germany   | December      | Sales of solar products                                     | 100.00%                 | 100.00%           |
| Hanwha SolarOne Investment Holding Ltd.             | England   | December      | Holding company                                             | 100.00%                 | 100.00%           |
| Hanwha SolarOne Power Generation (Wuxi) Co., Ltd.   | China     | December      | Solar photovoltaic power business                           | 100.00%                 | 100.00%           |
| HANWHA TECHM USA LLC                                | USA       | December      | Manufacture of automobile parts                             | 100.00%                 | 100.00%           |
| Hanwha Village Market, LLC                          | USA       | December      | Real estate development                                     | 100.00%                 | 100.00%           |
| Hanwha West Properties LLC                          | USA       | December      | Real estate development                                     | 100.00%                 | 100.00%           |
| HQC Maywood, LLC                                    | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HQC Rock River Solar Holdings LLC                   | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | 50.00%            |
| HQC Rock River Solar Power Generation Station LLC   | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HQ MEX, LLC                                         | Mexico    | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HQ MEXICO HOLDINGS S DE RL DE CV                    | Mexico    | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HQ MEXICO Solar I S DE RL DE CV                     | Mexico    | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HQ MEXICO Solar II S DE RL DE CV                    | Mexico    | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HSEA HVES, LLC                                      | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HSEA PR Isla Solar III, LLC                         | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HSESM American Union LLC                            | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HSESM PlanadaES LLC                                 | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| HSESM LeGrandUHS LLC                                | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| Huoqiu Hanrui New Energy Power Generation Co., Ltd. | China     | December      | Solar photovoltaic power business                           | 100.00%                 | 100.00%           |
| Kalaeloa Renewable Energy Park, LLC                 | USA       | December      | Solar photovoltaic power business                           | 100.00%                 | -                 |
| KMPT Solarpark Verwaltung GmbH                      | Germany   | December      | Solar photovoltaic power business                           | 100.00%                 | 100.00%           |
| Lodz Solar Sp. z o.o.                               | Poland    | December      | EPC construction                                            | 100.00%                 | 100.00%           |
| Mazovia Solar 1 Sp. Z o.o.                          | Poland    | December      | EPC construction                                            | 100.00%                 | 100.00%           |

| Company                                             | Locations | Closing Month | Main business                     | Percentage of ownership |                   |
|-----------------------------------------------------|-----------|---------------|-----------------------------------|-------------------------|-------------------|
|                                                     |           |               |                                   | December 31, 2018       | December 31, 2017 |
| Mazovia Solar 2 Sp. Z o.o.                          | Poland    | December      | EPC construction                  | 100.00%                 | 100.00%           |
| Mazovia Solar 3 Sp. Z o.o.                          | Poland    | December      | EPC construction                  | 100.00%                 | 100.00%           |
| Nantong Hanwha Import & Export Co., Ltd.            | China     | December      | Sales of solar products           | 100.00%                 | 100.00%           |
| PV Vallenar Uno SpA                                 | Chile     | December      | Holding company                   | 100.00%                 | 100.00%           |
| QSUN 1 (formerly, SPP Wytwarzanie 11 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 2 (formerly, SPP Wytwarzanie 12 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 3 (formerly, SPP Wytwarzanie 14 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 4 (formerly, SPP Wytwarzanie 15 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 5 (formerly, SPP Wytwarzanie 30 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 6 (formerly, SPP Wytwarzanie 17 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 7 (formerly, SPP Wytwarzanie 16 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 8 (formerly, SPP Wytwarzanie 5 sp. z. o. o.)   | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 9 (formerly, SPP Wytwarzanie 20 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 10 (formerly, SPP Wytwarzanie 21 sp. z. o. o.) | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 11 (formerly, SPP Wytwarzanie 4 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 12 (formerly, SPP Eco Sun sp. z. o. o.)        | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 13 (formerly, SPP Wytwarzanie 7 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 14 (formerly, SPP Wytwarzanie 6 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 15 (formerly, SPP Wytwarzanie 8 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 16 (formerly, SPP Wytwarzanie 9 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 17 (formerly, SPP Wytwarzanie 1 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 18 (formerly, SPP Wytwarzanie 2 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN 19 (formerly, SPP Wytwarzanie 3 sp. z. o. o.)  | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| QSUN Poland Sp. z o.o.                              | Poland    | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| SFH Solarpark GmbH                                  | Germany   | December      | Solar photovoltaic power business | 100.00%                 | 100.00%           |
| Solar Monkey 1, LLC                                 | USA       | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| Solar Monkey 2, LLC                                 | USA       | December      | Solar photovoltaic power business | 100.00%                 | -                 |
| Solarpark FFT Infrastruktur GmbH & Co. KG           | Germany   | December      | Solar photovoltaic power business | -                       | 100.00%           |
| Universal Bearings LLC                              | USA       | December      | Manufacture of bearings           | 100.00%                 | 100.00%           |
| WSE Bradley Road Ltd                                | England   | December      | Solar photovoltaic power business | 100.00%                 | 100.00%           |
| Aslan Gunes Enerjisi A.S.(*2)                       | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| AKD En. Ur. San. ve Tic. A.S. (*2)                  | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| AKY 4 En. Ur. San. ve Tic. A.S. (*2)                | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| AKY 5 En. Ur. San. ve Tic. A.S. (*2)                | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| RTE 4 En. Ur. San. ve Tic. A.S. (*2)                | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| BSN 5 En. Ur. San. ve Tic. A.S. (*2)                | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 1 Gunes En. Ur. San. Ve Tic. A.S. (*2)        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 2 Gunes En. Ur. San. Ve Tic. A.S. (*2)        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 6 Gunes En. Ur. San. Ve Tic. A.S. (*2)        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |

| Company                                                                               | Locations | Closing Month | Main business                     | Percentage of ownership |                   |
|---------------------------------------------------------------------------------------|-----------|---------------|-----------------------------------|-------------------------|-------------------|
|                                                                                       |           |               |                                   | December 31, 2018       | December 31, 2017 |
| Tesla 7 Gunes En. Ur. San. Ve Tic. A.S. (*2)                                          | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 8 Gunes En. Ur. San. Ve Tic. A.S. (*2)                                          | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 9 Gunes En. Ur. San. Ve Tic. A.S. (*2)                                          | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 10 Gunes En. Ur. San. Ve Tic. A.S. (*2)                                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 11 Gunes En. Ur. San. Ve Tic. A.S. (*2)                                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 12 Gunes En. Ur. San. Ve Tic. A.S. (*2)                                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tesla 13 Gunes En. Ur. San. Ve Tic. A.S. (*2)                                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Hiprom Enerji Yatirimlari A.S. (*2)                                                   | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Sipahi Enerji Uretim A.S. (*2)                                                        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Kuantum Enerji Uretim A.S. (*2)                                                       | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Nuans Enerji Uretim A.S. (*2)                                                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Birinci Enerji Uretim A.S.                                                            | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Varlik Enerji Uretim A.S. (*2)                                                        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Tugce Enerji Uretim A.S. (*2)                                                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Bolca Enerji Uretim A.S. (*2)                                                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Sema Enerji Uretim Ltd. Sti. (*2)                                                     | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Alkin Enerji Uretim Ltd. Sti. (*2)                                                    | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Kartal Enerji Uretim Ltd. Sti. (*2)                                                   | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Mutlak Enerji Uretim Ltd. Sti. (*2)                                                   | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Elcin Enerji Uretim Ltd. Sti. (*2)                                                    | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Yapici Enerji Uretim A.S.                                                             | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Yilmazer Enerji Uretim A.S.                                                           | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Yenicag 1 Enerji Elektrik Gunes Enerjisi Uretimi Proje                                | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Pazarlama Dagitim Sanayi Ticaret Ltd.Sti.                                             |           |               |                                   |                         |                   |
| Papatya Enerji Elektrik Gunes Enerjisi Uretimi Proje                                  | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Pazarlama Dagitim Sanayi Ticaret Ltd.Sti.                                             |           |               |                                   |                         |                   |
| Kayrabey Enerji Elektrik Gunes Enerjisi Uretimi Proje                                 | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Pazarlama Dagitim Sanayi Ticaret Ltd. Sti.                                            |           |               |                                   |                         |                   |
| Maki Enerji Elektrik Gunes Enerjisi Uretimi Proje                                     | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Pazarlama Dagitim Sanayi Ticaret Ltd. Sti.                                            |           |               |                                   |                         |                   |
| BDI Enerji Elektrik Gunes Enerjisi Uretimi Proje                                      | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Pazarlama Dagitim Sanayi Ticaret Ltd. Sti.                                            |           |               |                                   |                         |                   |
| Fnt Gida Turizm Ic Ve Dis Ticaret Sanayi Ltd. Sti. (*2)                               | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Meva Muhendislik Bilisim Enerji Insaat Iletisim Turizm San.Ve Dis Tic. Ltd. Sti. (*2) | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Serimer Optik Medikal Kirtasiye Temizlik Insaat Ithalat                               | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| lhra cat Sanayi Tic. Ltd. Sti. (*2)                                                   |           |               |                                   |                         |                   |
| Marel Bilisim Muhendislik Enerji Insaat Iletisim Turizm Gida                          | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| San. Ve Dis Tic. Ltd. Sti. (*2)                                                       |           |               |                                   |                         |                   |
| Fior Gunes Enerjisi Anonim Sirketi(*2)                                                | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |

| Company                                                                | Locations | Closing Month | Main business                     | Percentage of ownership |                   |
|------------------------------------------------------------------------|-----------|---------------|-----------------------------------|-------------------------|-------------------|
|                                                                        |           |               |                                   | December 31, 2018       | December 31, 2017 |
| Aceka Turizm ve Insaat A.S. (*2)                                       | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Altaylar Altyapi ve Malzeme Hizmetleri A.S. (*2)                       | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Bilgidar iletisim Egitim ve Danismanlik Hizmetleri Tic. Ltd. Sti. (*2) | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Greenland Altyapi ve Malzeme Hizmetleri A.S. (*2)                      | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Hazar Altyapi ve Malzeme Hizmetleri A.S. (*2)                          | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Kartal Altyapi ve Malzeme Hizmetleri A.S. (*2)                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Kent Altyapi ve Malzeme Hizmetleri A.S. (*2)                           | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Lisola Elektrik Uretim Ins.ve Tic.Ltd.Sti. (*2)                        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Toprakkale Altyapi ve Malzeme Hizmetleri A.S. (*2)                     | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Ulu Gunes Enerjisi AnonimSirketi(*2)                                   | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Onan Enerji Uretim A.S. (*2)                                           | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Eflak Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                          | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Dimetoka Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                       | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Varna Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                          | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Segah Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                          | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| isfahan Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Buselik Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Kaniye Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Hersek Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                         | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Turaneli Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                       | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Moravia Enerji Sanayi ve Ticaret Ltd. Sti. (*2)                        | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |
| Uno Enerji A.S. (*2)                                                   | Turkey    | December      | Solar photovoltaic power business | -                       | -                 |

(\*1) Due to the issuance of unequal shares for the years ended December 31, 2018, the Group's ownership percentage decreased.

(\*2) With contractual agreement the Group include the company within consolidated criteria without ownership percentage.

(2) Changes of scope of consolidation.

Subsidiaries newly included in the consolidation and excluded from the consolidation during the year ended December 31, 2018, are as follows:

1) Subsidiaries newly included in the consolidation for the year ended December 31, 2018, are as follows:

| Company Name                                        | Reason                        |
|-----------------------------------------------------|-------------------------------|
| Water Solar Corp.                                   |                               |
| Eagle Petroleum, LLC                                |                               |
| Eagle Petroleum Monterey, LLC                       |                               |
| Hanwha Resources (USA) Corporation                  |                               |
| Hanwha Solarone(beipiao)Co.,Ltd                     |                               |
| QSUN Poland Sp. z o.o.                              |                               |
| QSUN 1 (formerly, SPP Wytwarzanie 11 sp. z. o. o.)  |                               |
| QSUN 2 (formerly, SPP Wytwarzanie 12 sp. z. o. o.)  |                               |
| QSUN 3 (formerly, SPP Wytwarzanie 14 sp. z. o. o.)  |                               |
| QSUN 4 (formerly, SPP Wytwarzanie 15 sp. z. o. o.)  |                               |
| QSUN 5 (formerly, SPP Wytwarzanie 30 sp. z. o. o.)  |                               |
| QSUN 6 (formerly, SPP Wytwarzanie 17 sp. z. o. o.)  |                               |
| QSUN 7 (formerly, SPP Wytwarzanie 16 sp. z. o. o.)  | Newly acquired                |
| QSUN 8 (formerly, SPP Wytwarzanie 5 sp. z. o. o.)   |                               |
| QSUN 9 (formerly, SPP Wytwarzanie 20 sp. z. o. o.)  |                               |
| QSUN 10 (formerly, SPP Wytwarzanie 21 sp. z. o. o.) |                               |
| QSUN 11 (formerly, SPP Wytwarzanie 4 sp. z. o. o.)  |                               |
| QSUN 12 (formerly, SPP Eco Sun sp. z. o. o.)        |                               |
| QSUN 13 (formerly, SPP Wytwarzanie 7 sp. z. o. o.)  |                               |
| QSUN 14 (formerly, SPP Wytwarzanie 6 sp. z. o. o.)  |                               |
| QSUN 15 (formerly, SPP Wytwarzanie 8 sp. z. o. o.)  |                               |
| QSUN 16 (formerly, SPP Wytwarzanie 9 sp. z. o. o.)  |                               |
| QSUN 17 (formerly, SPP Wytwarzanie 1 sp. z. o. o.)  |                               |
| QSUN 18 (formerly, SPP Wytwarzanie 2 sp. z. o. o.)  |                               |
| QSUN 19 (formerly, SPP Wytwarzanie 3 sp. z. o. o.)  |                               |
| Yungam Techno Solar Power Corp.                     |                               |
| Yungam Hae-oreum Solar Power Corp.                  |                               |
| Hi-pass Solar Power Corp.                           |                               |
| Haesarang Solar Power Corp.                         |                               |
| Hanbando Solar Power Corp.                          |                               |
| Garnet Solar Power Generation Station 1, LLC        |                               |
| Hanwha Q CELLS Americas Holdings. Corp.             |                               |
| Hanwha Q CELLS Australia Holdings Pty Ltd           |                               |
| Hanwha Q CELLS Canada, Inc                          |                               |
| Hanwha Q CELLS EPC USA, LLC                         |                               |
| Hanwha Q CELLS PR Solar Holdings LLC                |                               |
| Hanwha Q CELLS Servicios Comerciales, S DE RL DE CV |                               |
| Hanwha Q CELLS Solar Technology Australia Pty Ltd.  |                               |
| Hanwha Q CELLS USA Corp.                            |                               |
| Hanwha Q CELLS USA, INC.                            | Newly included<br>from merger |
| HQC Maywood, LLC                                    |                               |
| HQC Rock River Solar Holdings LLC                   |                               |
| HQC Rock River Solar Power Generation Station LLC   |                               |
| HQ MEX, LLC                                         |                               |
| HQ MEXICO HOLDINGS S DE RL DE CV                    |                               |
| HQ MEXICO Solar I S DE RL DE CV                     |                               |
| HQ MEXICO Solar II S DE RL DE CV                    |                               |
| HSEA HVES, LLC                                      |                               |
| HSEA PR Isla Solar III, LLC                         |                               |
| HSESM American Union LLC                            |                               |
| HSESM PlanadaES LLC                                 |                               |
| HSESM LeGrandUHS LLC                                |                               |
| Kalaeloa Renewable Energy Park, LLC                 |                               |
| Solar Monkey 1, LLC                                 |                               |
| Solar Monkey 2, LLC                                 |                               |

2) Subsidiaries excluded from the consolidation during the year ended December 31, 2018, are as follows:

| Company Name                                                                                     | Reason              |
|--------------------------------------------------------------------------------------------------|---------------------|
| Hale Ka Lac, LLC                                                                                 | Sales to associates |
| Hanwha Hawaii LLC                                                                                |                     |
| Hanwha Development Services LLC                                                                  | Liquidation         |
| Hanwha Q CELLS Til Til Dos SpA                                                                   |                     |
| Solarpark FFT Infrastruktur GmbH & Co. KG                                                        |                     |
| Birinci Enerji Uretim A.S.                                                                       |                     |
| Yapici Enerji Uretim A.S.                                                                        |                     |
| Yilmazer Enerji Uretim A.S.                                                                      | Share sales         |
| Yenicag 1 Enerji Elektrik Gunes Enerjisi Uretimi Proje Pazarlama Dagitim Sanayi Ticaret Ltd.Sti. |                     |
| Papatya Enerji Elektrik Gunes Enerjisi Uretimi Proje Pazarlama Dagitim Sanayi Ticaret Ltd.Sti.   |                     |
| Kayrabey Enerji Elektrik Gunes Enerjisi Uretimi Proje Pazarlama Dagitim Sanayi Ticaret Ltd. Sti. |                     |
| Maki Enerji Elektrik Gunes Enerjisi Uretimi Proje Pazarlama Dagitim Sanayi Ticaret Ltd. Sti.     |                     |
| BDI Enerji Elektrik Gunes Enerjisi Uretimi Proje Pazarlama Dagitim Sanayi Ticaret Ltd. Sti.      |                     |
|                                                                                                  |                     |
|                                                                                                  |                     |
|                                                                                                  |                     |
|                                                                                                  |                     |
|                                                                                                  |                     |

(3) Financial information of major subsidiaries

|                                                                                                   | In thousands of Korean won |               |                |              |                  |
|---------------------------------------------------------------------------------------------------|----------------------------|---------------|----------------|--------------|------------------|
|                                                                                                   | Assets                     | Liabilities   | Equity         | Revenue      | Net Income(Loss) |
| Gyeonggi Yongin Techno Valley Co., Ltd.                                                           | ₩ 232,771,203              | ₩ 250,591,919 | ₩ (17,820,716) | ₩ 11,945,916 | ₩ (8,260,755)    |
| Gimhae Techno Valley Co., Ltd.                                                                    | 28,579,550                 | 12,560,654    | 16,018,896     | 42,918,332   | 3,440,386        |
| Seosan Techno Valley                                                                              | 18,209,159                 | 8,205,749     | 10,003,410     | 2,447,343    | 1,845,639        |
| Asan Techno Valley                                                                                | 1,638,186                  | -             | 1,638,186      | -            | 21,053           |
| H-Valley Co., Ltd. (formerly, Gyeonggi hwaseong bio valley Co.,Ltd.)                              | 10,325,805                 | 7,426,885     | 2,898,920      | 2,597,882    | (1,331,218)      |
| Water Solar Corp.                                                                                 | 6,270,949                  | 5,867,390     | 403,559        | -            | -                |
| Hanwha Galleria Co., Ltd.                                                                         | 1,867,660,401              | 882,818,664   | 984,841,737    | 356,784,005  | 15,682,799       |
| Hanwha Galleria Timeworld Co., Ltd.                                                               | 434,067,890                | 228,807,985   | 205,259,905    | 332,681,412  | 6,712,603        |
| Hanwha City Development Co., Ltd.                                                                 | 210,441,246                | 7,465,008     | 202,976,238    | 7,086,818    | (18,863,724)     |
| Hanwha B&B Co Ltd.                                                                                | 11,801,858                 | 3,028,553     | 8,773,305      | 14,773,128   | 109,694          |
| NHL Development Co.Ltd.                                                                           | 70,448,669                 | 25,347,605    | 45,101,064     | -            | (36,945,402)     |
| Yungam Techno Solar Power Corp.                                                                   | 8,353,642                  | 213,564       | 8,140,078      | 164,205      | 10,092           |
| Yungam Hae-oreum Solar Power Corp.                                                                | 5,896,810                  | 72,803        | 5,824,007      | 115,533      | (38,988)         |
| Hi-pass Solar Power Corp.                                                                         | 11,214,064                 | 9,256,386     | 1,957,678      | 291,178      | (70,823)         |
| Hanbando Solar Power Corp.                                                                        | 3,499,581                  | 3,240,752     | 258,829        | 60,371       | 23,459           |
| Hanwha Compound Corporation                                                                       | 83,911,378                 | 33,009,150    | 50,902,228     | 138,883,479  | 1,371,641        |
| Hanwha Chemical Overseas Holdings, Co., Ltd.                                                      | 95,278,074                 | 1,580,348     | 93,697,726     | -            | (2,428,074)      |
| Hanwha Q CELLS & Advanced Materilas Corporation (formerly, Hanwha Advanced Materials Corporation) | 3,119,767,744              | 2,085,698,718 | 1,034,069,026  | 898,537,161  | 25,177,814       |
| Haesarang Solar Power Corp.                                                                       | 9,523,154                  | 6,222,575     | 3,300,579      | 241,328      | 5,291            |
| Hanwha Chemical (Shanghai) Co.,Ltd.                                                               | 45,827,914                 | 28,045,928    | 17,781,986     | 149,083,314  | 2,500,021        |
| Hanwha Advanced Materials Beijing Co., Ltd.                                                       | 66,443,879                 | 26,994,780    | 39,449,099     | 46,072,128   | (940,114)        |
| Hanwha Advanced Materials Europe, s.r.o.                                                          | 133,114,708                | 83,788,011    | 49,326,697     | 98,883,733   | (1,444,772)      |
| Hanwha Advanced Materials Holdings USA Inc.                                                       | 44,272,016                 | 3,560,362     | 40,711,654     | -            | -                |
| Hanwha Advanced Materials Mexico S. De R.L. De C.V.                                               | 58,851,135                 | 56,150,562    | 2,700,573      | 40,124,072   | (3,825,901)      |
| Hanwha Advanced Materials Shanghai Co., Ltd.                                                      | 53,305,717                 | 30,440,160    | 22,865,557     | 44,027,523   | (1,180,721)      |
| Hanwha America Development Inc.                                                                   | 109,801,672                | 3,607,383     | 106,194,289    | -            | 1,266,404        |
| Hanwha Chemical (Ningbo) Co., Ltd.                                                                | 324,606,065                | 109,067,990   | 215,538,075    | 374,496,881  | 8,940,771        |
| Hanwha Chemical (Thailand) Co., Ltd.                                                              | 39,188,612                 | 10,771,638    | 28,416,974     | 29,927,425   | (81,149)         |
| Hanwha Chemical Malaysia Sdn. Bhd.                                                                | 37,556,001                 | 30,552,306    | 7,003,695      | 165,552,653  | 3,554,772        |
| Hanwha Holdings(USA), Inc. (*1)                                                                   | 668,721,400                | 397,064,192   | 271,657,208    | 641,427,039  | (23,397,537)     |

|                                             | In thousands of Korean won |               |              |               |               | Net |
|---------------------------------------------|----------------------------|---------------|--------------|---------------|---------------|-----|
|                                             | Assets                     | Liabilities   | Equity       | Revenue       | Income(Loss)  |     |
| Hanwha International Corp.                  | ₩ 56,200,396               | ₩ 537,902     | ₩ 55,662,494 | ₩ -           | ₩ 2,026,813   |     |
| Hanwha Q CELLS Americas Holdings Corp. (*2) | 294,999,717                | 221,704,146   | 73,295,571   | 28,082,013    | (5,815,854)   |     |
| Hanwha Q CELLS Australia Pty Ltd.           | 28,387,347                 | 26,592,965    | 1,794,382    | 101,338,129   | 1,489,412     |     |
| Hanwha Q CELLS Chile SpA                    | 25,151,574                 | 8,750,290     | 16,401,284   | 5,312,460     | (2,094,407)   |     |
| Hanwha Q CELLS Co., Ltd. (*3)               | 2,352,676,366              | 1,635,558,570 | 717,117,796  | 1,660,919,366 | (311,455,999) |     |
| Hanwha Q CELLS GmbH                         | 509,659,295                | 316,621,247   | 193,038,048  | 802,291,641   | 753,465       |     |
| Hanwha Q CELLS Investment Co., Ltd.         | 474,246,503                | 114,508,196   | 359,738,307  | -             | (536,439)     |     |
| Hanwha Q CELLS Malaysia Sdn. Bhd.           | 615,680,815                | 450,629,764   | 165,051,051  | 620,259,840   | 18,522,702    |     |
| Hanwha Q CELLS Turkey (*4)                  | 143,118,765                | 159,284,276   | (16,165,511) | 68,127,801    | (35,171,195)  |     |
| Hanwha Solar Holdings Co., Ltd.             | 894,079,481                | -             | 894,079,481  | -             | (269,459)     |     |

(\*1) Financial information of intermediate parent company Hanwha Holdings (USA), Inc. and its 17 subsidiaries.

(\*2) Financial information of intermediate parent company Hanwha Q CELLS Americas Holdings Corp. and its 17 subsidiaries.

(\*3) Financial information of intermediate parent company Hanwha Q CELLS Co., Ltd. and its 19 subsidiaries.

(\*4) Financial information of intermediate parent company Hanwha Q CELLS Turkey and its 55 subsidiaries.

## 2. **SIGNIFICANT ACCOUNTING POLICIES:**

### (1) Basis of consolidation

The Company and its subsidiaries (the “Group”) have prepared the consolidated financial statements in accordance with the Korean International Financial Reporting Standards (“K-IFRS”).

Except as described below, the accounting policies applied by the Group in these consolidated financial statements are the same as those applied by the Group in its consolidated financial statements as of and for the year ended December 31, 2017. The principal accounting policies are set out below. Except for the effect of the Amendments to K-IFRSs and new interpretations set out below, the principal accounting policies used to prepare the consolidated financial statements as of and for the year ended December 31, 2018 are consistent with the accounting policies used to prepare the consolidated financial statements as of and for the year ended December 31, 2017.

The accompanying consolidated financial statements have been prepared on the historical cost basis except for certain properties, non-current assets and financial instruments that are measured at fair values, as explained in the accounting policies below. Historical cost is based on the fair values of the consideration given.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, regardless of whether that price is directly observable or estimated using another valuation technique. In estimating the fair value of an asset or a liability, the Group takes into account the characteristics of the asset or liability if market participants would take those characteristics into account when pricing the asset or liability at the measurement date. Fair value for measurement and disclosure purposes in these consolidated financial statements is determined on such a basis, except for share-based payment transactions that are within the scope of K-IFRS 1102 Share-based payment, leasing transactions that are within the scope of K-IFRS 1017 Leases, and measurements that have some similarities to fair value but are not fair value, such as net realisable value in K-IFRS 1002 Inventories or value in use in K-IFRS 1036 Impairment of Assets.

### 1) Amendments to K-IFRSs and new interpretations that are mandatorily effective for the current year

#### Enactment to K-IFRS 1109 – Financial Instrument

With the initial application date of January 1, 2018, the Group has applied K-IFRS 1109 and the amendments to other relevant standards for the first time in the current period. K-IFRS 1109 contains new requirements for i) classification and measurement of financial assets and financial liabilities, ii) impairment of financial assets and iii) hedge accounting.

At the date of initial application, the Group elected not to restate prior periods, and hence, the Company did not restate comparative financial statements in accordance with K-IFRS 1109.

The main contents of the new regulations and their impact on the Group's consolidated financial statements are as follows:

#### A. Classification and measurement of financial assets

All recognized financial assets that are currently within the scope of K-IFRS 1109 will be subsequently measured either at amortized cost or fair value under K-IFRS 1109 based on the business model and the nature of the contractual cash flows.

- Financial assets measured at amortized cost:

A debt instrument that is held within a business model whose objective is to collect the contractual cash flows and has contractual cash flows that are solely payments of principal and interest on the principal amount outstanding shall be subsequently measured at amortized cost.

- Financial assets measured at fair value through other comprehensive income ("FVTOCI"):

A debt instrument that is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets and has contractual cash flows that are solely payments of principal and interest on the principal amount outstanding shall be subsequently measured at FVTOCI.

- Financial assets measured at fair value through profit or loss ("FVTPL"):

All other debt and equity instruments shall be subsequently measured at FVTPL.

Notwithstanding the foregoing, the Group may make the following irrevocable election or designation at the time of initial recognition of a financial asset:

- In a business combination that is not a held for trading and does apply K-IFRS 1103, you may elect to present subsequent changes in the fair value of the investment in equity securities that are not contingent consideration recognized by the acquirer in other comprehensive income.

- If the Group eliminates or significantly reduces accounting mismatch by designating debt security as a FVTPL, the Group can designate the debt security that meets the requirements of a financial asset at FVTOCI or a financial asset at amortized cost as FVTPL.

There is no debt security designated as FVTPL that meets the requirements of a financial asset at FVTOCI or a financial asset at amortized cost for the years ended December 31, 2018.

When a debt security measured at FVTOCI is removed, the cumulative gain or loss recognized in other comprehensive income is reclassified from equity to profit or loss as a reclassification adjustment. On the other hand, for equity security designated as FVTOCI, cumulative gains or losses previously recognized in other comprehensive income are not subsequently reclassified to profit or loss. A debt security subsequently measured at amortized cost or FVTOCI is eligible for impairment.

Management has reviewed and assessed the financial assets held by the Group based on the facts and circumstances that existed at the date of initial application and, as a result of the initial application of K-IFRS 1109, management has determined that the following effects will occur:

- Debt securities classified as available-for-sale ("AFS") financial assets in accordance with K-IFRS 1039 are held under a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets, and the debt securities with contractual cash flows consisting solely payments of principal and interest on the principal amount outstanding are classified as financial assets at FVTOCI. Changes in the fair value of these debt securities are recognized as accumulated gain or loss until they are eliminated or reclassified.

- Investments in equity securities classified as AFS financial assets in accordance with K-IFRS 1039 and measured at fair value at the end of each reporting period (neither held for trading nor contingent consideration arising from business combinations) are designated as FVTOCI. Changes in the fair value of these equity securities are recognized as accumulated gain or loss.

- There is no change in the measurement of equity instruments that are held for trading. Such instruments continue to be measured at FVTPL.

- In accordance with K-IFRS 1039, held-to-maturity financial assets and financial assets classified as loans and receivables are held under a business model whose objective is collecting contractual cash flows, and the financial assets consisting solely payments of principal and interest on the principal amount outstanding are measured at amortized cost under K-IFRS 1109.

- Financial assets at FVTPL in accordance with K-IFRS 1039 are also measured at FVTPL under K-IFRS 1109.

Changes in the classification of financial assets under K-IFRS 1109 are described in Note 2.(1)-(ii)-E. Gain on valuation of AFS financial assets of ₩46,924 million were split two parts: ₩46,920 million for valuation gains and losses for equity instruments designated as FVTOCI that are not subsequently reclassified to profit and loss and ₩4 million for valuation gains and losses for debts instruments designated as FVTOCI that are subsequently reclassified to profit and loss. In addition, the amount of decrease in retained earnings of impairment loss that was previously recognized was reclassified to other comprehensive income - loss on valuation of equity method designated as fair value measurement amount of ₩ 20,068 million.

Other reclassification of financial assets do not affect the Group's consolidated financial position, profit or loss, other comprehensive income or comprehensive income.

## B. Impairment: Financial assets

In accordance with K-IFRS 1109's expected credit loss impairment model, unlike K-IFRS 1039, an impairment loss is recognized in respect of impairment of financial assets at the end of each reporting period to reflect changes in credit risk after the initial recognition of the financial asset losses and their changes, that is, it does not necessarily mean that a credit event should occur before you recognize credit losses.

The Group recognizes expected credit loss about i) debt security measured at amortized cost or FVTOCI, ii) lease receivables, iii) receivables and contract assets and iv) loan contracts and financial guarantee contracts that subject to the impairment provisions of K-IFRS 1109 expected credit loss as loss allowance.

In particular, when the credit risk of the financial instrument is significantly increased after initial recognition, or when the credit is impaired when the financial asset is acquired, the loss allowance is measured as the expected credit loss for the whole period. Meanwhile, if the credit risk of a financial instrument does not increase significantly after initial recognition (excluding financial asset whose credit is impaired when it is acquired), the Group measures the loss allowance on financial instruments at an amount equivalent to the expected 12-month credit loss. In addition, K-IFRS 1109 provides a simplified approach of measuring the loss allowance on trade receivables, contract assets and lease receivables under certain circumstances, which is the amount corresponding to the expected credit losses for the whole period. Among them, the Group applies the simplified approach for trade receivables.

Management determines the credit risk at the date of first recognition of financial instruments in accordance with K-IFRS 1109. Also management reviews and assesses the impairment of financial assets, contract assets and financial guarantee contracts using reasonable and supportive information that is available for use without undue cost or effort in comparison with the credit risk of the initial date of adoption (January 1, 2018). As of January 1, 2018, the Company recognized an additional loss allowance of ₩2,313 million for the years ended December 31.

The difference between provisions for doubtful accounts under K-IFRS 1039 and guarantees under K-IFRS 1037 as of January 1, 2018, and loss allowance under K-IFRS 1109 is not material.

In accordance with amendments to K-IFRS 1107, the disclosure requirements for the total exposure of credit risk on the Group's consolidated financial statements have increased.

## C. Classification and measurement of financial liabilities

One of the major changes related to the classification and measurement of financial liabilities as a result of the adoption of K-IFRS 1109 is the change in the fair value of financial liabilities designated as FVTPL. Except for when the effect of changes in the credit risk of the financial liabilities designated as fair value through fair value measurement is recognized as other comprehensive income, it causes an accounting inconsistency in the profit or loss; changes in fair value are recognized in other comprehensive income. Changes in fair value due to credit risk of financial liabilities are not subsequently reclassified to profit or loss, but are replaced with retained earnings when financial liabilities are eliminated. In accordance with K-IFRS 1039, all changes in fair value of financial liabilities designated as financial liabilities at FVTPL have been presented in profit or loss.

The adoption of K-IFRS 1109 has no significant impact on the classification and measurement of financial liabilities.

Note 2.(1)-(ii)-E describes the specific details of the change in classification according to the application of K-IFRS 1109.

## D. Hedge accounting

The new general hedge accounting model maintains three types of hedge accounting. However, those are introducing more flexibility in the types of transactions eligible for hedge accounting and are increasing the types of hedging instruments and risk factors for non-financial items that are appropriate for hedge accounting. In addition, the related regulations on risk appraisal effectiveness were generally revised and replaced by the "economic relationship" principle between the hedged item and the hedging instrument. Retrospective assessment of the hedging effectiveness is no longer required. Additional disclosure requirements have been introduced regarding our risk management activities.

K-IFRS 1109 has no effect on the Group's consolidated financial position and results of operations for the period. The Group's risk management activities are described in Note 4.

E. The classification and measurement of financial assets and financial liabilities in accordance with K-IFRS 1109 and K-IFRS 1039 as of January 1, 2018, the initial application date, are as follows:

|                                           |                                             |                                                     | In thousands of Korean won      |               |                 |
|-------------------------------------------|---------------------------------------------|-----------------------------------------------------|---------------------------------|---------------|-----------------|
| Category                                  |                                             |                                                     | Book value                      |               |                 |
|                                           |                                             |                                                     | Additional loss allowance under |               |                 |
|                                           | K-IFRS 1039                                 | K-IFRS 1109                                         | K-IFRS 1039                     | K-IFRS 1109   | K-IFRS 1109     |
| Financial Assets                          |                                             |                                                     |                                 |               |                 |
| Trade and other receivables (Note 9)      | Loans and receivables                       | Financial assets measured at amortized cost         | ₩ 1,718,321,605                 | ₩ (2,313,071) | ₩ 1,716,008,534 |
| Other financial assets (Note 10)          | Loans and Receivables                       | Financial assets measured at amortized cost         | 433,279,450                     | -             | 433,279,450     |
| Derivative assets (Note 10)               | Financial assets at FVTPL                   | FVTPL—financial assets                              | 883,763                         | -             | 883,763         |
| Unlisted securities (Note 13)             | AFS financial assets                        | FVTOCI—financial assets                             | 118,285,948                     | -             | 118,285,948     |
| Listed securities (Note 13)               | AFS financial assets                        | FVTOCI—financial assets                             | 122,545,315                     | -             | 122,545,315     |
| Debentures (Note 13)                      | AFS financial assets                        | FVTOCI—financial assets                             | 77,051                          | -             | 77,051          |
| Collective Investment Fund (Note 13)      | AFS financial assets                        | FVTPL—financial assets                              | 88,541                          | -             | 88,541          |
| Financial liabilities                     |                                             |                                                     |                                 |               |                 |
| Trade and other payables (Note 19)        | Financial liabilities at amortized cost     | Financial liabilities measured at amortized cost    | 1,608,154,913                   | -             | 1,608,154,913   |
| Contingent consideration (Note 5,6, 19)   | Financial liabilities at FVTPL              | Financial liabilities measured at FVTPL             | 46,894,927                      | -             | 46,894,927      |
| Borrowings (Note 20)                      | Financial liabilities at amortized cost     | Financial liabilities measured at amortized cost    | 4,405,762,766                   | -             | 4,405,762,766   |
|                                           | Other financial liabilities(*)              | Other financial liabilities(*)                      | 11,614,294                      | -             | 11,614,294      |
| Derivative liabilities (Note 21)          | Financial liabilities at FVTPL              | Financial liabilities measured at FVTPL             | 38,593,072                      | -             | 38,593,072      |
|                                           | Other financial liabilities(*)              | Other financial liabilities(*)                      | 1,883,687                       | -             | 1,883,687       |
| Other financial liabilities (Note 21)     | Financial liabilities at amortized cost     | Financial liabilities measured at amortized cost    | 158,057,625                     | -             | 158,057,625     |
| Financial guarantee Liabilities (Note 21) | Financial liabilities at amortized cost (*) | Financial liabilities measured at amortized cost(*) | 1,314,448                       | -             | 1,314,448       |

(\*) Hedging derivative instruments that are not subject to financial liabilities by category, financial liabilities and financial guarantees related to transfer transactions not qualified for derecognition are classified as other financial liabilities.

#### Enactment to K-IFRS 1115 – Revenue from Contracts with Customers

In the current year, the Group has applied K-IFRS 1115 Revenue from Contracts with Customers which is effective for an annual period that begins on or after January 1, 2018. K-IFRS 1115 introduced a 5-step approach to revenue recognition. Far more prescriptive guidance has been added in K-IFRS 1115 to deal with specific scenarios. Details of the new requirements as well as their impact on the Group's consolidated financial statements are described below.

The Group initially applied K-IFRS 1115, "Revenue from Contracts with Customers," and adopted the cumulative effect of the initial application of K-IFRS 1115 on January 1, 2018. We chose to apply it modified retrospective to recognize it on the first day. In addition, the standard is applied retroactively only to contracts that are not completed on the date of initial application, and all contractual changes made before the initial application date are not rewritten.

The contents of the new standards and the accounting policies applied by the Group are as follows.

The Group recognizes revenue from the following main sources:

- Raw materials - Sales of petrochemical products, such as polyethylene, PVC RESIN and caustic soda
- Processing - Sales of plastic processing products, such as lightweight composite materials and high-function materials
- Distribution sector - Retail distribution business, such as department store and duty free shop
- Photovoltaic sector - Manufacture and sales of photovoltaic products

Revenues are measured based on the consideration set by the contract with the customer and excludes the amount collected on behalf of the third party. In addition, the Group recognizes revenue when the goods or services are transferred to the customer.

a. Sales of goods - Raw materials/Processing/Solar Photovoltaic

Revenues from the sale of goods are recognized when the goods are delivered to the buyer, and the provision and refund liabilities for returnability and the warranty liability for sale are reasonably estimated.

b. Provision of goods and rental services - Distribution sector

The price the customer promises due to the return right granted by the Group in accordance with the contract of sale of the goods with the customer may change. In accordance with K-IFRS 1115, the variable cost is estimated using a method that expects to be able to better anticipate the consideration to be entitled to the right to receive the expected or probable price of the right to receive the right. It recognizes revenue by including the variable price in the transaction price only to the extent that it is highly unlikely that it will carry out a significant portion of the cumulative revenue amount that has already been recognized. Amounts that the Group does not expect to have the right to receive or receive are recognized as a refund liability and the related inventories are recognized as refundable assets.

Amendments to K-IFRS 1102 – Share-based Payment

The amendments include: 1) when measuring the fair value of share-based payment, the effects of vesting and non-vesting conditions on the measurement of cash-settled share-based payment should be consistent with the measurement of equity-settled share-based payment, 2) share-based payment transaction in which the Group settles the share-based payment arrangement net by withholding a specified portion of the equity instruments per statutory tax withholding requirements would be classified as equity-settled in its entirety, if otherwise would be classified as equity-settled without the net settlement feature and 3) when a cash-settled share-based payment changes to an equity-settled share-based payment because of modifications of the terms and conditions, the original liability recognized is derecognized and the equity-settled share-based payment is recognized at the modification-date fair value. Any difference between the carrying amount of the liability at the modification date and the amount recognized in equity at the same date would be recognized in profit and loss immediately. The application of these amendments has no significant impact on the Group's consolidated financial statements.

Amendments to K-IFRS 1040 – Investment Property

The amendments clarify that a transfer to, or from, investment property necessitates an assessment of whether a property meets, or has ceased to meet, the definition of investment property, supported by observable evidence that a change in use has occurred. The amendments further clarify that situations other than the ones listed in K-IFRS 1040 may evidence a change in use and that a change in use is possible for properties under construction (i.e., a change in use is not limited to completed properties). The amendments have no material impact on the Group's consolidated financial statements.

Enactment to K-IFRS 2122 – Foreign Currency Transactions and Advance Consideration

The interpretation addresses how to determine the 'date of transaction' for the purpose of determining the exchange rate to use on initial recognition of an asset, expense or income, when consideration for that item has been paid or received in advance in a foreign currency, which resulted in the recognition of a non-monetary asset or non-monetary liability (e.g., a non-refundable deposit or deferred revenue).

The interpretation specifies that the date of transaction is the date on which the entity initially recognizes the non-monetary asset or non-monetary liability arising from the payment or receipt of advance consideration. If there are multiple payments or receipts in advance, the interpretation requires an entity to determine the date of transaction for each payment or receipt of advance consideration.

Because the Group already accounts for transactions involving the payment or receipt of advance consideration in a foreign currency in a way that is consistent with the amendments, the amendments have no impact on the Group's consolidated financial statements.

Annual Improvements to K-IFRS 2014 – 2016 – Cycle

The annual improvements include amendments to K-IFRS 1101 First-time Adoption and K-IFRS 1028 Investment in Associates and Joint Ventures. The amendments to K-IFRS 1028 clarify that the option for a venture capital organization and other similar entities to measure investments in associates and joint ventures at FVTPL is available separately for each associate or joint venture and that election should be made at initial recognition of the associate or joint venture. In respect of the option for an entity that is not an investment entity (IE) to retain the fair value measurement applied by its associates and joint ventures that are IEs when applying the equity method, the amendments make a similar clarification that this choice is available for each IE associate or IE joint venture.

The amendments have no impact on the Group's consolidated financial statements as the Group is neither a first-time adopter of K-IFRS nor a venture capital organization. Furthermore, the Group does not have any associate or joint venture that is an IE.

The effect of changes in accounting policies on the consolidated financial statements is as follows:

|                                                   |   | In thousands of Korean won |                       |                         |
|---------------------------------------------------|---|----------------------------|-----------------------|-------------------------|
|                                                   |   | January 1, 2018            |                       |                         |
|                                                   |   | Before application         | Adjustments           | After application       |
| <b>Assets</b>                                     |   |                            |                       |                         |
| Current assets                                    |   |                            |                       |                         |
| Cash and cash equivalents                         | ₩ | 804,983,081                | ₩ -                   | ₩ 804,983,081           |
| Other financial assets                            |   | 370,508,336                | -                     | 370,508,336             |
| Trade and other receivables                       |   | 1,706,780,803              | (14,702,424)          | 1,692,078,379           |
| Other current assets                              |   | 186,578,903                | 12,617,819            | 199,196,722             |
| Inventories                                       |   | 1,143,758,174              | -                     | 1,143,758,174           |
| Current income tax assets                         |   | 7,724,630                  | -                     | 7,724,630               |
| Assets classified as held-for-sale current assets |   | <u>2,133,140</u>           | <u>-</u>              | <u>2,133,140</u>        |
|                                                   |   | <u>4,222,467,067</u>       | <u>(2,084,605)</u>    | <u>4,220,382,462</u>    |
| Non-current assets                                |   |                            |                       |                         |
| FVTPL—financial assets                            |   | -                          | 88,541                | 88,541                  |
| AFS financial assets                              |   | 240,996,855                | (240,996,855)         | -                       |
| Financial assets at FVTOCI                        |   | -                          | 240,908,314           | 240,908,314             |
| Other financial assets                            |   | 63,654,878                 | -                     | 63,654,878              |
| Long-term trade and other receivables             |   | 11,540,802                 | -                     | 11,540,802              |
| Investments in associates and joint ventures      |   | 2,682,319,452              | (19,883,940)          | 2,662,435,512           |
| Investment property                               |   | 349,947,327                | -                     | 349,947,327             |
| Property, plant and equipment                     |   | 5,588,231,455              | -                     | 5,588,231,455           |
| Intangible assets                                 |   | 422,049,607                | -                     | 422,049,607             |
| Other non-current assets                          |   | 26,364,929                 | -                     | 26,364,929              |
| Deferred income tax assets                        |   | <u>41,915,528</u>          | <u>-</u>              | <u>41,915,528</u>       |
|                                                   |   | <u>9,427,020,833</u>       | <u>(19,883,940)</u>   | <u>9,407,136,893</u>    |
| <b>Total assets</b>                               | ₩ | <u>13,649,487,900</u>      | ₩ <u>(21,968,545)</u> | ₩ <u>13,627,519,355</u> |
| <b>Liabilities</b>                                |   |                            |                       |                         |
| Current liabilities                               |   |                            |                       |                         |
| Trade and other payables                          | ₩ | 1,631,912,989              | ₩ (776,282)           | ₩ 1,631,136,707         |
| Borrowings                                        |   | 2,641,415,545              | -                     | 2,641,415,545           |
| Other financial liabilities                       |   | 154,756,644                | -                     | 154,756,644             |
| Provisions                                        |   | 49,718,076                 | (660,733)             | 49,057,343              |
| Other current liabilities                         |   | 329,059,425                | 22,312,500            | 351,371,925             |
| Current income tax liabilities                    |   | <u>87,327,542</u>          | <u>-</u>              | <u>87,327,542</u>       |
|                                                   |   | <u>4,894,190,221</u>       | <u>20,875,485</u>     | <u>4,915,065,706</u>    |
| Non-current liabilities                           |   |                            |                       |                         |
| Long-term trade and other payables                |   | 23,136,851                 | -                     | 23,136,851              |
| Long-term borrowings                              |   | 1,775,961,516              | -                     | 1,775,961,516           |
| Other financial assets                            |   | 45,092,188                 | -                     | 45,092,188              |
| Net defined benefit liabilities                   |   | 304,696,118                | -                     | 304,696,118             |
| Long-term employee benefits                       |   | 15,726,452                 | -                     | 15,726,452              |
| Provisions                                        |   | 31,690,007                 | -                     | 31,690,007              |
| Other non-current liabilities                     |   | 1,140                      | -                     | 1,140                   |
| Deferred tax liabilities                          |   | <u>371,520,245</u>         | <u>(4,618,872)</u>    | <u>366,901,373</u>      |
|                                                   |   | <u>2,567,824,517</u>       | <u>(4,618,872)</u>    | <u>2,563,205,645</u>    |
| <b>Total liabilities</b>                          | ₩ | <u>7,462,014,738</u>       | ₩ <u>16,256,613</u>   | ₩ <u>7,478,271,351</u>  |

|                                             | In thousands of Korean won |                       |                         |
|---------------------------------------------|----------------------------|-----------------------|-------------------------|
|                                             | January 1, 2018            |                       |                         |
|                                             | Before application         | Adjustments           | After application       |
| <b>Equity</b>                               |                            |                       |                         |
| Equity attributable to owner of the Company | 6,015,148,478              | (36,976,464)          | 5,978,172,014           |
| Capital stock                               | 829,665,480                | -                     | 829,665,480             |
| Capital surplus                             | 828,953,857                | -                     | 828,953,857             |
| Capital adjustments                         | (3,180,843)                | -                     | (3,180,843)             |
| Accumulated other comprehensive income      | (5,005,500)                | (23,006,843)          | (28,012,343)            |
| Retained earnings                           | 4,364,715,484              | (13,969,621)          | 4,350,745,863           |
| Non-controlling interests                   | 172,324,684                | (1,248,694)           | 171,075,990             |
| <b>Total Equity</b>                         | <u>6,187,473,162</u>       | <u>(38,225,158)</u>   | <u>6,149,248,004</u>    |
| <b>Total liabilities and equity</b>         | <u>₩ 13,649,487,900</u>    | <u>₩ (21,968,545)</u> | <u>₩ 13,627,519,355</u> |

The effect of changes in accounting policy on each item of equity as of the initial application date is as follows:

|                                    | In thousands of Korean won                  |                          |                        |                           |
|------------------------------------|---------------------------------------------|--------------------------|------------------------|---------------------------|
|                                    | Equity attributable to owner of the Company |                          |                        |                           |
|                                    | Capital stock                               | Other capital Components | Retained earnings      | Non-controlling interests |
| December 31, 2017                  | ₩ 829,665,480                               | ₩ 820,767,514            | ₩ 4,364,715,484        | ₩ 172,324,684             |
| Initial application of K-IFRS 1109 | -                                           | (23,006,843)             | 20,509,466             | 76,566                    |
| Initial application of K-IFRS 1115 | -                                           | -                        | (34,479,087)           | (1,325,260)               |
| January 1, 2018                    | <u>₩ 829,665,480</u>                        | <u>₩ 797,760,671</u>     | <u>₩ 4,350,745,863</u> | <u>₩ 171,075,990</u>      |

The main effect of changes in accounting policies at the end of the current year on consolidated financial statements of the group is as follows:

a. Consolidated entity

In accordance with K-IFRS 1115, the Group classifies the operation of the VIP('very Important person') system as a separate performance obligation and allocates the transaction amount based on the sales performance obligation and the relative individual selling price. Amounts that the Group does not anticipate will be recognized as a refund liability, and the related inventories are recognized as refundable assets.

b. Associates and joint ventures of the Group

The Group has revalued its financial assets and financial liabilities based on the expected credit loss model in accordance with K-IFRS 1109. In addition, in accordance with K-IFRS 1115, the transaction price is allocated to the performance obligation identified in the ownership sale contract, the consideration for the share of the land and building is recognized when the ownership is transferred, Are recognized as a contractual liability and recognized as revenue when the period expires.

(2) The Group has not applied the following new standards and amendments that have been issued but are not yet adopted.

Enactment to K-IFRS 1116— Leases

A. General impact of application of K-IFRS 1116 Leases

K-IFRS 1116 provides a comprehensive model for the identification of lease arrangements and their treatments in the financial statements for both lessors and lessees. K-IFRS 1116 will supersede the current lease guidance including K-IFRS 1017 Leases and the related interpretations(K-IFRS 2104, K-IFRS 2015 and K-IFRS 2027) when it becomes effective for accounting periods beginning on or after January 1, 2019. The date of initial application of K-IFRS 1116 for the Group will be January 1, 2019.

The lessor has an option to choose between the full retrospective application for each reporting date and modified retrospective application at the initial application date.

The Group plans to apply modified retrospective approach as of January 1, 2019 in accordance with K-IFRS 1116. Therefore, the cumulative effect of applying K-IFRS 1116 will be adjusted in the retained earnings (or, where appropriate, other components of equity) at the date of initial application, and the comparative financial statements will not be restated.

The lessee and lessor must account for each lease element of the lease, separate from the non-lease element ("non-lease element") in a lease contract. The lessee is required to recognize lease assets and liabilities that represents the right to use the underlying assets and the obligation to pay the lease payments. However, in the case of short-term lease and small-value-based lease, the exemption provisions of the standard may be selected. In addition, the lessee is not required to separate the lease component from the non-lease component in accordance with the simplified approach, and can account for each lease component and related non-lease component as one lease component.

In contrast to lessee accounting, K-IFRS 1116 substantially carries forward the lessor accounting requirements in K-IFRS 1017.

#### B. Impact of the new definition of a lease

The Group will make use of the practical expedient available on transition to K-IFRS 1116 not to reassess whether a contract is or contains a lease. Accordingly, the definition of a lease in accordance with K-IFRS 1117 will continue to apply to those leases entered or modified before January 1, 2019.

The change in definition of a lease mainly relates to the concept of control. K-IFRS 1116 distinguishes between leases and service contracts on the basis of whether the use of an identified asset is controlled by the customer. Control is considered to exist if the customer has:

- The right to obtain substantially all of the economic benefits from the use of an identified asset; and
- The right to direct the use of that asset.

The project has shown that the new definition in K-IFRS 1116 will not change significantly the scope of contracts that meet the definition of a lease for the Group.

#### C. Impact on Lessee Accounting

##### Operating leases

K-IFRS 1116 will change how the Group accounts for leases previously classified as operating leases under K-IFRS 1017, which were off-balance sheet. On initial application of K-IFRS 1116, for all leases (except as noted below), the Group will:

- Recognize right-of-use assets and lease liabilities in the consolidated statement of financial position, initially measured at the present value of the future lease payments;
- Recognize depreciation of right-of-use assets and interest on lease liabilities in the consolidated statement of profit or loss;
- Separate the total amount of cash paid into a principal portion (presented within financing activities) and interest (presented within operating activities) in the consolidated cash flow statement.

Under K-IFRS 1116, right-of-use assets will be tested for impairment in accordance with K-IFRS 1036 Impairment of Assets. This will replace the previous requirement to recognize a provision for onerous lease contracts.

For short-term leases (lease term of 12 months or less) and leases of low-value assets (such as personal computers and office furniture), the Group will opt to recognize a lease expense on a straight-line basis as permitted by K-IFRS 1116.

##### Finance leases

The main differences between K-IFRS 1116 and K-IFRS 1017 with respect to assets formerly held under a finance lease is the measurement of the residual value guarantees provided by the lessee to the lessor. K-IFRS 1116 requires that the Group recognizes as part of its lease liability only the amount expected to be payable under a residual value guarantee, rather than the maximum amount guaranteed as required by K-IFRS 1017. On initial application the Group will present equipment previously included in property, plant and equipment within the line item for right-of-use assets and the lease liability, previously presented within borrowing, will be presented in a separate line for lease liabilities.

Based on an analysis of the Group's finance leases as at December 31, 2018 on the basis of the facts and circumstances that exist at that date, the group have assessed that the impact of this change will not have an impact on the amounts recognized in the Group's consolidated financial statements.

#### D. Impact on Lessor Accounting

Under K-IFRS 1116, a lessor continues to classify leases as either finance leases or operating leases and account for those two types of leases differently. However, K-IFRS 1116 has changed and expanded the disclosures required, in particular regarding how a lessor manages the risks arising from its residual interest in leased assets.

Under K-IFRS 1116, an intermediate lessor accounts for the head lease and the sublease as two separate contracts. The intermediate lessor is required to classify the sublease as a finance or operating lease by reference to the right-of-use asset arising from the head lease (and not by reference to the underlying asset as was the case under K-IFRS 1017).

Because of this change the Group will reclassify certain of its sublease agreements as finance leases. As required by K-IFRS 1109, an allowance for expected credit losses will be recognized on the finance lease receivables. The leased assets will be derecognized and finance lease asset receivables recognized. This change in accounting will change the timing of recognition of the related revenue (recognized in finance income).

#### K-IFRS 1109 – Prepayment Features with Negative Compensation (Amendment)

The amendments to K-IFRS 1109 clarify that for the purpose of assessing whether a prepayment feature meets the SPPI condition, the party exercising the option may pay or receive reasonable compensation for the prepayment irrespective of the reason for prepayment. In other words, prepayment features with negative compensation do not automatically fail SPPI. The amendment applies to annual periods beginning on or after January 1, 2019, with earlier application permitted.

#### K-IFRS 1028 – Long-term Interests in Associates and Joint Ventures (Amendment)

The amendment clarifies that K-IFRS 1109, including its impairment requirements, applies to long-term interests. Furthermore, in applying K-IFRS 1109 to long-term interests, an entity does not take into account adjustments to their carrying amount required by K-IFRS 1028 (i.e., adjustments to the carrying amount of long-term interests arising from the allocation of losses of the investee or assessment of impairment in accordance with K-IFRS 1028). The amendments apply retrospectively to annual reporting periods beginning on or after January 1, 2019. Earlier application is permitted.

#### Annual Improvements to K-IFRS Standards 2015–2017 Cycle

The Annual Improvements include amendments to four Standards such as K-IFRS 1012 Income Taxes, K-IFRS 1023 Borrowing Costs, K-IFRS 1103 Business Combinations, and K-IFRS 1111 Joint Arrangements.

##### 1) K-IFRS 1012 Income Taxes

The amendments clarify that an entity should recognize the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where the entity originally recognized the transactions that generated the distributable profits. This is the case irrespective of whether different tax rates apply to distributed and undistributed profits.

##### 2) K-IFRS 1023 Borrowing Costs

The amendments clarify that if any specific borrowing remains outstanding after the related asset is ready for its intended use or sale, that borrowing becomes part of the funds that an entity borrows generally when calculating the capitalisation rate on general borrowings.

##### 3) K-IFRS 1103 Business Combinations

The amendments to K-IFRS 1103 clarify that when an entity obtains control of a business that is a joint operation, the entity applies the requirements for a business combination achieved in stages, including remeasuring its previously held interest (PHI) in the joint operation at fair value. The PHI to be remeasured includes any unrecognized assets, liabilities and goodwill relating to the joint operation.

##### 4) K-IFRS 1111 Joint Arrangements

The amendments to K-IFRS 1111 clarify that when a party that participates in, but does not have joint control of, a joint operation that is a business obtains joint control of such a joint operation, the entity does not remeasure its PHI in the joint operation.

All the amendments are effective for annual periods beginning on or after January 1, 2019 and generally require prospective application. Earlier application is permitted.

#### K-IFRS 1019 Employee Benefits Plan Amendment, Curtailment or Settlement (Amendment)

The amendments clarify that the past service cost (or of the gain or loss on settlement) is calculated by measuring the defined benefit liability (asset) using updated assumptions and comparing benefits offered and plan assets before and after the plan amendment (or curtailment or settlement) but ignoring the effect of the asset ceiling (that may arise when the defined benefit plan is in a surplus position). K-IFRS 1019 is now clear that the change in the effect of the asset ceiling that may result from the plan amendment (or curtailment or settlement) is determined in a second step and is recognized in the normal manner in other comprehensive income.

The paragraphs that relate to measuring the current service cost and the net interest on the net defined benefit liability (asset) have also been amended. An entity will now be required to use the updated assumptions from this remeasurement to determine current service cost and net interest for the remainder of the reporting period after the change to the plan. In the case of the net interest, the amendments make it clear that for the period post plan amendment, the net interest is calculated by multiplying the net defined benefit liability (asset) as remeasured under paragraph 99 with the discount rate used in the remeasurement (also taking into account the effect of contributions and benefit payments on the net defined benefit liability (asset)).

The amendments are applied prospectively. They apply only to plan amendments, curtailments or settlements that occur on or after the beginning of the annual period in which the amendments to K-IFRS 1019 are first applied. The amendments to K-IFRS 1019 must be applied to annual periods beginning on or after January 1, 2019, but they can be applied earlier if an entity elects to do so.

#### K-IFRS 1115 Revenue from Contracts with Customers (Amendment)

This amendment relates to prevent the revision of meaning 'contract' referred in K-IFRS 1115 paragraph 129.1 to 'individual contract' in relation to 'additional disclosure of contracts based on contract costs incurred to date', so that even if application of K-IFRS 1115 is adopted, the range of disclosure has not been reduced. In addition, K-IFRS 1115 does not distinguish the types of contracts that the service contracts that did not qualify for the application of K-IFRS 1011 in paragraph 45.1 can be qualified in K-IFRS 1115 paragraph 129.1 and it is to clarify that the range of the contracts subject to make disclosure in accordance with paragraph 129.1 can be expanded compared to the previous standard. This amendment is effective for annual periods beginning on or after January 1, 2019 and earlier application is permitted.

#### K-IFRS 2123 Interpretation Uncertainty over Income Tax Treatments (Amendment)

K-IFRS 2123 Interpretation sets out how to determine the accounting tax position when there is uncertainty over income tax treatments. The Interpretation requires an entity to:

- determine whether uncertain tax positions are assessed separately or as a group; and
  - assess whether it is probable that a tax authority will accept an uncertain tax treatment used, or proposed to be used, by an entity in its income tax filings:
- If yes, the entity should determine its accounting tax position consistently with the tax treatment used or planned to be used in its income tax filings.
- If no, the entity should reflect the effect of uncertainty in determining its accounting tax position.

The Interpretation is effective for annual periods beginning on or after January 1, 2019. Entities can apply the Interpretation with either full retrospective application or modified retrospective application without restatement of comparatives retrospectively or prospectively.

The directors of the Company is reviewing the impact of the above listed amendments on the Group's consolidated financial statements.

## (2) Basis of Consolidation

The consolidated financial statements incorporate the financial statements of the Company and entities controlled by the Company (and its subsidiaries) made up to December 31 each year. Control is achieved when the Company 1) has the power over the investee, 2) is exposed, or has rights, to variable returns from its involvement with the investee, and 3) has the ability to use its power to affect its returns. The Company reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control listed above.

When the Company has less than a majority of the voting rights of an investee, it considers that it has power over the investee when the voting rights are sufficient to give it the practical ability to direct the activities of the investee unilaterally. The Company considers all relevant facts and circumstances in assessing whether or not the Company's voting rights in an investee are sufficient to give it power, including:

- the size of the Company's holding of voting rights relative to the size and dispersion of holdings of the other vote holders;
- potential voting rights held by the Company, other vote holders or other parties;
- rights arising from other contractual arrangements; and
- any additional facts and circumstances that indicate that the Company has, or does not have, the current ability to direct the relevant activities at the time that decisions need to be made, including voting patterns at previous shareholders' meetings.

Consolidation of a subsidiary begins when the Company obtains control over the subsidiary and ceases when the Company loses control of the subsidiary. Specifically, the results of subsidiaries acquired or disposed of during the year are included in profit or loss from the date the Company gains control until the date when the Company ceases to control the subsidiary. Profit or loss and each component of other comprehensive income are attributed to the owners of the Company and to the non-controlling interests. Total comprehensive income of the subsidiaries is attributed to the owners of the Company and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

When necessary, adjustments are made to the financial statements of subsidiaries to bring the accounting policies used into line with the Group's accounting policies.

All intra-group assets and liabilities, equity, income, expenses and cash flows relating to transactions between the members of the Group are eliminated on consolidation

Non-controlling interests in subsidiaries are identified separately from the Group's equity therein. Those interests of non-controlling shareholders that are present ownership interests entitling their holders to a proportionate share of net assets upon liquidation may initially be measured at 1) fair value or 2) at the non-controlling interests' proportionate share of the fair value of the acquiree's identifiable net assets. The choice of measurement is made on an acquisition-by-acquisition basis. Other non-controlling interests are initially measured at fair value. Subsequent to acquisition, the carrying amount of non-controlling interests is the amount of those interests at initial recognition plus the non-controlling interests' share of subsequent changes in equity. Total comprehensive income is attributed to non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Changes in the Group's interests in subsidiaries that do not result in a loss of control are accounted for as equity transactions. The carrying amounts of the Group's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiaries. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized directly in equity and attributed to owners of the Company.

When the Group loses control of a subsidiary, a gain or loss on disposal is calculated as the difference between (i) the aggregate of the fair value of the consideration received and the fair value of any retained interest and (ii) the previous carrying amount of the assets (including goodwill), less liabilities of the subsidiary and any non-controlling interests. All amounts previously recognized in other comprehensive income in relation to that subsidiary are accounted for as if the Group had directly disposed of the related assets or liabilities of the subsidiary (i.e. reclassified to profit or loss or transferred to another category of equity as required/permitted by applicable K-IFRS standards). The fair value of any investment retained in the former subsidiary at the date when control is lost is recognized as the fair value on initial recognition for subsequent accounting under K-IFRS 1109 Financial Instruments when applicable, or the cost on initial recognition of an investment in an associate or a joint venture.

### (3) Business Combination

Acquisitions of businesses are accounted for using the acquisition method. The consideration transferred in a business combination is measured at fair value, which is calculated as the sum of the acquisition-date fair values of the assets transferred by the Group, liabilities incurred by the Group to the former owners of the acquiree and the equity interest issued by the Group in exchange for control of the acquiree. Acquisition-related costs are recognized in profit or loss as incurred.

At the acquisition date, the identifiable assets acquired and the liabilities assumed are recognized at their fair value at the acquisition date, except that:

- deferred tax assets or liabilities and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with K-IFRS 1012 Income Taxes and K-IFRS 1019 Employee Benefits respectively;
- liabilities or equity instruments related to share-based payment arrangements of the acquiree or share-based payment arrangements of the Group entered into to replace share-based payment arrangements of the acquiree are measured in accordance with K-IFRS 1102 Share-based Payment at the acquisition date; and
- assets (or disposal groups) that are classified as held for sale in accordance with K-IFRS 1105 Non-current Assets Held for Sale and Discontinued Operations are measured in accordance with that Standard.

Goodwill is measured as the excess of the sum of: a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree, and c) the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed. If, after reassessment, the net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of: a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree, and c) the fair value of the acquirer's previously held interest in the acquiree (if any); the excess is recognized immediately in profit or loss as a bargain purchase gain.

When the consideration transferred by the Group in a business combination includes contingent consideration arrangement, the contingent consideration is measured at its acquisition-date fair value and included as part of the consideration transferred in a business combination. Changes in fair value of the contingent consideration that qualify as measurement period adjustments are adjusted retrospectively, with corresponding adjustments against goodwill. Measurement period adjustments are adjustments that arise from additional information obtained during the 'measurement period' (which cannot exceed one year from the acquisition date) about facts and circumstances that existed at the acquisition date.

The subsequent accounting for changes in the fair value of the contingent consideration that do not qualify as measurement period adjustments depends on how the contingent consideration is classified. Contingent consideration that is classified as equity is not remeasured at subsequent reporting dates and its subsequent settlement is accounted for within equity. Other contingent consideration is remeasured to fair value at subsequent reporting dates with changes in fair value recognized in profit or loss.

When a business combination is achieved in stages, the Group's previously held interests in the acquired entity are remeasured to its acquisition-date fair value and the resulting gain or loss, if any, is recognized in profit or loss. Amounts arising from interests in the acquiree prior to the acquisition date that have previously been recognized in other comprehensive income are reclassified to profit or loss, where such treatment would be appropriate if that interest were disposed of.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period (see above), or additional assets or liabilities are recognized, to reflect new information obtained about facts and circumstances that existed as of the acquisition date that, if known, would have affected the amounts recognized as of that date.

#### (4) Investments in associates and joint ventures

An associate is an entity over which the Group has significant influence and that is neither a subsidiary nor an interest in a joint venture. Significant influence is the power to participate in the financial and operating policy decisions of the investee but is not control or joint control over those policies.

A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

The results and assets and liabilities of associates or joint ventures are incorporated in these financial statements using the equity method of accounting, except when the investment is classified as held for sale, in which case it is accounted for in accordance with K-IFRS 1105. Under the equity method, an investment in an associate or a joint venture is recognized initially in the consolidated statement of financial position at cost and adjusted thereafter to recognize the Group's share of the profit or loss and other comprehensive income of the associate or joint venture. When the Group's share of losses of an associate or a joint venture exceeds the Group's interest in that associate or joint venture (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate or joint venture), the Group discontinues recognising its share of further losses. Additional losses are recognized only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate or joint venture.

An investment in an associate or a joint venture is accounted for using the equity method from the date on which the investee becomes an associate or a joint venture. On acquisition of the investment in an associate or a joint venture, any excess of the cost of the investment over the Group's share of the net fair value of the identifiable assets and liabilities of the investee is recognized as goodwill, which is included within the carrying amount of the investment. Any excess of the Group's share of the net fair value of the identifiable assets and liabilities over the cost of the investment, after reassessment, is recognized immediately in profit or loss in the period in which the investment is acquired.

An investment in an associate or a joint venture is accounted for using the equity method from the date on which the investee becomes an associate or a joint venture. On acquisition of the investment in an associate or a joint venture, any excess of the cost of the investment over the Group's share of the net fair value of the identifiable assets and liabilities of the investee is recognized as goodwill, which is included within the carrying amount of the investment. Any excess of the Group's share of the net fair value of the identifiable assets and liabilities over the cost of the investment, after reassessment, is recognized immediately in profit or loss in the period in which the investment is acquired.

The requirements of K-IFRS 1028 are applied to determine whether it is necessary to recognize any impairment loss with respect to the Group's investment in an associate or a joint venture. When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment in accordance with K-IFRS 1036 as a single asset by comparing its recoverable amount (higher of value in use and fair value less costs of disposal) with its carrying amount. Any impairment loss recognized is not allocated to any asset, including goodwill that forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognized in accordance with K-IFRS 1036 to the extent that the recoverable amount of the investment subsequently increases.

The Group discontinues the use of the equity method from the date when the investment ceases to be an associate or a joint venture. When the Group retains an interest in the former associate or a joint venture and the retained interest is a financial asset, the Group measures the retained interest at fair value at that date and the fair value is regarded as its fair value on initial recognition in accordance with K-IFRS 1109. The difference between the carrying amount of the associate or a joint venture at the date the equity method was discontinued, and the fair value of any retained interest and any proceeds from disposing of a part interest in the associate or a joint venture is included in the determination of the gain or loss on disposal of the associate or joint venture. In addition, the Group accounts for all amounts previously recognized in other comprehensive income in relation to that associate on the same basis as would be required if that associate had directly disposed of the related assets or liabilities. Therefore, if a gain or loss previously recognized in other comprehensive income by that associate or joint venture would be reclassified to profit or loss on the disposal of the related assets or liabilities, the Group reclassifies the gain or loss from equity to profit or loss (as a reclassification adjustment) when the associate or joint venture is disposed of.

When the Group reduces its ownership interest in an associate or a joint venture but the Group continues to use the equity method, the Group reclassifies to profit or loss the proportion of the gain or loss that had previously been recognized in other comprehensive income relating to that reduction in ownership interest if that gain or loss would be reclassified to profit or loss on the disposal of the related assets or liabilities.

When the equity method becomes a joint venture investment or vice versa, the group continues to apply the equity method and does not remeasure the remaining equity interests.

When a group entity transacts with an associate or a joint venture of the Group, profits and losses resulting from the transactions with the associate or joint venture are recognized in the Group's consolidated financial statements only to the extent of interests in the associate or joint venture that are not related to the Group.

#### (5) Interests in joint operations

A joint operation is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets, and obligations for the liabilities, relating to the arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

When a group entity undertakes its activities under joint operations, the Group as a joint operator recognizes in relation to its interest in a joint operation:

- its assets, including its share of any assets held jointly;
- its liabilities, including its share of any liabilities incurred jointly;
- its revenue from the sale of its share of the output arising from the joint operation;
- its share of the revenue from the sale of the output by the joint operation; and
- its expenses, including its share of any expenses incurred jointly.

The Group accounts for the assets, liabilities, revenues and expenses relating to its interest in a joint operation in accordance with the K-IFRS Standards applicable to the particular assets, liabilities, revenues and expenses.

When a group entity transacts with a joint operation in which a group entity is a joint operator (such as a sale or contribution of assets), the Group is considered to be conducting the transaction with the other parties to the joint operation, and gains and losses resulting from the transactions are recognized in the Group's consolidated financial statements only to the extent of other parties' interests in the joint operation.

When a group entity transacts with a joint operation in which a group entity is a joint operator (such as a purchase of assets), the Group does not recognize its share of the gains and losses until it resells those assets to a third party.

#### (6) Goodwill

Goodwill resulting from an acquisition of a business is carried at cost as established at the date of acquisition of the business less accumulated impairment losses, if any.

For the purpose of impairment testing, goodwill is allocated to each of the Group's cash-generating units (or groups of cash-generating units) that is expected to benefit from the synergies of the combination.

A cash-generating unit to which goodwill has been allocated is tested for impairment annually, or more frequently when there is indication that the unit may be impaired. If the recoverable amount of the cash-generating unit is less than its carrying amount, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to the other assets of the unit on a pro-rata basis based on the carrying amount of each asset in the unit. Any impairment loss for goodwill is recognized directly in profit or loss. An impairment loss recognized for goodwill is not reversed in subsequent periods.

On disposal of the relevant cash-generating unit, the attributable amount of goodwill is included in the determination of the profit or loss on disposal.

(7) Non-current assets held for sale

Non-current assets (and disposal groups) classified as held for sale are measured at the lower of carrying amount and fair value less costs to sell.

Non-current assets and disposal groups are classified as held for sale if their carrying amount will be recovered through a sale transaction rather than through continuing use. This condition is regarded as met only when the sale is highly probable and the asset (or disposal group) is available for immediate sale in its present condition. Management must be committed to the sale which should be expected to qualify for recognition as a completed sale within one year from the date of classification.

When the Group is committed to a sale plan involving loss of control of a subsidiary, all of the assets and liabilities of that subsidiary are classified as held for sale when the criteria described above are met, regardless of whether the Group will retain a non-controlling interest in its former subsidiary after the sale.

When the Group is committed to a sale plan involving disposal of an investment in an associate or, a portion of an investment in an associate, the investment, or the portion of the investment in the associate that will be disposed of is classified as held for sale when the criteria described above are met, and the Group ceases to apply the equity method in relation to the portion that is classified as held for sale. Any retained portion of an investment in an associate that has not been classified as held for sale continues to be accounted for using the equity method.

(8) Revenue recognition

The consolidation entity has applied Revenue from Contracts with Customers with K-IFRS 1115 since 1 January 2018,. In accordance with K-IFRS 15, an entity has chosen to apply the cumulative effect of initial application of the IFRS retrospectively to recognise it on 1 January 2018 at the date of initial application. In addition, this was applied retrospectively only to contracts that were not completed at the date of initial application, and a practical expedient was used not to restate contracts retrospectively for all contract changes made before the date of initial application.

According to K-IFRS 1115, all types of contracts are recognised by applying a five-step revenue recognition model (① Contract Identification → ② Identify performance obligations → ③ Transaction Price Calculation → ④ Transaction Price Allocations to performance obligations → ⑤ Revenue Recognition When satisfied with performance obligations).

1) Identify performance obligations

a. Point-in-time

The Group recognizes revenue when the goods or services are transferred to the customer. In addition, the Group exports variety of finished goods or merchandises by Incoterms Group C condition. (CIF and others) Since the seller provides logistics service after passing the control to the customer, the Group identify the relative logistics service(including insurance) as separate performance obligation.

b. Over-time

Under K-IFRS 1115, if performance obligations satisfy one or more of the 3 condition of paragraph 35, performance obligations would be identified as over-time, otherwise as point-in-time. The time of revenue recognition can be changed if the Group's performance obligations satisfy the 3 condition of paragraph 35.

2) Allocate transaction price

The Group allocate the transaction price to the separate performance obligations in one contract based on the relative standalone selling price of each separate performance obligation. For estimating standalone selling price of each performance obligation, the Group use the method of 'Market price adjustment approach' and others.

3) Variable transaction price

The price the customer promises due to the return right granted by the Group in accordance with the contract of sale of the goods with the customer may change. In accordance with K-IFRS 1115, the variable cost is estimated using a method that expects to be able to better anticipate the consideration to be entitled to the right to receive the expected or probable price of the right to receive the right. It recognizes revenue by including the variable price in the transaction price only to the extent that it is highly unlikely that it will carry out a significant portion of the cumulative revenue amount that has already been recognized. Amounts that the Group does not expect to have the right to receive or receive are recognized as a refund liability and the related inventories are recognized as refundable assets.

(9) Lease

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

1) The Group as lessor

Amounts due from lessees under finance leases are recognized as receivables at the amount of the Group's net investment in the leases. Finance lease income is allocated to accounting periods so as to reflect a constant periodic rate of return on the Group's net investment outstanding in respect of the leases.

Rental income from operating leases is recognized on a straight-line basis over the term of the relevant lease. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognized on a straight-line basis over the lease term.

2) The Group as lessee

Assets held under finance leases are initially recognized as assets of the Group at their fair value at the inception of the lease or, if lower, at the present value of the minimum lease payments. The corresponding liability to the lessor is included in the statement of financial position as a finance lease obligation.

Lease payments are apportioned between finance expenses and reduction of the lease obligation so as to achieve a constant rate of interest on the remaining balance of the liability. Finance expenses are recognized immediately in profit or loss, unless they are directly attributable to qualifying assets, in which case they are capitalized in accordance with the Group's general policy on borrowing costs (see Note 2. (11)). Contingent rentals are recognized as expenses in the periods in which they are incurred.

Operating lease payments are recognized as an expense on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed. Contingent rentals arising under operating leases are recognized as an expense in the period in which they are incurred.

In the event that lease incentives are received to enter into operating leases, such incentives are recognized as a liability. The aggregate benefit of incentives is recognized as a reduction of rental expense on a straight-line basis, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

(10) Foreign Currencies

The individual financial statements of each group entity are presented in the currency of the primary economic environment in which the entity operates (its functional currency). For the purpose of the consolidated financial statements, the results and financial position of each group entity are expressed in Korean Won, which is the functional currency of the entity and the presentation currency for the consolidated financial statements.

In preparing the financial statements of the individual entities, transactions in currencies other than the entity's functional currency (foreign currencies) are recognized at the rates of exchange prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Non-monetary items carried at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Non-monetary items that are measured in terms of historical cost in a foreign currency are not retranslated.

Exchange differences are recognized in profit or loss in the period in which they arise except for:

- exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings;
- exchange differences on transactions entered into in order to hedge certain foreign currency risks (see Note 2 (25) below for hedging accounting policies); and
- exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur (therefore forming part of the net investment in the foreign operation), which are recognized initially in other comprehensive income and reclassified from equity to profit or loss on disposal or partial disposal of the net investment.

For the purpose of presenting consolidated financial statements, the assets and liabilities of the Company's foreign operations are expressed in Korean Won using exchange rates prevailing at the end of the reporting period. Income and expense items are translated at the average exchange rates for the period, unless exchange rates fluctuated significantly during that period, in which case the exchange rates at the dates of the transactions are used. Exchange differences arising, if any, are recognized in other comprehensive income and accumulated in equity (attributed to non-controlling interests as appropriate).

On the disposal of a foreign operation (i.e. a disposal of the Group's entire interest in a foreign operation, or a disposal involving loss of control over a subsidiary that includes a foreign operation, or partial disposal of an interest in a joint arrangement or an associate that includes a foreign operation of which the retained interest becomes a financial asset), all of the accumulated exchange differences in respect of that operation attributable to the owners of the Company are reclassified to profit or loss. Any exchange differences that have previously been attributed to non-controlling interests are derecognized, but they are not reclassified to profit or loss.

In the case of a partial disposal (i.e. no loss of control) of a subsidiary that includes a foreign operation, the proportionate share of accumulated exchange differences are re-attributed to non-controlling interests in equity and are not recognized in profit or loss. For all other partial disposals (i.e. partial disposals of associates or joint arrangements that do not result in the Group losing significant influence or joint control), the proportionate share of the accumulated exchange differences is reclassified to profit or loss.

Goodwill and fair value adjustments arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the closing rate. Exchange differences arising are recognized in other comprehensive income.

#### (11) Borrowing Costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale.

To the extent that variable rate borrowings are used to finance a qualifying asset and are hedged in an effective cash flow hedge of interest rate risk, the effective portion of the derivative is recognized in other comprehensive income and reclassified to profit or loss when the qualifying asset impacts profit or loss. To the extent that fixed rate borrowings are used to finance a qualifying asset and are hedged in an effective fair value hedge of interest rate risk, the capitalised borrowing costs reflect the hedged interest rate.

Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs eligible for capitalization.

All other borrowing costs are recognized in profit or loss in the period in which they are incurred.

#### (12) Government grants

Government grants are not recognized until there is reasonable assurance that the Group will comply with the conditions attaching to them and that the grants will be received.

The benefit of a government loan at a below-market rate of interest is treated as a government grant, measured as the difference between proceeds received and the fair value of the loan based on prevailing market interest rates.

Government grants related to assets are presented in the statement of financial position by deducting the grant from the carrying amount of the asset. The related grant is recognized in profit or loss over the life of a depreciable asset as a reduced depreciation expense.

Government grants related to income are recognized in profit or loss on a systematic basis over the periods in which the Group recognizes as expenses the related costs for which the grants are intended to compensate.

Government grants towards staff re-training costs are recognized as income over the periods necessary to match them with the related costs and are deducted in reporting the related expense.

Government grants relating to the acquisition of property, plant and equipment are treated as deferred income and released to profit or loss over the expected useful lives of the assets concerned.

#### (13) Retirement benefit costs and termination benefits

Contributions to defined contribution retirement benefit plans are recognized as an expense when employees have rendered service entitling them to the contributions.

For defined benefit retirement benefit plans, the cost of providing benefits is determined using the Projected Unit Credit Method, with actuarial valuations being carried out at the end of each annual reporting period. Remeasurements comprising actuarial gains and losses, the effect of the asset ceiling (if applicable) and the return on plan assets (excluding interest) are recognized immediately in the statement of financial position with a charge or credit to the statement of comprehensive income in the period in which they occur. Remeasurements recognized in the statement of comprehensive income are not reclassified. Past service cost is recognized in profit or loss when the plan amendment or curtailment occurs, or when the Group recognizes related restructuring costs or termination benefits, if earlier. Gains or losses on settlement of a defined benefit plan are recognized when the settlement occurs.

Net interest is calculated by applying a discount rate to the net defined benefit liability or asset. Defined benefit costs are split into three categories:

service costs, which includes current service cost, past service cost and gains and losses on curtailments and settlements; net interest expense or income; and  
remeasurements.

Net interest expense or income is recognized within finance costs, and the remeasurement component in other comprehensive income. Curtailment gains and losses are accounted for as past service costs.

The retirement benefit obligation recognized in the consolidated statement of financial position represents the actual deficit or surplus in the Group's defined benefit plans. Any surplus resulting from this calculation is limited to the present value of any economic benefits available in the form of refunds from the plans or reductions in future contributions to the plans.

A liability for a termination benefit is recognized at the earlier of when the entity can no longer withdraw the offer of the termination benefit and when the entity recognizes any related restructuring costs.

Discretionary contributions made by employees or third parties reduce service cost upon payment of these contributions to the plan. When the formal terms of the plans specify that there will be contributions from employees or third parties, the accounting depends on whether the contributions are linked to service, as follows:

If the contributions are not linked to services (e.g. contributions are required to reduce a deficit arising from losses on plan assets or from actuarial losses), they are reflected in the remeasurement of the net defined benefit liability (asset).

If contributions are linked to services, they reduce service costs. For the amount of contribution that is dependent on the number of years of service, the entity reduces service cost by attributing the contributions to periods of service using the attribution method required by K-KFRS 1019 paragraph 70 for the gross benefits. For the amount of contribution that is independent of the number of years of service, the entity [reduces service cost in the period in which the related service is rendered / reduces service cost by attributing contributions to the employees' periods of service in accordance with K-IFRS 1019 paragraph 70.

#### (14) Share-based payments

##### 1) Share-based payment transactions of the Group

Equity-settled share-based payments to employees and others providing similar services are measured at the fair value of the equity instruments at the grant date. The fair value excludes the effect of non-market-based vesting conditions.

The fair value determined at the grant date of the equity-settled share-based payments is expensed on a straight-line basis over the vesting period, based on the Group's estimate of the number of equity instruments that will eventually vest. At each reporting date, the Group revises its estimate of the number of equity instruments expected to vest as a result of the effect of non-market-based vesting conditions. The impact of the revision of the original estimates, if any, is recognized in profit or loss such that the cumulative expense reflects the revised estimate, with a corresponding adjustment to reserves.

Equity-settled share-based payment transactions with parties other than employees are measured at the fair value of the goods or services received, except where that fair value cannot be estimated reliably, in which case they are measured at the fair value of the equity instruments granted, measured at the date the entity obtains the goods or the counterparty renders the service.

For cash-settled share-based payments, a liability is recognized for the goods or services acquired, measured initially at the fair value of the liability. At each reporting date until the liability is settled, and at the date of settlement, the fair value of the liability is remeasured, with any changes in fair value recognized in profit or loss for the year.

##### 2) Share-based payment transactions of the acquiree in a business combination

When the share-based payment awards held by the employees of an acquiree (acquiree awards) are replaced by the Group's share-based payment awards (replacement awards), both the acquiree awards and the replacement awards are measured in accordance with K-IFRS 1102 Share-based payment ("market-based measure") at the acquisition date. The portion of the replacement awards that is included in measuring the consideration transferred in a business combination equals the market-based measure of the acquiree awards multiplied by the ratio of the portion of the vesting period completed to the greater of the total vesting period or the original vesting period of the acquire award. The excess of the market-based measure of the replacement awards over the market-based measure of the acquiree awards included in measuring the consideration transferred is recognized as remuneration cost for post-combination service.

However, when the acquiree awards expire as a consequence of a business combination and the Group replaces those awards when it does not have an obligation to do so, the replacement awards as measured at their market-based measure in accordance with K-IFRS 1102. All of the market-based measure of the replacement awards is recognized as remuneration cost for post-combination service.

At the acquisition date, when the outstanding equity-settled share-based payment transactions held by the employees of an acquiree are not exchanged by the Group for its share-based payment transactions, the acquiree share-based payment transactions are measured at their market-based measure at the acquisition date. If the share-based payments have vested by the acquisition date, they are included as part of the non-controlling interest in the acquiree. However, if the share-based payment transactions have not vested by the acquisition date, the market based measure of the unvested share-based payment transactions is allocated to the non-controlling interest in the acquiree based on the ratio of the portion of the vesting period completed to the greater of the total vesting period or the original vesting period of the share-based payment transaction. The balance is recognized as remuneration cost for post-combination service.

#### (15) Taxation

Income tax expense represents the sum of the tax currently payable and deferred tax.

##### 1) Current tax

The tax currently payable is based on taxable profit for the year. Taxable profit differs from net profit as reported in the consolidated statement of profit or loss and comprehensive income because of items of income or expense that are taxable or deductible in other years and items that are never taxable or deductible. The Group's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period.

A provision is recognized for those matters for which the tax determination is uncertain but it is considered probable that there will be a future outflow of funds to a tax authority. The provisions are measured at the best estimate of the amount expected to become payable. The assessment is based on the judgement of tax professionals within the Company supported by previous experience in respect of such activities and in certain cases based on specialist independent tax advice.

##### 2) Deferred tax

Deferred tax is the tax expected to be payable or recoverable on differences between the carrying amounts of assets and liabilities in the financial statements and the corresponding tax bases used in the computation of taxable profit, and is accounted for using the liability method. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilized. Such deferred tax assets and liabilities are not recognized if the temporary difference arises from goodwill or from the initial recognition (other than in a business combination) of other assets and liabilities in a transaction that affects neither the taxable profit nor the accounting profit.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries and associates, and interests in joint ventures, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments and interests are only recognized to the extent that it is probable that there will be sufficient taxable profits against which to utilize the benefits of the temporary differences and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow all or part of the asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Deferred tax assets and liabilities are offset if, and only if the Group has a legally enforceable right to set off current tax assets against current tax liabilities, and the deferred tax assets and liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities which intend either to settle current tax liabilities and assets on a net basis, or to realize the assets and settle the liabilities simultaneously, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

For the purpose of measuring deferred tax liabilities and deferred tax assets for investment properties that are measured using the fair value model, the carrying amounts of such properties are presumed to be recovered entirely through sale, unless the presumption is rebutted. The presumption is rebutted when the investment property is depreciable and is held within a business model whose objective is to consume substantially all of the economic benefits embodied in the investment properties over time, rather than through sale.

3) Current and deferred tax for the year

Current and deferred tax are recognized in profit or loss, except when they relate to items that are recognized in other comprehensive income or directly in equity, in which case, the current and deferred tax are also recognized in other comprehensive income or directly in equity respectively. Where current tax or deferred tax arises from the initial accounting for a business combination, the tax effect is included in the accounting for the business combination.

(16) Property, plant and equipment

Property, plant and equipment are stated at cost less subsequent accumulated depreciation and accumulated impairment losses. The cost of an item of property, plant and equipment is directly attributable to their purchase or construction, which includes any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. It also includes the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

Subsequent costs are recognized in carrying amount of an asset or as a separate asset if it is probable that future economic benefits associated with the assets will flow into the Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

The Group does not depreciate land. Depreciation expense is computed using the straight-line method based on the estimated useful lives of the assets as follows:

| <b>Category</b>      | <b>Estimated useful lives(Years)</b> |
|----------------------|--------------------------------------|
| Buildings            | 5–60                                 |
| Structures           | 8–50                                 |
| Machinery            | 2–15                                 |
| Vehicles             | 1–10                                 |
| Tools and equipments | 1–20                                 |
| Others               | 1–12                                 |

If each part of an item of property, plant and equipment has a cost that is significant in relation to the total cost of the item, it is depreciated separately.

The Group reviews the depreciation method, the estimated useful lives and residual values of property, plant and equipment at the end of each annual reporting period. If expectations differ from previous estimates, the changes are accounted for as a change in an accounting estimate.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected to arise from the continued use of the asset. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in profit or loss in the period in which the property is derecognized.

(17) Investment property

Investment properties are properties held to earn rentals and/or for capital appreciation (including property under construction for such purposes). Investment properties are measured initially at cost, including transaction costs. Subsequent to initial recognition, investment properties are reported at cost less accumulated depreciation and accumulated impairment losses.

Subsequent costs are recognized in carrying amount of an asset or as a separate asset if it is probable that future economic benefits associated with the assets will flow into the Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

While land is not depreciated, all other investment property is depreciated based on the respective assets estimated useful lives ranging from 5 ~ 60 years using the straight-line method.

The estimated useful lives, residual values and depreciation method are reviewed at the end of each reporting period, with the effect of any changes in estimate accounted for on a prospective basis.

An investment property is derecognized upon disposal or when the investment property is permanently withdrawn from use and no future economic benefits are expected from the disposal. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in profit or loss in the period in which the property is derecognized.

(18) Intangible assets

1) Intangible assets acquired separately

Intangible assets with finite useful lives that are acquired separately are carried at cost, less accumulated amortization and accumulated impairment losses. Amortization is recognized on a straight-line basis over their estimated useful lives as follows:

| <u>Category</u>            | <u>Estimated useful lives(Year)</u> |
|----------------------------|-------------------------------------|
| Industrial property rights | 5–10                                |
| Land use rights            | 44–50                               |
| Memberships                | 20                                  |
| Other intangible assets    | 1–20                                |

The estimated useful life and amortization method are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis. Intangible assets with indefinite useful lives that are acquired separately are carried at cost less accumulated impairment losses.

2) Internally-generated intangible assets - research and development expenditure

Expenditure on research activities is recognized as an expense in the period in which it is incurred.

Expenditure arising from development (or from the development phase of an internal project) is recognized as an intangible asset if, only if, the development project is designed to produce new or substantially improved products, and the Group can demonstrate the technical and economical feasibility and measure reliably the resources attributable to the intangible asset during its development.

Development expenditure is amortized on a straight-line basis over 5 to 10 years depending on their economic useful lives.

The amount initially recognized for internally-generated intangible assets is the sum of the expenditure incurred from the date when the intangible asset first meets the recognition criteria. Where no internally-generated intangible asset can be recognized, development expenditure is recognized in profit or loss in the period in which it is incurred.

Subsequent to initial recognition, internally-generated intangible assets are reported at cost less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

3) Intangible assets acquired in a business combination

Intangible assets that are acquired in a business combination are recognized separately from goodwill and are initially recognized at their fair value at the acquisition date (which is regarded as their cost). Subsequent to initial recognition, intangible assets acquired in a business combination are reported at cost less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

4) Derecognition of intangible assets

An intangible asset is derecognized on disposal, or when no future economic benefits are expected from its use. Gains or losses arising from derecognition of an intangible asset, measured as the difference between the net disposal proceeds and the carrying amount of the asset, and are recognized in profit or loss when the asset is derecognized.

5) Patents and trademarks

Patents and trademarks are measured initially at purchase cost and are amortized on a straight-line basis over their estimated useful lives.

(19) Impairment of tangible and intangible assets other than goodwill

At the end of each reporting period, the Group reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). When it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the cash-generating unit to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual cash-generating units, or otherwise they are allocated to the smallest group of cash-generating units for which a reasonable and consistent allocation basis can be identified.

Intangible assets with indefinite useful lives and intangible assets not yet available for use are tested for impairment at least annually, and whenever there is an indication that the asset may be impaired.

Recoverable amount is the higher of fair value less costs to sell or value in use. If the recoverable amount of an asset (or a cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (or the cash-generating unit) is reduced to its recoverable amount and the reduced amount is recognized in profit or loss.

Where an impairment loss subsequently reverses, the carrying amount of the asset (or a cash-generating unit) is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset (or the cash-generating unit) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

#### (20) Inventories

Inventories are stated at the lower of cost and net realizable value. Cost of inventories, except for those in in-transit, are measured under the weighted average method [on a first-in-first-out basis] and consists of the purchase price, cost of conversion and other costs incurred in bringing the inventories to their present location and condition. Net realizable value represents the estimated selling price for inventories less all estimated costs of completion and costs necessary to make the sale.

When inventories are sold, the carrying amount of those inventories is recognized as an expense (cost of sales) in the period in which the related revenue is recognized. The amount of any write-down of inventories to net realizable value and all losses of inventories is recognized as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realizable value, is recognized as a reduction in the amount of inventories recognized as an expense in the period in which the reversal occurs.

#### (21) Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. When a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows (where the effect of the time value of money is material). The discount rate used is a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. Where discounting is used, the increase in the provision due to the passage is recognized in profit or loss as borrowing cost.

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

At the end of each reporting period, the remaining provision balance is reviewed and assessed to determine if the current best estimate is being recognized. If the existence of an obligation to transfer economic benefit is no longer probable, the related provision is reversed during the period.

#### 1) Warranties

Provisions for the expected cost of warranty obligations under local sale of goods legislation are recognized at the date of sale of the relevant products, at the directors' best estimate of the expenditure required to settle the Group's obligation.

#### (22) Financial instrument

Financial assets and financial liabilities are recognized in the Group's statement of financial position when the Group becomes a party to the contractual provisions of the instrument.

Financial assets and financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities (other than financial assets and financial liabilities at fair value through profit or loss) are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit or loss are recognized immediately in profit or loss.

## (23) Financial assets

All regular way purchases or sales of financial assets are recognized and derecognized on a trade date basis. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

All recognized financial assets are measured subsequently in their entirety at either amortized cost or fair value, depending on the classification of the financial assets.

### 1) Classification of financial assets

Debt instruments that meet the following conditions are measured subsequently at amortized cost:

- the financial asset is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows; and
- the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Debt instruments that meet the following conditions are measured subsequently at fair value through other comprehensive income (FVTOCI):

- the financial asset is held within a business model whose objective is achieved by both collecting contractual cash flows and selling the financial assets; and
- the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

By default, all other financial assets are measured subsequently at fair value through profit or loss (FVTPL).

Despite the foregoing, the Group may make the following irrevocable election / designation at initial recognition of a financial asset:

- the Group may irrevocably elect to present subsequent changes in fair value of an equity investment in other comprehensive income if certain criteria are met (see (1-3) below); and
- the Group may irrevocably designate a debt investment that meets the amortized cost or FVTOCI criteria as measured at FVTPL if doing so eliminates or significantly reduces an accounting mismatch (see (1-4) below).

### 1-1) Amortized cost and effective interest method

The effective interest method is a method of calculating the amortized cost of a debt instrument and of allocating interest income over the relevant period. For financial assets other than purchased or originated credit-impaired financial assets (i.e. assets that are credit-impaired on initial recognition), the effective interest rate is the rate that exactly discounts estimated future cash receipts (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) excluding expected credit losses, through the expected life of the debt instrument, or, where appropriate, a shorter period, to the gross carrying amount of the debt instrument on initial recognition. For purchased or originated credit-impaired financial assets, a credit-adjusted effective interest rate is calculated by discounting the estimated future cash flows, including expected credit losses, to the amortized cost of the debt instrument on initial recognition.

The amortized cost of a financial asset is the amount at which the financial asset is measured at initial recognition minus the principal repayments, plus the cumulative amortisation using the effective interest method of any difference between that initial amount and the maturity amount, adjusted for any loss allowance. The gross carrying amount of a financial asset is the amortized cost of a financial asset before adjusting for any loss allowance.

Interest income is recognized using the effective interest method for debt instruments measured subsequently at amortized cost and at FVTOCI. For financial assets other than purchased or originated credit-impaired financial assets, interest income is calculated by applying the effective interest rate to the gross carrying amount of a financial asset, except for financial assets that have subsequently become credit-impaired (see below). For financial assets that have subsequently become credit-impaired, interest income is recognized by applying the effective interest rate to the amortized cost of the financial asset. If, in subsequent reporting periods, the credit risk on the credit-impaired financial instrument improves so that the financial asset is no longer credit-impaired, interest income is recognized by applying the effective interest rate to the gross carrying amount of the financial asset.

For purchased or originated credit-impaired financial assets, the Group recognizes interest income by applying the credit-adjusted effective interest rate to the amortized cost of the financial asset from initial recognition. The calculation does not revert to the gross basis even if the credit risk of the financial asset subsequently improves so that the financial asset is no longer credit-impaired.

Interest income is recognized in profit or loss and is included in the "finance income - interest income" line item (see note 35).

#### 1-2) Debt instruments classified as at FVTOCI

The corporate bonds are initially measured at fair value plus transaction costs. Subsequently, changes in the carrying amount of these corporate bonds as a result of foreign exchange gains and losses, impairment gains or losses, and interest income calculated using the effective interest method are recognized in profit or loss. The amounts that are recognized in profit or loss are the same as the amounts that would have been recognized in profit or loss if these corporate bonds had been measured at amortized cost. All other changes in the carrying amount of these corporate bonds are recognized in other comprehensive income and accumulated under the heading of investments revaluation reserve. When these corporate bonds are derecognized, the cumulative gains or losses previously recognized in other comprehensive income are reclassified to profit or loss.

#### 1-3) Equity instruments designated as at FVTOCI

On initial recognition, the Group may make an irrevocable election (on an instrument-by-instrument basis) to designate investments in equity instruments as at FVTOCI. Designation at FVTOCI is not permitted if the equity investment is held for trading or if it is contingent consideration recognized by an acquirer in a business combination.

A financial asset is held for trading if:

- it has been acquired principally for the purpose of selling it in the near term; or
- on initial recognition it is part of a portfolio of identified financial instruments that the Group manages together and has evidence of a recent actual pattern of short-term profit-taking; or
- it is a derivative (except for a derivative that is a financial guarantee contract or a designated and effective hedging instrument).

Investments in equity instruments at FVTOCI are initially measured at fair value plus transaction costs. Subsequently, they are measured at fair value with gains and losses arising from changes in fair value recognized in other comprehensive income and accumulated in the investments revaluation reserve. The cumulative gain or loss is not be reclassified to profit or loss on disposal of the equity investments, instead, it is transferred to retained earnings.

Dividends on these investments in equity instruments are recognized in profit or loss in accordance with K-IFRS 1109, unless the dividends clearly represent a recovery of part of the cost of the investment. Dividends are included in the 'finance income' line item (note 35) in profit or loss.

#### 1-4) Financial assets at FVTPL

Financial assets that do not meet the criteria for being measured at amortized cost or FVTOCI are measured at FVTPL. Specifically:

- Investments in equity instruments are classified as at FVTPL, unless the Group designates an equity investment that is neither held for trading nor a contingent consideration arising from a business combination as at FVTOCI on initial recognition (see (1-3) above).
- Debt instruments that do not meet the amortized cost criteria or the FVTOCI criteria (see (1-1) and (1-2) above) are classified as at FVTPL. In addition, debt instruments that meet either the amortized cost criteria or the FVTOCI criteria may be designated as at FVTPL upon initial recognition if such designation eliminates or significantly reduces a measurement or recognition inconsistency (so called 'accounting mismatch') that would arise from measuring assets or liabilities or recognising the gains and losses on them on different bases. The Group has not designated any debt instruments as at FVTPL.

Financial assets at FVTPL are measured at fair value at the end of each reporting period, with any fair value gains or losses recognized in profit or loss to the extent they are not part of a designated hedging relationship.

#### 2) Foreign exchange gains and losses

The carrying amount of financial assets that are denominated in a foreign currency is determined in that foreign currency and translated at the spot rate at the end of each reporting period. Specifically;

- for financial assets measured at amortized cost that are not part of a designated hedging relationship, exchange differences are recognized in profit or loss in the 'other gains and losses' line item.
- for debt instruments measured at FVTOCI that are not part of a designated hedging relationship, exchange differences on the amortized cost of the debt instrument are recognized in profit or loss in the 'other gains and losses'.
- Other exchange differences are recognized in other comprehensive income in the investments revaluation reserve;
- for financial assets measured at FVTPL that are not part of a designated hedging relationship, exchange differences are recognized in profit or loss in the 'other gains and losses' line item.
- for equity instruments measured at FVTOCI, exchange differences are recognized in other comprehensive income in the investments revaluation reserve.

### 3) Impairment of financial assets

The Group recognizes a loss allowance for expected credit losses on investments in debt instruments that are measured at amortized cost or at FVOCI, lease receivables, trade receivables and contract assets, as well as on financial guarantee contracts. The amount of expected credit losses is updated at each reporting date to reflect changes in credit risk since initial recognition of the respective financial instrument.

The Group always recognizes lifetime ECL for trade receivables, contract assets and lease receivables. The expected credit losses on these financial assets are estimated using a provision matrix based on the Group's historical credit loss experience, adjusted for factors that are specific to the debtors, general economic conditions and an assessment of both the current as well as the forecast direction of conditions at the reporting date, including time value of money where appropriate.

For all other financial instruments, the Group recognizes lifetime ECL when there has been a significant increase in credit risk since initial recognition. However, if the credit risk on the financial instrument has not increased significantly since initial recognition, the Group measures the loss allowance for that financial instrument at an amount equal to 12-month ECL.

Lifetime ECL represents the expected credit losses that will result from all possible default events over the expected life of a financial instrument. In contrast, 12-month ECL represents the portion of lifetime ECL that is expected to result from default events on a financial instrument that are possible within 12 months after the reporting date.

#### 3-1) Significant increase in credit risk

In assessing whether the credit risk on a financial instrument has increased significantly since initial recognition, the Group compares the risk of a default occurring on the financial instrument at the reporting date with the risk of a default occurring on the financial instrument at the date of initial recognition. In making this assessment, the Group considers both quantitative and qualitative information that is reasonable and supportable, including historical experience and forward-looking information that is available without undue cost or effort. Forward-looking information considered includes the future prospects of the industries in which the Group's debtors operate, obtained from economic expert reports, financial analysts, governmental bodies, relevant think-tanks and other similar organisations, as well as consideration of various external sources of actual and forecast economic information that relate to the Group's core operations.

In particular, the following information is taken into account when assessing whether credit risk has increased significantly since initial recognition:

- an actual or expected significant deterioration in the financial instrument's external (if available) or internal credit rating;
- significant deterioration in external market indicators of credit risk for a particular financial instrument, e.g. a significant increase in the credit spread, the credit default swap prices for the debtor, or the length of time or the extent to which the fair value of a financial asset has been less than its amortized cost;
- an actual or expected significant deterioration in the operating results of the debtor;
- significant increases in credit risk on other financial instruments of the same debtor;
- an actual or expected significant adverse change in the regulatory, economic, or technological environment of the debtor that results in a significant decrease in the debtor's ability to meet its debt obligations.

Irrespective of the outcome of the above assessment, the Group presumes that the credit risk on a financial asset has increased significantly since initial recognition when contractual payments are more than 30 days past due, unless the Group has reasonable and supportable information that demonstrates otherwise.

Despite the foregoing, the Group assumes that the credit risk on a financial instrument has not increased significantly since initial recognition if the financial instrument is determined to have low credit risk at the reporting date. A financial instrument is determined to have low credit risk if:

- (1) The financial instrument has a low risk of default,
- (2) The debtor has a strong capacity to meet its contractual cash flow obligations in the near term, and
- (3) Adverse changes in economic and business conditions in the longer term may, but will not necessarily, reduce the ability of the borrower to fulfil its contractual cash flow obligations.

The Group considers a financial asset to have low credit risk when the asset has external credit rating of 'investment grade' in accordance with the globally understood definition or if an external rating is not available, the asset has an internal rating of 'performing'. Performing means that the counterparty has a strong financial position and there is no past due amounts.

For financial guarantee contracts, the date that the Group becomes a party to the irrevocable commitment is considered to be the date of initial recognition for the purposes of assessing the financial instrument for impairment. In assessing whether there has been a significant increase in the credit risk since initial recognition of a financial guarantee contracts, the Group considers the changes in the risk that the specified debtor will default on the contract.

The Group regularly monitors the effectiveness of the criteria used to identify whether there has been a significant increase in credit risk and revises them as appropriate to ensure that the criteria are capable of identifying significant increase in credit risk before the amount becomes past due.

### 3-2) Definition of default

The Group considers the following as constituting an event of default for internal credit risk management purposes as historical experience indicates that financial assets that meet either of the following criteria are generally not recoverable:

- when there is a breach of financial covenants by the debtor; or
- information developed internally or obtained from external sources indicates that the debtor is unlikely to pay its creditors, including the Group, in full (without taking into account any collateral held by the Group).

Irrespective of the above analysis, the Group considers that default has occurred when a financial asset is more than 90 days past due unless the Group has reasonable and supportable information to demonstrate that a more lagging default criterion is more appropriate.

### 3-3) Credit-impaired financial assets

A financial asset is credit-impaired when one or more events that have a detrimental impact on the estimated future cash flows of that financial asset have occurred. Evidence that a financial asset is credit-impaired includes observable data about the following events:

- (a) significant financial difficulty of the issuer or the borrower;
- (b) a breach of contract, such as a default or past due event (see (3-2) above);
- (c) the lender(s) of the borrower, for economic or contractual reasons relating to the borrower's financial difficulty, having granted to the borrower a concession(s) that the lender(s) would not otherwise consider;
- (d) it is becoming probable that the borrower will enter bankruptcy or other financial reorganisation; or
- (e) the disappearance of an active market for that financial asset because of financial difficulties.

### 3-4) Write-off policy

The Group writes off a financial asset when there is information indicating that the debtor is in severe financial difficulty and there is no realistic prospect of recovery, e.g. when the debtor has been placed under liquidation or has entered into bankruptcy proceedings, or in the case of trade receivables, when the amounts are over two years past due, whichever occurs sooner. Financial assets written off may still be subject to enforcement activities under the Group's recovery procedures, taking into account legal advice where appropriate.

### 3-5) Measurement and recognition of expected credit losses

The measurement of expected credit losses is a function of the probability of default, loss given default (i.e. the magnitude of the loss if there is a default) and the exposure at default. The assessment of the probability of default and loss given default is based on historical data adjusted by forward-looking information as described above. As for the exposure at default, for financial assets, this is represented by the assets' gross carrying amount at the reporting date; for financial guarantee contracts, the exposure includes the amount drawn down as at the reporting date, together with any additional amounts expected to be drawn down in the future by default date determined based on historical trend, the Group's understanding of the specific future financing needs of the debtors, and other relevant forward-looking information.

For financial assets, the expected credit loss is estimated as the difference between all contractual cash flows that are due to the Group in accordance with the contract and all the cash flows that the Group expects to receive, discounted at the original effective interest rate. For a lease receivable, the cash flows used for determining the expected credit losses is consistent with the cash flows used in measuring the lease receivable in accordance with K-IFRS 1017 *Leases*.

For a financial guarantee contract, as the Group is required to make payments only in the event of a default by the debtor in accordance with the terms of the instrument that is guaranteed, the expected loss allowance is the expected payments to reimburse the holder for a credit loss that it incurs less any amounts that the Group expects to receive from the holder, the debtor or any other party.

If the Group has measured the loss allowance for a financial instrument at an amount equal to lifetime ECL in the previous reporting period, but determines at the current reporting date that the conditions for lifetime ECL are no longer met, the Group measures the loss allowance at an amount equal to 12-month ECL at the current reporting date, except for assets for which simplified approach was used.

The Group recognizes an impairment gain or loss in profit or loss for all financial instruments with a corresponding adjustment to their carrying amount through a loss allowance account, except for investments in debt instruments that are measured at FVTOCI, for which the loss allowance is recognized in other comprehensive income and accumulated in the investment revaluation reserve, and does not reduce the carrying amount of the financial asset in the statement of financial position.

#### 4) Derecognition of financial assets

The Group derecognizes a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity. If the Group neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the Group recognizes its retained interest in the asset and an associated liability for amounts it may have to pay. If the Group retains substantially all the risks and rewards of ownership of a transferred financial asset, the Group continues to recognize the financial asset and also recognizes a collateralised borrowing for the proceeds received.

On derecognition of a financial asset measured at amortized cost, the difference between the asset's carrying amount and the sum of the consideration received and receivable is recognized in profit or loss. In addition, on derecognition of an investment in a debt instrument classified as at FVTOCI, the cumulative gain or loss previously accumulated in the investments revaluation reserve is reclassified to profit or loss. In contrast, on derecognition of an investment in equity instrument which the Group has elected on initial recognition to measure at FVTOCI, the cumulative gain or loss previously accumulated in the investments revaluation reserve is not reclassified to profit or loss, but is transferred to retained earnings.

#### (24) Financial liabilities and equity instruments

##### 1) Classification as debt or equity

Debt and equity instruments are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangement and the definitions of financial liability and an equity instrument.

##### 2) Equity instruments

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by the Group are recognized at the proceeds received, net of direct issue costs.

Repurchase of the Company's own equity instruments is recognized and deducted directly in equity. No gain or loss is recognized in profit or loss on the purchase, sale, issue or cancellation of the Company's own equity instruments.

##### 3) Compound instruments

The component parts of compound instruments (convertible bonds) issued by the Group are classified separately as financial liabilities and equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and equity instrument. Conversion option that will be settled by the exchange of a fixed amount of cash or another financial asset for a fixed number of the Company's own equity instruments is an equity instrument.

At the date of issue, the fair value of the liability component is estimated using the prevailing market interest rate for a similar non-convertible instrument. This amount is recorded as a liability on an amortized cost basis using the effective interest method until extinguished upon conversion or at the instrument's maturity date.

The conversion option classified as equity is determined by deducting the amount of the liability component from the fair value of the compound instrument as a whole. This is recognized and included in equity, net of income tax effects, and is not subsequently remeasured. In addition, the conversion option classified as equity will remain in equity until the conversion option is exercised, in which case, the balance recognized in equity will be transferred to share premium. No gain or loss is recognized in profit or loss upon conversion or expiration of the conversion option.

Transaction costs that relate to the issue of the convertible notes are allocated to liability and equity components in proportion to the allocation of the gross proceeds. Transaction costs relating to equity component are recognized directly in equity. Transaction costs relating to the liability component are included in the carrying amount of the liability component and are amortized over the lives of the convertible notes using the effective interest method.

#### 4) Financial liabilities

All financial liabilities are measured subsequently at amortized cost using the effective interest method or at FVTPL. However, financial liabilities that arise when a transfer of a financial asset does not qualify for derecognition or when the continuing involvement approach applies, and financial guarantee contracts issued by the Group, are measured in accordance with the specific accounting policies set out below.

#### 5) Financial liabilities at FVTPL

Financial liabilities are classified as at FVTPL when the financial liability is (i) contingent consideration of an acquirer in a business combination, (ii) held for trading or (iii) it is designated as at FVTPL.

A financial liability is classified as held for trading if:

- it has been acquired principally for the purpose of repurchasing it in the near term; or
- on initial recognition it is part of a portfolio of identified financial instruments that the Group [Company] manages together and has a recent actual pattern of short-term profit-taking; or
- it is a derivative that is not designated and effective as a hedging instrument.

A financial liability other than a financial liability held for trading or contingent consideration of an acquirer in a business combination may be designated as at FVTPL upon initial recognition if:

- such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise; or
- the financial liability forms part of a group of financial assets or financial liabilities or both, which is managed and its performance is evaluated on a fair value basis, in accordance with the Group's documented risk management or investment strategy, and information about the grouping is provided internally on that basis; or
- it forms part of a contract containing one or more embedded derivatives, and K-IFRS 1109 permits the entire combined contract to be designated as at FVTPL.

Financial liabilities at FVTPL are measured at fair value, with any gains or losses arising on changes in fair value recognized in profit or loss to the extent that they are not part of a designated hedging relationship. The net gain or loss recognized in profit or loss incorporates any interest paid on the financial liability and is included in the 'other gains and losses' line item in profit or loss.

However, for financial liabilities that are designated as at FVTPL, the amount of change in the fair value of the financial liability that is attributable to changes in the credit risk of that liability is recognized in other comprehensive income, unless the recognition of the effects of changes in the liability's credit risk in other comprehensive income would create or enlarge an accounting mismatch in profit or loss. The remaining amount of change in the fair value of liability is recognized in profit or loss. Changes in fair value attributable to a financial liability's credit risk that are recognized in other comprehensive income are not subsequently reclassified to profit or loss; instead, they are transferred to retained earnings upon derecognition of the financial liability.

Gains or losses on financial guarantee contracts issued by the Group that are designated by the Group as at FVTPL are recognized in profit or loss.

#### 6) Financial liabilities measured subsequently at amortized cost

Financial liabilities that are not (i) contingent consideration of an acquirer in a business combination, (ii) held-for-trading, or (iii) designated as at FVTPL, are measured subsequently at amortized cost using the effective interest method.

The effective interest method is a method of calculating the amortized cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the financial liability, or (where appropriate) a shorter period, to the amortized cost of a financial liability.

#### 7) Financial guarantee contracts

A financial guarantee contract is a contract that requires the issuer to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payments when due in accordance with the terms of a debt instruments.

Financial guarantee contract liabilities are measured initially at their fair values and, if not designated as at FVTPL and do not arise from a transfer of an asset, are measured subsequently at the higher of:

- the amount of the loss allowance determined in accordance with K-IFRS 1109 (see financial assets above); and
- the amount recognized initially less, where appropriate, cumulative amortisation recognized in accordance with the revenue recognition policies set out above.

8) Foreign exchange gains and losses

For financial liabilities that are denominated in a foreign currency and are measured at amortized cost at the end of each reporting period, the foreign exchange gains and losses are determined based on the amortized cost of the instruments. These foreign exchange gains and losses are recognized in the 'other gains and losses' line item in profit or loss for financial liabilities that are not part of a designated hedging relationship. For those which are designated as a hedging instrument for a hedge of foreign currency risk foreign exchange gains and losses are recognized in other comprehensive income and accumulated in a separate component of equity.

The fair value of financial liabilities denominated in a foreign currency is determined in that foreign currency and translated at the spot rate at the end of the reporting period. For financial liabilities that are measured as at FVTPL, the foreign exchange component forms part of the fair value gains or losses and is recognized in profit or loss for financial liabilities that are not part of a designated hedging relationship.

9) Derecognition of financial liabilities

The Group derecognizes financial liabilities when, and only when, the Group's obligations are discharged, cancelled or have expired. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

When the Group exchanges with the existing lender one debt instrument into another one with the substantially different terms, such exchange is accounted for as an extinguishment of the original financial liability and the recognition of a new financial liability. Similarly, the Group accounts for substantial modification of terms of an existing liability or part of it as an extinguishment of the original financial liability and the recognition of a new liability. It is assumed that the terms are substantially different if the discounted present value of the cash flows under the new terms, including any fees paid net of any fees received and discounted using the original effective rate is at least 10 percent different from the discounted present value of the remaining cash flows of the original financial liability. If the modification is not substantial, the difference between: (1) the carrying amount of the liability before the modification; and (2) the present value of the cash flows after modification should be recognized in profit or loss as the modification gain or loss within other gains and losses.

(25) Derivative financial instruments

The Group enters into a variety of derivative financial instruments to manage its exposure to interest rate and foreign exchange rate risks, including foreign exchange forward contracts, options and interest rate swaps.

Derivatives are recognized initially at fair value at the date a derivative contract is entered into and are subsequently remeasured to their fair value at each reporting date. The resulting gain or loss is recognized in profit or loss immediately unless the derivative is designated and effective as a hedging instrument, in which event the timing of the recognition in profit or loss depends on the nature of the hedge relationship.

A derivative with a positive fair value is recognized as a financial asset whereas a derivative with a negative fair value is recognized as a financial liability. Derivatives are not offset in the financial statements unless the Group has both legal right and intention to offset. The impact of the Master Netting Agreements on the Group's financial position is disclosed. A derivative is presented as a non-current asset or a non-current liability if the remaining maturity of the instrument is more than 12 months and it is not expected to be realised or settled within 12 months. Other derivatives are presented as current assets or current liabilities.

1) Embedded derivatives

An embedded derivative is a component of a hybrid contract that also includes a non-derivative host – with the effect that some of the cash flows of the combined instrument vary in a way similar to a stand-alone derivative.

Derivatives embedded in hybrid contracts with a financial asset host within the scope of K-IFRS 1109 are not separated. The entire hybrid contract is classified and subsequently measured as either amortized cost or fair value as appropriate.

Derivatives embedded in hybrid contracts with hosts that are not financial assets within the scope of K-IFRS 1109 (e.g. financial liabilities) are treated as separate derivatives when they meet the definition of a derivative, their risks and characteristics are not closely related to those of the host contracts and the host contracts are not measured at FVTPL.

An embedded derivative is presented as a non-current asset or non-current liability if the remaining maturity of the hybrid instrument to which the embedded derivative relates is more than 12 months and is not expected to be realised or settled within 12 months.

## 2) Hedge accounting

The Group designates certain derivatives as hedging instruments in respect of foreign currency risk and interest rate risk in fair value hedges, cash flow hedges, or hedges of net investments in foreign operations. Hedges of foreign exchange risk on firm commitments are accounted for as cash flow hedges.

At the inception of the hedge relationship, the Group documents the relationship between the hedging instrument and the hedged item, along with its risk management objectives and its strategy for undertaking various hedge transactions. Furthermore, at the inception of the hedge and on an ongoing basis, the Group documents whether the hedging instrument is effective in offsetting changes in fair values or cash flows of the hedged item attributable to the hedged risk, which is when the hedging relationships meet all of the following hedge effectiveness requirements:

- there is an economic relationship between the hedged item and the hedging instrument;
- the effect of credit risk does not dominate the value changes that result from that economic relationship; and
- the hedge ratio of the hedging relationship is the same as that resulting from the quantity of the hedged item that the Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

If a hedging relationship ceases to meet the hedge effectiveness requirement relating to the hedge ratio but the risk management objective for that designated hedging relationship remains the same, the Group adjusts the hedge ratio of the hedging relationship (i.e. rebalances the hedge) so that it meets the qualifying criteria again.

The Group designates the full change in the fair value of a forward contract (i.e. including the forward elements) as the hedging instrument for all of its hedging relationships involving forward contracts.

The Group designates only the intrinsic value of option contracts as a hedged item, i.e. excluding the time value of the option. The changes in the fair value of the aligned time value of the option are recognized in other comprehensive income and accumulated in the cost of hedging reserve. If the hedged item is transaction-related, the time value is reclassified to profit or loss when the hedged item affects profit or loss. If the hedged item is time-period related, then the amount accumulated in the cost of hedging reserve is reclassified to profit or loss on a rational basis – the Group applies straight-line amortisation. Those reclassified amounts are recognized in profit or loss in the same line as the hedged item. If the hedged item is a non-financial item, then the amount accumulated in the cost of hedging reserve is removed directly from equity and included in the initial carrying amount of the recognized non-financial item. Furthermore, if the Group expects that some or all of the loss accumulated in cost of hedging reserve will not be recovered in the future, that amount is immediately reclassified to profit or loss.

## 3) Cash flow hedges

The effective portion of changes in the fair value of derivatives and other qualifying hedging instruments that are designated and qualify as cash flow hedges is recognized in other comprehensive income and accumulated under the heading of cash flow hedging reserve, limited to the cumulative change in fair value of the hedged item from inception of the hedge. The gain or loss relating to the ineffective portion is recognized immediately in profit or loss, and is included in the 'other gains and losses' line item.

Amounts previously recognized in other comprehensive income and accumulated in equity are reclassified to profit or loss in the periods when the hedged item affects profit or loss, in the same line as the recognized hedged item. However, when the hedged forecast transaction results in the recognition of a non-financial asset or a non-financial liability, the gains and losses previously recognized in other comprehensive income and accumulated in equity are removed from equity and included in the initial measurement of the cost of the non-financial asset or non-financial liability. This transfer does not affect other comprehensive income. Furthermore, if the Group expects that some or all of the loss accumulated in the cash flow hedging reserve will not be recovered in the future, that amount is immediately reclassified to profit or loss.

The Group discontinues hedge accounting only when the hedging relationship (or a part thereof) ceases to meet the qualifying criteria (after rebalancing, if applicable). This includes instances when the hedging instrument expires or is sold, terminated or exercised. The discontinuation is accounted for prospectively. Any gain or loss recognized in other comprehensive income and accumulated in cash flow hedge reserve at that time remains in equity and is reclassified to profit or loss when the forecast transaction occurs. When a forecast transaction is no longer expected to occur, the gain or loss accumulated in cash flow hedge reserve is reclassified immediately to profit or loss.

(26) Fair Value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, regardless of whether that price is directly observable or estimated using another valuation technique. In estimating the fair value of an asset or a liability, the Group takes into account the characteristics of the asset or liability if market participants would take those characteristics into account when pricing the asset or liability at the measurement date. Fair value for measurement and/or disclosure purposes in these consolidated financial statements is determined on such a basis, except for share-based payment transactions that are within the scope of K-IFRS No. 1102 Share-based payment, leasing transactions that are within the scope of K-IFRS No.1017 Leases, and measurements that have some similarities to fair value but are not fair value, such as net realisable value in K-IFRS 1002 Inventories or value in use in K-IFRS No.1036 Impairment of Assets.

In addition, for financial reporting purposes, fair value measurements are categorized into Level 1, 2 or 3 based on the degree to which the inputs to the fair value measurements are observable and the significance of the inputs to the fair value measurement in its entirety, which are described as follows:

(Level 1) inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the Group can access at the measurement date;

(Level 2) inputs are inputs, other than quoted prices included within Level 1, that are observable for the asset or liability, either directly or indirectly; and

(Level 3) inputs are unobservable inputs for the asset or liability.

(27) Accounting Treatment related to the Emission Rights Cap and Trade Scheme

The Group classifies the emission rights as intangible assets. Emission rights allowances the Government allocated free of charge are measured at nil, and emission rights allowances purchased are measured at cost, which the Group paid to purchase the allowances. If emission rights the Government allocated free of charge are sufficient to settle the emission rights allowances allotted for vintage year, the emissions liabilities are measured at nil. However, for the emissions liabilities that exceed the allowances allocated free of charge, the shortfall is measured at best estimate at the end of the reporting period.

(28) Segment Reporting

Each operating segment is reported Information of each operating segment is reported in a manner consistent with the business segment reporting provided to the chief operating decision-maker (Note 41). The chief operating decision-maker is responsible for allocating resources and assessing performance of the operating segments.

(29) Approval of Issuance of the Financial Statements

The issuance of the December 31, 2018 financial statements of the Group was authorized for issuance by the Board of Directors on February 20, 2019, which will be submitted for approval at the annual shareholder's meeting on March 26, 2019.

**3. SIGNIFICANT ESTIMATES AND ASSUMPTIONS:**

In the application of the Group accounting policies, which are described in Note 2, management is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period or in the period of the revision and future periods if the revision affects both current and future periods.

The following are the key assumptions concerning the future, and other key sources of estimation uncertainty at the end of the reporting period, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year.

(1) Impairment of goodwill

Determining whether goodwill is impaired requires an estimation of the value in use of the cash-generating units to which goodwill has been allocated. The value in use calculation requires the directors to estimate the future cash flows expected to arise from the cash-generating unit and a suitable discount rate in order to calculate present value.

(2) Defined Benefit Plan

The Group's defined benefit obligation is determined based on the actuarial valuation carried out at the end of each annual reporting period. Actuarial assumptions are the Group's best estimates of the variables in determining the cost of providing post-retirement benefits such as discount rates, rates of expected future salary increases and mortality rates. Significant estimation uncertainty is likely to persist in making such assumptions due to the long-term nature of post-retirement benefit plan. As of December 31, 2018, net defined benefit liability of the plan is ₩371,701 million (2017: ₩304,696 million), as detailed in Note 23.

(3) Useful lives of property, plant and equipment

As described at Note 2.(16) above, the Group reviews the estimated useful lives of property, plant and equipment at the end of each annual reporting period.

(4) Valuation of Financial Instruments

The Group uses valuation techniques that include inputs that are not based on observable market data to estimate the fair value of certain type of financial instruments. Note 5 provides detailed information about key assumptions used in the determination of the fair value of financial instruments, as well as the detailed sensitivity analysis for these assumptions. The directors believe that the chosen valuation techniques and assumptions used are appropriate in determining the fair value of financial instruments.

(5) Uncertainty on the Investment and Mutual Aid Promotion Tax

Under the Investment and Mutual Aid Promotion Tax regime, the Group may incur increased tax burden depending on its level of investment, payroll increase or cash dividends for the three years from 2018. There is uncertainty in the estimation of the tax impact to the Group which is reviewed by the management per the current level of investment, payroll increase or cash dividends.

(6) Impairment of Polysilicon cash-generated units

Because of the decrease of government grant of China and impact of Safeguard of the United States, there seem to be long-term depression on the Polysilicon Division. The Group conducted impairment test for calculating recoverable amount. The recoverable amount of the cash flow-generating unit was determined on the basis of value in use, and value in use was determined by discounting future cash flows expected from the continued use of the asset. The key assumptions used in calculating value in use include forecasts of future cash flows, discount rates, etc. and reflect management's assessment of future trends in the industry, which has been determined by considering external and internal information (formerly historical information), but are inherent in estimation uncertainty. details are described in Note.

**4. FINANCIAL RISK MANAGEMENT:**

(1) Financial risk management

The Finance department of the Group manages operations, organizes access to domestic and international financial markets and monitors and manages financial risks related to the Group's operations through an internal risk report that analyzes the extent and magnitude of each risk. These risks include market risk (including foreign exchange risk and interest rate risk), credit risk and liquidity risk.

1) Market risk

(a) Foreign exchange risk

The group's foreign exchange risk arises when future forecast transactions and recognised assets and liabilities are denominated in a currency other than the functional currency, and the major foreign currencies for which the exchange position occurs are USD, EUR and JPY.

The consolidation entity selects the foreign exchange risk management policy of each company by considering the nature of the business and the existence of measures to cope with the exchange rate fluctuation risk of each company being connected. In addition, the consolidation entity regularly evaluates, manages and reports the risks of foreign exchange exposure, using the foreign exchange risk management model, so that the maximum amount of loss for foreign exchange risk exposure is within the allowable range. The consolidation entity uses derivatives for foreign exchange risk management purposes, if necessary.

The following table shows the sensitivity for each foreign currency on income before income tax, with all other variables held constant, as of December 31, 2018 and 2017, when exchange rates change by 1% for the foreign exchange positions held by the Group.

|     | In thousands of Korean won |                    |                      |                    |
|-----|----------------------------|--------------------|----------------------|--------------------|
|     | 2018                       |                    | 2017                 |                    |
|     | 1% increase                | 1% decrease        | 1% increase          | 1% decrease        |
| USD | ₩ (4,960,492)              | ₩ 4,960,492        | ₩ (8,685,341)        | ₩ 8,685,341        |
| EUR | 464,358                    | (464,358)          | 339,376              | (339,376)          |
| JPY | 313,288                    | (313,288)          | 250,749              | (250,749)          |
|     | <u>₩ (4,182,846)</u>       | <u>₩ 4,182,846</u> | <u>₩ (8,095,216)</u> | <u>₩ 8,095,216</u> |

The table above shows the sensitivity analysis performed on monetary assets and liabilities denominated in foreign currencies other than the Group's functional currency. The effect of changes in foreign exchange rates due to the hedging effectiveness of derivative instrument transactions was also considered.

(b) Interest rate risk

Interest rate risk is the risk that future changes in market interest rates will result in changes in interest income and interest costs, such as deposits and borrowing, mainly from deposits and borrowing in variable interest terms.

The goal of the group's interest rate risk management is to maximize the value of the entity by seeking to minimize the uncertainty of interest rate changes and net interest costs.

As of the end of the current term, if other variables are constant and interest rates on floating rate borrowing rise (falling) by 1%, the current period net income before corporate tax expense deduction is expected to have decreased (increased) by ₩22,855 million won (December 31, 2017: ₩ 21,220 million won).

1) Credit risk

The Group is exposed to credit risk that could result in financial loss to the other party due to the failure of one of the parties to the financial instrument to fulfill its obligations. The management of the Group is dealing with customers whose credit rating is above a certain level in order to manage credit risk. When a contract is made with a new customer, the Group evaluates the customer's creditworthiness by using financial information and information provided by the credit rating agency, and determines the credit limit based on this.

The Group's maximum exposure to credit risk is the carrying amount of all financial assets (excluding equity instruments), which include cash and cash equivalents deposited at financial institutions and trade receivables and other receivables.

2) Liquidity risk

The consolidation entity monitors the forecast of liquidity at all times to ensure that the unused borrowing limit (see Note 38) is kept at an appropriate level and that it does not violate the borrowing limit or agreement to meet the demand for operating funds. In forecasting liquidity, we consider external legislation or legal requirements such as group financing plans, agreement compliance, group internal target financial ratios and restrictions on currency.

(a) Contractual maturities of non-derivative liabilities

Maturity analysis of non-derivative liabilities according to their remaining maturities as of December 31, 2018, and December 31, 2017, is as follows:

| Category                          | In thousands of Korean won |                        |                      |                        |
|-----------------------------------|----------------------------|------------------------|----------------------|------------------------|
|                                   | December 31, 2018          |                        |                      |                        |
|                                   | Within 1 year              | 1 to 5 years           | After 5 years        | Total                  |
| Borrowings (*1)                   | ₩ 3,015,621,998            | ₩ 2,952,161,766        | ₩ 141,733,410        | ₩ 6,109,517,174        |
| Trade payables and other payables | 1,479,945,702              | 329,899                | -                    | 1,480,275,601          |
| Other financial liabilities (*2)  | 119,060,028                | 9,623,289              | 280,000              | 128,963,317            |
|                                   | <u>₩ 4,614,627,728</u>     | <u>₩ 2,962,114,954</u> | <u>₩ 142,013,410</u> | <u>₩ 7,718,756,092</u> |

(\*1) Includes projected cash flows of related interest expense.

(\*2) Projected cash flows from accrued interest and financial guarantee liabilities are not included.

| Category                          | In thousands of Korean won |                        |                      |                        |
|-----------------------------------|----------------------------|------------------------|----------------------|------------------------|
|                                   | December 31, 2017          |                        |                      |                        |
|                                   | Within 1 year              | 1 to 5 years           | After 5 years        | Total                  |
| Borrowings (*1)                   | ₩ 2,741,359,841            | ₩ 1,695,118,546        | ₩ 142,888,845        | ₩ 4,579,367,232        |
| Trade payables and other payables | 1,632,120,849              | 23,965,936             | -                    | 1,656,086,785          |
| Other financial liabilities (*2)  | 129,554,295                | 9,416,942              | -                    | 138,971,237            |
|                                   | <u>₩ 4,503,034,985</u>     | <u>₩ 1,728,501,424</u> | <u>₩ 142,888,845</u> | <u>₩ 6,374,425,254</u> |

(\*1) Includes projected cash flows of related interest expense.

(\*2) Projected cash flows from accrued interest and financial guarantee liabilities are not included.

(b) Expected cash flows of derivative liabilities by maturity

| Category                   | In thousands of Korean won |              |               |              |
|----------------------------|----------------------------|--------------|---------------|--------------|
|                            | December 31, 2018          |              |               |              |
|                            | Within 1 year              | 1 to 5 years | After 5 years | Total        |
| Derivative liabilities (*) | ₩ 16,885,632               | ₩ 634,429    | ₩ -           | ₩ 17,520,061 |

(\*) Even if derivatives settled gross were classified as assets, expected cash flows are included in the liquidity risk analysis.

Derivatives settled on a gross basis whose prices have not yet been determined are reflected in the expected net cash flows.

| Category                   | In thousands of Korean won |              |               |              |
|----------------------------|----------------------------|--------------|---------------|--------------|
|                            | December 31, 2017          |              |               |              |
|                            | Within 1 year              | 1 to 5 years | After 5 years | Total        |
| Derivative liabilities (*) | ₩ 4,946,432                | ₩ 34,649,037 | ₩ -           | ₩ 39,595,469 |

(\*) Even if derivatives settled gross were classified as assets, expected cash flows are included in the liquidity risk analysis.

Derivatives settled on a gross basis whose prices have not yet been determined are reflected in the expected net cash flows.

In addition to the above financial liabilities, the Group has signed financial guarantee contracts and supplemental funding agreements for related parties. If related parties fail to meet an obligation, additional payment obligations by the Group may be incurred within a year and the maximum amount of the related liquidity risk is ₩ 143,877 million won (December 31, 2017: ₩ 89,120 million won) (see Note 39).

## (2) Capital Risk Management

The Group's capital management objective is to sustain the ability, as a going concern, to consistently deliver profits to shareholders and other stakeholders and to maintain a robust capital structure to reduce the cost of capital. The Group uses the debt-to-equity ratio as an indicator to manage capital. This ratio is calculated by dividing total debt by total equity. Total debt and total equity is presented in the consolidated financial statements as "total liabilities" and "total equity," respectively.

The debt-to-equity ratio of the Group as of December 31, 2018 and 2017 is as follows:

|                           | In thousands Korean won |                   |
|---------------------------|-------------------------|-------------------|
|                           | December 31, 2018       | December 31, 2017 |
| Total Debt(A)             | 9,004,379,086           | 7,462,014,737     |
| Total Equity(B)           | 6,227,096,362           | 6,187,473,162     |
| Debt-to-Equity Ratio(A/B) | 144.60%                 | 120.60%           |

#### 4. FAIR VALUE:

##### (1) Fair value of financial instruments by category

Fair value of financial instruments by category as of December 31, 2018, and December 31, 2017, are as follows:

|                                         | In thousands of Korean won |                 |                   |                 |
|-----------------------------------------|----------------------------|-----------------|-------------------|-----------------|
|                                         | December 31, 2018          |                 | December 31, 2017 |                 |
|                                         | Book value                 | Fair Value      | Book value        | Fair Value      |
| Financial assets                        |                            |                 |                   |                 |
| Cash and cash equivalents               | ₩ 1,024,121,436            | ₩ 1,024,121,436 | ₩ 804,983,081     | ₩ 804,983,081   |
| FVTPL—financial assets                  | 81,614                     | 81,614          | -                 | -               |
| AFS financial assets(*1)                | -                          | -               | 240,476,424       | 240,476,424     |
| FVTOCI—financial assets(*2)             | 80,230,461                 | 80,230,461      | -                 | -               |
| Trade receivables and other receivables | 1,761,499,408              | 1,761,499,408   | 1,718,321,605     | 1,718,321,605   |
| Other financial assets:                 |                            |                 |                   |                 |
| Derivative assets                       | 7,977,889                  | 7,977,889       | 883,763           | 883,763         |
| Others                                  | 494,153,551                | 494,153,551     | 433,279,450       | 433,279,450     |
| Total                                   | ₩ 3,368,064,359            | ₩ 3,368,064,359 | ₩ 3,197,944,323   | ₩ 3,197,944,323 |
| Financial liabilities                   |                            |                 |                   |                 |
| Trade payables and other payables       | ₩ 1,480,067,741            | ₩ 1,480,067,741 | ₩ 1,655,049,840   | ₩ 1,655,049,840 |
| Borrowings                              | 5,888,542,382              | 5,988,367,511   | 4,417,377,060     | 4,429,659,081   |
| Other financial liabilities:            |                            |                 |                   |                 |
| Derivative liabilities                  | 25,497,950                 | 25,497,950      | 40,476,759        | 40,476,759      |
| Others                                  | 150,688,103                | 150,688,103     | 159,372,073       | 159,372,073     |
| Total                                   | ₩ 7,544,796,176            | ₩ 7,644,621,305 | ₩ 6,272,275,732   | ₩ 6,284,557,753 |

(\*1) Equity instruments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured are measured at cost. As such, they are not subject to fair value measurements (Note 5.(4)).

(\*2) Unlisted securities whose fair value cannot be measured reliably because the active trading market does not exist or whose difference between fair value and acquisition cost is not material are measured at fair value.

##### (2) Fair value hierarchy

Financial instruments that are carried at fair values by hierarchy level as of December 31, 2018, and December 31, 2017, are as follows:

|                                                                | In thousands of Korean won |            |            |               |
|----------------------------------------------------------------|----------------------------|------------|------------|---------------|
|                                                                | December 31, 2018          |            |            |               |
|                                                                | Level 1                    | Level 2    | Level 3    | Total         |
| Recurring fair value measurements                              |                            |            |            |               |
| FVTPL—financial assets                                         | ₩ -                        | ₩ -        | ₩ 81,614   | ₩ 81,614      |
| Fair value through other comprehensive income—financial assets | 64,226,121                 | 78,765     | 15,925,575 | 80,230,461    |
| Derivative assets                                              | -                          | 7,977,889  | -          | 7,977,889     |
| Derivative liabilities                                         | -                          | 25,497,950 | -          | 25,497,950    |
| Trade payables and other payables                              | -                          | -          | 23,758,076 | 23,758,076    |
|                                                                |                            |            |            |               |
|                                                                | In thousands of Korean won |            |            |               |
|                                                                | December 31, 2017          |            |            |               |
|                                                                | Level 1                    | Level 2    | Level 3    | Total         |
| Recurring fair value measurements                              |                            |            |            |               |
| AFS financial assets                                           | ₩ 122,545,315              | ₩ 77,051   | ₩ 77,051   | ₩ 240,476,424 |
| Derivative assets                                              | -                          | 883,763    | 883,763    | 883,763       |
| Derivative liabilities                                         | -                          | 40,476,759 | 40,476,759 | 40,476,759    |
| Trade payables and other payables                              | -                          | -          | -          | 46,894,927    |
| Trade payables and other payables                              | -                          | -          | 23,758,076 | 23,758,076    |

(3) Valuation techniques and inputs used in the recurring fair value measurements of financial instruments categorized within Level 2 and Level 3 of the fair value hierarchy are as follows:

- Derivative instruments (currency forwards, options and swaps and interest rate swaps)

Fair value of currency forwards and options is measured based on forward exchange rate quoted in the current market at the end of the reporting period, which has the same remaining period of derivatives to be measured. If the forward exchange rate, which has the same remaining period of currency forward, option, swap and interest rate swap, is not quoted in the current market, fair value is measured using estimates of similar period of forward exchange rate by applying interpolation method with quoted forward exchange rates. As the inputs used to measure fair value of currency forwards and options are supported by observable market data, such as forward exchange rates, the Group classified the estimates of fair value measurements of the currency forwards and options as Level 2 of the fair-value hierarchy.

- Government securities

The fair value of government securities is based on quoted prices in active markets, where available, discounted by the future cash flows of debt securities. The Group classifies government securities as Level 2 of the fair-value hierarchy.

- Unlisted equity securities

Fair value of unlisted equity securities is measured using discounted cash flow projection and certain assumptions not based on observable market prices or rates, such as sales growth rate, pretax operating income ratio and discount rate based on business plan and circumstance of industry are used to estimate the future cash flow. The weighted-average cost of capital used to discount the future cash flows, is calculated by applying the Capital Asset Pricing Model, using the data of similar listed companies. The Group determines that the effect of estimation and assumptions referred above affecting fair value of unlisted equity securities is significant and classifies fair value measurements of unlisted securities as Level 3 of the fair-value hierarchy.

- Trade payables and other payables

Trade payables and other payables classified as Level 3 are contingent consideration related to the acquisition of the Hanwha General Chemical Co., Ltd. The discount rate used to discount future cash flows was 2.685% and the discount rate was calculated by discounting the expected cash flow using the probability of occurrence at the time of payment. The Group classifies fair value measurements of trade and other payables as Level 3 in the fair value hierarchy based on the assumption that the assumptions and assumptions mentioned above are the reason for the effect on the trade payables and other payables.

(4) Level 3 fair value

Changes in fair value of financial instruments classified as Level 3 for the years ended December 31, 2018 and 2017 are as follows:

|                                                           | In thousands of Korean won |               |
|-----------------------------------------------------------|----------------------------|---------------|
|                                                           | 2018                       | 2017          |
| Beginning balance                                         | ₩ 117,854,058              | ₩ 118,561,483 |
| Moving to Level 3 (*1)                                    | 385,582                    | 3,419,997     |
| Acquisition                                               | 3,000,004                  | 42,946        |
| Disposal                                                  | (104,008)                  | (12,713,160)  |
| Total gain or loss for the period                         |                            |               |
| - Gains and losses included in other comprehensive income | 4,135,714                  | 10,583,591    |
| - Gains and losses included in profit or loss             | (6,927)                    | -             |
| - Impairment                                              | -                          | (2,040,799)   |
| Others (*2)                                               | (109,257,234)              | -             |
| Ending balance                                            | ₩ 16,007,189               | ₩ 117,854,058 |

(\*1) The movement occurred by evaluating the fair value of Hanwha Investment Corp.'s equity instruments

(\*2) Includes changes of consolidation criteria and change in foreign currencies

(5) Financial instruments measured at cost

Details of financial instruments measured at cost as of December 31, 2017, are as follows:

|                            | In thousands of Korean won |         |
|----------------------------|----------------------------|---------|
|                            | December 31, 2017          |         |
| AFS financial assets       |                            |         |
| Unlisted equity securities | ₩                          | 520,431 |

**5. FINANCIAL INSTRUMENTS BY CATEGORY:**

(1) Carrying amount of financial instruments by category

1) Carrying amount of financial assets by category as of December 31, 2018, and December 31, 2017, are as follows:

| In thousands of Korean won                           |                                                                 |                                                  |                                       |           |                 |
|------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------|---------------------------------------|-----------|-----------------|
| December 31, 2018                                    |                                                                 |                                                  |                                       |           |                 |
|                                                      | Financial assets<br>at fair value<br>through profit<br>and loss | Financial assets<br>at fair value<br>through OCI | Financial assets<br>at amortized cost | Others(*) | Total           |
| Current:                                             |                                                                 |                                                  |                                       |           |                 |
| Cash and cash equivalents                            | ₩ -                                                             | ₩ -                                              | ₩ 1,024,121,436                       | ₩ -       | ₩ 1,024,121,436 |
| Trade receivables and other<br>receivables           | -                                                               | -                                                | 1,758,577,997                         | -         | 1,758,577,997   |
| Other financial assets                               | 6,001,948                                                       | -                                                | 408,806,412                           | -         | 414,808,360     |
| Non-current:                                         |                                                                 |                                                  |                                       |           |                 |
| FVTPL—financial assets                               | 81,614                                                          | -                                                | -                                     | -         | 81,614          |
| FVTOCI—financial assets                              | -                                                               | 80,230,461                                       | -                                     | -         | 80,230,461      |
| Long-term trade receivables<br>and other receivables | -                                                               | -                                                | 2,921,411                             | -         | 2,921,411       |
| Other long-term financial<br>assets                  | 1,212,992                                                       | -                                                | 85,347,139                            | 762,949   | 87,323,080      |
| Total                                                | ₩ 7,296,554                                                     | ₩ 80,230,461                                     | ₩ 3,279,774,395                       | ₩ 762,949 | ₩ 3,368,064,359 |

(\*) Includes hedging derivative instruments not applicable to financial assets by category.

| In thousands of Korean won                           |                                                              |                      |                          |                 |
|------------------------------------------------------|--------------------------------------------------------------|----------------------|--------------------------|-----------------|
| December 31, 2017                                    |                                                              |                      |                          |                 |
|                                                      | Financial assets at fair<br>value through profit<br>and loss | AFS financial assets | Loans and<br>receivables | Total           |
| Current:                                             |                                                              |                      |                          |                 |
| Cash and cash equivalents                            | ₩ -                                                          | ₩ -                  | ₩ 804,983,081            | ₩ 804,983,081   |
| Trade receivables and<br>other receivables           | -                                                            | -                    | 1,706,780,803            | 1,706,780,803   |
| Other financial assets                               | 883,763                                                      | -                    | 369,624,573              | 370,508,336     |
| Non-current:                                         |                                                              |                      |                          |                 |
| AFS financial<br>assets                              | -                                                            | 240,996,855          | -                        | 240,996,855     |
| Long-term trade receivables<br>and other receivables | -                                                            | -                    | 11,540,802               | 11,540,802      |
| Other long-term financial<br>assets                  | -                                                            | -                    | 63,654,877               | 63,654,877      |
| Total                                                | ₩ 883,763                                                    | ₩ 240,996,855        | ₩ 2,956,584,136          | ₩ 3,198,464,754 |

2) Carrying amounts of financial liabilities by category as of December 31, 2018, and December 31, 2017, are as follows:

In thousands of Korean won

| December 31, 2018                              |                                                                      |                                            |              |                 |
|------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------|--------------|-----------------|
|                                                | Financial liabilities<br>at fair value<br>through<br>profit and loss | Financial liabilities<br>at amortized cost | Others(*)    | Total           |
| Current:                                       |                                                                      |                                            |              |                 |
| Trade payables and other<br>payables           | ₩ 23,758,076                                                         | ₩ 1,455,979,766                            | ₩ -          | ₩ 1,479,737,842 |
| Short-term borrowings                          | -                                                                    | 2,880,101,643                              | 13,379,533   | 2,893,481,176   |
| Other financial liabilities                    | 22,852,786                                                           | 132,580,297                                | 6,845,994    | 162,279,077     |
| Non-current:                                   |                                                                      |                                            |              |                 |
| Long-term trade payables and<br>other payables | -                                                                    | 329,899                                    | -            | 329,899         |
| Long-term borrowings                           | -                                                                    | 2,995,061,206                              | -            | 2,995,061,206   |
| Other long-term financial<br>liabilities       | 2,000,198                                                            | 9,896,136                                  | 2,010,642    | 13,906,976      |
| Total                                          | ₩ 48,611,060                                                         | ₩ 7,473,948,947                            | ₩ 22,236,169 | ₩ 7,544,796,176 |

(\*) Includes hedging derivative instruments, financial liabilities and financial guarantees related to transfer transactions not qualified for derecognition not applicable to financial liabilities by category.

In thousands of Korean won

December 31, 2017

|                                             | <b>Financial liabilities<br/>at fair value<br/>through<br/>profit and loss</b> |            | <b>Financial<br/>liabilities<br/>at amortized cost</b> | <b>Others(*)</b> | <b>Total</b>    |
|---------------------------------------------|--------------------------------------------------------------------------------|------------|--------------------------------------------------------|------------------|-----------------|
| Current:                                    |                                                                                |            |                                                        |                  |                 |
| Trade payables and other payables           | ₩                                                                              | 23,758,076 | ₩ 1,608,154,913                                        | ₩ -              | ₩ 1,631,912,989 |
| Short-term borrowings                       |                                                                                | -          | 2,629,801,251                                          | 11,614,294       | 2,641,415,545   |
| Other financial liabilities                 |                                                                                | 5,743,687  | 148,651,331                                            | 361,626          | 154,756,644     |
| Non-current:                                |                                                                                |            |                                                        |                  |                 |
| Long-term trade payables and other payables |                                                                                | 23,136,851 | -                                                      | -                | 23,136,851      |
| Long-term borrowings                        |                                                                                | -          | 1,775,961,515                                          | -                | 1,775,961,515   |
| Other long-term financial liabilities       |                                                                                | 32,849,385 | 9,406,294                                              | 2,836,509        | 45,092,188      |
| Total                                       | ₩                                                                              | 85,487,999 | ₩ 6,171,975,304                                        | ₩ 14,812,429     | ₩ 6,272,275,732 |

(\*) Includes hedging derivative instruments, financial liabilities and financial guarantees related to transfer transactions not qualified for derecognition not applicable to financial liabilities by category.

(2) Net profit or loss of financial instruments by category

Details of net profit or loss of financial instruments by category for the years ended December 31, 2018 and 2017, are as follows:

In thousands of Korean won

2018

|                                                   | <b>Financial assets<br/>at FVTPL(*1)</b> | <b>Financial assets<br/>at FVTOCI</b> | <b>Financial assets<br/>at amortized cost</b> | <b>Financial<br/>liabilities at<br/>amortized cost(*2)</b> | <b>Total</b>  |
|---------------------------------------------------|------------------------------------------|---------------------------------------|-----------------------------------------------|------------------------------------------------------------|---------------|
| Interest income                                   | ₩ -                                      | ₩ -                                   | ₩ 22,025,888                                  | ₩ -                                                        | ₩ 22,025,888  |
| Gain on foreign<br>currency transactions          | 319,447                                  | -                                     | 78,945,779                                    | 26,838,734                                                 | 106,103,960   |
| Gain on foreign<br>currency translation           | -                                        | -                                     | 34,550,832                                    | 118,282,784                                                | 152,833,616   |
| Interest expense                                  | -                                        | -                                     | -                                             | (160,253,874)                                              | (160,253,874) |
| Loss on foreign<br>currency transactions          | (411,905)                                | -                                     | (75,220,294)                                  | (40,333,574)                                               | (115,965,773) |
| Loss on foreign<br>currency translation           | -                                        | -                                     | (52,821,738)                                  | (167,284,258)                                              | (220,105,996) |
| Bad debt expense                                  | -                                        | -                                     | (89,659,324)                                  | -                                                          | (89,659,324)  |
| Other bad debt expense                            | -                                        | -                                     | (4,974,318)                                   | -                                                          | (4,974,318)   |
| Reversal of allowance                             | -                                        | -                                     | 1,299                                         | -                                                          | 1,299         |
| Reversal of other bad<br>debt expense             | -                                        | -                                     | 76,122,526                                    | -                                                          | 76,122,526    |
| Loss on valuation of<br>FVTPL—financial<br>assets | (6,927)                                  | -                                     | -                                             | -                                                          | (6,927)       |
| Loss on disposal of<br>trade receivables          | -                                        | -                                     | (1,914,228)                                   | -                                                          | (1,914,228)   |
| Gain on valuation of<br>derivatives               | 25,989,117                               | -                                     | -                                             | -                                                          | 25,989,117    |
| Gain on transactions of<br>derivatives            | 20,398,669                               | -                                     | -                                             | -                                                          | 20,398,669    |
| Loss on valuation of<br>derivatives               | (5,333,359)                              | -                                     | -                                             | -                                                          | (5,333,359)   |
| Loss on transactions of<br>derivatives            | (11,164,601)                             | -                                     | -                                             | -                                                          | (11,164,601)  |
| Dividend income                                   | -                                        | 2,618,653                             | -                                             | -                                                          | 2,618,653     |
| Others                                            | (829,084)                                | -                                     | -                                             | -                                                          | (829,084)     |
|                                                   | 28,961,357                               | 2,618,653                             | (12,943,578)                                  | (222,750,188)                                              | (204,113,756) |

Other comprehensive  
income:

In thousands of Korean  
won

|                                                              | 2018                             |                               |                                       |                                                   |                        |
|--------------------------------------------------------------|----------------------------------|-------------------------------|---------------------------------------|---------------------------------------------------|------------------------|
|                                                              | Financial assets<br>at FVTPL(*1) | Financial assets<br>at FVTOCI | Financial assets<br>at amortized cost | Financial<br>liabilities at<br>amortized cost(*2) | Total                  |
| Gain (loss) on<br>valuation of<br>FVTOCI—financial<br>assets | -                                | (84,049,769)                  | -                                     | -                                                 | (84,049,769)           |
| Gain on valuation of<br>derivatives                          | (542,330)                        | -                             | -                                     | -                                                 | (542,330)              |
|                                                              | <u>₩ 28,419,027</u>              | <u>₩ (81,431,116)</u>         | <u>₩ (12,943,578)</u>                 | <u>₩ (222,750,188)</u>                            | <u>₩ (288,705,855)</u> |

(\*1) Includes profit and loss of hedging derivative instruments in Note 6 (1).

(\*2) Includes profit and loss of financial liabilities and financial guarantees related to transfer transactions not qualified for derecognition in Note 6 (1), (ii).

In thousand of Korean  
won

|                                              | 2017                                     |                         |                          |                                                   |                        |
|----------------------------------------------|------------------------------------------|-------------------------|--------------------------|---------------------------------------------------|------------------------|
|                                              | Financial<br>instruments<br>at FVTPL(*1) | AFS<br>financial assets | Loans and<br>receivables | Financial<br>liabilities at<br>amortized cost(*2) | Total                  |
| Interest income                              | ₩ 145,261                                | ₩ -                     | ₩ 15,265,802             | ₩ -                                               | ₩ 15,411,063           |
| Gain on foreign<br>currency transactions     | -                                        | -                       | 242,371,406              | 19,860,849                                        | 262,232,255            |
| Gain on foreign<br>currency translation      | -                                        | -                       | 101,227,486              | 64,062,163                                        | 165,289,649            |
| Interest expense                             | -                                        | -                       | -                        | (148,823,555)                                     | (148,823,555)          |
| Loss on foreign<br>currency transactions     | -                                        | -                       | (115,265,743)            | (164,311,831)                                     | (279,577,574)          |
| Loss on foreign<br>currency translation      | -                                        | -                       | (84,360,081)             | (21,795,660)                                      | (106,155,741)          |
| Bad debt expense                             | -                                        | -                       | (42,683,250)             | -                                                 | (42,683,250)           |
| Other bad debt expense                       | -                                        | -                       | (281,984)                | -                                                 | (281,984)              |
| Gain on disposal of AFS<br>financial assets  | -                                        | 5,551,834               | -                        | -                                                 | 5,551,834              |
| Loss on disposal of AFS<br>financial assets  | -                                        | (5,293)                 | -                        | -                                                 | (5,293)                |
| Impairment loss of AFS<br>financial assets   | -                                        | (8,510,137)             | -                        | -                                                 | (8,510,137)            |
| Loss on disposal of<br>trade receivables     | -                                        | -                       | (958,439)                | -                                                 | (958,439)              |
| Gain on valuation of<br>derivatives          | 2,185,899                                | -                       | -                        | -                                                 | 2,185,899              |
| Gain on transactions of<br>derivatives       | 8,079,730                                | -                       | -                        | -                                                 | 8,079,730              |
| Loss on valuation of<br>derivatives          | (32,822,512)                             | -                       | -                        | -                                                 | (32,822,512)           |
| Loss on transactions of<br>derivatives       | (14,224,219)                             | -                       | -                        | -                                                 | (14,224,219)           |
| Dividend income                              | -                                        | 1,644,900               | -                        | -                                                 | 1,644,900              |
| Others                                       | (1,226,205)                              | -                       | -                        | (571,705)                                         | (1,797,910)            |
|                                              | <u>(37,862,046)</u>                      | <u>(1,318,696)</u>      | <u>115,315,197</u>       | <u>(251,579,739)</u>                              | <u>(175,445,284)</u>   |
| Other comprehensive<br>income:               |                                          |                         |                          |                                                   |                        |
| Gain on valuation of<br>AFS financial assets | -                                        | 23,278,994              | -                        | -                                                 | 23,278,994             |
| Gain on valuation of<br>derivatives          | 265,992                                  | -                       | -                        | -                                                 | 265,992                |
|                                              | <u>₩ (37,596,054)</u>                    | <u>₩ 21,960,298</u>     | <u>₩ 115,315,197</u>     | <u>₩ (251,579,739)</u>                            | <u>₩ (151,900,298)</u> |

(\*1) Includes profit and loss of hedging derivative instruments in Note 6 (1).

(\*2) Includes profit and loss of financial liabilities and financial guarantees related to transfer transactions not qualified for derecognition in Note 6 (1), (ii).

## 6. TRANSFERS OF FINANCIAL ASSETS:

The Group transfers financial assets that are not derecognized in their entirety and counterparties of the related liabilities have recourse for the transferred assets.

All of the transferred financial assets as of December 31, 2018, are recognized as trade receivables and the related liabilities are accounted for as short-term borrowings. The carrying amounts and fair value of transferred trade receivables and related liabilities amounted to ₩13,380 million won (December 31, 2017: ₩11,614 million won) and the net position is zero.

#### 7. CASH AND CASH EQUIVALENTS:

Restricted cash and cash equivalents provided as collateral for borrowings and others as of December 31, 2018, are ₩4,555 million won (December 31, 2017: ₩2,863 million won) (See Note 38).

#### 8. TRADE RECEIVABLES AND OTHER RECEIVABLES:

(1) Trade receivables and other receivables as of December 31, 2018, and December 31, 2017, are as follows:

| <i>In thousands of Korean won</i> | <b>December 31, 2018</b> |                    | <b>December 31, 2017</b> |                     |
|-----------------------------------|--------------------------|--------------------|--------------------------|---------------------|
|                                   | <b>Current</b>           | <b>Non-current</b> | <b>Current</b>           | <b>Non-current</b>  |
| Trade receivables                 | ₩ 1,816,006,161          | ₩ -                | ₩ 1,716,524,366          | ₩ -                 |
| Allowance for doubtful accounts   | (164,152,885)            | -                  | (79,562,914)             | -                   |
| Sub Total                         | <u>1,651,853,276</u>     | <u>-</u>           | <u>1,636,961,452</u>     | <u>-</u>            |
| Other receivables                 | 110,065,048              | 7,655,611          | 70,585,879               | 202,846,742         |
| Allowance for doubtful accounts   | (3,340,327)              | (4,734,200)        | (766,528)                | (191,305,940)       |
| Sub Total                         | <u>106,724,721</u>       | <u>2,921,411</u>   | <u>69,819,351</u>        | <u>11,540,802</u>   |
| Total                             | <u>₩ 1,758,577,997</u>   | <u>₩ 2,921,411</u> | <u>₩ 1,706,780,803</u>   | <u>₩ 11,540,802</u> |

(2) The aging analysis of trade receivables and other receivables as of December 31, 2018 and 2017 are as follows:

| <i>In thousands won</i>    | <b>December 31, 2018</b>   |                          | <b>December 31, 2017</b> |
|----------------------------|----------------------------|--------------------------|--------------------------|
|                            | <b>Account Receivables</b> | <b>Other Receivables</b> |                          |
| Receivables not past due:  | ₩ 1,237,019,695            | ₩ 78,194,662             | ₩ 1,424,959,895          |
| Past due but not impaired: |                            |                          |                          |
| Less than 3 months         | 261,009,315                | 14,824,897               | 141,312,115              |
| Less than 6 months         | 66,452,246                 | 5,978,546                | 68,365,327               |
| Less than 1 year           | 189,234,217                | 1,832,159                | 104,917,273              |
| Over 1 year                | 33,844,680                 | 14,233,161               | 54,777,260               |
| Sub Total                  | <u>550,540,458</u>         | <u>36,868,763</u>        | <u>369,371,975</u>       |
| Impaired:                  |                            |                          |                          |
| Less than 3 months         | 94,639                     | -                        | -                        |
| Less than 6 months         | -                          | -                        | -                        |
| Less than 1 year           | 74,964                     | 560,650                  | 362,557                  |
| Over 1 year                | 28,276,405                 | 2,096,584                | 195,262,560              |
| Sub Total                  | <u>28,446,008</u>          | <u>2,657,234</u>         | <u>195,625,117</u>       |
| Total                      | <u>1,816,006,161</u>       | <u>117,720,659</u>       | <u>1,989,956,987</u>     |

(3) Credit risk and Loss allowance

1) Changes in allowance for doubtful accounts for the years ended December 31, 2018 and 2017, are as follows:

|                                                      | December 31, 2018           |                         |               |
|------------------------------------------------------|-----------------------------|-------------------------|---------------|
|                                                      | Non-impaired<br>receivables | Impaired<br>receivables | Total         |
| Beginning balance                                    | ₩ 76,010,265                | ₩ 195,625,117           | ₩ 271,635,382 |
| Write-offs                                           | (10,508,320)                | (114,261,038)           | (124,769,358) |
| Reversal                                             | (1,299)                     | (76,122,526)            | (76,123,825)  |
| Changes by increases or<br>write-offs of receivables | 93,038,318                  | 655,289                 | 93,693,607    |
| Changes in exchange rates<br>and others              | (17,414,794)                | 25,206,400              | 7,791,606     |
| Ending balance                                       | ₩ 141,124,170               | ₩ 31,103,242            | ₩ 172,227,412 |

(\*) Allowance for trade receivables and other receivables is measured as expected credit losses for the full term in accordance with K-IFRS 1109.

|                                      | December 31, 2017                 |                                   |
|--------------------------------------|-----------------------------------|-----------------------------------|
|                                      | Allowance of Trade<br>receivables | Allowance of Other<br>receivables |
| Beginning balance                    | ₩ 43,062,677                      | ₩ 192,330,592                     |
| Increase                             | 42,683,250                        | 9,920                             |
| Write-offs                           | (5,028,072)                       | (300,744)                         |
| Changes in exchange rates and others | (1,154,941)                       | 32,700                            |
| Ending balance                       | ₩ 79,562,914                      | ₩ 192,072,468                     |

(\*) As of December 31, 2018, the Group elects to apply the prospective approach of K-IFRS 1109 and the changes in allowances for doubtful accounts for years ended December 31, 2017, are in accordance with K-IFRS 1039.

2) Amounts recognized in profit or loss as "Loss Allowances" in the current and prior periods are as follows:

In thousands of Korean  
won

|                                           | 2018         | 2017(*)      |
|-------------------------------------------|--------------|--------------|
| Loss Allowances                           |              |              |
| - Changes of allowances<br>for impairment | ₩ 93,693,607 | ₩ 42,693,170 |

(\*) Loss allowance on trade receivables for the years ended, 2017, was assessed in accordance with the loss-incurred model and individual receivables that were not recoverable were written off directly.

(4) Trade receivables and other receivables are provided as collateral for borrowings as of December 31, 2018 (See Note 38).

## 9. OTHER FINANCIAL ASSETS:

(1) Other financial assets as of December 31, 2018, and December 31, 2017, are as follows:

In thousands of Korean  
won

|                       | December 31, 2018 |              | December 31, 2017 |              |
|-----------------------|-------------------|--------------|-------------------|--------------|
|                       | Current           | Non-current  | Current           | Non-current  |
| Financial instruments | ₩ 375,933,298     | ₩ 11,767,356 | ₩ 338,098,391     | ₩ 8,512,640  |
| Loans                 | 17,515,005        | 43,998,509   | 12,497,230        | 27,384,296   |
| Deposits              | 11,516,098        | 29,581,274   | 14,089,701        | 27,757,941   |
| Accrued revenue       | 3,842,011         | -            | 4,939,251         | -            |
| Derivative assets     | 6,001,948         | 1,975,941    | 883,763           | -            |
| Total                 | ₩ 414,808,360     | ₩ 87,323,080 | ₩ 370,508,336     | ₩ 63,654,877 |

(2) Derivatives

The Group entered into currency forwards, cross currency swaps and other contracts to hedge exchange rate risk of trade receivables denominated in foreign currencies.

Derivatives as of December 31, 2018, and December 31, 2017, are as follows:

*In thousands of Korean won*

|                     | December 31, 2018  |                     | December 31, 2017 |                     |
|---------------------|--------------------|---------------------|-------------------|---------------------|
|                     | Assets             | Liabilities         | Assets            | Liabilities         |
| Trading:            |                    |                     |                   |                     |
| Currency forwards   | ₩ 2,911,530        | ₩ 501,497           | ₩ 300,678         | ₩ 734,312           |
| Currency options    | 2,849,061          | 8,073,559           | 128,497           | 15,438,738          |
| Currency swaps      | 1,212,992          | 14,067,762          | -                 | 22,141,229          |
| Interest rate swaps | <u>241,357</u>     | <u>2,210,166</u>    | <u>454,588</u>    | <u>278,793</u>      |
| Sub Total           | <u>7,214,940</u>   | <u>24,852,984</u>   | <u>883,763</u>    | <u>38,593,072</u>   |
| Cash flow hedge:    |                    |                     |                   |                     |
| Currency swaps      | 762,949            | 423,425             | -                 | 1,714,030           |
| Interest rate swaps | -                  | <u>221,541</u>      | -                 | <u>169,657</u>      |
| Sub Total           | <u>762,949</u>     | <u>644,966</u>      | -                 | <u>1,883,687</u>    |
| Total               | <u>₩ 7,977,889</u> | <u>₩ 25,497,950</u> | <u>₩ 883,763</u>  | <u>₩ 40,476,759</u> |

(3) Impairment of other financial assets

For the purpose of impairment testing, government bonds and unsecured corporate bonds are considered to have low credit risk because the counterparty's credit rating is at least BBB- rated. Therefore, for the purpose of impairment testing for these financial assets, the allowance for losses was measured at the amount equivalent to the expected 12-month credit loss. Loans and leasehold deposits that are acquired before the initial application date of the related-party loans and lease deposits are measured at the initial date of application of K-IFRS 1109 to the extent that the credit risk has increased significantly after the initial recognition. For-sale financial assets are measured at the amount corresponding to the expected credit loss over the period until the asset is disposed of.

Management is also considering the future outlook of the industry to which the issuer of the financial asset belongs when determining the expected credit loss through past experience of default, the financial condition of the counterparty, as well as reports from economists or financial analysts. There are no changes of estimates or assumptions used to estimate the allowance for losses on these financial assets during for the six-month period ended December 31, 2018.

(4) Other financial assets are provided as collateral for borrowings as of December 31, 2018 (See Note 38).

**10. OTHER ASSETS:**

Other assets as of December 31, 2018 and December 31, 2017, are as follows:

*In thousands of Korean won*

|                                    | December 31, 2018    |                     | December 31, 2017    |                     |
|------------------------------------|----------------------|---------------------|----------------------|---------------------|
|                                    | Current              | Non-current         | Current              | Non-current         |
| Advance payments                   | ₩ 313,922,051        | ₩ -                 | ₩ 196,241,073        | ₩ -                 |
| Allowances for impairment          | (102,966,016)        | -                   | (105,906,487)        | -                   |
| Prepaid construction costs         | -                    | -                   | 415,049              | -                   |
| Prepaid expenses                   | 36,070,738           | 4,314,091           | 29,937,016           | 12,692,113          |
| Refund asset(*1)                   | 315,955              | -                   | -                    | -                   |
| Contract asset(*2)                 | 24,206,537           | -                   | -                    | -                   |
| Prepaid value-added tax and others | <u>43,677,158</u>    | <u>14,409,822</u>   | <u>65,892,252</u>    | <u>13,672,816</u>   |
| Total                              | <u>₩ 315,226,423</u> | <u>₩ 18,723,913</u> | <u>₩ 186,578,903</u> | <u>₩ 26,364,929</u> |

(\*1) Includes right to retrieve refunded inventories, by newly adopted K-IFRS 1115. (Note 22.(2)).

(\*2) Includes prepaid construction costs and trade receivables and other receivables (Note 9) at the year ended December 31, 2017. (Note 22.(2)).

# 11. INVENTORIES:

(1) Inventories as of December 31, 2018, and December 31, 2017, are as follows:

*In thousands of  
Korean won*

|                        | December 31, 2018   |                      |                 | December 31, 2017   |                      |                 |
|------------------------|---------------------|----------------------|-----------------|---------------------|----------------------|-----------------|
|                        | Acquisition<br>cost | Valuation<br>reserve | Book<br>value   | Acquisition<br>cost | Valuation<br>reserve | Book<br>value   |
| Merchandise            | ₩ 315,327,905       | ₩ (7,166,867)        | ₩ 308,161,038   | ₩ 221,144,455       | ₩ (805,354)          | ₩ 220,339,101   |
| Finished goods         | 595,236,945         | (22,274,373)         | 572,962,572     | 396,615,780         | (14,192,900)         | 382,422,880     |
| Half-finished<br>goods | 16,254,846          | (668,554)            | 15,586,292      | 18,715,798          | (442,146)            | 18,273,652      |
| Work in process        | 237,444,444         | -                    | 237,444,444     | 225,313,027         | -                    | 225,313,027     |
| Raw materials          | 183,257,984         | (9,459,447)          | 173,798,537     | 177,289,002         | (12,016,161)         | 165,272,841     |
| Supplies               | 82,923,314          | -                    | 82,923,314      | 72,755,757          | -                    | 72,755,757      |
| Goods in transit       | 76,586,202          | -                    | 76,586,202      | 59,380,916          | -                    | 59,380,916      |
| Total                  | ₩ 1,507,031,640     | ₩ (39,569,241)       | ₩ 1,467,462,399 | ₩ 1,171,214,735     | ₩ (27,456,561)       | ₩ 1,143,758,174 |

(2) The loss on valuation of inventories included in cost of sales in the consolidated statements of comprehensive income for the six-month period ended December 31, 2018, amounts to ₩39,569 million won (December 31, 2017: ₩25,457 million won).

(3) Inventories are provided as collateral for borrowings as of December 31, 2018 (Note 38).

# 12. FAIR VALUE FINANCIAL ASSETS AND AFS FINANCIAL ASSETS:

(1) Fair value financial assets as of December 31, 2018 and AFS financial assets as of December 31, 2017, are as follows:

| <i>In thousands of Korean won</i> | <u>December 31, 2018</u> | <u>December 31, 2017</u> |
|-----------------------------------|--------------------------|--------------------------|
| Profit or loss                    |                          |                          |
| Equity securities                 |                          |                          |
| Unlisted securities               | ₩ 81,614                 | ₩ -                      |
| Subtotal                          | 81,614                   | -                        |
| Other Comprehensive Income        |                          |                          |
| Equity securities (*)             |                          |                          |
| Listed securities                 | 64,226,121               | -                        |
| Unlisted securities               | 15,925,575               | -                        |
| Subtotal                          | 80,151,696               | -                        |
| Debt securities                   | 78,765                   | -                        |
| Subtotal                          | 78,765                   | -                        |
| AFS financial assets              |                          |                          |
| Listed securities                 | -                        | 122,545,315              |
| Unlisted securities               | -                        | 118,451,540              |
| Subtotal                          | -                        | 240,996,855              |
| Total                             | ₩ 80,312,075             | ₩ 240,996,855            |

(\*) The Company has employed an irrevocable option, designating equity instrument for the purpose of strategic investment, not for trading, as financial assets at FVTOCI.

(2) Changes in Fair value financial assets and AFS financial assets for the years ended December 31, 2018 and 2017 are as follows:

| <i>In thousands Korean won</i> | <u>2018</u>   | <u>2017</u>   |
|--------------------------------|---------------|---------------|
| Beginning balance              | ₩ 240,996,855 | ₩ 228,523,418 |
| Acquisition                    | 3,000,004     | 10,282,946    |
| Disposal/Transfer              | (10,146,898)  | (12,964,271)  |
| Valuation-FVOCI                | (84,049,769)  | 23,278,994    |
| Valuation-FVPL                 | (6,927)       | -             |
| Others (*)                     | (69,481,190)  | (8,124,232)   |
| Ending balance                 | ₩ 80,312,075  | ₩ 240,996,855 |

(\*) Includes effects due to changes in scope of consolidation and exchange rate changes and impairment and others.

# 13. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES:

(1) Investments in associates and joint ventures as of December 31, 2018 and 2017 are as follows:

*In thousands won*

| In thousands won                                          |              |               |                                                            | Ownership (%)     |                   |
|-----------------------------------------------------------|--------------|---------------|------------------------------------------------------------|-------------------|-------------------|
|                                                           |              |               |                                                            | December 31, 2018 | December 31, 2017 |
| Investees                                                 | Location     | Closing Month | Main business                                              |                   |                   |
| Associates:                                               |              |               |                                                            |                   |                   |
| Smile Ventures Co., Ltd.(*1)                              | Korea        | December      | Wholesale and retail                                       | 28.74%            | 29.41%            |
| Hanwha Savings Bank Co., Ltd.                             | Korea        | December      | Bank business                                              | 36.05%            | 36.05%            |
| Hanwha Station Development Co., Ltd.                      | Korea        | December      | Rent business                                              | 48.32%            | 48.32%            |
| HANWHA Eagles Professional Baseball Club(*2)              | Korea        | December      | Sports club operating                                      | 50.00%            | 50.00%            |
| Eagles Energy Co., Ltd                                    | Korea        | December      | Photovoltaic business                                      | 49.09%            | -                 |
| Hanwha General Chemical Co., Ltd.                         | Korea        | December      | Manufacture of basic compound of petrochemicals            | 36.05%            | 36.05%            |
| HANWHA INVESTMENT AND SECURITIES CO., LTD.                | Korea        | December      | Stock Broking                                              | 21.76%            | 21.76%            |
| Hanwha Hotels and Resort Co., Ltd.                        | Korea        | December      | Tourism and Lodge Industry                                 | 48.78%            | 48.78%            |
| 7000 Hawaii KAI LLC(*3)                                   | USA          | December      | Real estate development                                    | 49.00%            | -                 |
| Alterpower Specialist, Inc.(*2)                           | Phiippines   | December      | Photovoltaic business                                      | 20.00%            | -                 |
| CRP/Extell Parcel J, L.P.                                 | USA          | December      | Real Estate Development                                    | 49.00%            | 49.00%            |
| Crystal Solar Inc.                                        | USA          | December      | Solar Engineering                                          | 29.09%            | 29.09%            |
| Enfinity Philippines Renewable Resources Fourth, Inc.(*2) | Phiippines   | December      | Photovoltaic business                                      | 35.00%            | -                 |
| GRANSOLAR ATOTONILCO, S.A. DE C.V.                        | Mexico       | December      | Construction Business                                      | 20.00%            | 20.00%            |
| GRANSOLAR OCOTLAN, S.A. DE C.V.                           | Mexico       | December      | Construction Business                                      | 20.00%            | 20.00%            |
| International Polymers Company                            | Saudi Arabia | December      | Manufacture of basic compound                              | 25.00%            | 25.00%            |
| Luxbon Solar S.A.(*2)                                     | Luxembourg   | December      | Photovoltaic business                                      | 33.33%            | -                 |
| OneRoof Energy Group, Inc.(*4)                            | Canada       | December      | Photovoltaic business                                      | -                 | 46.15%            |
| Renew Akshay Urja Privated Limited                        | India        | March         | Photovoltaic business                                      | 43.87%            | 43.87%            |
| Saudi Specialized Products Company                        | Saudi Arabia | December      | Manufacture of chemicals                                   | 25.00%            | 25.00%            |
| Joint ventures:                                           |              |               |                                                            |                   |                   |
| YEOCHUN NCC Co., Ltd.                                     | Korea        | December      | Manufacture of basic compound                              | 50.00%            | 50.00%            |
| Burdur Enerji A.S.                                        | Turkey       | December      | Photovoltaic business                                      | 50.00%            | 50.00%            |
| Garnet Solar Power Generation Station 1, LLC(*5)          | USA          | December      | Photovoltaic business                                      | 100.00%           | 50.00%            |
| Gulf Advanced Cables Insulation Company                   | Saudi Arabia | December      | Manufacture of cable                                       | 50.00%            | 50.00%            |
| HANWHA KALYON GUNES ENERJISI URETIM ANONIM SIRKETI        | Turkey       | December      | Photovoltaic business                                      | 50.00%            | 50.00%            |
| HANWHA KALYON GUNES TEKNOLOJILERI URETIM ANONIM SIRKETI   | Turkey       | December      | Manufacture of Photovoltaic Ingots, Wafers, Cells, Modules | 50.00%            | 50.00%            |
| Hanwha Q CELLS PR Solar Holdings LLC(*5)                  | USA          | December      | Photovoltaic business                                      | 100.00%           | 50.00%            |
| HQC Rock River Solar Holdings LLC(*5)                     | USA          | December      | Photovoltaic business                                      | 100.00%           | 50.00%            |
| HSP TW TE, LLC                                            | USA          | December      | Photovoltaic business                                      | 50.00%            | 50.00%            |
| Lakeshore East Retail LLC                                 | USA          | December      | Real estate                                                | 50.00%            | 50.00%            |
| Parcel O LLC                                              | USA          | December      | Real estate                                                | 50.00%            | 50.00%            |

(\*1) Due to the issuance of unequal shares for the years ended December 31, 2018, the Group's ownership percentage decreased.

(\*2) Due to merger of Hanwha Q CELLS Korea Corp., the Company includes the scope of consolidation of the Group.

(\*3) The Group newly established the Company during the years ended December 31, 2018.

(\*4) Due to the liquidation, the Group lost its ownership of the Company.

(\*5) Due to merger of Hanwha Q CELLS Korea Corp. into Hanwha Q CELLS and Advanced Materials Corporation, the Group's ownership increased. The Company is reclassified to the Group's consolidated subsidiaries.

(2) Valuation of Investments in associates and joint ventures under the equity method for the years ended December 31, 2018 and 2017 are as follows:

| Investees                                               | 2018              |                            |                                           |                                   |                                |               |                |
|---------------------------------------------------------|-------------------|----------------------------|-------------------------------------------|-----------------------------------|--------------------------------|---------------|----------------|
|                                                         | Beginning Balance | Acquisition (Disposal)(*1) | Gain or loss on equity method Investments | Other Comprehensive income (loss) | Changes in accounting Policies | Others(*2)    | Ending Balance |
| <i>In thousands Korean Won</i>                          |                   |                            |                                           |                                   |                                |               |                |
| Associates:                                             |                   |                            |                                           |                                   |                                |               |                |
| Smile Ventures Co., Ltd.                                | ₩ 2,394,981       | ₩ -                        | ₩ (373,305)                               | ₩ 21,381                          | ₩ -                            | ₩ 10,996      | ₩ 2,054,053    |
| Hanwha Savings Bank Co., Ltd.                           | 62,730,483        | -                          | 5,361,319                                 | 14,604                            | (221,491)                      | (14,788)      | 67,870,127     |
| Hanwha Station Development Co., Ltd.                    | 75,335,541        | -                          | 3,700,085                                 | -                                 | -                              | (565,988)     | 78,469,638     |
| HANWHA Eagles Professional Baseball Club                | 761,274           | -                          | (173,053)                                 | -                                 | -                              | (192,930)     | 395,291        |
| Hanwha General Chemical Co., Ltd.                       | 973,879,654       | -                          | 159,243,742                               | 3,266,964                         | -                              | (2,299,532)   | 1,134,090,828  |
| HANWHA INVESTMENT AND SECURITIES CO., LTD.              | 210,617,647       | -                          | 15,751,050                                | 328,620                           | (17,424)                       | (68,254)      | 226,611,639    |
| Hanwha Hotels and Resort Co., Ltd.                      | 359,304,644       | -                          | (8,496,522)                               | (1,847,427)                       | (19,813,507)                   | 812,471       | 329,959,659    |
| 7000 Hawaii KAI LLC                                     | -                 | 18,059,922                 | (4,609,527)                               | -                                 | -                              | (218,729)     | 13,231,666     |
| CRP/Extell Parcel J, L.P.                               | -                 | -                          | -                                         | -                                 | -                              | -             | -              |
| Crystal Solar Inc.                                      | -                 | -                          | -                                         | -                                 | -                              | -             | -              |
| GRANSOLAR ATOTONILCO, S.A. DE C.V.                      | 428,865           | -                          | -                                         | -                                 | -                              | (428,865)     | -              |
| GRANSOLAR OCOTLAN, S.A. DE C.V.                         | 428,865           | -                          | -                                         | -                                 | -                              | (428,865)     | -              |
| International Polymers Company                          | 105,817,391       | -                          | 18,266,223                                | 5,125,577                         | -                              | (11,996,905)  | 117,212,286    |
| Renew Akshay Urja Privated Limited                      | 18,575,303        | -                          | 2,370,264                                 | -                                 | -                              | (933,111)     | 20,012,456     |
| Saudi Specialized Products Company                      | 9,322,165         | -                          | (2,272,328)                               | 366,675                           | -                              | -             | 7,416,512      |
| Others                                                  | -                 | 2,559,553                  | (98,742)                                  | 6,459                             | -                              | (5,887)       | 2,461,383      |
| Subtotal                                                | 1,819,596,813     | 20,619,475                 | 188,669,206                               | 7,282,853                         | (20,052,422)                   | (16,330,387)  | 1,999,785,538  |
| Joint ventures:                                         |                   |                            |                                           |                                   |                                |               |                |
| YEOCHUN NCC Co., Ltd.                                   | 783,003,952       | -                          | 231,522,820                               | -                                 | -                              | (433,404,233) | 581,122,539    |
| Burdur Enerji A.S.                                      | 744,079           | -                          | (744,079)                                 | -                                 | -                              | -             | -              |
| Garnet Solar Power Generation Station 1, LLC            | 3,002,517         | (2,905,737)                | (209,855)                                 | -                                 | -                              | 113,075       | -              |
| Gulf Advanced Cables Insulation Company                 | 9,696,100         | -                          | (1,674,890)                               | 392,263                           | -                              | 15,441        | 8,428,914      |
| HANWHA KALYON GUNES ENERJISI URETIM ANONIM SIRKETI      | 5,766,386         | -                          | -                                         | -                                 | -                              | (5,766,386)   | -              |
| HANWHA KALYON GUNES TEKNOLOJILERI URETIM ANONIM SIRKETI | 21,583,348        | 25,666,714                 | 114,742                                   | -                                 | -                              | (47,364,804)  | -              |
| Hanwha Q CELLS PR Solar Holdings LLC                    | 3,428,480         | (3,476,525)                | (115,163)                                 | -                                 | -                              | 163,208       | -              |
| HQC Rock River Solar Holdings LLC                       | 2,409,670         | (2,832,647)                | 611,312                                   | -                                 | -                              | (188,335)     | -              |
| HSP TW TE, LLC                                          | 7,499,800         | -                          | (27,509)                                  | 300,591                           | -                              | (253,856)     | 7,519,026      |
| Lakeshore East Retail LLC                               | 7,436,490         | -                          | (332,776)                                 | -                                 | -                              | (1,358,421)   | 5,745,293      |
| Parcel O LLC                                            | 18,151,817        | -                          | -                                         | -                                 | -                              | 1,608,141     | 19,759,958     |
| Subtotal                                                | 862,722,639       | 16,451,805                 | 229,144,602                               | 692,854                           | -                              | (486,436,170) | 622,575,730    |
| Total                                                   | 2,682,319,452     | 37,071,280                 | 417,813,808                               | 7,975,707                         | (20,052,422)                   | (502,766,557) | 2,622,361,268  |

(\*1) Includes changes in scope of consolidation due to merger of Hanwha Q CELLS Korea Corp.

(\*2) Includes gain on bargain purchase, change in foreign currencies and dividends received.

- (2) Valuation of Investments in associates and joint ventures under the equity method for the years ended December 31, 2018 and 2017 are as follows, continued:

In thousands Korean won

| Investees                                               | Beginning balance | Acquisition (Disposal)(*)1 | Gain or loss on equity method investments | Other Comprehensive income (loss) | Others(*)     | Ending balance |
|---------------------------------------------------------|-------------------|----------------------------|-------------------------------------------|-----------------------------------|---------------|----------------|
| Associates:                                             |                   |                            |                                           |                                   |               |                |
| Smile Ventures Co., Ltd. ₩                              | - ₩               | 2,500,000 ₩                | (105,019) ₩                               | - ₩                               | - ₩           | 2,394,981      |
| Hanwha Savings Bank Co., Ltd.                           | 54,389,472        | -                          | 8,295,615                                 | 18,810                            | 26,586        | 62,730,483     |
| Hanwha Newly-Development Force Fund                     | 1,578,251         | (1,577,013)                | (1,238)                                   | -                                 | -             | -              |
| Hanwha Station Development Co., Ltd.                    | 101,729,351       | (15,554,302)               | (7,635,024)                               | -                                 | (3,204,484)   | 75,335,541     |
| HANWHA Eagles Professional Baseball Club                | 1,334,743         | -                          | (600,729)                                 | -                                 | 27,260        | 761,274        |
| Hanwha General Chemical Co., Ltd.                       | 776,457,472       | -                          | 198,002,670                               | (746,546)                         | 166,058       | 973,879,654    |
| HANWHA INVESTMENT AND SECURITIES CO., LTD.              | 197,758,690       | -                          | 11,630,994                                | 876,872                           | 351,091       | 210,617,647    |
| Hanwha Hotels and Resort Co., Ltd.                      | 360,855,495       | -                          | (3,594,618)                               | 1,139,920                         | 903,847       | 359,304,644    |
| CRP/Extell Parcel J, L.P.                               | -                 | -                          | -                                         | -                                 | -             | -              |
| Crystal Solar Inc.                                      | -                 | -                          | -                                         | -                                 | -             | -              |
| GRANSOLAR ATOTONILCO, S.A. DE C.V.                      | 454,050           | -                          | -                                         | -                                 | (25,185)      | 428,865        |
| GRANSOLAR OCOTLAN, S.A. DE C.V.                         | 454,050           | -                          | -                                         | -                                 | (25,185)      | 428,865        |
| International Polymers Company                          | 105,537,732       | -                          | 12,924,227                                | (12,644,568)                      | -             | 105,817,391    |
| OneRoof Energy Group, Inc.                              | -                 | -                          | -                                         | -                                 | -             | -              |
| Renew Akshay Urja Privated Limited                      | 15,724,496        | -                          | 2,571,889                                 | -                                 | 278,918       | 18,575,303     |
| Saudi Specialized Products Company                      | 13,567,836        | -                          | (2,858,679)                               | (1,386,992)                       | -             | 9,322,165      |
| Subtotal                                                | 1,629,841,638     | (14,631,315)               | 218,630,088                               | (12,742,504)                      | (1,501,094)   | 1,819,596,813  |
| Joint ventures:                                         |                   |                            |                                           |                                   |               |                |
| YEOCHUN NCC Co., Ltd.                                   | 602,464,091       | -                          | 379,938,480                               | -                                 | (199,398,619) | 783,003,952    |
| Burdur Enerji A.S.                                      | 253,305           | -                          | 632,347                                   | (95,639)                          | (45,934)      | 744,079        |
| Garnet Solar Power Generation Station 1, LLC            | 3,871,627         | -                          | -                                         | -                                 | (869,110)     | 3,002,517      |
| Gulf Advanced Cables Insulation Company                 | 7,008,276         | 7,196,800                  | (3,562,126)                               | (946,850)                         | -             | 9,696,100      |
| HANWHA KALYON GUNES ENERJISI URETIM ANONIM SIRKETI      | -                 | 6,072,933                  | -                                         | -                                 | (306,547)     | 5,766,386      |
| HANWHA KALYON GUNES TEKNOLOJILERI URETIM ANONIM SIRKETI | -                 | 21,923,683                 | -                                         | -                                 | (340,335)     | 21,583,348     |
| Hanwha Q CELLS PR Solar Holdings LLC                    | 7,455,432         | -                          | (3,247,803)                               | -                                 | (779,149)     | 3,428,480      |
| HQC Rock River Solar Holdings LLC                       | 2,551,091         | -                          | 768,661                                   | -                                 | (910,082)     | 2,409,670      |
| HSP TW TE, LLC                                          | -                 | 7,917,533                  | -                                         | -                                 | (417,733)     | 7,499,800      |
| Lakeshore East Retail LLC                               | 10,882,515        | -                          | (72,467)                                  | -                                 | (3,373,558)   | 7,436,490      |
| Parcel O LLC                                            | 20,167,222        | -                          | -                                         | -                                 | (2,015,405)   | 18,151,817     |
| Subtotal                                                | 654,653,559       | 43,110,949                 | 374,457,092                               | (1,042,489)                       | (208,456,472) | 862,722,639    |
| Total                                                   | 2,284,495,197     | 28,479,634                 | 593,087,180                               | (13,784,993)                      | (209,957,566) | 2,682,319,452  |

(\*) Includes gain on bargain purchase, change in foreign currencies and dividends received.

- (3) Summary of financial information of key associates and joint ventures as of December 31, 2018 and 2017 are as follows:

*In thousands won*

| December 31, 2018                          |               |               |               |               |                   |                            |
|--------------------------------------------|---------------|---------------|---------------|---------------|-------------------|----------------------------|
| Investees                                  | Assets        | Liabilities   | Equity        | Revenue       | Net income (loss) | Total comprehensive income |
| Associates:                                |               |               |               |               |                   |                            |
| Hanwha Savings Bank Co., Ltd.              | ₩ 956,472,978 | ₩ 853,219,826 | ₩ 103,253,152 | ₩ 49,651,286  | ₩ 14,873,337      | ₩ 14,857,227               |
| Hanwha Station Development Co., Ltd.       | 401,153,205   | 272,511,704   | 128,641,501   | 218,359,271   | 10,670,725        | 10,481,792                 |
| Hanwha General Chemical Co., Ltd.          | 3,606,634,061 | 493,839,945   | 3,112,794,116 | 2,917,813,845 | 503,227,777       | 504,718,600                |
| HANWHA INVESTMENT AND SECURITIES CO., LTD. | 7,333,571,652 | 6,385,780,977 | 947,790,675   | 1,900,717,059 | 72,345,096        | 58,906,424                 |
| Hanwha Hotels and Resort Co., Ltd.         | 2,588,481,899 | 1,882,895,637 | 705,586,262   | 1,294,890,224 | (18,367,125)      | (31,400,848)               |
| International Polymers Company             | 917,403,514   | 455,325,726   | 462,077,788   | 323,914,855   | 73,134,505        | 93,604,128                 |
| Joint ventures:                            |               |               |               |               |                   |                            |
| YEOCHUN NCC Co., Ltd.                      | 2,095,597,626 | 890,949,067   | 1,204,648,559 | 5,854,385,467 | 457,305,507       | 450,497,041                |
| Gulf Advanced Cables Insulation Company    | 73,174,378    | 56,316,194    | 16,858,184    | 30,654,899    | (3,349,425)       | (2,534,015)                |
| Lakeshore East Retail LLC                  | 55,043,689    | 36,681,894    | 18,361,795    | 6,919,723     | (671,816)         | (240,037)                  |
| Parcel O LLC                               | 43,569,817    | 1,571,594     | 41,998,223    | -             | -                 | -                          |

*In thousands won*

| December 31, 2017                          |               |               |               |               |                   |                            |
|--------------------------------------------|---------------|---------------|---------------|---------------|-------------------|----------------------------|
| Investees                                  | Assets        | Liabilities   | Equity        | Revenue       | Net income (loss) | Total comprehensive income |
| Associates:                                |               |               |               |               |                   |                            |
| Hanwha Savings Bank Co., Ltd.              | ₩ 685,013,940 | ₩ 596,019,156 | ₩ 88,994,784  | ₩ 43,089,007  | ₩ 23,013,784      | ₩ 23,139,578               |
| Hanwha Station Development Co., Ltd.       | 415,846,935   | 296,704,716   | 119,142,219   | 63,322,149    | 155,110           | 72,754                     |
| Hanwha General Chemical Co., Ltd.          | 5,018,363,246 | 2,081,714,106 | 2,936,649,140 | 2,519,571,625 | 572,528,503       | 572,049,690                |
| HANWHA INVESTMENT AND SECURITIES CO., LTD. | 6,700,447,260 | 5,825,712,953 | 874,734,307   | 1,710,708,927 | 54,081,671        | 67,618,782                 |
| Hanwha Hotels and Resort Co., Ltd.         | 2,498,203,402 | 1,739,926,536 | 758,276,866   | 1,147,925,334 | (26,209,886)      | (22,115,231)               |
| International Polymers Company             | 933,187,763   | 516,543,432   | 416,644,331   | 304,195,567   | 51,715,955        | 1,987,056                  |
| Joint ventures:                            |               |               |               |               |                   |                            |
| YEOCHUN NCC Co., Ltd.                      | 2,566,316,773 | 952,165,255   | 1,614,151,518 | 5,415,957,596 | 765,741,811       | 766,944,574                |
| Gulf Advanced Cables Insulation Company    | 75,633,161    | 56,240,962    | 19,392,199    | 25,501,640    | (7,124,253)       | (8,984,994)                |
| Lakeshore East Retail LLC                  | 54,594,360    | 34,744,264    | 19,850,096    | 6,227,974     | (144,933)         | (240,037)                  |
| Parcel O LLC                               | 40,259,446    | -             | 40,259,446    | -             | -                 | -                          |

- (4) Details of financial information of key associates and joint ventures as of December 31, 2018 and 2017 are as follows:

*In thousands won*

|                                       | YEOCHUN NCC Co., Ltd. |                   | Hanwha General Chemical Co., Ltd. |                   |
|---------------------------------------|-----------------------|-------------------|-----------------------------------|-------------------|
|                                       | December 31, 2018     | December 31, 2017 | December 31, 2018                 | December 31, 2017 |
| Cash and cash equivalents             | 13,251,640            | 418,250,476       | 285,574,337                       | 99,268,129        |
| Current financial liabilities         | 165,532,212           | 230,643,796       | 111,818,350                       | 525,159,221       |
| Non-current financial Liabilities     | 281,595,679           | 136,569,961       | 18,864,000                        | 742,109,316       |
| Depreciation(*)                       | 84,304,017            | 100,345,028       | 96,397,182                        | 76,363,837        |
| Amortization of Intangible Assets (*) | -                     | 2,640,744         | 8,379,626                         | 14,141,064        |
| Interest income                       | 4,814,450             | 5,728,099         | 10,826,375                        | 4,876,783         |
| Interest expense                      | 8,790,659             | 12,168,255        | 38,430,228                        | 31,784,798        |
| Income tax expense                    | 173,103,330           | 245,231,491       | 22,036,974                        | 23,066,360        |

(\*) Includes expenses classified as cost of sales and selling expenses.

(5) Dividends received from associates and joint ventures for the years ended December 31, 2018 and 2017 are as follows:

| <i>In thousands won</i>                         | 2018        | 2017        |
|-------------------------------------------------|-------------|-------------|
| Associates:                                     |             |             |
| Hanwha Station Development Co., Ltd.            | ₩ 474,704   | ₩ 3,164,694 |
| International Polymers Company                  | 11,801,790  | -           |
| Joint ventures:                                 |             |             |
| YEOCHUN NCC Co., Ltd.                           | 430,000,000 | 200,000,000 |
| Garnet Solar Power Generation Station 1, LLC(*) | 67,113      | 603,801     |
| HQC Rock River Solar Holdings LLC(*)            | 350,081     | 456,411     |
| HSP TW TE, LLC                                  | 253,856     | -           |
| Lakeshore East Retail LLC                       | 1,650,313   | 2,262,152   |

(\*) Dividends received until the Company is reclassified to the Group's consolidated subsidiaries.

(6) Adjustments from financial information of key associates and joint ventures to book value of investments in associates and joint ventures as of December 31, 2018 and 2017 are as follows:

| <i>In thousands Korean won</i>                 | December 31, 2018              |                     |                               |            |                                       |                     |
|------------------------------------------------|--------------------------------|---------------------|-------------------------------|------------|---------------------------------------|---------------------|
| Investees                                      | Net assets at year-end (a) (*) | Group ownership (b) | Interest in net assets(a x b) | Goodwill   | Derecognized unrealized gains(losses) | Year-end book value |
| Associates:                                    |                                |                     |                               |            |                                       |                     |
| Hanwha Savings Bank Co., Ltd.                  | 103,253,152                    | 36.05%              | 37,219,160                    | 30,650,967 | -                                     | 67,870,127          |
| Hanwha Station Development Co., Ltd.           | 128,641,501                    | 48.32%              | 62,153,666                    | -          | 16,315,972                            | 78,469,638          |
| Hanwha General Chemical Co., Ltd.(*)           | 3,112,794,116                  | 36.05%              | 1,122,018,300                 | 2,693,337  | 9,379,191                             | 1,134,090,828       |
| HANWHA INVESTMENT AND SECURITIES CO., LTD. (*) | 945,978,217                    | 21.76%              | 205,853,310                   | 20,787,045 | (28,716)                              | 226,611,639         |
| Hanwha Hotels and Resort Co., Ltd. (*)         | 697,674,483                    | 48.78%              | 340,321,732                   | -          | (10,362,073)                          | 329,959,659         |
| International Polymers Company                 | 462,077,788                    | 25.00%              | 115,519,447                   | 1,795,924  | (103,085)                             | 117,212,286         |
| Joint ventures:                                |                                |                     |                               |            |                                       |                     |
| YEOCHUN NCC Co., Ltd.                          | 1,204,648,559                  | 50.00%              | 602,324,280                   | -          | (21,201,741)                          | 581,122,539         |
| Gulf Advanced Cables Insulation Company        | 16,858,184                     | 50.00%              | 8,429,092                     | -          | (178)                                 | 8,428,914           |
| Lakeshore East Retail LLC                      | 18,361,795                     | 50.00%              | 9,180,897                     | -          | (3,435,604)                           | 5,745,293           |
| Parcel O LLC                                   | 41,998,223                     | 50.00%              | 20,999,111                    | -          | (1,239,153)                           | 19,759,958          |

(\*) Associates prepare their consolidated financial statements, which their stated net assets refer to equity attributable to owners of the Group.

- (6) Adjustments from financial information of key associates and joint ventures to book value of investments in associates and joint ventures as of December 31, 2018 and 2017 are as follows, continued:

In thousands Korean won

| Investees                                      | December 31, 2017              |                     |                                |            |                                       |                     |
|------------------------------------------------|--------------------------------|---------------------|--------------------------------|------------|---------------------------------------|---------------------|
|                                                | Net assets at year-end (a) (*) | Group ownership (b) | Interest in net assets (a x b) | Goodwill   | Derecognized unrealized gains(losses) | Year-end book value |
| Associates:                                    |                                |                     |                                |            |                                       |                     |
| Hanwha Savings Bank Co., Ltd.                  | 88,994,784                     | 36.05%              | 32,079,516                     | 30,650,967 | -                                     | 62,730,483          |
| Hanwha Station Development Co., Ltd.           | 119,142,219                    | 48.32%              | 57,564,049                     | -          | 17,771,492                            | 75,335,541          |
| Hanwha General Chemical Co., Ltd. (*)          | 2,662,050,053                  | 36.05%              | 959,545,914                    | 2,693,337  | 11,640,403                            | 973,879,654         |
| HANWHA INVESTMENT AND SECURITIES CO., LTD. (*) | 872,483,526                    | 21.76%              | 189,860,209                    | 20,787,045 | (29,607)                              | 210,617,647         |
| Hanwha Hotels and Resort Co., Ltd. (*)         | 751,213,337                    | 48.78%              | 366,437,687                    | -          | (7,133,043)                           | 359,304,644         |
| International Polymers Company                 | 416,644,331                    | 25.00%              | 104,161,083                    | 1,795,924  | (139,616)                             | 105,817,391         |
| Joint ventures:                                |                                |                     |                                |            |                                       |                     |
| YEOCHUN NCC Co., Ltd.                          | 1,614,151,518                  | 50.00%              | 807,075,759                    | -          | (24,071,807)                          | 783,003,952         |
| Gulf Advanced Cables Insulation Company        | 19,392,199                     | 50.00%              | 9,696,100                      | -          | -                                     | 9,696,100           |
| Lakeshore East Retail LLC                      | 19,850,096                     | 50.00%              | 9,925,048                      | -          | (2,488,558)                           | 7,436,490           |
| Parcel O LLC                                   | 40,259,446                     | 50.00%              | 20,129,723                     | -          | (1,977,906)                           | 18,151,817          |

(\*) Associates prepare their consolidated financial statements, which their stated net assets refer to equity attributable to owners of the Group.

- (7) Fair value of marketable investments in associates and joint ventures as of December 31, 2018 and 2017 are as follows:

In thousands won

| Investees                                  | December 31, 2018 |               | December 31, 2017 |              |
|--------------------------------------------|-------------------|---------------|-------------------|--------------|
|                                            | Fair value        | Book value    | Fair value        | Book value   |
| HANWHA INVESTMENT AND SECURITIES CO., LTD. | ₩77,917,500       | ₩ 226,611,639 | ₩ 103,306,883     | ₩210,617,647 |

#### 14. INVESTMENT PROPERTY:

- (1) Investment property as of December 31, 2018 and 2017 are as follows:

In thousands won

|            | December 31, 2018  |                              |                    | December 31, 2017  |                              |                    |
|------------|--------------------|------------------------------|--------------------|--------------------|------------------------------|--------------------|
|            | Acquisition cost   | Accumulated depreciation (*) | Book value         | Acquisition cost   | Accumulated depreciation (*) | Book value         |
| Land       | 127,833,305        | -                            | 127,833,305        | 194,601,397        | -                            | 194,601,397        |
| Buildings  | 89,187,604         | (28,872,749)                 | 60,314,855         | 183,817,322        | (30,926,543)                 | 152,890,779        |
| Structures | 8,539,487          | (6,352,082)                  | 2,187,405          | 8,266,550          | (5,811,399)                  | 2,455,151          |
|            | <u>225,560,396</u> | <u>(35,224,831)</u>          | <u>190,335,565</u> | <u>386,685,269</u> | <u>(36,737,942)</u>          | <u>349,947,327</u> |

(\*) Includes accumulated impairment losses.

- (2) Changes in investment property for years ended December 31, 2018 and 2017, are as follows:

In thousands of Korean won

|                                   | 2018                 |                     |                    |                      |
|-----------------------------------|----------------------|---------------------|--------------------|----------------------|
|                                   | Land                 | Buildings           | Structures         | Total                |
| Beginning balance                 | ₩ 194,601,397        | ₩ 152,890,779       | ₩ 2,455,151        | ₩ 349,947,327        |
| Changes in scope of consolidation | (73,372,114)         | (92,992,590)        | -                  | (166,364,704)        |
| Acquisition                       | 33,697               | 294,933             | -                  | 328,630              |
| Transfer                          | 2,739,353            | 2,453,434           | -                  | 5,192,787            |
| Disposal                          | (1,075,200)          | (2,204,662)         | -                  | (3,279,862)          |
| Depreciation                      | -                    | (2,640,270)         | (299,436)          | (2,939,706)          |
| Impairment Loss                   | -                    | (122,385)           | -                  | (122,385)            |
| Changes in exchange rates         | <u>4,906,172</u>     | <u>2,635,616</u>    | <u>31,690</u>      | <u>7,573,478</u>     |
| Ending balance                    | <u>₩ 127,833,305</u> | <u>₩ 60,314,855</u> | <u>₩ 2,187,405</u> | <u>₩ 190,335,565</u> |

In thousands of Korean won

2017

|                           | Land          | Buildings     | Structures  | Total         |
|---------------------------|---------------|---------------|-------------|---------------|
| Beginning balance         | ₩ 223,575,736 | ₩ 171,569,270 | ₩ 2,423,943 | ₩ 397,568,949 |
| Acquisition               | 3,655         | 36,886        | -           | 40,541        |
| Transfer                  | (9,171,456)   | -             | 805,565     | (8,365,891)   |
| Disposal                  | (1,073,319)   | (105,055)     | (1,389)     | (1,179,763)   |
| Depreciation              | -             | (4,963,983)   | (332,770)   | (5,296,753)   |
| Impairment Loss           | -             | (1,137,689)   | (398,391)   | (1,536,080)   |
| Changes in exchange rates | (18,733,219)  | (12,508,650)  | (41,807)    | (31,283,676)  |
| Ending balance            | ₩ 194,601,397 | ₩ 152,890,779 | ₩ 2,455,151 | ₩ 349,947,327 |

- (3) As of the end of the current term, the fair value of investment property considering appraisal and public land is ₩ 272,076 million won. The fair value of investment property has been assessed by an independent assessor.
- (4) The rental income from investment property during the current term is ₩6,609 million (December 31, 2017: ₩ 9,216 million).

## 15. PROPERTY, PLANT AND EQUIPMENT:

- (1) Property, plant and equipment as of December 31, 2018 and 2017, are as follows:

In Korea thousands won

|                                     | December 31, 2018 |                             |               | December 31, 2017 |                             |               |
|-------------------------------------|-------------------|-----------------------------|---------------|-------------------|-----------------------------|---------------|
|                                     | Acquisition cost  | Accumulated depreciation(*) | Book value    | Acquisition cost  | Accumulated depreciation(*) | Book value    |
| Land                                | 1,833,183,691     | -                           | 1,833,183,691 | 1,802,079,129     | -                           | 1,802,079,129 |
| Buildings                           | 1,993,500,016     | (733,966,484)               | 1,259,533,532 | 1,638,236,336     | (615,008,779)               | 1,023,227,557 |
| Structures                          | 404,174,812       | (175,416,285)               | 228,758,527   | 360,268,929       | (160,600,455)               | 199,668,474   |
| Machineries                         | 5,940,012,291     | (3,281,746,135)             | 2,658,266,156 | 5,232,522,489     | (3,054,975,113)             | 2,177,547,376 |
| Vehicles                            | 53,328,006        | (39,198,297)                | 14,129,709    | 54,377,499        | (36,372,510)                | 18,004,989    |
| Tools and equipments                | 358,463,140       | (271,630,112)               | 86,833,028    | 334,929,013       | (250,162,793)               | 84,766,220    |
| Other property, plant and equipment | 31,027,554        | (12,501,471)                | 18,526,083    | 6,253,996         | (5,220,328)                 | 1,033,668     |
| Construction in progress            | 598,216,644       | (13,822,357)                | 584,394,287   | 281,959,147       | (540,288)                   | 281,418,859   |
| Machinery in transit                | 426,903           | -                           | 426,903       | 485,183           | -                           | 485,183       |
| Total                               | 11,212,333,057    | (4,528,281,141)             | 6,684,051,916 | 9,711,111,721     | (4,122,880,266)             | 5,588,231,455 |

(\*) Includes accumulated impairment losses and government grants.

- (2) Changes in property, plant and equipment for the years ended December 31, 2018 and 2017, are as follows:

In thousands of Korea won

2018

|                                   | Land          | Buildings     | Structures   | Machineries   | Vehicles    | Tools and equipments | Others     | Construction in progress | Machinery in transit | Total         |
|-----------------------------------|---------------|---------------|--------------|---------------|-------------|----------------------|------------|--------------------------|----------------------|---------------|
| Beginning balance                 | 1,802,079,129 | 1,023,227,557 | 199,668,474  | 2,177,547,376 | 18,004,989  | 84,766,220           | 1,033,668  | 281,418,859              | 485,183              | 5,588,231,455 |
| Acquisition                       | 12,690,544    | 13,156,161    | 7,750,583    | 159,042,918   | 243,491     | 13,931,887           | -          | 521,718,585              | 7,375,994            | 735,910,163   |
| Changes in scope of consolidation | 32,608,887    | 334,028,707   | 20,904,516   | 644,787,302   | 28,910      | 2,932,317            | 17,743,065 | 36,657,766               | -                    | 1,089,691,470 |
| Transfer                          | 6,485,215     | 25,621,527    | 15,808,264   | 161,610,352   | 205,935     | 20,565,888           | 9,844      | (241,699,973)            | (7,434,274)          | (18,827,222)  |
| Disposal                          | (20,738,010)  | (8,287,874)   | (19,678)     | (9,509,898)   | (138,895)   | (3,142,788)          | (297,293)  | (1,570,638)              | -                    | (43,705,074)  |
| Depreciation                      | -             | (61,617,654)  | (15,211,493) | (310,447,593) | (4,219,790) | (31,802,539)         | (253,082)  | -                        | -                    | (423,552,151) |
| Impairment Loss (*)               | (17,976)      | (71,030,360)  | -            | (163,779,714) | (14,174)    | (671,291)            | -          | (14,098,697)             | -                    | (249,612,212) |
| Changes in exchange rates         | 75,902        | 4,435,468     | (142,139)    | (984,587)     | 19,243      | 253,334              | 289,881    | 1,968,385                | -                    | 5,915,487     |
| Ending balance                    | 1,833,183,691 | 1,259,533,532 | 228,758,527  | 2,658,266,156 | 14,129,709  | 86,833,028           | 18,526,083 | 584,394,287              | 426,903              | 6,684,051,916 |

(\*) The Group recognized the unrecoverable amount as an impairment loss with regard to the polysilicon, Ingot and other operating segments.

In thousands of  
Korea won

|                                   | 2017          |               |              |               |             |                      |              |                          |                      |               |
|-----------------------------------|---------------|---------------|--------------|---------------|-------------|----------------------|--------------|--------------------------|----------------------|---------------|
|                                   | Land          | Buildings     | Structures   | Machineries   | Vehicles    | Tools and equipments | Others       | Construction in progress | Machinery in transit | Total         |
| Beginning balance                 | 1,706,669,222 | 1,054,026,799 | 187,279,134  | 2,189,147,529 | 23,635,740  | 94,239,023           | 22,490,892   | 482,455,183              | 1,024,758            | 5,760,968,280 |
| Acquisition                       | 1,617,606     | 25,715,754    | 491,892      | 55,753,212    | 424,622     | 14,515,254           | 71,320       | 381,230,338              | 7,087,662            | 486,907,660   |
| Changes in scope of consolidation | 2,426,877     | -             | -            | 14,083,875    | -           | -                    | -            | 5,539,290                | -                    | 22,050,042    |
| Transfer                          | 94,221,200    | 31,512,454    | 26,574,024   | 404,750,566   | 528,500     | 12,369,253           | -            | (572,856,503)            | (7,627,237)          | (10,527,743)  |
| Disposal                          | (1,177,748)   | (3,294,835)   | (207,796)    | (4,904,897)   | (2,478,342) | (1,944,065)          | (18,893,370) | (4,759,636)              | -                    | (37,660,689)  |
| Depreciation                      | -             | (61,318,715)  | (14,042,448) | (301,592,375) | (3,990,420) | (32,467,270)         | (1,290,080)  | -                        | -                    | (414,701,308) |
| Impairment Loss (*)               | -             | (3,515,791)   | -            | (130,361,058) | -           | (137,247)            | -            | -                        | -                    | (134,014,096) |
| Changes in exchange rates         | (1,678,028)   | (19,898,109)  | (426,332)    | (49,329,476)  | (115,111)   | (1,808,728)          | (1,345,094)  | (10,189,813)             | -                    | (84,790,691)  |
| Ending balance                    | 1,802,079,129 | 1,023,227,557 | 199,668,474  | 2,177,547,376 | 18,004,989  | 84,766,220           | 1,033,668    | 281,418,859              | 485,183              | 5,588,231,455 |

(\*) The Group recognized the unrecoverable amount as an impairment loss with regard to the polysilicon and other operating segments.

### (3) Impairment of property, plant and equipment

The consolidation entity completed the construction of a polysilicon manufacturing plant in Yeosu Industrial Park in 2013 and has been in commercial production since the first quarter of 2014. As the polysilicon industry entered a prolonged slump due to China's subsidy reduction and the U.S. safeguard action, damage to the business sector was discovered. The affected carrying amount of the polysilicon unit is ₩ 514,085, and the carrying amount of the heavy oil asset is ₩ 471,212 million, which is recoverable amount of ₩405,265 million.

The Group tested the polysilicon operating segment the cash-generating unit, for impairment and recognized impairment loss amounting to ₩ 108,820 and ₩ 79,878 million for the years ended December 31, 2018 and 2017, respectively, for the assets whose carrying amount exceeds its recoverable amount. The impairment loss is included in other non-operating expenses as impairment loss in property, plant and equipment.

The recoverable amount of the cash-generating unit is determined on the basis of value-in-use, which is calculated by discounting the future cash flows that are expected to be derived from the continued use of asset. The calculation of value-in-use is based on the following key assumptions:

- Cash flows are projected over a period of five years and are estimated based on past experience, actual operating results and the Group's business plan for the five year period. Cash flows after five years are estimated using a fixed growth rate of 1.00%. This growth rate does not exceed the average long-term growth rate of the industry.
- The selling price of products is applied to the cash flows projection period based on external information.
- Shareholder value is computed by discounting the operating annual cash flows using a discount rate of 7.49% and 9.25% as of December 31, 2018 and 2017.

The key assumptions used in calculating value-in-use reflect management's assessment of the future trends of the industry and are determined by considering external and internal (historical) information.

- Capital borrowing costs are ₩9,630 million and ₩3,943 million for the years ended December 31, 2018 and 2017, respectively, and the weighted-average capitalization rates of interest for the years ended December 31, 2018 and 2017, are 2.63%–4.20% and 2.31%–4.30%, respectively.
- Line items which include depreciation expenses of property, plant and equipment for the years ended December 31, 2018 and 2017 are as follows:

| In thousands won                       | 2018          | 2017          |
|----------------------------------------|---------------|---------------|
| Manufacturing cost and others          | ₩ 357,208,767 | ₩ 342,317,501 |
| Selling and administrative expenses(*) | 66,343,384    | 72,383,807    |
|                                        | ₩ 423,552,151 | ₩ 414,701,308 |

(\*) Includes amounts allocated to ordinary research and development expense.

(6) Property, plant and equipment are provided as collateral for borrowings as of December 31, 2018 (Note 38).

# **17. INTANGIBLE ASSETS:**

(1) Intangible assets as of December 31, 2018 and 2017, are as follows:

*In thousands Korean won*

|                            | December 31, 2018 |                             |               | December 31, 2017 |                             |               |
|----------------------------|-------------------|-----------------------------|---------------|-------------------|-----------------------------|---------------|
|                            | Acquisition cost  | Accumulated depreciation(*) | Book value    | Acquisition cost  | Accumulated depreciation(*) | Book value    |
| Goodwill                   | ₩ 302,805,093     | ₩ (39,998,422)              | ₩ 262,806,671 | ₩ 277,052,249     | ₩ (23,938,436)              | ₩ 253,113,813 |
| Industrial property rights | 37,970,877        | (25,896,424)                | 12,074,453    | 44,158,038        | (31,079,070)                | 13,078,968    |
| Land use rights            | 56,631,933        | (17,958,428)                | 38,673,505    | 88,247,901        | (15,446,185)                | 72,801,716    |
| Development Costs          | 90,064,957        | (28,851,408)                | 61,213,549    | 30,279,736        | (24,999,322)                | 5,280,414     |
| Membership                 | 57,140,401        | (3,834,265)                 | 53,306,136    | 57,817,406        | (3,229,180)                 | 54,588,226    |
| Other intangible Assets    | 86,044,622        | (34,735,451)                | 51,309,171    | 87,999,822        | (64,813,352)                | 23,186,470    |
| Total                      | ₩ 630,657,883     | ₩ (151,274,398)             | ₩ 479,383,485 | ₩ 585,555,152     | ₩ (163,505,545)             | ₩ 422,049,607 |

(\*) Includes accumulated impairment losses.

(2) Changes in intangible assets except for emission rights for the years ended December 31, 2018 and 2017, are as follows:

*In thousands of Korean won*

|                                   | 2018          |                            |                 |                   |              |                         |               |
|-----------------------------------|---------------|----------------------------|-----------------|-------------------|--------------|-------------------------|---------------|
|                                   | Goodwill      | Industrial property rights | Land use rights | Development costs | Membership   | Other intangible assets | Total         |
| Beginning balance                 | ₩ 253,113,813 | ₩ 13,078,968               | ₩ 72,801,716    | ₩ 5,280,414       | ₩ 54,588,226 | ₩ 23,186,470            | ₩ 422,049,607 |
| Changes in scope of consolidation | 20,606,069    | 52,666                     | -               | 51,401,189        | (41,065)     | 30,665,115              | 102,683,974   |
| Acquisition                       | -             | 147,951                    | 318,198         | 8,352,021         | 560,659      | 17,636,573              | 27,015,402    |
| Transfer                          | -             | 348,205                    | -               | 33,093            | (45,382)     | 3,242,426               | 3,578,342     |
| Disposal                          | -             | -                          | (12,808,552)    | -                 | (1,150,372)  | (13,597,772)            | (27,556,696)  |
| Amortization                      | -             | (1,440,044)                | (1,611,535)     | (1,703,168)       | (302,366)    | (8,504,315)             | (13,561,428)  |
| Impairment Loss(*1)               | (17,895,037)  | (121,506)                  | (20,301,276)    | (2,150,000)       | (311,860)    | (1,527,416)             | (42,307,095)  |
| Changes in exchange rates         | (623,430)     | 8,213                      | 274,954         | -                 | 8,296        | 208,090                 | (123,877)     |
| Others(*2)                        | 7,605,256     | -                          | -               | -                 | -            | -                       | 7,605,256     |
| Ending balance                    | ₩ 262,806,671 | ₩ 12,074,453               | ₩ 38,673,505    | ₩ 61,213,549      | ₩ 53,306,136 | ₩ 51,309,171            | ₩ 479,383,485 |

(\*1) The Group recognized the unrecoverable amount as an impairment loss with regard to the photovoltaic and other operating segments.

(\*2) The Group adjusted goodwill amount of newly acquired company by revaluing the net asset.

*In thousands of Korean won*

|                                   | 2017          |                            |                 |                   |              |                         |               |
|-----------------------------------|---------------|----------------------------|-----------------|-------------------|--------------|-------------------------|---------------|
|                                   | Goodwill      | Industrial property rights | Land use rights | Development costs | Membership   | Other intangible assets | Total         |
| Beginning balance                 | ₩ 247,882,084 | ₩ 14,298,551               | ₩ 78,694,586    | ₩ 5,850,996       | ₩ 52,862,754 | ₩ 26,611,369            | ₩ 426,200,340 |
| Changes in scope of consolidation | 11,471,424    | -                          | -               | -                 | -            | 417,719                 | 11,889,143    |
| Acquisition                       | -             | 1,073,860                  | 282,795         | 685,050           | 2,907,223    | 7,120,709               | 12,069,637    |
| Transfer                          | -             | 25,540                     | (13,169)        | 54,149            | 2,329,168    | 4,625,286               | 7,020,974     |
| Disposal                          | -             | -                          | (17,267)        | (453,070)         | (3,112,859)  | (4,506,917)             | (8,090,113)   |
| Amortization                      | -             | (2,291,827)                | (1,841,181)     | (860,540)         | (301,500)    | (10,237,719)            | (15,532,767)  |
| Impairment Loss                   | (6,023)       | -                          | -               | -                 | -            | -                       | (6,023)       |
| Changes in exchange rates         | (6,233,672)   | (27,156)                   | (4,304,048)     | 3,829             | (96,560)     | (843,977)               | (11,501,584)  |
| Ending balance                    | ₩ 253,113,813 | ₩ 13,078,968               | ₩ 72,801,716    | ₩ 5,280,414       | ₩ 54,588,226 | ₩ 23,186,470            | ₩ 422,049,607 |

(3) Changes in emission rights for the years ended December 31, 2018, are as follows:

| <i>In thousands of Korean won, quantity in tCO<sub>2</sub>-eq</i> | <b>Amount of 2018</b> |                  | <b>Amount of 2019</b> |               | <b>Amount of 2020</b> |               |
|-------------------------------------------------------------------|-----------------------|------------------|-----------------------|---------------|-----------------------|---------------|
|                                                                   | <b>Quantity</b>       | <b>Amount(*)</b> | <b>Quantity</b>       | <b>Amount</b> | <b>Quantity</b>       | <b>Amount</b> |
| Free allocation                                                   | 2,458,011             | -                | 2,458,011             | -             | 2,458,011             | -             |
| Purchases                                                         | 4,381                 | 99,548           | -                     | -             | -                     | -             |
| Ending balance                                                    | 2,462,392             | 99,548           | 2,458,011             | -             | 2,458,011             | -             |

(\*) Includes other intangible assets.

(4) Intangible assets are provided as collateral for borrowings as of December 31, 2018 (Note 38).

(5) Goodwill Impairment:

A. Goodwill is monitored by the management at the operating segment level (cash-generating units or group of cash-generating units). The following is a summary of goodwill allocation of each operating segment:

| <i>In thousands Korean won</i>                 | <b>December 31, 2018</b> | <b>December 31, 2017</b> |
|------------------------------------------------|--------------------------|--------------------------|
| Solar energy business                          | ₩ 189,488,775            | ₩ 189,897,484            |
| Hanwha AZDEL, Inc.                             | 23,955,212               | 22,954,668               |
| TDI (formerly, HANWHA FINE CHEMICAL CO., LTD.) | 18,510,215               | 18,510,215               |
| Others                                         | 30,852,469               | 21,751,446               |
| <b>Total</b>                                   | <b>₩ 262,806,671</b>     | <b>₩ 253,113,813</b>     |

B. The recoverable amounts of all cash generating units (groups) have been determined based on value-in-use calculations which are estimated on financial budgets approved by management covering a five-year period or net fair value which is the price in an active market less disposal cost. All assumptions related to the calculations are as follows:

|                                    | <b>Solar energy business</b> | <b>Hanwha AZDEL, Inc.</b> | <b>TDI (formerly, HANWHA FINE CHEMICAL CO, LTD.)</b> |
|------------------------------------|------------------------------|---------------------------|------------------------------------------------------|
| Operating income/Revenue Rate (*1) | 16.97%                       | 20.04%                    | 6.43%                                                |
| Revenue increase Rate (*2)         | 2.21%                        | 9.76%                     | 3.05%                                                |
| Discount Rate                      | 11.50%                       | 9.80%                     | 9.00%                                                |

(\*1) Average return on sales to calculate cash flow projections for future budget periods

(\*2) Annual average sales growth rate to determine cash flow projections for future budget periods

C. The Group recognized the unrecoverable amount as an impairment loss with regard to the photovoltaic and other operating segments. The Group determines that the carrying amount of the cash-generating unit(group) will not exceed its recoverable amount, except for those that recognise the impairment loss.

## 18. **ASSETS CLASSIFIED AS HELD FOR SALE:**

Assets classified as held for sale as of December 31, 2018, and 2017, are as follows:

| <i>In thousands of Korean won</i> | <b>December 31, 2018</b> | <b>December 31, 2017</b> |
|-----------------------------------|--------------------------|--------------------------|
| Machineries and others            | ₩ 18,179,899             | ₩ 2,133,140              |
| <b>Total</b>                      | <b>₩ 18,179,899</b>      | <b>₩ 2,133,140</b>       |

## 19. **TRADE PAYABLES AND OTHER PAYABLES:**

Trade payables and other payables as of December 31, 2018, and 2017, are as follows:

| <i>In thousands of Korean won</i> | <b>December 31, 2018</b> |                    | <b>December 31, 2017</b> |                     |
|-----------------------------------|--------------------------|--------------------|--------------------------|---------------------|
|                                   | <b>Current</b>           | <b>Non-current</b> | <b>Current</b>           | <b>Non-current</b>  |
| Trade payables                    | ₩1,158,885,352           | ₩ -                | ₩ 1,305,238,736          | ₩ -                 |
| Other payables                    | 320,852,490              | 329,899            | 326,674,253              | 23,136,851          |
| <b>Total</b>                      | <b>₩1,479,737,842</b>    | <b>₩ 329,899</b>   | <b>₩ 1,631,912,989</b>   | <b>₩ 23,136,851</b> |

## 20. BORROWINGS:

(1) Borrowings as of December 31, 2018, and 2017, are as follows:

*In thousands of Korean won*

|                                        | December 31, 2018     |                       | December 31, 2017     |                       |
|----------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                                        | Current               | Non-current           | Current               | Non-current           |
| Borrowings from financial institutions | ₩2,238,679,027        | ₩1,872,226,605        | ₩2,011,899,926        | ₩ 737,245,494         |
| Debentures                             | 654,802,149           | 1,122,834,601         | 629,515,619           | 1,038,716,021         |
| Total                                  | <u>₩2,893,481,176</u> | <u>₩2,995,061,206</u> | <u>₩2,641,415,545</u> | <u>₩1,775,961,515</u> |

(2) Borrowings from financial institutions as of December 31, 2018, and 2017, are as follows:

| <i>In thousands of Korean won</i>         | Financial Institutions     | December 31, 2018      | December 31, 2017      |
|-------------------------------------------|----------------------------|------------------------|------------------------|
| Borrowings in local currency              | KDB and others             | ₩ 2,122,749,159        | ₩ 933,087,731          |
| Borrowings in foreign currency            | Korea Exim bank and others | 1,971,386,129          | 1,804,443,395          |
| Overdraft                                 | Woori bank and others      | 3,390,811              | -                      |
| Loans on trade receivables collateral(*)  | Woori bank and others      | 13,379,533             | 11,614,294             |
| Subtotal                                  |                            | <u>4,110,905,632</u>   | <u>2,749,145,420</u>   |
| Less: Reclassification of current portion |                            | <u>(2,238,679,027)</u> | <u>(2,011,899,926)</u> |
| Total                                     |                            | <u>₩ 1,872,226,605</u> | <u>₩ 737,245,494</u>   |

(\*) The Group discounted trade receivables through factoring agreements with banks, which were accounted for as secured borrowings. Under the terms of the agreements, the Group is contractually obligated to make payments in the event of default by customers (Note 7).

(3) Debentures as of December 31, 2018, and 2017, are as follows:

*In thousands of Korean won*

| Issuing Company                          | Classification                            | Maturity date | Interest rate (%) | December 31, 2018 | December 31, 2017 |
|------------------------------------------|-------------------------------------------|---------------|-------------------|-------------------|-------------------|
| Hanwha Galleria Co., Ltd.                | 63 <sup>th</sup> public bonds             | -             | -                 | ₩ -               | ₩ 50,000,000      |
| Hanwha Galleria Co., Ltd.                | 64 <sup>th</sup> privately placed bonds   | -             | -                 | -                 | 20,000,000        |
| Hanwha Galleria Co., Ltd.                | 65 <sup>th</sup> privately placed bonds   | -             | -                 | -                 | 10,000,000        |
| Hanwha Galleria Co., Ltd.                | 66 <sup>th</sup> privately placed bonds   | -             | -                 | -                 | 10,000,000        |
| Hanwha Galleria Co., Ltd.                | 67 <sup>th</sup> privately placed bonds   | 2020.04.14    | 3.65              | 20,000,000        | 20,000,000        |
| Hanwha Galleria Co., Ltd.                | 68 <sup>th</sup> privately placed bonds   | 2021.02.26    | 3.08              | 30,000,000        | -                 |
| Hanwha Galleria Co., Ltd.                | FRN                                       | 2020.05.26    | 3L+1.00           | 33,543,000        | 32,142,000        |
| Hanwha Galleria Co., Ltd.                | FRN                                       | 2021.06.20    | 3L+1.05           | 33,543,000        | -                 |
| Hanwha Galleria Timeworld Co., Ltd.      | 20 <sup>th</sup> public convertible Bond  | -             | -                 | -                 | 49,984,800        |
| Hanwha Galleria Timeworld Co., Ltd.      | 21 <sup>th</sup> privately placed bonds   | -             | -                 | -                 | 10,000,000        |
| Hanwha Galleria Timeworld Co., Ltd.      | 22 <sup>th</sup> privately placed bonds   | 2019.06.28    | 3.30              | 20,000,000        | 20,000,000        |
| Hanwha Galleria Timeworld Co., Ltd. (*1) | 23 <sup>th</sup> public bond with warrant | 2021.06.22    | 0.00              | 50,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 52 <sup>th</sup> FRN                      | -             | -                 | -                 | 32,142,000        |
| Hanwha Advanced Materials Corporation    | 53 <sup>th</sup> privately placed bonds   | -             | -                 | -                 | 10,000,000        |
| Hanwha Advanced Materials Corporation    | 55 <sup>th</sup> FRN                      | 2019.05.19    | 3L+1.80           | 33,543,000        | 32,142,000        |
| Hanwha Advanced Materials Corporation    | 56 <sup>th</sup> privately placed bonds   | -             | -                 | -                 | 20,000,000        |
| Hanwha Advanced Materials Corporation    | 57 <sup>th</sup> privately placed bonds   | -             | -                 | -                 | 10,000,000        |
| Hanwha Advanced Materials Corporation    | 58 <sup>th</sup> FRN                      | 2021.02.16    | 3L+1.60           | 33,543,000        | -                 |
| Hanwha Advanced Materials Corporation    | 59-1 <sup>st</sup> privately placed bonds | 2019.08.27    | 3.50              | 10,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 59-2 <sup>nd</sup> privately placed bonds | 2020.02.27    | 3.69              | 20,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 60 <sup>th</sup> privately placed bonds   | 2020.08.24    | 3.50              | 20,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 61 <sup>th</sup> privately placed bonds   | 2020.04.16    | 3.30              | 10,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 62 <sup>th</sup> privately placed bonds   | 2019.10.17    | 3.20              | 10,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 1 <sup>st</sup> privately placed bonds    | 2020.06.30    | 3.80              | 40,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 2 <sup>nd</sup> privately placed bonds    | 2019.08.18    | 3.60              | 50,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 3 <sup>rd</sup> privately placed bonds    | 2019.08.18    | 3.60              | 15,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 4 <sup>th</sup> privately placed bonds    | 2019.08.18    | 3.60              | 20,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 5 <sup>th</sup> privately placed bonds    | 2019.08.18    | 3.60              | 5,000,000         | -                 |
| Hanwha Advanced Materials Corporation    | 5 <sup>th</sup> privately placed bonds    | 2020.08.25    | 3.80              | 40,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 6 <sup>th</sup> privately placed bonds    | 2020.08.25    | 3.80              | 20,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 7 <sup>th</sup> privately placed bonds    | 2019.08.25    | 3.60              | 10,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 8 <sup>th</sup> privately placed bonds    | 2020.01.26    | 3.80              | 30,000,000        | -                 |
| Hanwha Advanced Materials Corporation    | 9 <sup>th</sup> FRN                       | 2021.06.29    | 3L+1.96           | 33,543,000        | -                 |
| Hanwha Chemical Corporation              | 241 <sup>st</sup> privately placed bonds  | -             | -                 | -                 | 100,000,000       |
| Hanwha Chemical Corporation              | 242 <sup>nd</sup> public bonds            | -             | -                 | -                 | 103,000,000       |
| Hanwha Chemical Corporation              | 243-1 <sup>st</sup> public bonds          | -             | -                 | -                 | 102,000,000       |

In thousands of Korean won

| Issuing Company                            | Classification                   | Maturity date | Interest rate (%) | December 31, 2018      | December 31, 2017      |
|--------------------------------------------|----------------------------------|---------------|-------------------|------------------------|------------------------|
| Hanwha Chemical Corporation                | 243-2 <sup>th</sup> public bonds | 2020.05.28    | 3.07              | 98,000,000             | 98,000,000             |
| Hanwha Chemical Corporation                | 244 <sup>th</sup> FRN            | -             | -                 | -                      | 53,570,000             |
| Hanwha Chemical Corporation                | 245-1 <sup>th</sup> public bonds | -             | -                 | -                      | 50,000,000             |
| Hanwha Chemical Corporation                | 245-2 <sup>th</sup> public bonds | 2020.10.28    | 3.08              | 50,000,000             | 50,000,000             |
| Hanwha Chemical Corporation                | 246-1 <sup>th</sup> public bonds | 2019.02.24    | 2.70              | 56,000,000             | 56,000,000             |
| Hanwha Chemical Corporation                | 246-2 <sup>th</sup> public bonds | 2021.02.24    | 3.09              | 50,000,000             | 50,000,000             |
| Hanwha Chemical Corporation                | 247 <sup>th</sup> FRN            | 2019.04.08    | 3L+1.65           | 111,810,000            | 107,140,000            |
| Hanwha Chemical Corporation                | 248 <sup>th</sup> public bonds   | 2019.11.08    | 0.72              | 202,636,000            | 189,822,000            |
| Hanwha Chemical Corporation                | 249 <sup>th</sup> public bonds   | 2020.02.06    | 2.52              | 100,000,000            | 100,000,000            |
| Hanwha Chemical Corporation                | 250 <sup>th</sup> public bonds   | 2020.05.25    | 2.35              | 100,000,000            | 100,000,000            |
| Hanwha Chemical Corporation                | 251 <sup>th</sup> public bonds   | 2020.09.22    | 2.35              | 80,000,000             | 80,000,000             |
| Hanwha Chemical Corporation                | 252 <sup>th</sup> FRN            | 2021.07.23    | 3L+0.98           | 33,543,000             | -                      |
| Hanwha Chemical Corporation                | 253 <sup>th</sup> FRN            | 2021.10.04    | 3L+1.15           | 55,905,000             | -                      |
| Hanwha Chemical Corporation                | 254-1 <sup>th</sup> public bonds | 2021.11.29    | 2.31              | 60,000,000             | -                      |
| Hanwha Chemical Corporation                | 254-2 <sup>th</sup> public bonds | 2023.11.29    | 2.50              | 90,000,000             | -                      |
| Hanwha Q CELLS Co., Ltd.                   | FRN                              | 2019.01.11    | 3L+2.90           | 111,769,330            | 106,642,264            |
| Subtotal                                   |                                  |               |                   | 1,787,378,330          | 1,672,585,064          |
| Add : Call premium                         |                                  |               |                   | 755,150                | 376,135                |
| Less : Discount on debentures              |                                  |               |                   | (10,496,730)           | (4,729,559)            |
| Less : Reclassification of current portion |                                  |               |                   | (654,802,149)          | (629,515,619)          |
| Total                                      |                                  |               |                   | <u>₩ 1,122,834,601</u> | <u>₩ 1,038,716,021</u> |

(\*1) Bond with warrant as of December 31, 2018, is as follows:

|                            | Details                                                                                                                               |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Issuing company            | Hanwha Galleria Timeworld Co., Ltd.                                                                                                   |
| Face value                 | ₩50,000,000 thousand                                                                                                                  |
| Book value                 | ₩44,555,277 thousand                                                                                                                  |
| Call premium(rate)         | Upon issuance: ₩755,150 thousand (1.5103%)                                                                                            |
| Coupon rate                | 0.00%                                                                                                                                 |
| Rate of return at maturity | 0.50%                                                                                                                                 |
| Terms                      | ₩39,000 par value convertible into 1 share                                                                                            |
| Exercise period            | The bonds are convertible to shares from one month after issuance (July 22, 2018) until one month before the maturity (May 22, 2021). |

## 21. OTHER FINANCIAL LIABILITIES:

Other financial liabilities as of December 31, 2018, and 2017, are as follows:

| In thousands of Korean won          | December 31, 2018    |                     | December 31, 2017    |                     |
|-------------------------------------|----------------------|---------------------|----------------------|---------------------|
|                                     | Current              | Non-current         | Current              | Non-current         |
| Derivative liabilities(Note10.(2))  | ₩ 22,887,580         | ₩ 2,610,370         | ₩ 5,827,722          | ₩ 34,649,037        |
| Deposits                            | 7,234,650            | 9,340,572           | 7,522,478            | 9,358,081           |
| Accrued expenses                    | 125,345,647          | 555,564             | 141,128,853          | 48,213              |
| Financial guarantee liabilities (*) | <u>6,811,200</u>     | <u>1,400,470</u>    | <u>277,591</u>       | <u>1,036,857</u>    |
| Total                               | <u>₩ 162,279,077</u> | <u>₩ 13,906,976</u> | <u>₩ 154,756,644</u> | <u>₩ 45,092,188</u> |

(\*) The Company provides payment guarantees to related parties as of December 31, 2018 (Note 39). As of December 31, 2018, management assessed the debtor's industry outlook, as well as the past delinquency experience of the debt instruments subject to the financial guarantee contract and debt status of the debtor. As a result, the credit risk has not increased significantly since the initial recognition of the financial guarantee liability. Therefore, the loss allowance for financial guarantee contracts is measured by the expected credit loss for 12 months. There is no change in estimation techniques or important assumptions when assessing financial guarantee liabilities for the years ended December 31, 2018.

## 22. OTHER LIABILITIES:

(1) Other liabilities as of December 31, 2018 and 2017, are as follows:

*In thousands of Korean won*

|                          | <b>December 31, 2018</b> |                     | <b>December 31, 2017</b> |                    |
|--------------------------|--------------------------|---------------------|--------------------------|--------------------|
|                          | <b>Current</b>           | <b>Non-current</b>  | <b>Current</b>           | <b>Non-current</b> |
| Advances from customers  | ₩ -                      | ₩ -                 | ₩ 267,430,810            | ₩ -                |
| Withholdings             | 12,294,824               | -                   | 13,350,582               | -                  |
| Value-added tax payables | 13,513,650               | -                   | 15,420,639               | -                  |
| Unearned revenues        | -                        | 22,798,236          | 32,857,394               | 1,140              |
| Refund liability         | 1,387,147                | -                   | -                        | -                  |
| Contract liability       | 412,693,460              | 753,074             | -                        | -                  |
| <b>Total</b>             | <b>₩ 439,889,081</b>     | <b>₩ 23,551,310</b> | <b>₩ 329,059,425</b>     | <b>₩ 1,140</b>     |

(2) Contract asset and contract liability as of December 31, 2018, are as follows:

| <b>Category</b>                               | <b>Amount</b>        |
|-----------------------------------------------|----------------------|
| Refund asset                                  |                      |
| Right to retrieve refunded inventories        | ₩ 315,955            |
| <b>Total</b>                                  | <b>₩ 315,955</b>     |
| Refund liability                              |                      |
| Refund liability                              | 1,387,147            |
| <b>Total</b>                                  | <b>₩ 1,387,147</b>   |
| Contract asset                                |                      |
| Prepaid construction costs                    | ₩ 136,170            |
| Amount due from customers for contract work   | 24,070,367           |
| <b>Total</b>                                  | <b>₩ 24,206,537</b>  |
| Contract liability                            |                      |
| Customer loyalty                              | ₩ 23,055,667         |
| Amount due to customers for contract work (*) | 52,215,338           |
| Advances from customers                       | 320,833,509          |
| Unearned revenue                              | 17,342,020           |
| <b>Total</b>                                  | <b>₩ 413,446,534</b> |

(\*) This amount is included as "Trade payables and other payables" as of December 31, 2017. (Note 19)

## 23. NET DEFINED BENEFIT LIABILITIES:

(1) Net defined benefit liabilities as of December 31, 2018 and 2017, are as follows:

*In thousands of Korean won*

|                                             | <b>December 31, 2018</b> | <b>December 31, 2017</b> |
|---------------------------------------------|--------------------------|--------------------------|
| Present value of defined benefit obligation | ₩ 520,682,885            | ₩ 461,757,370            |
| Fair value of plan assets                   | (148,981,834)            | (157,061,252)            |
| <b>Net defined benefit liabilities</b>      | <b>₩ 371,701,051</b>     | <b>₩ 304,696,118</b>     |

(2) Changes in the present value of defined benefit obligation for the years ended December 31, 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i>    | <b>2018</b>   | <b>2017</b>   |
|--------------------------------------|---------------|---------------|
| Beginning balance                    | ₩ 461,757,370 | ₩ 457,979,344 |
| Current service cost                 | 45,989,286    | 44,856,214    |
| Interest expense                     | 16,936,483    | 14,903,359    |
| Remeasurements(*)                    | 22,850,597    | (14,498,653)  |
| Benefits paid                        | (58,568,760)  | (39,417,675)  |
| Changes in scope of consolidation    | 12,071,788    | -             |
| Changes in exchange rates and others | 19,646,121    | (2,065,219)   |
| Ending balance                       | ₩ 520,682,885 | ₩ 461,757,370 |

(\*) Remeasurement of defined benefit obligation is as follows:

| <i>In thousands won</i>                                          | <b>2018</b>  | <b>2017</b>    |
|------------------------------------------------------------------|--------------|----------------|
| Actuarial losses (gains) due to empirical adjustments            | ₩ 6,283,478  | ₩ (2,207,790)  |
| Actuarial losses due to changes in demographic assumptions       | 1,973,497    | -              |
| Actuarial losses (gains) due to changes in financial assumptions | 14,593,622   | (12,290,863)   |
| Total                                                            | ₩ 22,850,597 | ₩ (14,498,653) |

(3) Changes in fair value of plan assets for the years ended December 31, 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i>    | <b>2018</b>   | <b>2017</b>   |
|--------------------------------------|---------------|---------------|
| Beginning balance                    | ₩ 157,061,252 | ₩ 64,494,403  |
| Interest income                      | 4,685,155     | 3,331,966     |
| Remeasurements(*)                    | (3,108,204)   | (1,132,761)   |
| Contributions by the employer        | 564,218       | 98,917,554    |
| Benefits paid                        | (8,858,239)   | (6,415,684)   |
| Changes in scope of consolidation    | (1,078,507)   | -             |
| Changes in exchange rates and others | (283,841)     | (2,134,226)   |
| Ending balance                       | ₩ 148,981,834 | ₩ 157,061,252 |

(\*) Return on plan assets (excluding amounts included in interest income).

(4) Plan assets as of December 31, 2018 and 2017 are as follows:

| <i>In thousands won</i>                    | <b>December 31, 2018</b> | <b>December 31, 2017</b> |
|--------------------------------------------|--------------------------|--------------------------|
| Equity instruments                         | ₩ 3,937,172              | ₩ 8,541,776              |
| Debt instruments                           | 7,397,110                | 3,290,549                |
| Principal guaranteed financial instruments | 136,150,760              | 143,940,464              |
| Others                                     | 1,496,792                | 1,288,463                |
| Total                                      | ₩ 148,981,834            | ₩ 157,061,252            |

(5) Expenses recognized in the consolidated statements of comprehensive income for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands of Korean won</i> | <b>2018</b>  | <b>2017</b>  |
|-----------------------------------|--------------|--------------|
| Current service cost              | ₩ 45,989,286 | ₩ 44,856,214 |
| Net interest cost                 | 12,251,328   | 11,571,393   |
| Total(*)                          | ₩ 58,240,614 | ₩ 56,427,607 |

(\*) Retirement benefits of ₩113 million and ₩248 million were transferred to construction in progress under property, plant and equipment for the years ended December 31, 2018 and 2017, respectively.

(6) Key actuarial assumptions for the years ended December 31, 2018 and 2017 are as follows:

| <b>Category</b>             | <b>2018</b>  | <b>2017</b>  |
|-----------------------------|--------------|--------------|
| Discount rate               | 2.97 ~ 3.49% | 3.09 ~ 3.86% |
| Expected salary growth rate | 3.17 ~ 5.79% | 3.73 ~ 6.12% |

(7) Sensitivity analysis of due to changes in key actuarial assumptions as of December 31, 2018 is as follows:

| Category                    | Change in assumption | Increase in assumption | Decrease in assumption |
|-----------------------------|----------------------|------------------------|------------------------|
| Discount rate               | 1.00%                | 5.26% Decrease         | 5.97% Increase         |
| Expected salary growth rate | 1.00%                | 5.96% Increase         | 5.35% Decrease         |

## 24. PROVISIONS:

(1) Provisions as of December 31, 2018 and 2017, are as follows:

| In thousands of Korean won            | December 31, 2018 |              | December 31, 2017 |              |
|---------------------------------------|-------------------|--------------|-------------------|--------------|
|                                       | Current           | Non-current  | Current           | Non-current  |
| Provision for construction warranties | ₩ 1,762,577       | ₩ 1,078,878  | ₩ -               | ₩ -          |
| Provision for returns                 | -                 | -            | 711,913           | -            |
| Provision for restoration             | -                 | 2,270,976    | -                 | 1,121,739    |
| Provision for product warranties      | 28,393,921        | 41,971,737   | 26,722,972        | 24,373,268   |
| Provision for litigation              | 16,452,366        | 19,179,670   | -                 | 6,195,000    |
| Emissions liabilities(*)              | 4,477,348         | -            | 22,283,191        | -            |
| Other provision                       | 7,671             | -            | -                 | -            |
| Total                                 | ₩ 51,093,883      | ₩ 64,501,260 | ₩ 49,718,076      | ₩ 31,690,007 |

(\*) The amount of greenhouse gas estimated to have been discharged for the year ended December 31, 2018, is 2,661,659 tCO<sub>2</sub> (December 31, 2017: 2,653,796 tCO<sub>2</sub>.)

(2) Changes in provisions for the years ended December 31, 2018 and 2017 are as follows:

| In thousand of Korean won            | 2018                                  |                       |                           |                                  |                          |                       |                 |              |
|--------------------------------------|---------------------------------------|-----------------------|---------------------------|----------------------------------|--------------------------|-----------------------|-----------------|--------------|
|                                      | Provision for construction warranties | Provision for returns | Provision for restoration | Provision for product warranties | Provision for litigation | Emissions liabilities | Other provision | Total        |
| Beginning balance                    | -                                     | 711,913               | 1,121,739                 | 51,096,240                       | 6,195,000                | 22,283,191            | -               | 81,408,083   |
| Changes in scope of consolidation    | 1,061,644                             | -                     | 1,095,894                 | 14,642,312                       | -                        | -                     | 22,901          | 16,822,751   |
| Changes in accounting policies       | -                                     | (711,913)             | -                         | -                                | -                        | -                     | -               | (711,913)    |
| Charged                              | 1,747,492                             | -                     | 37,915                    | 7,939,730                        | 33,922,931               | 4,477,348             | 2,789           | 48,128,205   |
| Used                                 | -                                     | -                     | -                         | (3,269,076)                      | -                        | (8,247,957)           | (222)           | (11,517,255) |
| Reversal                             | -                                     | -                     | -                         | -                                | (4,770,000)              | (14,035,234)          | (17,797)        | (18,823,031) |
| Changes in exchange rates and others | 32,319                                | -                     | 15,427                    | (43,548)                         | 284,105                  | -                     | -               | 288,303      |
| Ending balance                       | 2,841,455                             | -                     | 2,270,975                 | 70,365,658                       | 35,632,036               | 4,477,348             | 7,671           | 115,595,143  |
| Current                              | 1,762,577                             | -                     | -                         | 28,393,921                       | 16,452,366               | 4,477,348             | 7,671           | 51,093,883   |
| Non-current                          | 1,078,878                             | -                     | 2,270,975                 | 41,971,737                       | 19,179,670               | -                     | -               | 64,501,260   |

(\*) Amounts that the Group does not expect to receive from the consideration received or receivable due to the return right granted by the Group in accordance with the contract of sale of goods to customers due to application of K-IFRS 1115 is recognized as a refund liability and related inventory assets were recognized as refund assets.

In thousands of  
Korean won

|                                         | 2017                     |                              |                                        |                             |                          | Total         |
|-----------------------------------------|--------------------------|------------------------------|----------------------------------------|-----------------------------|--------------------------|---------------|
|                                         | Provision for<br>returns | Provision for<br>restoration | Provision for<br>product<br>warranties | Provision for<br>litigation | Emissions<br>liabilities |               |
| Beginning balance                       | ₩ 787,513                | ₩ 1,087,800                  | ₩ 71,390,445                           | ₩ 12,088,090                | ₩ 19,209,098             | ₩ 104,562,946 |
| Charged                                 | -                        | 33,939                       | 8,327,407                              | -                           | 28,215,118               | 36,576,464    |
| Used                                    | -                        | -                            | (17,925,048)                           | (2,056,301)                 | -                        | (19,981,349)  |
| Reversal                                | (75,600)                 | -                            | (8,677,548)                            | (3,835,344)                 | (25,141,025)             | (37,729,517)  |
| Changes in exchange<br>rates and others | -                        | -                            | (2,019,016)                            | (1,445)                     | -                        | (2,020,461)   |
| Ending balance                          | ₩ 711,913                | ₩ 1,121,739                  | ₩ 51,096,240                           | ₩ 6,195,000                 | ₩ 22,283,191             | ₩ 81,408,083  |
| Current                                 | ₩ 711,913                | ₩ -                          | ₩ 26,722,972                           | ₩ -                         | ₩ 22,283,191             | ₩ 49,718,076  |
| Non-current                             | -                        | 1,121,739                    | 24,373,268                             | 6,195,000                   | -                        | 31,690,007    |

## 25. CAPITAL STOCK AND SURPLUS:

(1) Capital stock as of December 31, 2018 and 2017, are as follows:

| In thousands won, except for share<br>data | December 31, 2018 |                        | December 31, 2017 |                        |
|--------------------------------------------|-------------------|------------------------|-------------------|------------------------|
|                                            | Common<br>shares  | Preferred<br>shares(*) | Common<br>shares  | Preferred<br>shares(*) |
| Total number of authorized shares          | 200,000,000       | 100,000,000            | 200,000,000       | 100,000,000            |
| Par value per share                        | ₩ 5               | ₩ 5                    | ₩ 5               | ₩ 5                    |
| Number of shares issued                    | 163,110,394       | 1,123,737              | 164,809,359       | 1,123,737              |
| Capital stock                              | ₩ 815,551,970     | ₩ 5,618,685            | ₩ 824,046,795     | ₩ 5,618,685            |

(\*) Non-cumulative preferred shares are eligible to receive cash dividends equal to cash dividends for common shares plus an additional 1%.

(2) The fluctuations in the number of outstanding shares for the years ended December 31, 2018 and 2017 are as follows:

|                              | 2018            |                    | 2017            |                    |
|------------------------------|-----------------|--------------------|-----------------|--------------------|
|                              | Common<br>Share | Preferred<br>Share | Common<br>Share | Preferred<br>Share |
| Beginning                    | 164,809,359     | 1,123,737          | 164,809,359     | 1,123,737          |
| Retirement of treasury share | (1,698,965)     | -                  | -               | -                  |
| Ending                       | 163,110,394     | 1,123,737          | 164,809,359     | 1,123,737          |

(3) Capital surplus as of December 31, 2018 and 2017, are as follows:

| In thousands won                       | December 31, 2018 | December 31, 2017 |
|----------------------------------------|-------------------|-------------------|
| Paid-in capital in excess of par value | ₩ 486,753,224     | ₩ 478,258,399     |
| Revaluation reserve                    | 86,071,253        | 86,071,253        |
| Gain from merger                       | 75,670,859        | 75,670,859        |
| Other capital surplus                  | 208,466,777       | 188,953,346       |
| Total                                  | ₩ 856,962,113     | ₩ 828,953,857     |

## 26. CAPITAL ADJUSTMENTS:

Consolidated capital adjustments as of December 31, 2018 and 2017, are composed of other capital adjustments recognized during the prior acquisition of subsidiaries.

## 27. ACCUMULATED OTHER COMPREHENSIVE LOSS:

Accumulated other comprehensive loss as of December 31, 2018 and 2017, are as follows:

| <i>In thousands Korean won</i>                                       | <b>December 31, 2018</b> | <b>December 31, 2017</b> |
|----------------------------------------------------------------------|--------------------------|--------------------------|
| Gain on value of available-for-sale financial assets                 | ₩ -                      | ₩ 46,919,940             |
| Gain on valuation of FVTOCI—financial assets(debt instrument)        | 29,652                   | -                        |
| Loss on valuation of FVTOCI—financial assets(equity instrument)      | (27,537,992)             | -                        |
| Share of other comprehensive income of associates and joint ventures | 96,201,872               | 99,295,380               |
| Gain on valuation of derivatives                                     | 308,974                  | 735,250                  |
| Currency translation adjustments                                     | (150,254,294)            | (151,956,070)            |
| <b>Total</b>                                                         | <b>₩ (81,251,788)</b>    | <b>₩ (5,005,500)</b>     |

## 28. RETAINED EARNINGS:

Retained earnings as of December 31, 2018 and 2017, are as follows:

| <i>In thousands Korean won</i>   | <b>December 31, 2018</b> | <b>December 31, 2017</b> |
|----------------------------------|--------------------------|--------------------------|
| Legal reserves                   | ₩ 61,851,077             | ₩ 56,097,264             |
| Voluntary reserves               | 2,645,935,589            | 2,203,477,245            |
| Revaluation surplus              | 697,698,141              | 697,672,130              |
| Unappropriated retained earnings | 1,091,042,333            | 1,407,468,845            |
| <b>Total</b>                     | <b>₩ 4,496,527,140</b>   | <b>₩ 4,364,715,484</b>   |

## 29. DIVIDENDS:

- (1) During the year ended December 31, 2018, dividends on the Company's common shares of ₩57,089 million (₩350 per share) and dividends on preferred shares of ₩449 million (₩400 per share) were paid out for the year ended December 31, 2017.
- (2) During the year ended December 31, 2017, dividends on the Company's common shares of ₩57,089 million (₩350 per share) and dividends on preferred shares of ₩449 million (₩400 per share) were paid out for the year ended December 31, 2016.
- (3) Dividends on the Company's common shares of ₩32,622 million (₩200 per share) and dividends on preferred shares of ₩281 million (₩250 per share) for the year ended December 31, 2018, are to be proposed at the regular general shareholders' meeting scheduled for March 26, 2019. These consolidated financial statements do not reflect these dividends payable.

## 30. REVENUE:

Revenue for the years ended December 31 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i> | <b>2018</b>            | <b>2017</b>            |
|-----------------------------------|------------------------|------------------------|
| Sales - Finished Goods            | ₩ 6,291,387,442        | ₩ 6,848,963,237        |
| Sales - Merchandise               | 2,506,077,546          | 1,808,155,031          |
| Sales - Construction              | 37,899,478             | -                      |
| Others                            | 210,677,438            | 684,694,958            |
| <b>Total</b>                      | <b>₩ 9,046,041,904</b> | <b>₩ 9,341,813,226</b> |

### 31. COST OF GOODS SOLD:

Cost of goods sold for the years ended December 31 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i>   | <b>2018</b>     | <b>2017</b>     |
|-------------------------------------|-----------------|-----------------|
| Cost of Goods Sold - Finished Goods | ₩ 6,039,564,051 | ₩ 5,825,831,476 |
| Cost of Goods Sold - Merchandise    | 1,262,918,205   | 1,032,966,016   |
| Cost of Goods Sold - Construction   | 38,394,995      | -               |
| Others                              | 117,684,721     | 527,475,870     |
| Total                               | ₩ 7,458,561,972 | ₩ 7,386,273,362 |

### 32. SELLING AND ADMINISTRATIVE EXPENSES:

Selling and administrative expenses for the years ended December 31, 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i>             | <b>2018</b>     | <b>2017</b>     |
|-----------------------------------------------|-----------------|-----------------|
| Salaries                                      | ₩ 245,957,321   | ₩ 264,910,275   |
| Retirement benefits                           | 24,103,868      | 26,764,721      |
| Other long-term employee benefits             | 2,330,181       | 902,402         |
| Voluntary resignation benefits                | 220,951         | 309,386         |
| Welfare expenses                              | 50,906,730      | 53,641,888      |
| Rental expenses                               | 41,258,854      | 58,268,610      |
| Reception expenses                            | 9,544,726       | 8,497,085       |
| Depreciation on investment property           | 406,298         | 497,137         |
| Depreciation on property, plant and equipment | 66,343,384      | 72,383,807      |
| Amortization of intangible assets             | 9,286,966       | 11,336,322      |
| Taxes and dues                                | 27,772,657      | 26,594,629      |
| Advertising expenses                          | 37,835,599      | 36,139,366      |
| Bad debt expenses                             | 89,659,324      | 42,683,250      |
| Travel expenses                               | 14,783,218      | 13,167,185      |
| Travel expenses for overseas branch           | 243,699         | 367,362         |
| Conference expenses                           | 1,788,250       | 2,193,879       |
| Communication charges                         | 4,218,736       | 4,484,394       |
| Supplies expenses                             | 4,595,250       | 3,945,581       |
| Publication expenses                          | 1,081,528       | 1,065,822       |
| Outsourcing expenses                          | 64,894,744      | 46,674,897      |
| Freight expenses                              | 140,178,280     | 138,542,390     |
| Warehousing charges                           | 29,568,390      | 17,247,621      |
| Sample and packing expenses                   | 5,079,924       | 5,596,653       |
| Utility expenses                              | 14,219,987      | 14,561,481      |
| Sales commissions                             | 14,290,957      | 12,268,583      |
| Export selling expenses                       | 50,260,435      | 72,959,029      |
| Repair expenses                               | 14,884,374      | 14,439,959      |
| Insurance expenses                            | 14,811,165      | 12,764,534      |
| Commissions                                   | 151,403,981     | 134,877,046     |
| Research expenses                             | 32,151,004      | 38,725,649      |
| Ordinary development expenses                 | 38,294,018      | 42,020,757      |
| Market development expenses                   | 5,404,393       | 5,396,601       |
| Maintenance expenses for overseas branch      | 94,987          | 137,955         |
| Product warranties expenses                   | 7,565,833       | 44,935          |
| Training expenses                             | 5,643,162       | 4,887,310       |
| Product handling commission                   | 3,112,578       | 3,417,569       |
| Miscellaneous expenses                        | 3,558,968       | 3,024,135       |
| Others                                        | 5,379,464       | 3,388,669       |
| Total                                         | ₩ 1,233,134,184 | ₩ 1,199,128,874 |

### 33. NATURE OF EXPENSES:

Details of nature of expenses for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands of Korean won</i>                                  | 2018            | 2017            |
|--------------------------------------------------------------------|-----------------|-----------------|
| Changes in finished goods, half-finished goods and work in process | ₩ (199,983,749) | ₩ 327,908,458   |
| Sales merchandise                                                  | 1,262,918,205   | 1,032,966,016   |
| Use of raw materials and supplies                                  | 4,992,653,434   | 4,869,392,097   |
| Employee benefits (*1)                                             | 681,739,731     | 722,236,877     |
| Welfare expenses                                                   | 122,655,795     | 128,357,351     |
| Rental expenses                                                    | 54,412,901      | 100,060,380     |
| Depreciations of investment property                               | 2,939,706       | 5,296,753       |
| Depreciations of property, plant and equipment                     | 423,552,151     | 414,701,308     |
| Amortization of intangible assets                                  | 13,561,428      | 15,532,767      |
| Freight and warehousing expenses                                   | 169,830,473     | 167,865,902     |
| Utility expenses                                                   | 123,360,030     | 134,178,603     |
| Outsourcing expenses                                               | 433,007,737     | 311,493,042     |
| Export selling expenses                                            | 50,102,659      | 73,982,316      |
| Taxes and dues                                                     | 36,217,233      | 36,275,694      |
| Others                                                             | 524,728,422     | 245,154,672     |
| Total (*2)                                                         | ₩ 8,691,696,156 | ₩ 8,585,402,236 |

(\*1) Includes salaries and wages, and retirement benefits.

(\*2) The total amount is cost of sales and selling and administrative expenses in the consolidated final statements of comprehensive income.

### 34. OTHER NON-OPERATING INCOME AND EXPENSES:

(1) Other non-operating income for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands of Korean won</i>                                | 2018          | 2017          |
|------------------------------------------------------------------|---------------|---------------|
| Gain on foreign currency transactions                            | ₩ 106,103,960 | ₩ 262,232,255 |
| Gain on foreign currency translation                             | 152,833,616   | 165,289,649   |
| Gain on valuation of derivatives                                 | 25,989,117    | 2,185,899     |
| Gain on disposal of available-for-sale financial assets          | -             | 5,551,834     |
| Gain on disposal of investments in associates and joint ventures | 8,070,044     | 695,482       |
| Gain on transactions of derivatives                              | 20,398,669    | 8,079,730     |
| Gain on disposal of investment property                          | 1,179,731     | 746,143       |
| Reversal of impairment losses on investment property             | 22,903        | -             |
| Gain on disposal of property, plant and equipment                | 20,043,011    | 3,355,895     |
| Reversal of impairment losses on property, plant and equipment   | 108,369       | -             |
| Gain on disposal of intangible assets                            | (94,011)      | 20,521,977    |
| Reversal of allowance                                            | 1,299         | -             |
| Reversal of other bad debt expense                               | 76,122,526    | -             |
| Rental income                                                    | 331,628       | 277,515       |
| Gain on bargain purchase                                         | 203,559       | -             |
| Others                                                           | 57,157,387    | 15,430,000    |
| Total                                                            | ₩ 468,471,808 | ₩ 484,366,379 |

(2) Other non-operating expenses for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands of Korean won</i>                                | <b>2018</b>          | <b>2017</b>          |
|------------------------------------------------------------------|----------------------|----------------------|
| Loss on foreign currency transactions                            | ₩ 115,965,773        | ₩ 279,577,574        |
| Loss on foreign currency translation                             | 220,105,996          | 106,155,741          |
| Loss on valuation of derivatives                                 | 5,333,359            | 32,822,512           |
| Loss on disposal of available-for-sale financial assets          | -                    | 5,293                |
| Loss on disposal of investments in associates and joint ventures | 14,814,494           | -                    |
| Impairment loss on available-for-sale financial assets           | -                    | 8,510,137            |
| Impairment loss on investments in associates and joint ventures  | 52,877,765           | -                    |
| Loss on transactions of derivatives                              | 11,164,601           | 14,224,219           |
| Loss on valuation of FVTPL—financial assets                      | 6,927                | -                    |
| Loss on disposal of trade receivables                            | 1,914,228            | 958,439              |
| Loss on disposal of investment property                          | 235,200              | -                    |
| Loss on disposal of property, plant and equipment                | 7,752,975            | 16,073,289           |
| Loss on disposal of intangible assets                            | 7,296,840            | 525,665              |
| Impairment loss on investment property                           | 145,288              | 1,536,080            |
| Impairment loss on property, plant and equipment                 | 249,720,581          | 134,014,096          |
| Impairment loss on intangible assets                             | 42,307,095           | 6,023                |
| Other bad debt expenses                                          | 4,974,318            | 281,984              |
| Loss on inventory abandoned                                      | 246,309              | 486,473              |
| Commissions (non-operating)                                      | 26,706,750           | 6,357,681            |
| Donations                                                        | 7,272,987            | 12,400,796           |
| Others                                                           | 47,847,418           | 22,308,070           |
| <b>Total</b>                                                     | <b>₩ 816,688,904</b> | <b>₩ 636,244,072</b> |

### 35. **FINANCE INCOME AND EXPENSES:**

(1) Finance income for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands of Korean won</i> | <b>2018</b>         | <b>2017</b>         |
|-----------------------------------|---------------------|---------------------|
| Finance Income                    |                     |                     |
| Interest income-PV Discount       | ₩ 769,996           | ₩ -                 |
| Interest income-others            | 21,255,892          | 15,411,063          |
| Dividends income                  | 2,618,653           | 1,644,900           |
| <b>Total</b>                      | <b>₩ 24,644,541</b> | <b>₩ 17,055,963</b> |

(2) Finance expenses for the years ended December 31, 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i> | <b>2018</b>   | <b>2017</b>   |
|-----------------------------------|---------------|---------------|
| Finance Expense                   |               |               |
| Interest expense                  | ₩ 160,253,874 | ₩ 148,823,555 |

**36. INCOME TAX EXPENSE:**

(1) Income tax expense for the years ended December 31, 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i>     | <b>2018</b>   | <b>2017</b>   |
|---------------------------------------|---------------|---------------|
| Current income tax:                   |               |               |
| Current income taxes                  | ₩ 115,874,269 | ₩ 135,895,855 |
| Adjustments for prior years           | 3,964,526     | 2,850,500     |
| Sub Total: Current income tax         | 119,838,795   | 138,746,355   |
| Deferred income tax:                  |               |               |
| Changes of temporary differences      | 1,695,539     | 89,424,596    |
| Income tax charged directly to equity | 6,353,803     | 3,147,756     |
| Income tax expense                    | ₩ 127,888,137 | ₩ 231,318,707 |

(2) The actual income tax expense on the Group's profit before income tax, which differs from the amount that is computed using the tax calculated at the weighted average of annual corporate income tax rates rate applied to profits of consolidated entities, for the years ended December 31, 2018 and 2017 is as follows:

| <i>In thousands of Korean won</i>      | <b>2018</b>   | <b>2017</b>     |
|----------------------------------------|---------------|-----------------|
| Profit before income tax               | ₩ 288,333,127 | ₩ 1,065,852,886 |
| Income tax based on statutory tax rate | 69,776,617    | 257,936,398     |
| Adjustments:                           |               |                 |
| Permanent differences                  | (17,103,917)  | (6,619,966)     |
| Adjustments for prior years            | 3,964,526     | 2,850,500       |
| Tax credit                             | (3,925,824)   | (1,526,615)     |
| Effects of unrecognized deferred tax   | 70,921,989    | (19,665,493)    |
| Others                                 | 4,254,746     | (1,656,117)     |
| Sub total: Adjustments                 | 58,111,520    | (26,617,691)    |
| Income tax expense                     | ₩ 127,888,137 | ₩ 231,318,707   |

(3) Income tax credited(charged) directly to equity for the years ended December 31, 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i>                                                           | <b>2018</b> | <b>2017</b> |
|---------------------------------------------------------------------------------------------|-------------|-------------|
| Current income tax:                                                                         |             |             |
| Remeasurement of net defined benefit liabilities                                            | ₩ 751,310   | ₩ 225,137   |
| Deferred income tax:                                                                        |             |             |
| Gain on valuation of available-for-sale financial assets                                    | -           | (6,026,861) |
| Loss on valuation of fair value financial assets                                            | 12,403,002  | -           |
| Share of other comprehensive loss of associates and joint ventures                          | 648,058     | 815,170     |
| Loss(gain) on valuation of derivatives                                                      | 115,870     | (58,245)    |
| Currency translation adjustments                                                            | (4,352,428) | 13,323,357  |
| Remeasurement of net retirement benefit liabilities                                         | 5,311,612   | (3,954,465) |
| Share of remeasurements of net defined benefit liabilities of associates and joint ventures | 659,623     | (264,319)   |
| Other capital surplus                                                                       | (9,378,836) | (896,296)   |
| Other capital adjustments                                                                   | 195,592     | (15,722)    |
| Sub total: Deferred income tax                                                              | 5,602,493   | 2,922,619   |
| Total                                                                                       | ₩ 6,353,803 | ₩ 3,147,756 |

(4) Changes in deferred income tax for the years ended December 31, 2018 and 2017 are as follows:

*In thousands of Korean won*

|                                                                                             | 2018            |                |                            |             |                                   |
|---------------------------------------------------------------------------------------------|-----------------|----------------|----------------------------|-------------|-----------------------------------|
|                                                                                             | January 1, 2018 | Profit or loss | Other comprehensive income | Equity      | Changes in scope of consolidation |
| Allowance for doubtful accounts                                                             | ₩ 47,732,582    | (42,210,567)   | -                          | -           | -                                 |
| Loss on valuation of inventories                                                            | 4,297,539       | 2,413,982      | -                          | -           | -                                 |
| Gain (loss) on valuation of derivatives                                                     | 3,718,352       | (3,073,260)    | 115,870                    | -           | -                                 |
| Gain (loss) on valuation of FVOCI—financial assets                                          | (9,330,163)     | 15,019,256     | 12,403,002                 | -           | -                                 |
| Bonuses                                                                                     | 7,463,131       | (2,798,553)    | -                          | -           | -                                 |
| Depreciation                                                                                | (24,758,889)    | 546,454        | -                          | -           | -                                 |
| Defined benefit obligation                                                                  | 101,691,232     | (22,911,800)   | 5,311,612                  | -           | -                                 |
| Plan assets                                                                                 | (33,658,645)    | 1,787,754      | -                          | -           | -                                 |
| Revaluation reserve                                                                         | (25,896,100)    | 30,305         | -                          | -           | -                                 |
| Revaluation surplus                                                                         | (199,350,492)   | 2,184,916      | -                          | -           | -                                 |
| Share of remeasurements of net defined benefit liabilities of associates and joint ventures | (238,679,997)   | 27,112,065     | (3,044,747)                | (9,183,244) | 350,066                           |
| Others                                                                                      | 37,166,734      | 14,601,416     | -                          | -           | -                                 |
| Total                                                                                       | ₩ (329,604,716) | (7,298,032)    | 14,785,737                 | (9,183,244) | 350,066                           |

*In thousandsof Korean won*

|                                                                                             | 2017            |                |                            |           |                   |
|---------------------------------------------------------------------------------------------|-----------------|----------------|----------------------------|-----------|-------------------|
|                                                                                             | January 1, 2017 | Profit or loss | Other comprehensive income | Equity    | December 31, 2017 |
| Allowance for doubtful accounts                                                             | ₩ 47,249,230    | 483,352        | -                          | -         | ₩ 47,732,582      |
| Loss on valuation of inventories                                                            | 3,330,967       | 966,572        | -                          | -         | 4,297,539         |
| Gain (loss) on valuation of derivatives                                                     | 453,317         | 3,323,280      | (58,245)                   | -         | 3,718,352         |
| Available-for-sale financial assets                                                         | (6,422,163)     | 3,118,861      | (6,026,861)                | -         | (9,330,163)       |
| Bonuses                                                                                     | 7,723,902       | (260,771)      | -                          | -         | 7,463,131         |
| Depreciation                                                                                | (18,395,816)    | (6,363,073)    | -                          | -         | (24,758,889)      |
| Defined benefit obligation                                                                  | 100,382,583     | 5,263,114      | (3,954,465)                | -         | 101,691,232       |
| Plan assets                                                                                 | (10,932,785)    | (22,725,860)   | -                          | -         | (33,658,645)      |
| Revaluation reserve                                                                         | (25,911,573)    | 15,473         | -                          | -         | (25,896,100)      |
| Revaluation surplus                                                                         | (199,384,607)   | 34,115         | -                          | -         | (199,350,492)     |
| Share of remeasurements of net defined benefit liabilities of associates and joint ventures | (170,435,675)   | (81,206,512)   | 13,874,208                 | (912,018) | (238,679,997)     |
| Others                                                                                      | 32,162,500      | 5,004,234      | -                          | -         | 37,166,734        |
| Total                                                                                       | ₩ (240,180,120) | (92,347,215)   | 3,834,637                  | (912,018) | ₩ (329,604,716)   |

(5) Deductible (taxable) temporary differences not recognized as deferred income tax as of December 31, 2018 and 2017 is as follows:

| <i>In thousands of Korean won</i>                 | December 31, 2018 | December 31, 2017 |
|---------------------------------------------------|-------------------|-------------------|
| Investments in associates and joint ventures (*1) | ₩ 859,753,151     | ₩ 753,576,190     |
| Payment guarantee fee and others(*2)              | 11,874,782        | 78,601,901        |

(\*1) Temporary differences on investments in associates and joint ventures which are not likely to be reversed.

(\*2) Temporary differences of assets and liabilities recognized initially through transactions that do not impact accounting or taxable income and are not due to business combination.

### 37. EARNINGS PER SHARE:

(1) Basic earnings per common shares for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands won, expect for share data</i>       | 2018          | 2017          |
|------------------------------------------------------|---------------|---------------|
| Net income                                           | ₩ 160,444,990 | ₩ 834,534,179 |
| Net income attributable to owners of the Company     | 186,679,515   | 824,697,350   |
| Net income available to common shares                | 185,346,398   | 818,998,732   |
| Weighted average number of common shares outstanding | 163,110,394   | 163,110,394   |
| Basic earnings per common shares (In won)            | ₩ 1,136       | ₩ 5,021       |

(2) Basic earnings per preferred shares for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands won, expect for share data</i>          | 2018 (*)      | 2017 (*)      |
|---------------------------------------------------------|---------------|---------------|
| Net income                                              | ₩ 160,444,990 | ₩ 834,534,179 |
| Net income attributable to owners of the Company        | 186,679,515   | 824,697,350   |
| Net income available to preferred shares                | 1,333,117     | 5,698,618     |
| Weighted average number of preferred shares outstanding | 1,123,737     | 1,123,737     |
| Basic earnings per preferred shares (In won)            | ₩ 1,186       | ₩ 5,071       |

(\*) Preferred shares were issued under former commercial law of the Republic of Korea prior to amendments in 1997. These preferred shares hold the same priority as common shares in terms of dividends pay out and distribution of residual properties. Thus, earnings per share were calculated accordingly.

(3) Potential common shares consist of convertible bonds and bond with warrant issued by Hanwha Galleria Timeworld Co., Ltd.

Basic and diluted earnings per share for the years ended December 31, 2018 and 2017, are identical since there are no potentially dilutive common shares.

### 38. COMMITMENTS AND CONTINGENCIES:

(1) Credit limits provided by financial institutions as of December 31, 2018, are as follows:

| <i>In thousands of Korean won, In USD, In EUR, In CNY, In MYR,<br/>In CZK, In THB, In MXN</i> | Currency | Limit amounts |
|-----------------------------------------------------------------------------------------------|----------|---------------|
| Overdrafts                                                                                    | KRW      | 52,000,000    |
|                                                                                               | EUR      | 7,000,000     |
|                                                                                               | THB      | 30,000,000    |
| Usance                                                                                        | USD      | 97,840,000    |
| D/A, D/P, Local and foreign trade                                                             | USD      | 80,200,000    |
|                                                                                               | THB      | 70,000,000    |
| Others                                                                                        | KRW      | 2,375,679,500 |
|                                                                                               | USD      | 1,626,534,260 |
|                                                                                               | EUR      | 47,000,000    |
|                                                                                               | CNY      | 2,858,715,660 |
|                                                                                               | MYR      | 597,231,229   |
|                                                                                               | CZK      | 1,183,350,000 |
|                                                                                               | THB      | 90,000,000    |
|                                                                                               | MXN      | 98,283,000    |
| Total                                                                                         | KRW      | 2,427,679,500 |
|                                                                                               | USD      | 1,804,574,260 |
|                                                                                               | EUR      | 54,000,000    |
|                                                                                               | CNY      | 2,858,715,660 |
|                                                                                               | MYR      | 597,231,229   |
|                                                                                               | CZK      | 1,183,350,000 |
|                                                                                               | THB      | 190,000,000   |
|                                                                                               | MXN      | 98,283,000    |

- (2) The Group collateralized the following assets as collaterals in relation to borrowings as of December 31, 2018, are as follows:

| <i>In thousands of Korean won</i>       | <b>Collateral amount</b> | <b>Lender</b>                     |
|-----------------------------------------|--------------------------|-----------------------------------|
| Cash and cash equivalents               | ₩ 4,555,435              | Nonghyup Bank and others          |
| Trade receivables and other receivables | 125,299,963              | Korea Development Bank and others |
| Other financial assets                  | 267,076,745              | Shinhan Bank and others           |
| Inventories                             | 249,908,459              | Korea Development Bank and others |
| Property, plant and equipment           | 2,644,302,615            | Korea Development Bank and others |
| Intangible assets                       | 30,239,338               | KEB Hana Bank and others          |
| Subsidiary equity                       | 34,000,000               | Korea Development Bank and others |

(\*) Other than the collaterals listed above, the Group provided collaterals to related parties (Note 39).

- (3) Guarantees provided to others as of December 31, 2018, are as follows:

As of December 31, 2018, the Group provides payment guarantees totaling ₩23,769 million for loans taken out by employees from financial institutions.

As of December 31, 2018, the Group provides payment guarantees and collateral for related parties in addition to the above guarantees provided to others (Note 39).

- (4) The Group is provided with contract performance guarantee and others as of December 31, 2018.

| <i>In Thousands Korean won</i> | <b>Detail</b>                               | <b>Currency</b> | <b>Amount</b> |
|--------------------------------|---------------------------------------------|-----------------|---------------|
| <b>Guarantor</b>               |                                             |                 |               |
| Shinhan Bank                   | Guarantee for FRN bonds                     | USD             | 114,000,000   |
| Kookmin Bank                   | Guarantee for FRN bonds                     | USD             | 130,000,000   |
| Seoul Guarantee Insurance      | Implementation of land acquisition contract | KRW             | 79,772,104    |
|                                | Gwanggyo branch                             |                 |               |
| The Daegu Bank LTD             | Guarantee for bonds                         | USD             | 10,000,000    |
| KEB Hana Bank                  | Guarantee for foreign currency              | USD             | 73,931,264    |
| Woori Bank                     | Guarantee for foreign currency              | USD             | 20,000,000    |
| SC Bank                        | Guarantee for foreign currency              | USD             | 8,900,000     |

- (5) The Group is a plaintiff in 19 pending litigations involving an aggregate litigation amount of ₩110,018 million and is a defendant in 17 pending litigations involving an aggregate amount of ₩21,535 million as of December 31, 2018. The outcome of any of these proceedings cannot be reasonably estimated.

- (6) On July 11, 2005, the Group sold all of its ownership interests in POSCO ENERGY Co., Ltd. to POSCO. According to the stock

sale and purchase agreement, the Group shall indemnify Korea Independent Energy Co., Ltd. from any complaint filed by a third party regarding intake channels and drainage canals used by Korea Independent Energy Co., Ltd. to the extent of 25% of any related loss upon the termination of the electricity power agreement contracted between Korea Independent Energy Co., Ltd. and Korea Electric Power Corporation or until the cause of the claim is resolved. Management does not believe the ultimate resolution would have a material adverse effect on the financial condition of the Group.

- (7) On April 30, 2015, the Group acquired 27.62% of ownership interest in Hanwha General Chemical Co., Ltd. to strengthen

competitive advantage in the petrochemical industry and establish stable revenue growth through product diversification. The stock sale and purchase agreement states that the Group may make additional payments contingent upon performance of Hanwha Total Petrochemical Co., Ltd.

On the other hand, Samsung C&T Corporation and Samsung SDI are entitled to the right of first sale regarding their remaining ownership interests at the time of Hanwha General Chemical Co., Ltd.'s initial public offerings. If Hanwha General Chemical Co., Ltd.'s stock cannot be listed within six years (seven years if requested by the Group) from the end date of the transaction (April, 30, 2015), Samsung C&T Corporation and Samsung SDI have a put option and the Group has a call option in regard to the remaining ownership interests. If Samsung C&T Corporation and Samsung SDI sell their ownership interests, the Group has first priority in buying them. If the Group sells its ownership interest, Samsung C&T Corporation and Samsung SDI have a tag-along right, and the Group has a drag-along right.

- (8) As of December 31, 2018, the Group provided a guarantee of USD 69,258,138.59 in relation to the module supply agreement between Hanwha Q Cells America Inc. and NextEra.
- (9) As of December 31, 2018, the Group has a contractual arrangement to fund EUR 18,977,185 if the Group fails to deliver on its obligation to secure supplementary financing for Luxbon Solar S.A.
- (10) As of December 31, 2018, the Group has a supplementary funding arrangement with KDB Bank and others in connection with the Group's facility loans amounting to ₩218,800 million for the construction of a cell power plant in Jincheon and a module facility in Eumseong.
- (11) As of December 31, 2018, the Group provided payment guarantees of USD 597,600, USD 621,006, EUR 257,703 in relation to the equipment contracts between Hanwha Q CELLS Turkey and Sungrow Deutschland GmbH, Europower Enerji ve Otomasyon Tek.San Tic. A.S. Turkey and SMA Solar Technology AG, Germany.

### 39. RELATED PARTIES:

- (1) Details of the Group's related parties as of December 31, 2018, are as follows:

| Description            | Related parties                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------|
| Associates in domestic | YEOCHUN NCC Co., Ltd.<br>Hanwha General Chemical Co., Ltd.<br>Hanwha Hotels and Resort Co., Ltd. and others |
| Associates in overseas | International Polymers Company<br>Gulf Advanced Cables Insulation Company and others                        |
| Conglomerate (*):      | H-Solution Corporation<br>Hanwha System Corporation<br>HANWHA TOTAL PETROCHEMICALS Co., Ltd. and others     |

(\*) Although these companies are not applicable to related parties defined in K-IFRS 1024 Paragraph 9, a group of large-size affiliates designated by the Korea Fair Trade Commission is classified as related party according to the resolution by the Securities & Futures Commission in accordance with substantial relationship defined in K-IFRS 1024 Paragraph 10.

- (2) Transactions with related parties for the years ended December 31, 2018 and 2017, are as follows:

*In thousands of Korean won*

| Company name                               | 2018        |                          |               |                             |
|--------------------------------------------|-------------|--------------------------|---------------|-----------------------------|
|                                            | Sales       | Disposal of fixed assets | Purchase      | Acquisition of fixed assets |
| Parent Company: Hanwha Corporation (*1)    | 177,985,399 | -                        | 209,318,575   | 260,377                     |
| Associates                                 |             |                          |               |                             |
| Eagles Energy Co., Ltd                     | 9,091       | -                        | -             | -                           |
| Hanwha Savings Bank Co., Ltd.              | 324,196     | -                        | -             | -                           |
| Hanwha Station Development Co., Ltd.(*2)   | 43,292      | -                        | 1,048,002     | -                           |
| HANWHA Eagles Professional Baseball Club   | 25,786      | -                        | 1,021,285     | -                           |
| Hanwha General Chemical Co., Ltd.          | 6,249,300   | -                        | 27,691,169    | -                           |
| HANWHA INVESTMENT AND SECURITIES CO., LTD. | 965,913     | -                        | 982           | -                           |
| Hanwha Hotels and Resort Co., Ltd.         | 3,687,211   | 215,579                  | 15,914,729    | 17,853,699                  |
| Crystal Solar Inc.                         | 178,216     | -                        | -             | -                           |
| International Polymers Company(*3)         | 75,762      | -                        | 155,249,393   | -                           |
| Saudi Specialized Products Company         | 296,019     | -                        | -             | -                           |
| Joint ventures:                            |             |                          |               |                             |
| YEOCHUN NCC Co., Ltd.(*4)                  | 22,379,661  | -                        | 1,552,143,122 | -                           |
| Burdur Enerji A.S.                         | 44,015      | -                        | -             | -                           |
| Gulf Advanced Cables Insulation Company    | 368,171     | -                        | 34,394        | -                           |
| Conglomerate:                              |             |                          |               |                             |
| 174 PG Torreon, S. de R.L. de C.V.         | -           | -                        | 919,072       | -                           |
| 174 Power Global Corporation               | 4,063,213   | -                        | 168,209       | -                           |
| Dreamplus Production., Co. Ltd.            | 420         | -                        | -             | -                           |
| DATA ANALYTICS LAB Co., LTD                | 687         | -                        | -             | -                           |
| LAKEPARK-H Co., Ltd.                       | 33,883      | -                        | 5,000,000     | -                           |

In thousands of Korean won

| Company name                                                    | 2018        |                          |             |                             |
|-----------------------------------------------------------------|-------------|--------------------------|-------------|-----------------------------|
|                                                                 | Sales       | Disposal of fixed assets | Purchase    | Acquisition of fixed assets |
| 101 Global Co., Ltd.                                            | 1,050       | -                        | 520,397     | -                           |
| SIT CO., LTD.                                                   | 36,056      | -                        | 30,540      | -                           |
| SIT Tech CO., Ltd.                                              | 2,730       | -                        | -           | -                           |
| Yeosu Sea World Corporation                                     | 126         | -                        | 146,092     | -                           |
| Ilsan Sea World Corporation                                     | 154         | -                        | 73,184      | -                           |
| Gtention                                                        | 1,820       | -                        | -           | -                           |
| Taekyung Chemical Co., Ltd.(*5)                                 | 40,716,594  | -                        | -           | -                           |
| HANWHA 63 CITY CORPORATION                                      | 241,018     | -                        | 9,292,102   | -                           |
| Hanwha Engineering & Construction Corporation                   | 20,779,631  | -                        | 170,147,606 | -                           |
| Hanwha Financial Asset Co.Ltd                                   | 2,310       | -                        | -           | -                           |
| Hanwha Estate Co., Ltd.                                         | 392,791     | -                        | 24,405,056  | -                           |
| Agricultural Corporation Company                                | 1,181       | -                        | -           | -                           |
| Green Tomorrow Co., Ltd.                                        |             |                          |             |                             |
| DreamPlus Global seed association of investment                 | 800         | -                        | -           | -                           |
| H-Solution Corporation                                          | 2,177       | -                        | -           | -                           |
| Eco E&O corporation                                             | 18,980      | -                        | 980         | -                           |
| Jeju Ocean Science Museum Corporation                           | -           | -                        | 197,132     | -                           |
| Foodist Food Culture(Shanghai) Co., Ltd.                        | -           | -                        | 3,769,206   | -                           |
| Hanwha Defense Systems Corp.                                    | 1,538,678   | -                        | -           | -                           |
| Hanwha Life Asset Co., Ltd.                                     | 13,416      | -                        | -           | -                           |
| Hanwha LIFE INSURANCE CO., LTD (*6)                             | 6,183,038   | -                        | 19,658,978  | -                           |
| Hanwha General Insurance Co., Ltd.                              | 4,288,043   | -                        | 10,455,740  | -                           |
| Hanwha Insurance Investigation Co., Ltd.                        | 51,262      | -                        | -           | -                           |
| Hanwha System Corporation                                       | 1,636,279   | -                        | 18,208,524  | -                           |
| Hanwha Energy Corporation                                       | 761,679     | 313,663                  | 164,540,443 | -                           |
| HANWHA S&C CO., LTD.(*7)                                        | 68,051      | -                        | 24,434,147  | -                           |
| HANWHA AEROSPACE CO., LTD (formerly, HANWHA TECHWIN CO., LTD.)  | 1,878,791   | -                        | -           | -                           |
| Hanwha Asset Management Co., Ltd.                               | 80,891      | -                        | -           | -                           |
| Hanwha Precision Machinery Co.,Ltd.                             | 303,869     | -                        | -           | -                           |
| Hanwha Land Systems co., Ltd.                                   | 1,154,029   | -                        | -           | -                           |
| HANWHA Q CELLS Korea Corp.(*8)                                  | 198,588,462 | -                        | 699,294,315 | -                           |
| HANWHA TECHWIN CO., LTD.                                        | 255,308     | -                        | 8,920       | -                           |
| HANWHA TOTAL PETROCHEMICAL Co., Ltd.                            | 6,063,988   | -                        | 63,400,363  | -                           |
| Hanwha Power Systems Co., Ltd.                                  | 171,265     | -                        | 545,745     | -                           |
| Haenara Solar Co., Ltd.                                         | 1,288,128   | -                        | -           | -                           |
| HUMANPOWER Co., Ltd.(*9)                                        | -           | -                        | 309,592     | -                           |
| Alfabeta En. San. ve Tic. A.S.                                  | 22,783      | -                        | -           | -                           |
| Altinorda Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.  | 22,004      | -                        | -           | -                           |
| Bahcesaray Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti. | 22,356      | -                        | -           | -                           |
| BT1 Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.        | 89,417      | -                        | -           | -                           |
| Cento En. San. ve Tic. Ltd. Sti.                                | 30,475      | -                        | -           | -                           |
| Gunesim En. San. ve Tic. Ltd. Sti.                              | 22,783      | -                        | -           | -                           |
| HANWHA AERO ENGINES.,LTD                                        | -           | -                        | 24,214      | -                           |
| Hanwha Energy Corporation Japan                                 | 130,000     | -                        | -           | -                           |
| Hanwha Energy Corporation Singapore Pte. Ltd.                   | 173,918     | -                        | -           | -                           |
| Hanwha Europe GmbH                                              | 96,327,671  | -                        | 877,802     | -                           |
| Hanwha General Chemical AU Pty Ltd                              | 1,618       | -                        | -           | -                           |
| Hanwha General Chemical USA Corp.                               | 874,840     | -                        | -           | -                           |
| Hanwha Hong Kong Co., Ltd.                                      | 168,043     | -                        | -           | -                           |
| Hanwha Q CELLS Americas Holdings. Corp.                         | 36,892,060  | -                        | 30,833,599  | -                           |
| Hanwha Q CELLS Japan Co.,Ltd.                                   | 245,318,465 | -                        | 135,881,725 | -                           |
| Hanwha Q CELLS Solar Technology Australia Pty Ltd.              | 118,848     | -                        | -           | -                           |
| Hanwha Solar Power USA Corp.                                    | 2,706       | -                        | -           | -                           |
| Hanwha Techwin America                                          | 262         | -                        | -           | -                           |
| Hanwha Techwin Automation Americas, Inc.                        | 94,018      | -                        | 24,537      | -                           |
| HQC Rock River Solar Power Generation Station LLC               | 3,086       | -                        | -           | -                           |
| Lamda En. San. ve Tic. A.S.                                     | 19,080      | -                        | -           | -                           |
| Meca Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.       | 22,004      | -                        | -           | -                           |
| NHS Agri-Service Pty Ltd                                        | 2,427       | -                        | -           | -                           |

In thousands of Korean won

| Company name                                 | 2018        |                          |               |                             |
|----------------------------------------------|-------------|--------------------------|---------------|-----------------------------|
|                                              | Sales       | Disposal of fixed assets | Purchase      | Acquisition of fixed assets |
| Primo Gunes Enerjisi A.S.                    | 41,079      | -                        | -             | -                           |
| Raggio En. San. ve Tic. Ltd. Sti.            | 19,080      | -                        | -             | -                           |
| Razin GES Elektrik Sanayi ve Ticaret A.S.    | 45,215      | -                        | -             | -                           |
| Razin Gunes Enerjisi Sanayi ve Ticaret A.S.  | 42,364      | -                        | -             | -                           |
| Razin Elektrik Uretim Sanayi ve Ticaret A.S. | 84,694      | -                        | -             | -                           |
| Razin En. San. ve Tic. A.S.                  | 56,606      | -                        | -             | -                           |
| S&P World Networks DMCC                      | 681,371     | -                        | 279,614       | -                           |
| Sol Caltivante III S.A.                      | 28,833      | -                        | -             | -                           |
| Tessa En. San. ve Tic. Ltd. Sti.             | 30,475      | -                        | -             | -                           |
| Vizi En. San. ve Tic. Ltd. Sti.              | 22,783      | -                        | -             | -                           |
| Total                                        | 884,664,194 | 529,242                  | 3,345,869,485 | 18,114,076                  |

(\*1) The Group paid dividends of ₩20,841 million to Hanwha Corporation for the years ended December 31, 2018.

(\*2) The Group received dividends of ₩475 million from Hanwha Station Development Co., Ltd. for the years ended December 31, 2018.

(\*3) The Group received dividends of ₩11,802 million from International Polymers Company for the years ended December 31, 2018.

(\*4) The Group received dividends of ₩430,000 million from YEOCHUN NCC Co., Ltd. for the years ended December 31, 2018.

(\*5) Taekyung Chemical Co., Ltd. was excluded from the scope of related parties as of December 13, and transaction details are from January 1 to December 13.

(\*6) The Group received dividends of ₩2,129 million from Hanwha LIFE INSURANCE CO., LTD. for the years ended December 31, 2018.

(\*7) Since HANWHA S&C CO., LTD. merged into Hanwha System Corporation on August 1, the transaction details are from January 1 to July 31.

(\*8) Since HANWHA Q CELLS Korea Corp. merged into Hanwha Q CELLS & Advanced Materials Corporation on August 1, the transaction details are from January 1 to October 31.

(\*9) HUMANPOWER Co., Ltd. was excluded from the scope of related parties as of June 11, and transaction details are from January 1 to June 11.

In thousands of Korean won

| Company name                               | 2017         |                          |               |                             |
|--------------------------------------------|--------------|--------------------------|---------------|-----------------------------|
|                                            | Sales        | Disposal of fixed assets | Purchase      | Acquisition of fixed assets |
| Parent company:                            |              |                          |               |                             |
| Hanwha Corporation(*1)                     | ₩166,083,568 | ₩761,825                 | ₩100,801,212  | ₩66,867                     |
| Associates:                                |              |                          |               |                             |
| Hanwha Savings Bank Co., Ltd.              | 76,189       | -                        | -             | -                           |
| Hanwha Station Development Co., Ltd.(*2)   | 13,379       | -                        | 990,028       | -                           |
| HANWHA Eagles Professional Baseball Club   | 27,044       | -                        | 1,547,243     | -                           |
| Hanwha General Chemical Co., Ltd.          | 4,563,512    | -                        | 21,742,916    | -                           |
| HANWHA INVESTMENT AND SECURITIES CO., LTD. | 841,185      | -                        | 703           | -                           |
| Hanwha Hotels and Resort Co., Ltd.         | 4,365,765    | -                        | 16,015,516    | -                           |
| Crystal Solar Inc.                         | 205,005      | -                        | -             | -                           |
| International Polymers Company             | 312,861      | -                        | 162,275,397   | -                           |
| Renew Akshay Urja Private Limited          | 53,523       | -                        | -             | -                           |
| Saudi Specialized Products Company         | 241,296      | -                        | -             | -                           |
| Joint ventures:                            |              |                          |               |                             |
| YEOCHUN NCC Co., Ltd.(*3)                  | 16,486,020   | -                        | 1,312,885,574 | -                           |
| Burdur Enerji A.S.                         | 57,119       | -                        | -             | -                           |
| Gulf Advanced Cables Insulation Company    | 383,356      | -                        | -             | -                           |
| Conglomerate:                              |              |                          |               |                             |
| 174 Power Global Corporation               | 240,313      | -                        | 16,548        | -                           |
| Dreamplus Production., Co. Ltd.            | 226          | -                        | -             | -                           |
| 101 Global Co., Ltd.                       | 4,999        | -                        | 831,664       | -                           |
| SIT CO., LTD.                              | 39,445       | -                        | -             | -                           |
| Yeosu Sea World Corporation                | 78           | -                        | 138,790       | -                           |

In thousands of Korean won

| Company name                                                         | 2017        |                                |             |                                |
|----------------------------------------------------------------------|-------------|--------------------------------|-------------|--------------------------------|
|                                                                      | Sales       | Disposal<br>of fixed<br>assets | Purchase    | Acquisition<br>of fixed assets |
| Ilsan Seaworld, Co., Ltd.                                            | 151         | -                              | 92,808      | -                              |
| Gtention                                                             | 1,712       | -                              | -           | -                              |
| Kyongju Aerospace Electrical Systems<br>Co., Ltd                     | 4,019       | -                              | -           | -                              |
| Taekyung Chemical Co., Ltd.                                          | 57,806,130  | -                              | -           | -                              |
| HANWHA 63 CITY CORPORATION                                           | 232,169     | -                              | 8,606,786   | -                              |
| Hanwha Engineering & Construction<br>Corporation                     | 2,650,188   | 1,759,281                      | 90,078,059  | -                              |
| Hanwha Estate Co., Ltd.                                              | 470,772     | -                              | 23,647,066  | -                              |
| Agricultural Corporation Company<br>Green Tomorrow Co., Ltd.         | 2,002       | -                              | -           | -                              |
| DreamPlus Global seed association<br>of investment                   | 4,800       | -                              | -           | -                              |
| H-Solution Corporation<br>(formerly HANWHA S&C CO., LTD.)            | 146,080     | -                              | 30,439,704  | -                              |
| Eco E&O corporation                                                  | 16,380      | -                              | 78,785      | -                              |
| Jeju Ocean Science Museum Corporation                                | -           | -                              | 224,093     | -                              |
| Foodist Food Culture(Shanghai) Co., Ltd.                             | -           | -                              | 4,688,999   | -                              |
| Hanwha Defense Systems Corp.                                         | 716,277     | 2,483,284                      | -           | -                              |
| Hanwha Life Asset Co., Ltd.                                          | 11,850      | -                              | -           | -                              |
| Hanwha LIFE INSURANCE CO., LTD.(*4)                                  | 4,357,419   | -                              | 18,742,559  | 650,000                        |
| Hanwha General Insurance Co., Ltd.                                   | 2,656,347   | -                              | 10,456,759  | -                              |
| Hanwha Insurance Investigation Co., Ltd.                             | 104,283     | -                              | -           | -                              |
| Hanwha System Corporation                                            | 1,146,327   | -                              | -           | -                              |
| Hanwha Energy Corporation                                            | 785,594     | -                              | 156,101,934 | -                              |
| HANWHA S&C Co., Ltd.                                                 | 273,900     | -                              | 10,833,595  | -                              |
| Hanwha Investment Corp.                                              | 6,088       | -                              | -           | -                              |
| Hanwha Asset Management Co., Ltd.                                    | 83,627      | -                              | -           | 540,000                        |
| Hanwha Precision Machinery Co., Ltd.                                 | 200,598     | -                              | -           | -                              |
| Hanwha Land Systems                                                  | 503,283     | -                              | -           | -                              |
| HANWHA Q CELLS Korea Corp.                                           | 259,951,471 | 20,103,539-                    | 589,604,563 | -                              |
| HANWHA AEROSPACE CO., LTD<br>(formerly, HANWHA TECHWIN CO.,<br>LTD.) | 3,125,463   | -                              | 654,923     | -                              |
| HANWHA TOTAL PETROCHEMICAL<br>Co., Ltd.                              | 6,008,427   | -                              | 48,218,829  | -                              |
| Hanwha Power System Co. Ltd.                                         | 112,512     | -                              | 122,841     | -                              |
| HUMANPOWER Co., Ltd.                                                 | -           | -                              | 1,388,987   | -                              |
| Acropark Golf Corp.                                                  | -           | -                              | -           | 83,247                         |
| Altinorda Enerji IC ve Dis Ticaret Sanayi ve<br>Ticaret Ltd. Sti.    | 22,628      | -                              | -           | -                              |
| Bahcesaray Enerji IC ve Dis Ticaret Sanayi ve<br>Ticaret Ltd. Sti.   | 22,992      | -                              | -           | -                              |
| Blue Albatross FZE                                                   | -           | -                              | 6,254       | -                              |
| BT1 Enerji IC ve Dis Ticaret Sanayi ve<br>Ticaret<br>Ltd. Sti.       | 91,953      | -                              | -           | -                              |
| Hanwha Europe GmbH                                                   | 90,607,795  | -                              | 1,410,362   | -                              |
| Hanwha Q CELLS Americas Holdings. Corp.                              | 124,324,254 | -                              | 1,031,414   | -                              |
| Hanwha Q CELLS Japan Co., Ltd.                                       | 208,585,638 | -                              | 69,996,536  | -                              |
| Hanwha Techwin Automation Americas, Inc.                             | 5,078       | -                              | -           | -                              |
| HQC Rock River Solar Power Generation<br>Station LLC                 | 15,071      | -                              | -           | -                              |
| Meca Enerji IC ve Dis Ticaret Sanayi ve<br>Ticaret Ltd. Sti.         | 22,628      | -                              | -           | -                              |
| Primo Gunes Enerjisi A.S.                                            | 369,253     | -                              | -           | -                              |
| Razin Elektrik Uretim Sanayi ve Ticaret A.S.                         | 115,364     | -                              | -           | -                              |
| Razin En. San. ve Tic. A.S.                                          | 67,206      | -                              | -           | -                              |
| Razin GES Elektrik Sanayi ve Ticaret A.S.                            | 51,709      | -                              | -           | -                              |
| Razin Gunes Enerjisi Sanayi ve Ticaret A.S.                          | 51,301      | -                              | -           | -                              |
| S&P World Networks DMCC                                              | 896,767     | -                              | -           | -                              |
| TRI ENERGY GLOBAL PTE. LTD.                                          | 19,224,900  | -                              | -           | -                              |

In thousands of Korean won

| Company name | 2017         |                          |                |                             |
|--------------|--------------|--------------------------|----------------|-----------------------------|
|              | Sales        | Disposal of fixed assets | Purchase       | Acquisition of fixed assets |
|              | ₩979,847,289 | ₩25,107,929              | ₩2,683,671,447 | ₩1,340,114                  |

(\*1) The Group paid dividends of ₩20,841 million to Hanwha Corporation for the year ended December 31, 2017.

(\*2) The Group received dividends of ₩3,165 million from Hanwha Station Development Co., Ltd. for the year ended December 31, 2017.

(\*3) The Group received dividends of ₩200,000 million from YEOCHUN NCC Co., Ltd. for the year ended December 31, 2017.

(\*4) The Group received dividends of ₩1,216 million from Hanwha LIFE INSURANCE CO., LTD. for the year ended December 31, 2017.

(3) Outstanding receivables and payables from transactions with related parties as of December 31, 2018, and 2017, are as follows:

In thousands of Korean won

| Company name                                            | 2018              |            |                   |                |                |
|---------------------------------------------------------|-------------------|------------|-------------------|----------------|----------------|
|                                                         | Receivables       |            |                   | Payables       |                |
|                                                         | Trade receivables | Loans      | Other receivables | Trade payables | Other payables |
| Parent Company: Hanwha Corporation                      | 15,565,991        | -          | 1,302,982         | 45,069,998     | 12,100,683     |
| Associates:                                             |                   |            |                   |                |                |
| HANWHA Eagles Professional Baseball Club                | 32,560            | -          | 297,110           | -              | -              |
| Hanwha Savings Bank Co., Ltd.                           | -                 | -          | 17,112,079        | -              | -              |
| Hanwha Station Development Co., Ltd.                    | 280,652           | -          | 1,120,000         | -              | 320,289        |
| Hanwha General Chemical Co., Ltd.                       | 1,695,633         | -          | 60,463            | 2,712,942      | 170,583        |
| HANWHA INVESTMENT AND SECURITIES CO., LTD.              | 27,618            | -          | -                 | -              | 1,162,068      |
| Hanwha Hotels and Resort Co., Ltd.                      | 763,821           | -          | 41,775,566        | 1,476,780      | 1,048,319      |
| Crystal Solar Inc.(*1)                                  | -                 | 2,055,250  | 559,050           | -              | -              |
| Enfinity Philippines Renewable Resources Fourth, Inc.   | -                 | 12,510,332 | -                 | -              | -              |
| HANWHA KALYON GUNES TEKNOLOJILERI URETIM ANONIM SIRKETI | 4,155             | -          | -                 | -              | -              |
| International Polymers Company                          | -                 | -          | 1,695,375         | 29,673,971     | -              |
| Luxbon Solar S.A.                                       | -                 | 8,583,075  | -                 | -              | -              |
| Saudi Specialized Products Company                      | -                 | 15,838,922 | 196,372           | -              | -              |
| Joint Ventures                                          |                   |            |                   |                |                |
| YEOCHUN NCC Co., Ltd.                                   | 2,332,310         | -          | 127,532           | 188,503,674    | 34,753,304     |
| Burdur Enerji A.S.                                      | 169,392           | -          | -                 | -              | -              |
| Gulf Advanced Cables Insulation Company                 | -                 | 15,733,393 | 632,000           | -              | -              |
| Conglomerate:                                           |                   |            |                   |                |                |
| 174 PG Torreon, S. de R.L. de C.V.                      | 8,807,307         | -          | -                 | 911,289        | -              |
| 174 Power Global Corporation                            | 45,091            | -          | 1,491             | -              | -              |
| 101 Global Co., Ltd.                                    | -                 | -          | -                 | 147,480        | 5,742          |
| Yeosu Sea World Corporation                             | -                 | -          | -                 | -              | 13,067         |
| Ilsan Seaworld, Co., Ltd.                               | -                 | -          | -                 | -              | 7,485          |
| Hanwha Engineering & Construction Corporation           | 18,262,564        | -          | 393,600           | 15,240,370     | 13,701,082     |
| Hanwha Estate Co., Ltd.                                 | 29,602            | -          | -                 | 22,770         | 2,397,445      |
| HANWHA 63 CITY CORPORATION                              | 2,580             | -          | -                 | 86             | 624,665        |
| Eco E&O corporation                                     | 220               | -          | -                 | -              | -              |
| Jeju Ocean Science Museum Corporation                   | -                 | -          | -                 | -              | 12,354         |
| Foodist Food Culture(Shanghai) Co., Ltd.                | -                 | -          | -                 | -              | 36,979         |

In thousands of Korean won

| Company name                                                       | 2018              |            |                   |                |                |
|--------------------------------------------------------------------|-------------------|------------|-------------------|----------------|----------------|
|                                                                    | Receivables       |            |                   | Payables       |                |
|                                                                    | Trade receivables | Loans      | Other receivables | Trade payables | Other payables |
| Hanwha Defense Systems Corp.                                       | 356,840           | -          | -                 | -              | -              |
| Hanwha Life Asset Co., Ltd.                                        | 537               | -          | -                 | -              | -              |
| Hanwha LIFE INSURANCE CO., LTD.                                    | 628,283           | -          | 108,175,733       | 117,822        | 36,158         |
| Hanwha General Insurance Co., Ltd.                                 | 149,557           | -          | 285,796           | -              | 444,160        |
| Hanwha System Corporation                                          | 1,987,157         | -          | -                 | 2,740,822      | 5,643,092      |
| Hanwha Energy Corporation                                          | 50,198            | -          | 4,400             | 12,024,496     | 418,403        |
| HANWHA AEROSPACE CO., LTD.<br>(formerly, HANWHA TECHWIN CO., LTD.) | 226,716           | -          | -                 | -              | -              |
| Hanwha Asset Management Co., Ltd.                                  | 1,881             | -          | -                 | -              | -              |
| Hanwha Precision Machinery Co., Ltd.                               | 53,515            | -          | -                 | 4,611,072      | -              |
| Hanwha Land Systems                                                | 293,813           | -          | -                 | -              | -              |
| HANWHA TECHWIN CO., LTD.                                           | 1,100             | -          | -                 | -              | -              |
| HANWHA TOTAL PETROCHEMICAL Co., Ltd.                               | 1,444,400         | -          | 34,840            | 4,805,265      | 1,058          |
| Hanwha Power System Co. Ltd.                                       | 5,280             | -          | -                 | 216,797        | 110,085        |
| Haenara Solar Co., Ltd.                                            | 1,416,941         | -          | -                 | -              | -              |
| Hanwha Canada Development Inc.                                     | 42,576            | -          | -                 | -              | -              |
| Hanwha Energy Corporation Singapore Pte. Ltd.                      | 172,834           | -          | -                 | -              | -              |
| Hanwha Europe GmbH                                                 | 16,415,513        | -          | -                 | -              | 52,097         |
| Hanwha General Chemical USA Corp.                                  | -                 | -          | 304,290           | -              | -              |
| Hanwha Q CELLS Japan Co., Ltd.                                     | 48,208,405        | -          | 86,853            | 1,811,657      | 2,037,171      |
| Hanwha Techwin Automation Americas, Inc.                           | -                 | 2,244,551  | -                 | -              | -              |
| HQC Tatanka Wi Solar Power Generation Station, LLC                 | 1,315,866         | -          | -                 | -              | -              |
| NHS Agri-Service Pty Ltd                                           | -                 | -          | 2,600             | -              | -              |
| Sol Caltivante II S.A.                                             | 114,528           | -          | -                 | -              | -              |
| Sol Caltivante III S.A.                                            | 242,758           | -          | -                 | -              | -              |
| Sol Caltivante IV S.A.                                             | 71,548            | -          | -                 | -              | -              |
| Sol Caltivante VI S.A.                                             | 171,663           | -          | -                 | -              | -              |
| Total                                                              | 121,391,405       | 56,965,523 | 174,168,132       | 310,087,291    | 75,096,289     |

(\*1) The Group recognized allowance for doubtful accounts for loans and others of Crystal Solar Inc., as of December 31, 2018.

In thousands of Korean won

|                                            | December 31, 2017 |            |                   |                |                |
|--------------------------------------------|-------------------|------------|-------------------|----------------|----------------|
|                                            | Receivables       |            |                   | Payables       |                |
|                                            | Trade receivables | Loans      | Other receivables | Trade payables | Other payables |
| Parent company:                            |                   |            |                   |                |                |
| Hanwha Corporation                         | ₩13,711,046       | ₩ -        | ₩ 2,940,386       | ₩30,263,248    | ₩7,712,776     |
| Associates:                                |                   |            |                   |                |                |
| Hanwha Savings Bank Co., Ltd.              | -                 | -          | 2,002,466         | -              | -              |
| Hanwha Station Development Co., Ltd.       | 268,935           | -          | 1,120,000         | -              | 303,344        |
| HANWHA Eagles Professional Baseball Club   | 42,636            | -          | 359,601           | -              | 60             |
| Hanwha General Chemical Co., Ltd.          | 1,051,586         | -          | 153,700           | 2,474,524      | 224,926        |
| HANWHA INVESTMENT AND SECURITIES CO., LTD. | 26,408            | -          | 105,327           | -              | 1,162,166      |
| Hanwha Hotels and Resort Co., Ltd.         | 710,300           | -          | 58,256,145        | 197,407        | 1,171,167      |
| Crystal Solar Inc.                         | -                 | 1,802,184  | 535,700           | -              | -              |
| International Polymers Company             | -                 | 9,487,020  | 1,360,777         | 32,795,585     | -              |
| Saudi Specialized Products                 | -                 | 10,417,693 | 249,465           | -              | -              |

In thousands of Korean won

| Company                                          | December 31, 2017    |            |                      |                   |                   |
|--------------------------------------------------|----------------------|------------|----------------------|-------------------|-------------------|
|                                                  | Receivables          |            |                      | Payables          |                   |
|                                                  | Trade<br>receivables | Loans      | Other<br>receivables | Trade<br>payables | Other<br>payables |
| Joint ventures:                                  |                      |            |                      |                   |                   |
| YEOCHUN NCC Co., Ltd.                            | 3,229,271            | -          | 195,856              | 308,444,979       | 25,597,951        |
| Burdur Enerji A.S.                               | 119,181              | -          | -                    | -                 | -                 |
| Gulf Advanced Cables<br>Insulation Company       | -                    | 14,775,028 | 469,588              | -                 | -                 |
| Conglomerate:                                    |                      |            |                      |                   |                   |
| 174 Power Global<br>Corporation                  | -                    | -          | 1,268                | -                 | -                 |
| 101 Global Co., Ltd.                             | -                    | -          | -                    | 224,086           | 11,297            |
| SIT CO., LTD.                                    | 2,383                | -          | -                    | -                 | -                 |
| Yeosu Sea World<br>Corporation                   | -                    | -          | -                    | -                 | 12,347            |
| Ilsan Seaworld, Co., Ltd.                        | -                    | -          | -                    | -                 | 8,832             |
| Taekyung Chemical<br>Co., Ltd.                   | 1,987,702            | -          | -                    | -                 | -                 |
| HANWHA 63 CITY<br>CORPORATION                    | 318                  | -          | -                    | -                 | 778,498           |
| Hanwha Engineering &<br>Construction Corporation | 135,835              | -          | 452,426              | 16,690,296        | 334,573           |
| Hanwha Estate Co., Ltd.                          | 83,669               | -          | -                    | -                 | 2,262,302         |
| Dreamplus Production.,<br>Co. Ltd.               | 440                  | -          | -                    | -                 | -                 |
| H-Solution Corporation                           | 323                  | -          | 29,706               | 1,102,530         | 6,014,172         |

In thousands of Korean won

|                                                                          | December 31, 2017      |       |                      |                     |                   |
|--------------------------------------------------------------------------|------------------------|-------|----------------------|---------------------|-------------------|
|                                                                          | Receivables            |       |                      | Payables            |                   |
|                                                                          | Account<br>receivables | Loans | Other<br>receivables | Account<br>payables | Other<br>payables |
| Conglomerate:                                                            |                        |       |                      |                     |                   |
| Jeju Ocean Science<br>Museum Corporation                                 | ₩ -                    | ₩ -   | ₩ -                  | ₩ -                 | ₩ 18,230          |
| Foodist Food<br>Culture(Shanghai)<br>Co., Ltd.                           | -                      | -     | -                    | 21,766              | 47,747            |
| Hanwha Defense<br>Systems Corp.                                          | 174,136                | -     | 34,378               | -                   | -                 |
| Hanwha Life Asset Co.,<br>Ltd.                                           | 499                    | -     | -                    | -                   | -                 |
| Hanwha LIFE<br>INSURANCE<br>CO., LTD.                                    | 152,827                | -     | 115,115,712          | -                   | 36,182            |
| Hanwha General<br>Insurance Co., Ltd.                                    | 122,909                | -     | 616,948              | -                   | 464,727           |
| Hanwha System<br>Corporation                                             | 58,687                 | -     | -                    | -                   | -                 |
| Hanwha Energy<br>Corporation                                             | 36,145                 | -     | 28,278               | 15,503,754          | -                 |
| HANWHA AEROSPACE<br>CO., LTD.<br>(formerly, HANWHA<br>TECHWIN CO., LTD.) | 87,985                 | -     | 53,243               | -                   | -                 |
| Hanwha Investment Corp.                                                  | 71                     | -     | -                    | -                   | -                 |
| Hanwha Asset<br>Management<br>Co., Ltd.                                  | 536                    | -     | -                    | -                   | -                 |
| Hanwha Precision<br>Machinery Co., Ltd.                                  | 18,072                 | -     | -                    | -                   | -                 |
| Hanwha Land Systems co.,<br>Ltd.                                         | 80,940                 | -     | -                    | -                   | -                 |
| HANWHA Q CELLS<br>Korea Corp.                                            | 66,669,158             | -     | 5,063,723            | 189,058,930         | -                 |
| HANWHA TOTAL                                                             | 1,017,100              | -     | -                    | 4,464,635           | -                 |

In thousands of Korean won

|                                                    | December 31, 2017    |                     |                      |                      |                     |
|----------------------------------------------------|----------------------|---------------------|----------------------|----------------------|---------------------|
|                                                    | Receivables          |                     | Payables             |                      |                     |
|                                                    | Account receivables  | Loans               | Other receivables    | Account payables     | Other payables      |
| PETROCHEMICAL Co., Ltd.                            |                      |                     |                      |                      |                     |
| Hanwha Power Systems Co., Ltd.                     | 95,658               | -                   | -                    | 92,400               | 10,120              |
| HUMANPOWER Co., Ltd.                               | -                    | -                   | -                    | -                    | 466,853             |
| Hanwha Europe GmbH                                 | 17,798,556           | -                   | -                    | 6,663                | 24,101              |
| Hanwha Q CELLS Americas Holdings. Corp.            | 79,900,670           | -                   | 3,754                | -                    | 140,294             |
| Hanwha Q CELLS Japan Co., Ltd.                     | 34,437,426           | -                   | 8,195,632            | 2,424,382            | 357,701             |
| Hanwha Techwin Automation Americas, Inc.           | -                    | 2,149,288           | -                    | -                    | -                   |
| HQC Rock River Solar Power Generation Station LLC. | -                    | -                   | 923                  | -                    | -                   |
| Primo Gunes Enerjisi A.S.                          | -                    | 3,831,253           | -                    | -                    | -                   |
|                                                    | <u>₩ 222,021,408</u> | <u>₩ 42,462,466</u> | <u>₩ 197,345,002</u> | <u>₩ 603,765,185</u> | <u>₩ 47,160,366</u> |

In addition, there is no allowance for doubtful accounts for related-party receivables recognized by the Company as of December 31, 2017.

(4) Loan transactions with related parties for the years ended December 31, 2018 and 2017, are as follows:

In thousands of Korean won

|                                                       |                   | 2018      |              |                                   |             |                |
|-------------------------------------------------------|-------------------|-----------|--------------|-----------------------------------|-------------|----------------|
| Company                                               | Beginning balance | Increase  | Decrease     | Changes in scope of consolidation | Others(*1)  | Ending balance |
| Associates                                            |                   |           |              |                                   |             |                |
| Crystal Solar Inc.                                    | 1,802,184         | 1,658,250 | (1,599,750)  | -                                 | 194,566     | 2,055,250      |
| Enfinity Philippines Renewable Resources Fourth, Inc. | -                 | -         | -            | 12,510,332                        | -           | 12,510,332     |
| International Polymers Company                        | 9,487,020         | -         | (8,259,950)  | -                                 | (1,227,070) | -              |
| Luxbon Solar S.A.(*2)                                 | -                 | -         | -            | 8,583,075                         | -           | 8,583,075      |
| Saudi Specialized Products Company                    | 10,417,693        | 4,680,840 | -            | -                                 | 740,389     | 15,838,922     |
| Joint Ventures                                        |                   |           |              |                                   |             |                |
| Gulf Advanced Cables Insulation Company               | 14,775,028        | -         | -            | -                                 | 958,365     | 15,733,393     |
| Conglomerate                                          |                   |           |              |                                   |             |                |
| Hanwha Techwin Automation Americas, Inc.              | 2,149,288         | -         | -            | -                                 | 95,263      | 2,244,551      |
| Primo Gunes Enerjisi A.S.                             | 3,831,253         | -         | (2,447,140)  | -                                 | (1,384,113) | -              |
|                                                       | 42,462,466        | 6,339,090 | (12,306,840) | 21,093,407                        | (622,600)   | 56,965,523     |

(\*1) Includes accrued revenues related to loans.

(\*2) This is a loan that transferred to the scope of consolidation since HANWHA Q CELLS Korea Corp. merged into Hanwha Q CELLS & Advanced Materials Corporation for the years ended December 31, 2018.

In thousands of Korean won

| In thousands of Korean won |                                         | 2017              |           |             |             |                |  |
|----------------------------|-----------------------------------------|-------------------|-----------|-------------|-------------|----------------|--|
|                            |                                         | Beginning balance | Increase  | Decrease    | Others(*)   | Ending balance |  |
|                            | Company                                 |                   |           |             |             |                |  |
| Associates:                | Crystal Solar Inc.                      | ₩ 1,849,005       | ₩ -       | ₩ -         | ₩ (46,821)  | ₩ 1,802,184    |  |
|                            | International Polymers Company          | 10,382,701        | -         | -           | (895,681)   | 9,487,020      |  |
|                            | Saudi Specialized Products Company      | 9,512,614         | 1,896,833 | -           | (991,754)   | 10,417,693     |  |
|                            | Gulf Advanced Cables Insulation Company | 24,006,993        | -         | (6,025,822) | (3,206,143) | 14,775,028     |  |

In thousands of Korean won

|               |                           | 2017                |                    |                       |                      |                     |
|---------------|---------------------------|---------------------|--------------------|-----------------------|----------------------|---------------------|
|               | Company                   | Beginning balance   | Increase           | Decrease              | Others(*)            | Ending balance      |
| Conglomerate: | Hanwha Q CELLS USA Corp.  | 20,144,062          | -                  | (17,952,767)          | (2,191,295)          | -                   |
|               | Hanwha Techwin Automation | -                   | 2,272,800          | -                     | (123,512)            | 2,149,288           |
|               | Primo Gunes Enerjisi A.S. |                     |                    |                       |                      |                     |
|               |                           | <u>3,728,178</u>    | <u>-</u>           | <u>-</u>              | <u>103,075</u>       | <u>3,831,253</u>    |
|               |                           | <u>₩ 69,623,553</u> | <u>₩ 4,169,633</u> | <u>₩ (23,978,589)</u> | <u>₩ (7,352,131)</u> | <u>₩ 42,462,466</u> |

(\*) Includes accrued revenues related to loans.

- (5) Borrowing transactions with related parties for the ended December 31, 2018, are not existed. Borrowing transactions with related parties for the ended December 31, 2017, are as follows:

In thousands of Korean won

|               |                           | 2017              |          |            |           |                |
|---------------|---------------------------|-------------------|----------|------------|-----------|----------------|
|               |                           | Beginning balance | Increase | Decrease   | Others(*) | Ending balance |
| Conglomerate: |                           |                   |          |            |           |                |
|               | Primo Gunes Enerjisi A.S. | ₩ 84,595          | ₩ -      | ₩ (74,998) | ₩ (9,597) | ₩ -            |

(\*) Includes accrued interest related to borrowings.

- (6) Equity transactions with related parties for the years December 31, 2018 and 2017, are as follows:

In thousands of Korean won

|                 |                  | Transaction | Company                                                 | 2018         |
|-----------------|------------------|-------------|---------------------------------------------------------|--------------|
| Joint ventures: | Capital increase |             | HANWHA KALYON GUNES TEKNOLOJILERI URETIM ANONIM SIRKETI | ₩ 26,007,721 |
| Associates:     | Share sales      |             | Hanwha Hawaii LLC and others                            | 35,934,110   |

In thousands of Korean won

|                 |                             | Transaction | Company                                                 | 2017         |
|-----------------|-----------------------------|-------------|---------------------------------------------------------|--------------|
| Joint ventures: | Capital increase            |             | Gulf Advanced Cables Insulation Company                 | ₩ 7,196,800  |
|                 | Capital increase            |             | HANWHA KALYON GUNES TEKNOLOJILERI URETIM ANONIM SIRKETI | 21,871,898   |
|                 | Capital increase            |             | HANWHA KALYON GUNES ENERJISI URETIM ANONIM SIRKETI      | 6,064,889    |
| Associates:     | Liquidation dividend        |             | Hanwha Newly-Development Force Fund                     | 1,577,013    |
|                 | Acquisition cost adjustment |             | Hanwha Station Development Co., Ltd.                    | (15,554,302) |

- (7) Payment guarantees provided for related parties as of December 31, 2018, are as follows:

(In USD)

| Guarantee                                             | Currency | Limit      | Execution Amount | Use of payment guarantee               |
|-------------------------------------------------------|----------|------------|------------------|----------------------------------------|
| Alterpower Specialist, Inc.                           | USD      | 1,000,000  | 1,000,000        | Borrowings from financial institutions |
| Enfinity Philippines Renewable Resources Fourth, Inc. | USD      | 52,000,000 | 52,000,000       | Borrowings from financial institutions |
| International Polymers Company                        | USD      | 24,000,000 | 24,000,000       | Borrowings from financial institutions |
| Gulf Advanced Cables Insulation Company               | USD      | 7,333,333  | 7,333,333        | Borrowings from financial institutions |
| Saudi Specialized Products Company                    | USD      | 4,346,667  | 4,346,667        | Borrowings from financial institutions |

(In USD)

| <u>Guarantee</u>   | <u>Currency</u> | <u>Limit</u> | <u>Execution Amount</u> | <u>Use of payment guarantee</u>        |
|--------------------|-----------------|--------------|-------------------------|----------------------------------------|
| Burdur Enerji A.S. | USD             | 40,000,000   | 9,136,756               | Borrowings from financial institutions |
|                    | USD             | 128,680,000  | 97,816,756              |                                        |

(8) As of December 31, 2018, the Group pledged collateral of ₩1,510,600 thousand to its related party, HANWHA INVESTMENT AND SECURITIES CO., LTD. in relation to the deposit for the building in Seo-gu, Daejeon.

(9) As of December 31, 2018, the Group provides a guarantee of USD 131,000,000 for transactions involving sales of modules between Hanwha Q CELLS Japan Co., Ltd. and MARUBENI CORPORATION, JPY 4,610,000,000 for transactions involving purchases of goods between Hanwha Q CELLS Japan Co., Ltd. and NTT-F., USD 2,526,518 for transactions involving sales of modules between Hanwha Q CELLS Japan Co., Ltd. and Itochu Corporation, JPY 131,348,708 for transactions involving sales of modules between Hanwha Q CELLS Japan Co., Ltd. and JGC Corporation and JPY 296,000,000 for transactions involving sales of modules between Hanwha Q CELLS Japan Co., Ltd. and Rokunohe Solar Park. At last, the Group provides a guarantee of JPY 2,111,360,000 for transactions involving sales of modules between Hanwha Q CELLS Japan Co., Ltd. and Nippon Renewable Energy K.K.

(10) Details of compensation for key executives for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands of Korean won</i> | <u>2018</u>         | <u>2017</u>         |
|-----------------------------------|---------------------|---------------------|
| Short-term employee benefits      | ₩ 29,053,156        | ₩ 33,574,243        |
| Retirement benefits               | 6,104,751           | 5,871,551           |
| Other long-term employee benefits | 8,324               | 8,100               |
|                                   | <u>₩ 35,166,231</u> | <u>₩ 39,453,894</u> |

#### 40. CASH FLOWS:

(1) Cash flows generated from operation activities for the years ended December 31, 2018 and 2017, are as follows:

| <i>In thousands of Korean won</i>                              | <u>2018</u>   | <u>2017</u>     |
|----------------------------------------------------------------|---------------|-----------------|
| Income before income tax expense                               | ₩ 288,333,127 | ₩ 1,065,852,886 |
| Adjustments:                                                   |               |                 |
| Retirement benefits(*)                                         | 58,127,567    | 56,179,262      |
| Other long-term employee benefits                              | 3,605,096     | 2,224,441       |
| Depreciation of investment property                            | 2,939,706     | 5,296,753       |
| Depreciation of property, plant and equipment                  | 423,552,151   | 414,701,308     |
| Amortization                                                   | 13,561,428    | 15,532,767      |
| Bad debt expenses                                              | 89,659,324    | 42,683,250      |
| Rental expenses                                                | 103,125       | 1,454,539       |
| Transfer (reversal) of provisions                              | 29,305,174    | (1,153,053)     |
| Gain on valuation of derivatives                               | (25,989,117)  | (2,185,899)     |
| Gain on foreign currency translation                           | (152,833,616) | (165,289,649)   |
| Gain on disposal of AFS financial assets                       | -             | (5,551,834)     |
| Gain on disposal of investment in associates                   | (8,070,044)   | (695,482)       |
| Gain on disposal of investment property                        | (1,179,731)   | (746,143)       |
| Gain on disposal of property, plant and equipment              | (20,043,011)  | (3,355,895)     |
| Gain on disposal of intangible assets                          | 94,011        | (20,521,977)    |
| Recovery of impairment losses of Investment property           | (22,903)      | -               |
| Recovery of impairment losses of property, plant and equipment | (108,369)     | -               |

*In thousands of Korean won*

|                                                                 | <b>2018</b>          | <b>2017</b>            |
|-----------------------------------------------------------------|----------------------|------------------------|
| Reversal of allowance                                           | (1,299)              | -                      |
| Reversal of other bad debt expense                              | (76,122,526)         | -                      |
| Gains on bargains purchases                                     | (203,559)            | -                      |
| Loss on foreign currency translation                            | 220,105,996          | 106,155,741            |
| Loss on disposal of trade receivables                           | 1,914,228            | 958,439                |
| Loss on disposal of AFS financial assets                        | -                    | 5,293                  |
| Impairment loss of AFS financial assets                         | -                    | 8,510,137              |
| Loss on disposal of investment in associates                    | 14,814,494           | -                      |
| Impairment loss on investments in associates and joint ventures | 52,877,765           | -                      |
| Loss on valuation of FVTPL—financial assets                     | 6,927                | -                      |
| Loss on valuation of derivatives                                | 5,333,359            | 32,822,512             |
| Loss on disposal of property, plant and equipment               | 235,200              | -                      |
| Loss on disposal of property, plant and equipment               | 7,752,975            | 16,073,289             |
| Loss on disposal of intangible assets                           | 7,296,840            | 525,665                |
| Impairment loss of investment property                          | 145,288              | 1,536,080              |
| Impairment loss of property, plant and equipment                | 249,720,581          | 134,014,096            |
| Impairment loss of intangible assets                            | 42,307,095           | 6,023                  |
| Other bad debt expense                                          | 4,974,318            | 281,984                |
| Loss on inventory abandoned                                     | 246,309              | 486,473                |
| Loss on valuation of inventories                                | 39,569,241           | 27,456,561             |
| Interest income                                                 | (22,025,888)         | (15,411,063)           |
| Dividends income                                                | (2,618,653)          | (1,644,900)            |
| Interest expense                                                | 160,253,874          | 148,823,555            |
| Share of profit of associates and joint ventures                | (417,813,808)        | (593,087,180)          |
| Others                                                          | (31,682,276)         | (6,214,309)            |
| Decrease (increase) in trade receivables, net                   | 667,124,587          | (45,539,619)           |
| Decrease (increase) in other receivables, net                   | 2,551,693            | (10,929,736)           |
| Decrease(increase) in inventories                               | (171,032,953)        | 233,372,420            |
| Decrease(increase) in other financial assets                    | 245,543              | 8,579,405              |
| Decrease(increase) in other current assets                      | 40,474,113           | (35,412,062)           |
| Decrease(increase) in other non-current assets                  | 7,638,040            | (16,265,184)           |
| Increase (decrease) in trade payables                           | (550,432,702)        | 131,722,964            |
| Increase(decrease) in other payables                            | (46,236,883)         | (69,873,107)           |
| Increase(decrease) in other financial liabilities               | (32,818,823)         | 6,930,464              |
| Increase(decrease) in other current liabilities                 | (343,178)            | (243,899,168)          |
| Increase(decrease) in other long-term liabilities               | (2,660)              | (7,940)                |
| Payment of severance indemnities                                | (58,568,760)         | (39,417,675)           |
| Decrease in plan assets                                         | 8,856,819            | (92,501,870)           |
| Payment of other long-term employee benefits                    | (1,753,806)          | (2,470,772)            |
| Provisions                                                      | (3,269,297)          | (19,981,349)           |
| Payment of derivatives                                          | (9,234,068)          | (1,919,426)            |
| Cash generated from operations                                  | <u>₩ 811,318,064</u> | <u>₩ 1,068,111,015</u> |

(\*) Excludes ₩113 million (2017: ₩248 million) transferred to construction in progress from ₩58,241 million (2017: ₩56,427 million) for the years ended December 31, 2018 and 2017.

(2) Significant transactions not affecting cash flows for the year ended December 31, 2018 are as follows:

| <i>In thousand won</i>                                                        |   | <b>2018</b> | <b>2017</b> |
|-------------------------------------------------------------------------------|---|-------------|-------------|
| Transfer to the related assets from construction in progress                  | ₩ | 109,565,587 | 392,021,067 |
| Transfer to investment property from construction in progress                 |   | 1,628,476   | 6,383       |
| Transfer to stored goods from machinery in transit                            |   | 7,423,380   | 7,072,841   |
| Reclassification of current portion of non-current other payable              |   | 23,965,936  | 23,965,936  |
| Changes in other payables due to acquisition of property, plant and equipment |   | 2,511,814   | 1,992,406   |
| Reclassification of current portion of debentures and borrowings              |   | 454,978,567 | 653,245,367 |

(3) Changes in liabilities from financing activities for the year ended December 31, 2018 and 2017 are as follows:

| <i>In thousands of Korean won</i>               | <b>2018</b>                      |                         | <b>2017</b>                      |                         |
|-------------------------------------------------|----------------------------------|-------------------------|----------------------------------|-------------------------|
|                                                 | <b>Borrowings and Debentures</b> | <b>Dividend payable</b> | <b>Borrowings and Debentures</b> | <b>Dividend payable</b> |
| Beginning balance                               | 4,417,377,060                    | -                       | 4,829,594,165                    | -                       |
| Changes in scope of consolidation               | 1,339,053,184                    | -                       | (210,200)                        | -                       |
| Changes in cash flows from financing activities | 174,423,157                      | (60,858,133)            | (453,403,119)                    | (68,018,133)            |
| Decrease in retained earnings                   | -                                | 57,538,133              | -                                | 57,538,133              |
| Decrease in non-controlling interests           | -                                | 3,320,000               | -                                | 10,480,000              |
| Others(*)                                       | (42,311,019)                     | -                       | 41,396,214                       | -                       |
| Ending balance                                  | 5,888,542,382                    | -                       | 4,417,377,060                    | -                       |

(\*) Includes effects due to exchange rate changes.

#### **41. OPERATING SEGMENT INFORMATION:**

The Group has four strategic business units as reportable segments. Each strategic business unit operates to provide distinguished products and services. As required technical capabilities and marketing strategies are different for these business units, they are separately operated. The chief decision maker reviews internal reports for each strategic business unit on at least a quarterly basis.

Details of segment reporting are as follows:

- Raw materials: manufacturing and distribution of PE, PVC and CA
- Manufacturing: manufacturing and distribution of automotive parts
- Retail: department stores, wholesaling and retailing
- Photovoltaic: manufacturing and distribution of solar products, such as ingots and modules
- Others: manufacturing, distribution and leasing

(1) Operating income by each reportable segment for the years ended December 31, 2018 and 2017, is as follows:

| In thousands won                                 | 2018            |               |             |               |               |               |                         | Total         |
|--------------------------------------------------|-----------------|---------------|-------------|---------------|---------------|---------------|-------------------------|---------------|
|                                                  | Raw material    | Manufacturing | Retail      | Photovoltaic  | Subtotal      | Others        | Consolidated adjustment |               |
| Revenue:                                         |                 |               |             |               |               |               |                         |               |
| External revenue                                 | ₩ 4,022,128,206 | 853,848,259   | 663,553,024 | 2,521,617,863 | 8,061,147,352 | 984,894,552   | -                       | 9,046,041,904 |
| Inter-segment revenue                            | 350,033,644     | 193,782,829   | 40,685,521  | 1,101,229,121 | 1,685,731,115 | 38,744,867    | (1,724,475,982)         | -             |
|                                                  | ₩ 4,372,161,850 | 1,047,631,088 | 704,238,545 | 3,622,846,984 | 9,746,878,467 | 1,023,639,419 | (1,724,475,982)         | 9,046,041,904 |
| Operating profit(*1)                             | ₩ 367,172,406   | (13,433,436)  | 19,052,654  | (10,710,674)  | 362,080,950   | 4,578,993     | (12,314,195)            | 354,345,748   |
| Share of profit of associates and joint ventures |                 |               |             |               |               |               |                         | 417,813,808   |
| Other non-operating income and expenses          |                 |               |             |               |               |               |                         | (348,217,096) |
| Finance income and expenses                      |                 |               |             |               |               |               |                         | (135,609,333) |
| Income before income tax expense                 |                 |               |             |               |               |               |                         | 288,333,127   |
| Depreciation and amortization(*2)                | 199,530,912     | 48,430,600    | 40,772,452  | 126,046,566   | 414,780,531   | 21,718,827    | 3,553,927               | 440,053,286   |
| Loss on valuation of inventories                 | 17,476,606      | 1,651,923     | 1,035,962   | 15,789,401    | 35,953,892    | 3,615,348     | -                       | 39,569,240    |
| Bad debt expenses                                | 165,069         | 209,148       | 1,578,226   | 69,637,114    | 71,589,557    | 18,069,767    | -                       | 89,659,324    |
| Capital expenditures(*3)                         | 289,512,515     | 53,993,784    | 43,204,853  | 323,109,015   | 709,820,167   | 30,078,874    | (36,917)                | 739,862,124   |

(\*1) Total segment operating income is different from operating income in the consolidated statements of comprehensive income due to unrecognized income on inter-segment transactions, which were eliminated upon consolidation.

(\*)2. Total amount of depreciation of property, plant and equipment and investment property and amortization of intangible assets.

(\*3) Capital expenditures consists of acquisition of property, plant and equipment, investment property and intangible assets.

| In thousands won                                 | 2017            |               |             |               |               |               |                         |               |
|--------------------------------------------------|-----------------|---------------|-------------|---------------|---------------|---------------|-------------------------|---------------|
|                                                  | Raw material    | Manufacturing | Retail      | Photovoltaic  | Subtotal      | Others        | Consolidated adjustment | Total         |
| Revenue:                                         |                 |               |             |               |               |               |                         |               |
| External revenue                                 | ₩ 4,011,795,742 | 753,345,795   | 677,519,788 | 2,463,343,532 | 7,906,004,857 | 1,435,808,369 | -                       | 9,341,813,226 |
| Inter-segment revenue                            | 315,811,059     | 229,046,973   | 37,830,359  | 951,372,296   | 1,534,060,687 | 44,516,536    | (1,578,577,223)         | -             |
|                                                  | ₩ 4,327,606,801 | 982,392,768   | 715,350,147 | 3,414,715,828 | 9,440,065,544 | 1,480,324,905 | (1,578,577,223)         | 9,341,813,226 |
| Operating profit(*1)                             | ₩ 631,147,589   | 2,229,382     | 22,861,834  | 14,283,220    | 670,522,025   | 75,350,141    | 10,538,825              | 756,410,991   |
| Share of profit of associates and joint ventures |                 |               |             |               |               |               |                         | 593,087,180   |
| Other non-operating income and expenses          |                 |               |             |               |               |               |                         | (151,877,693) |
| Finance income and expenses                      |                 |               |             |               |               |               |                         | (131,767,592) |
| Income before income tax expense                 |                 |               |             |               |               |               |                         | 1,065,852,886 |
| Depreciation and amortization(*2)                | 199,493,102     | 43,764,892    | 43,201,230  | 116,827,211   | 403,286,435   | 25,062,603    | 7,181,790               | 435,530,828   |
| Loss on valuation of inventories                 | 9,129,517       | 1,861,921     | 616,644     | 13,398,976    | 25,007,058    | 2,449,503     | -                       | 27,456,561    |
| Bad debt expenses                                | 430,113         | 3,684         | 1,853,317   | 35,257,021    | 37,544,135    | 5,139,115     | -                       | 42,683,250    |
| Capital expenditures(*3)                         | 209,800,199     | 72,492,474    | 108,662,086 | 83,797,762    | 474,752,521   | 52,297,140    | (22,569,374)            | 504,480,287   |

(\*1) Total segment operating income is different from operating income in the consolidated statements of comprehensive income due to unrecognized income on inter-segment transactions, which were eliminated upon consolidation.

(\*2) Total amount of depreciation of property, plant and equipment and investment property and amortization of intangible assets.

(\*3) Capital expenditures consists of acquisition of property, plant and equipment, investment property and intangible assets.

(2) Segment information as of December 31, 2018, and December 31, 2017, is as follows:

*In thousands of Korean won*

|                                             | December 31, 2018      |                        |                        |                        |                         |                        |                          |                         |
|---------------------------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|------------------------|--------------------------|-------------------------|
|                                             | Raw material           | Manufacturing          | Retail                 | Photovoltaic           | Subtotal                | Others                 | Consolidated adjustment  | Total                   |
| Segment assets:                             |                        |                        |                        |                        |                         |                        |                          |                         |
| Current assets                              | ₩ 1,220,170,106        | ₩ 443,450,489          | ₩ 561,888,215          | ₩ 3,117,351,875        | ₩ 5,342,860,685         | ₩ 785,692,664          | ₩ (1,116,082,676)        | ₩ 5,012,470,673         |
| Investment in associates and joint ventures | 4,308,483,357          | 492,059,066            | 171,895,235            | 2,266,351,022          | 7,238,788,680           | 322,511,751            | (4,938,939,163)          | 2,622,361,268           |
| Other non-current assets                    | <u>2,723,456,584</u>   | <u>610,922,432</u>     | <u>1,579,746,699</u>   | <u>2,430,954,850</u>   | <u>7,345,080,565</u>    | <u>383,040,155</u>     | <u>(131,477,213)</u>     | <u>7,596,643,507</u>    |
|                                             | <u>₩ 8,252,110,047</u> | <u>₩ 1,546,431,987</u> | <u>₩ 2,313,530,149</u> | <u>₩ 7,814,657,747</u> | <u>₩ 19,926,729,930</u> | <u>₩ 1,491,244,570</u> | <u>₩ (6,186,499,052)</u> | <u>₩ 15,231,475,448</u> |
| Segment liabilities:                        |                        |                        |                        |                        |                         |                        |                          |                         |
| Current liabilities                         | ₩ 1,529,495,357        | ₩ 558,186,457          | ₩ 689,269,402          | ₩ 2,762,245,700        | ₩ 5,539,196,916         | ₩ 689,817,859          | ₩ (1,096,499,212)        | ₩ 5,132,515,563         |
| Non-current liabilities                     | <u>1,307,683,541</u>   | <u>347,160,650</u>     | <u>425,385,801</u>     | <u>1,728,419,254</u>   | <u>3,808,649,246</u>    | <u>81,845,283</u>      | <u>(18,631,006)</u>      | <u>3,871,863,523</u>    |
|                                             | <u>₩ 2,837,178,898</u> | <u>₩ 905,347,107</u>   | <u>₩ 1,114,655,203</u> | <u>₩ 4,490,664,954</u> | <u>₩ 9,347,846,162</u>  | <u>₩ 771,663,142</u>   | <u>₩ (1,115,130,218)</u> | <u>₩ 9,004,379,086</u>  |

*In thousands of Korean won*

|                                             | December 31, 2017      |                        |                        |                        |                         |                        |                          |                         |
|---------------------------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|------------------------|--------------------------|-------------------------|
|                                             | Raw material           | Manufacturing          | Retail                 | Photovoltaic           | Subtotal                | Others                 | Consolidated adjustment  | Total                   |
| Segment assets:                             |                        |                        |                        |                        |                         |                        |                          |                         |
| Current assets                              | ₩ 1,287,340,982        | ₩ 438,986,517          | ₩ 542,515,466          | ₩ 1,944,207,309        | ₩ 4,213,050,274         | ₩ 787,942,500          | ₩ (778,525,707)          | ₩ 4,222,467,067         |
| Investment in associates and joint ventures | 3,724,086,891          | 439,237,325            | 171,895,235            | 2,084,334,911          | 6,419,554,362           | 328,022,737            | (4,065,257,647)          | 2,682,319,452           |
| Other non-current assets                    | <u>2,883,000,661</u>   | <u>598,678,561</u>     | <u>1,618,518,221</u>   | <u>1,223,475,632</u>   | <u>6,323,673,075</u>    | <u>534,839,047</u>     | <u>(113,810,741)</u>     | <u>6,744,701,381</u>    |
|                                             | <u>₩ 7,894,428,534</u> | <u>₩ 1,476,902,403</u> | <u>₩ 2,332,928,922</u> | <u>₩ 5,252,017,852</u> | <u>₩ 16,956,277,711</u> | <u>₩ 1,650,804,284</u> | <u>₩ (4,957,594,095)</u> | <u>₩ 13,649,487,900</u> |
| Segment liabilities:                        |                        |                        |                        |                        |                         |                        |                          |                         |
| Current liabilities                         | ₩ 1,569,070,137        | ₩ 621,539,184          | ₩ 723,513,229          | ₩ 2,058,259,667        | ₩ 4,972,382,217         | ₩ 654,697,217          | ₩ (732,889,213)          | ₩ 4,894,190,221         |
| Non-current liabilities                     | <u>1,376,602,711</u>   | <u>200,684,599</u>     | <u>389,993,668</u>     | <u>427,138,687</u>     | <u>2,394,419,665</u>    | <u>201,861,682</u>     | <u>(28,456,831)</u>      | <u>2,567,824,516</u>    |
|                                             | <u>₩ 2,945,672,848</u> | <u>₩ 822,223,783</u>   | <u>₩ 1,113,506,897</u> | <u>₩ 2,485,398,354</u> | <u>₩ 7,366,801,882</u>  | <u>₩ 856,558,899</u>   | <u>₩ (761,346,044)</u>   | <u>₩ 7,462,014,737</u>  |

(3) The details of the consolidation adjustment for assets and liabilities in each sector as of the end of the December 31, 2018 2017 are as follows:

| <i>In thousands Korean won</i>          | December 31, 2018     | December 31, 2017     |
|-----------------------------------------|-----------------------|-----------------------|
| Consolidated assets                     |                       |                       |
| Segment assets                          |                       |                       |
| Sub total of assets                     | 19,926,729,930        | 16,956,277,711        |
| Other segment assets                    | 1,491,244,570         | 1,650,804,284         |
| Consolidated adjustment                 |                       |                       |
| Investment capital offset               | (4,938,939,163)       | (4,065,257,647)       |
| Internal transaction offset             | (1,111,723,702)       | (759,907,217)         |
| Others                                  | (135,836,187)         | (132,429,231)         |
| <b>Total : Consolidated assets</b>      | <b>15,231,475,448</b> | <b>13,649,487,900</b> |
| Consolidated liabilities                |                       |                       |
| Segment liabilities                     |                       |                       |
| Sub total of liabilities                | 9,347,846,162         | 7,366,801,882         |
| Other segment liabilities               | 771,663,142           | 856,558,899           |
| Consolidated adjustment                 |                       |                       |
| Investment capital offset               | (1,241,560,275)       | (924,871,559)         |
| Deferred tax liabilities                | 128,626,259           | 165,024,078           |
| Others                                  | (2,196,202)           | (1,498,563)           |
| <b>Total : Consolidated Liabilities</b> | <b>9,004,379,086</b>  | <b>7,462,014,737</b>  |

- (4) Details of the Group's sales revenues by region for the years ended December 31, 2018 and 2017, and assets by region as of December 31, 2018, and 2017, are as follows:

1) Regional Sales

*In thousands of Korean won*

|          | <b>2018</b>            | <b>2017</b>            |
|----------|------------------------|------------------------|
| Domestic | ₩ 5,084,128,774        | ₩ 5,341,258,441        |
| Overseas |                        |                        |
| China    | 1,891,396,933          | 2,613,414,979          |
| Germany  | 813,407,566            | 297,562,221            |
| Others   | 1,257,108,631          | 1,089,577,585          |
|          | <u>3,961,913,130</u>   | <u>4,000,554,785</u>   |
|          | <u>₩ 9,046,041,904</u> | <u>₩ 9,341,813,226</u> |

2) Regional non-current Assets

*In thousands of Korean won*

|          | <b>December 31, 2018</b> | <b>December 31, 2017</b> |
|----------|--------------------------|--------------------------|
| Domestic | ₩ 8,013,811,401          | ₩ 6,988,140,671          |
| Overseas |                          |                          |
| China    | 803,438,405              | 991,947,609              |
| Germany  | 237,475,997              | 230,803,129              |
| Others   | 940,130,344              | 858,021,360              |
|          | <u>1,981,044,746</u>     | <u>2,080,772,098</u>     |
|          | <u>₩ 9,994,856,147</u>   | <u>₩ 9,068,912,769</u>   |

(\*) Financial assets and deferred income tax assets are excluded from these amounts.

**38. REVENUE:**

The Group recognized sales revenue of each operating segment by transferring goods and services as point-in-time. The classification of revenue for each segment is consistent with operating segment information under K-IFRS 1108. (Note 34.(1))

**39. EFFECT OF ADOPTION OF K-IFRS 1115:**

The effect of adoption of K-IFRS 1115 on each item of the financial statements for the years ended December 31, 2018, and the causes of significant changes are as follows.

*In thousands of Korean won*

|                                         |   | <b>Consolidated Financial Position</b> |                |                    |
|-----------------------------------------|---|----------------------------------------|----------------|--------------------|
|                                         |   | <b>December 31, 2018</b>               |                |                    |
|                                         |   | <b>Previous Policies</b>               | <b>Changes</b> | <b>K-IFRS 1115</b> |
| Assets                                  |   |                                        |                |                    |
| Current Assets                          | ₩ | 5,012,154,718                          | ₩ 315,955      | ₩ 5,012,470,673    |
| Cash and cash equivalents               |   | 1,024,121,436                          | -              | 1,024,121,436      |
| Other financial assets                  |   | 414,808,360                            | -              | 414,808,360        |
| Trade receivables and other receivables |   | 1,782,648,364                          | (24,070,367)   | 1,758,577,997      |
| Other current assets                    |   | 290,840,101                            | 24,386,322     | 315,226,423        |
| Inventories                             |   | 1,467,462,399                          | -              | 1,467,462,399      |
| Current income tax assets               |   | 14,094,159                             | -              | 14,094,159         |
| Non-current assets held for sale        |   | 18,179,899                             | -              | 18,179,899         |
| Non-current assets                      |   | 10,242,411,472                         | (23,406,697)   | 10,219,004,775     |
| FVTPL—financial assets                  |   | 81,614                                 | -              | 81,614             |
| FVTOCI—financial assets                 |   | 80,230,461                             | -              | 80,230,461         |

In thousands of Korean won

**Consolidated Financial Position**  
**December 31, 2018**

|                                                   | Previous Policies       | Changes               | K-IFRS 1115             |
|---------------------------------------------------|-------------------------|-----------------------|-------------------------|
| <b>Assets</b>                                     |                         |                       |                         |
| Other financial assets                            | 87,323,080              | -                     | 87,323,080              |
| Long-term trade receivables and other receivables | 2,921,411               | -                     | 2,921,411               |
| Investments in associates and joint ventures      | 2,645,767,965           | (23,406,697)          | 2,622,361,268           |
| Investment property                               | 190,335,565             | -                     | 190,335,565             |
| Property, plant and equipment                     | 6,684,051,916           | -                     | 6,684,051,916           |
| Intangible assets                                 | 479,383,485             | -                     | 479,383,485             |
| Other non-current assets                          | 18,723,913              | -                     | 18,723,913              |
| Deferred income tax assets                        | 53,592,062              | -                     | 53,592,062              |
| Total assets                                      | <u>₩ 15,254,566,190</u> | <u>₩ (23,090,742)</u> | <u>₩ 15,231,475,448</u> |
| <b>Liabilities</b>                                |                         |                       |                         |
| Current Liabilities                               | ₩ 5,111,073,805         | ₩ 21,441,758          | ₩ 5,132,515,563         |
| Trade payables and other payables                 | 1,531,953,180           | (52,215,338)          | 1,479,737,842           |
| Short-term borrowings                             | 2,893,481,176           | -                     | 2,893,481,176           |
| Other financial liabilities                       | 162,279,077             | -                     | 162,279,077             |
| Provisions                                        | 51,689,105              | (595,222)             | 51,093,883              |
| Other non-current assets                          | 365,636,763             | 74,252,318            | 439,889,081             |
| Deferred income tax assets                        | 106,034,504             | -                     | 106,034,504             |
| Non-current liabilities                           | 3,876,511,200           | (4,647,677)           | 3,871,863,523           |
| Long-term trade payables and other payables       | 329,899                 | -                     | 329,899                 |
| Long-term borrowings                              | 2,995,061,206           | -                     | 2,995,061,206           |
| Other financial liabilities                       | 13,906,976              | -                     | 13,906,976              |
| Net defined benefit liabilities                   | 371,701,051             | -                     | 371,701,051             |
| Long-term employee benefits                       | 18,269,570              | -                     | 18,269,570              |
| Provisions                                        | 64,501,260              | -                     | 64,501,260              |
| Other non-current liabilities                     | 23,551,310              | -                     | 23,551,310              |
| Deferred tax liabilities                          | 389,189,928             | (4,647,677)           | 384,542,251             |
| Total liabilities                                 | <u>8,987,585,005</u>    | <u>16,794,081</u>     | <u>9,004,379,086</u>    |
| <b>Equity</b>                                     |                         |                       |                         |
| Capital stock                                     | 6,128,465,054           | (38,490,288)          | 6,089,974,766           |
| Capital surplus                                   | 821,170,655             | -                     | 821,170,655             |
| Capital adjustments                               | 856,962,112             | -                     | 856,962,112             |
| Accumulated other comprehensive income            | (3,433,353)             | -                     | (3,433,353)             |
| Retained earnings                                 | (81,251,788)            | -                     | (81,251,788)            |
| Equity attributable to owner of the Company       | 4,535,017,428           | (38,490,288)          | 4,496,527,140           |
| Non-controlling interests                         | <u>138,516,131</u>      | <u>(1,394,535)</u>    | <u>137,121,596</u>      |
| Total equity                                      | <u>6,266,981,185</u>    | <u>(39,884,823)</u>   | <u>6,227,096,362</u>    |
| Total liabilities and equity                      | <u>₩ 15,254,566,190</u> | <u>₩ (23,090,742)</u> | <u>₩ 15,231,475,448</u> |

*In thousands of Korean won*

**Consolidated Comprehensive Income**

|                            | <b>2018</b>              |                    |
|----------------------------|--------------------------|--------------------|
|                            | <b>Previous Policies</b> | <b>Changes</b>     |
|                            |                          | <b>K-IFRS 1115</b> |
| Revenue                    | 9,073,432,093            | (27,390,189)       |
| Cost of sales              | 7,458,630,714            | (68,742)           |
| Gross profit               | 1,614,801,379            | (27,321,447)       |
| Operating income           | 354,824,533              | (478,785)          |
| Net income                 | 164,448,939              | (4,003,949)        |
| Total comprehensive income | 79,311,618               | (4,003,949)        |

On the other hand, applying K-IFRS 1115 does not have a significant effect on the consolidated cash flow statement.

**40. BUSINESS CONSOLIDATION**

(1) General

As of November 1, 2018, Hanwha Advanced Materials Corporation merge Hanwha Q CELLS Korea Corp. for improvement of business segment and corporation value. As a result of merger, Hanwha Q CELLS Korea Corp. and its subsidiaries are included in the scope of consolidation of the Group, and Hanwha Advanced Materials Corporation changed its corporate name to Hanwha Q CELLS & Advanced Materials Corporation.

(2) Details of the amount paid as a consideration for business combination as of December 31, 2018, are as follows:

| <i>In thousands Korean won</i> | <b>Amounts</b>     |
|--------------------------------|--------------------|
| Cash                           | 439,514,802        |
| Shares                         | 116,790,016        |
| <b>Total</b>                   | <b>556,304,818</b> |

(3) The fair value of the identifiable assets acquired and liabilities assumed at the acquisition date as a result of a business combination occurring is as follows:

| <i>In thousands Korean won</i>                         | <b>Amounts</b> |
|--------------------------------------------------------|----------------|
| Recognized amounts of identifiable assets acquired     |                |
| Current assets                                         | 1,126,576,337  |
| Cash and cash equivalents                              | 100,482,771    |
| Trade and other receivables                            | 663,494,130    |
| Inventories                                            | 190,481,532    |
| Other assets                                           | 172,117,904    |
| Non-current assets                                     | 1,163,640,698  |
| Investments in associates and joint ventures           | 7,237,162      |
| Property, plant and equipment                          | 1,045,482,103  |
| Intangible assets                                      | 82,216,410     |
| Other assets                                           | 28,705,023     |
| Recognized amounts of identifiable liabilities assumed |                |
| Current liabilities                                    | 893,909,492    |
| Trade and other payables                               | 287,924,547    |
| Borrowings                                             | 544,124,083    |
| Other liabilities                                      | 61,860,862     |
| Non-current liabilities                                | 858,699,264    |
| Borrowings                                             | 794,929,101    |
| Provisions                                             | 15,860,480     |
| Net defined benefit liabilities                        | 20,255,055     |
| Deferred tax liabilities                               | 21,743,956     |
| Other liabilities                                      | 5,910,672      |
| Fair value of net identifiable assets                  | 537,608,279    |

(4) Goodwill amount at the merger date of November 1, 2018 is as follows:

| <i>In thousands Korean won</i> | <b>Amounts</b> |
|--------------------------------|----------------|
| I. Consideration amount        | 556,304,818    |
| II. Net identifiable assets    | (537,608,279)  |
| III. Goodwill (I - II)         | 18,696,539     |

(5) Net cash outflows from business combination at the merger date of November 1, 2018 is as follows:

| <i>In thousands Korean won</i>           | <b>Amounts</b> |
|------------------------------------------|----------------|
| Cash and cash equivalents consideration  | 439,514,802    |
| Less: acquired cash and cash equivalents | (100,482,771)  |
| Net cash outflows                        | 339,032,031    |

(6) Includes a net profit of ₩ 34,611 million for additional projects created by the merged entity and its subsidiaries. The Revenue recognized in the current period include sales of ₩ 333,028 million won from Hanwha Q CELLS Korea Corp and its subsidiaries.

#### 41. NON-CONTROLLING INTEREST

(1) Changes in accumulated non-controlling interests

Profit or loss allocated to non-controlling interests, net income attributable to non-controlling interests in equity and accumulated non-controlling interests of subsidiaries that are material to the Group for the years ended December 31, 2018 and 2017 are as follows:

*In thousands Korean won*

|                                     | <b>2018</b>                                    |                                                                           |                                                          |                                                    |                                                                     |
|-------------------------------------|------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------|
|                                     | <b>Percentage of non-controlling interests</b> | <b>Accumulated non-controlling interests at the beginning of the year</b> | <b>Net income allocated to non-controlling interests</b> | <b>Dividends paid to non-controlling interests</b> | <b>Accumulated non-controlling interests at the end of the year</b> |
| Hanwha Galleria Timeworld Co., Ltd. | 29.35%₩                                        | 69,114,450                                                                | 2,787,801                                                | -                                                  | 62,920,607                                                          |
| Hanwha Holdings(USA), Inc.          | 20.00%                                         | 54,846,859                                                                | (4,775,856)                                              | -                                                  | 52,838,199                                                          |

*In thousands Korean won*

|                                     | <b>2017</b>                                    |                                                                           |                                                          |                                                    |                                                                     |
|-------------------------------------|------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------|
|                                     | <b>Percentage of non-controlling interests</b> | <b>Accumulated non-controlling interests at the beginning of the year</b> | <b>Net income allocated to non-controlling interests</b> | <b>Dividends paid to non-controlling interests</b> | <b>Accumulated non-controlling interests at the end of the year</b> |
| Hanwha Galleria Timeworld Co., Ltd. | 29.35%₩                                        | 70,574,699                                                                | (3,186,705)                                              | -                                                  | 69,114,450                                                          |
| Hanwha Holdings(USA), Inc.          | 20.00%                                         | 61,686,106                                                                | 946,261                                                  | -                                                  | 54,846,859                                                          |

(2) Summarized financial information of subsidiaries

Summarized financial information for each non-controlling interest that is material to the Group prior to the elimination of intercompany transactions is as follows:

1) Summarized consolidated statements of financial position

*In thousands Korean won*

|                         | <b>December 31, 2018</b>                   |                                      |
|-------------------------|--------------------------------------------|--------------------------------------|
|                         | <b>Hanwha Galleria Timeworld Co., Ltd.</b> | <b>Hanwha Holdings(USA), Inc.(*)</b> |
| Current assets          | ₩ 123,364,194                              | ₩ 347,940,968                        |
| Non-current assets      | 310,703,696                                | 320,780,432                          |
| Current liabilities     | 171,319,019                                | 356,367,902                          |
| Non-current liabilities | 57,488,966                                 | 40,696,290                           |
| Equity                  | 205,259,905                                | 271,657,208                          |

(\*) Consolidated financial information of intermediate parent company Hanwha Holdings (USA), Inc. and its 17 subsidiaries.

In thousands Korean won

December 31, 2017

|                         | Hanwha Galleria Timeworld Co., Ltd. | Hanwha Holdings(USA), Inc.(*) |
|-------------------------|-------------------------------------|-------------------------------|
| Current assets          | ₩ 99,201,751                        | ₩ 298,395,138                 |
| Non-current assets      | 375,829,326                         | 452,243,665                   |
| Current liabilities     | 206,143,359                         | 312,407,212                   |
| Non-current liabilities | 39,715,634                          | 155,258,871                   |
| Equity                  | 229,172,084                         | 282,972,720                   |

(\*) Consolidated financial information of intermediate parent company Hanwha Holdings (USA), Inc. and its 17 subsidiaries.

2) Summarized consolidated statements of comprehensive income

In thousands won

2018

|                                   | Hanwha Galleria Timeworld Co., Ltd. | Hanwha Holdings(USA), Inc.(*) |
|-----------------------------------|-------------------------------------|-------------------------------|
| Revenue                           | ₩ 332,681,412                       | ₩ 641,427,039                 |
| Net income for the year           | 6,712,603                           | (23,397,537)                  |
| Other comprehensive income (loss) | (31,450,159)                        | 11,681,992                    |
| Total comprehensive loss          | (24,737,556)                        | (11,715,545)                  |

(\*) Consolidated financial information of intermediate parent company Hanwha Holdings (USA), Inc. and its 17 subsidiaries.

In thousands won

2017

|                                   | Hanwha Galleria Timeworld Co., Ltd. | Hanwha Holdings(USA), Inc.(*) |
|-----------------------------------|-------------------------------------|-------------------------------|
| Revenue                           | ₩ 330,703,011                       | ₩ 638,440,031                 |
| Net income for the year           | (12,784,641)                        | 4,214,017                     |
| Other comprehensive income (loss) | 5,291,964                           | (36,770,259)                  |
| Total comprehensive income (loss) | (7,492,677)                         | (32,556,242)                  |

(\*) Consolidated financial information of intermediate parent company Hanwha Holdings (USA), Inc. and its 17 subsidiaries.

(3) Summarized consolidated statements of cash flows

In thousands Korean won

2018

|                                       | Hanwha Galleria Timeworld Co., Ltd. | Hanwha Holdings(USA), Inc.(*) |
|---------------------------------------|-------------------------------------|-------------------------------|
| Cash flows from operating activities  | ₩ (2,768,669)                       | ₩ 44,634,614                  |
| Cash flows from investing activities  | 30,357,511                          | 8,637,037                     |
| Cash flows from financing activities  | (14,539,205)                        | (43,077,452)                  |
| Increase in cash and cash equivalents | 13,049,637                          | 10,194,199                    |
| Beginning of the year                 | 30,039,790                          | 59,820,897                    |
| Effects of foreign exchange rate      | 15,583                              | 3,697,685                     |
| End of the year                       | 43,105,010                          | 73,712,781                    |

(\*) Consolidated financial information of intermediate parent company Hanwha Holdings (USA), Inc. and its 17 subsidiaries.

In thousands Korean won

2017

|                                       | Hanwha Galleria Timeworld Co., Ltd. | Hanwha Holdings(USA), Inc.(*) |
|---------------------------------------|-------------------------------------|-------------------------------|
| Cash flows from operating activities  | ₩ 6,768,748                         | ₩ 71,930,941                  |
| Cash flows from investing activities  | 11,066,028                          | (50,720,673)                  |
| Cash flows from financing activities  | 9,529,538                           | 13,619,227                    |
| Decrease in cash and cash equivalents | 27,364,314                          | 34,829,495                    |
| Beginning of the year                 | 2,698,876                           | 30,262,157                    |
| Effects of foreign exchange rate      | (23,400)                            | (5,270,755)                   |
| End of the year                       | 30,039,790                          | 59,820,897                    |

(\*) Consolidated financial information of intermediate parent company Hanwha Holdings (USA), Inc. and its 17 subsidiaries.

**42. SUBSEQUENT EVENT:**

**(1) Acquisition and retirement of treasury stock**

As of February, 20<sup>th</sup>, 2019, the company decided to acquire and retire 1,631,104 shares of treasury stock until May, 20<sup>th</sup>, 2019. As a result of retirement of treasury stock, total issued common shares and preferred shares by the company are 161,479,290 shares and 1,123,737 shares each.

**(2) Merge between Hanwha Q CELLS Co., Ltd. and Hanwha Solar Holdings Co., Ltd and delisting from NASDAQ.**

As of October 15<sup>th</sup>, 2018, Hanwha Q CELLS Co., Ltd. decided to merge Hanwha Solar Holdings Co., Ltd. because of the decrease of necessities of listing in NASDAQ and improvement of management efficiency. In January 16<sup>th</sup>, 2019, Hanwha Solar Holdings Co., Ltd. complete the merging process of Hanwha Q CELLS Co., Ltd. and Hanwha Q CELLS Co., Ltd. delisted from NASDAQ as of January 28<sup>th</sup>, 2019. As a result of the merger, the surviving company Hanwha Solar Holdings Co., Ltd. changed its name to Hanwha Q CELLS Co., Ltd.