

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 20-F

(Mark One)

- ☐ REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR (g) OF THE SECURITIES EXCHANGE ACT OF 1934
- OR
- ☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018
- OR
- ☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
- OR
- ☐ SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
Date of event requiring this shell company report _____
For the transition period from _____ to _____
Commission file number 1-13368

POSCO

(Exact name of Registrant as specified in its charter)

POSCO

(Translation of Registrant's name into English)

The Republic of Korea

(Jurisdiction of incorporation or organization)

POSCO Center, 440 Teheran-ro, Gangnam-gu

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(Name, telephone, e-mail and/or facsimile number and address of company contact person)

Securities registered or to be registered pursuant to Section 12(b) of the Act.

Title of Each Class

Name of Each Exchange on Which Registered

American Depositary Shares, each representing
one-fourth of one share of common stock

New York Stock Exchange, Inc.

Common Stock, par value Won 5,000 per share *

New York Stock Exchange, Inc. *

Securities registered or to be registered pursuant to Section 12(g) of the Act.

None

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act.

None

As of December 31, 2018, there were 80,001,132 shares of common stock, par value Won 5,000 per share, outstanding (not including 7,185,703 shares of common stock held by the company as treasury shares)

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes ☒ **No** ☐

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. **Yes** ☐ **No** ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. **Yes** ☒ **No** ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). **Yes** ☒ **No** ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or an emerging growth company. See definition of "large accelerated filer," "accelerated filer" and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ☒ **Accelerated filer** ☐ **Non-accelerated filer** ☐ **Emerging growth company** ☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing. **U.S. GAAP** ☐ **IFRS** ☒ **Other** ☐

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow. **Item 17** ☐ **Item 18** ☐

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). **Yes** ☐ **No** ☒

* Not for trading, but only in connection with the registration of the American Depositary Shares.

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GLOSSARY

“ADR”	American Depositary Receipt evidencing ADSs.
“ADR depositary”	Citibank, N.A.
“ADS”	American Depositary Share representing one-fourth of one share of Common Stock.
“Commercial Code”	Commercial Code of the Republic of Korea.
“common stock”	Common stock, par value Won 5,000 per share, of POSCO.
“deposit agreement”	Deposit Agreement, dated as of July 19, 2013, among POSCO, the ADR Depositary and all holders and beneficial owners from time to time of ADRs issued thereunder.
“Dollars,” “\$” or “US\$”	The currency of the United States of America.
“FSCMA”	Financial Investment Services and Capital Markets Act of the Republic of Korea.
“Government”	The government of the Republic of Korea.
“IASB”	International Accounting Standards Board.
“IFRS”	International Financial Reporting Standards.
“Yen”	The currency of Japan.
“Korea”	The Republic of Korea.
“Gwangyang Works”	Gwangyang Steel Works.
“We”	POSCO and its consolidated subsidiaries.
“Pohang Works”	Pohang Steel Works.
“POSCO Group”	POSCO and its consolidated subsidiaries.
“Renminbi”	The currency of the People’s Republic of China.
“Securities Act”	The United States Securities Act of 1933, as amended.
“Securities Exchange Act”	The United States Securities Exchange Act of 1934, as amended.
“SEC”	The United States Securities and Exchange Commission.
“tons”	Metric tons (1,000 kilograms), equal to 2,204.6 pounds.
“U.S. GAAP”	Generally accepted accounting principles in the United States of America.
“Won” or “₩”	The currency of the Republic of Korea.

Any discrepancies in any table between totals and the sums of the amounts listed are due to rounding.

PART I

Item 1. *Identity of Directors, Senior Managers and Advisers*

Item 1.A. *Directors and Senior Management*

Not applicable

Item 1.B. *Advisers*

Not applicable

Item 1.C. *Auditor*

Not applicable

Item 2. *Offer Statistics and Expected Timetable*

Not applicable

Item 2.A. *Offer Statistics*

Not applicable

Item 2.B. *Method and Expected Timetable*

Not applicable

Item 3. *Key Information*

Item 3.A. *Selected Financial Data*

The selected financial data presented below should be read in conjunction with our Consolidated Financial Statements and related notes thereto and “Item 5. Operating and Financial Review and Prospects” included elsewhere in this annual report. The selected financial data in Won as of December 31, 2017 and 2018 and for each of the years in the three-year period ended December 31, 2018 were derived from our Consolidated Financial Statements included elsewhere in this annual report. Our Consolidated Financial Statements are prepared in accordance with IFRS as issued by the IASB.

In addition to preparing financial statements in accordance with IFRS as issued by the IASB included in this annual report, we prepare financial statements in accordance with Korean International Financial Reporting Standards (“K-IFRS”) as adopted by the Korean Accounting Standards Board (the “KASB”), which we are required to file with the Financial Services Commission and the Korea Exchange under the FSCMA. English translations of such financial statements are furnished to the SEC under Form 6-K. K-IFRS differs in certain respects from IFRS as issued by the IASB in the presentation of operating profit. Additionally, under K-IFRS, revenue from the development and sale of certain real estate is recognized using the percentage of completion method. However, under IFRS as issued by the IASB, revenue from the development and sale of real estate is recognized when an individual unit of residential real estate is delivered to the buyer. As a result, our consolidated statements of comprehensive income and our consolidated statements of financial position prepared in accordance with IFRS as issued by the IASB included in this annual report differ from our consolidated statements of comprehensive income and consolidated statements of financial position prepared in accordance with K-IFRS. See “Item 5.A. Operating Results — Explanatory Note Regarding Presentation of Certain Financial Information under K-IFRS.”

The information set forth below is not necessarily indicative of the results of future operations and should be read in conjunction with “Item 5. Operating and Financial Review and Prospects” and our consolidated financial statements and related notes included in this annual report.

Selected consolidated statement of comprehensive income data

	For the Year Ended December 31,				
	2014	2015	2016	2017	2018
	(In billions of Won, except per share data)				
Revenue	₩ 64,759	₩ 58,522	₩ 52,940	₩ 60,187	₩ 65,155
Cost of sales	57,465	52,018	46,271	51,916	57,129
Gross profit	7,293	6,504	6,668	8,271	8,026
Impairment loss on trade accounts and notes receivable	109	190	165	174	75
Other administrative expenses	2,201	2,206	2,126	2,003	1,986
Selling expenses	1,760	1,729	1,554	1,557	369
Impairment loss on other receivables	96	158	38	98	63
Other operating income	269	549	215	448	524
Other operating expenses	884	1,285	718	691	2,014
Operating profit	2,513	1,486	2,282	4,196	4,042
Share of profit (loss) of equity-accounted investees, net ..	(300)	(506)	(89)	11	113
Finance income	2,397	2,557	2,232	2,373	1,706
Finance costs	3,222	3,387	3,014	2,484	2,244
Profit before income tax	1,388	150	1,412	4,095	3,616
Income tax expense	824	267	380	1,186	1,684
Profit (loss)	564	(116)	1,032	2,909	1,932
Total comprehensive income (loss)	108	(278)	1,486	2,348	1,504
Profit (loss) for the period attributable to:					
Owners of the controlling company	633	171	1,355	2,756	1,712
Non-controlling interests	(69)	(288)	(323)	153	220
Total comprehensive income (loss) attributable to:					
Owners of the controlling company	182	24	1,814	2,184	1,293
Non-controlling interests	(73)	(302)	(328)	164	211
Basic and diluted earnings per share ⁽¹⁾	7,514	1,731	16,521	34,040	21,177
Dividends per share of common stock	8,000	8,000	8,000	8,000	10,000

Selected consolidated statements of financial position data

	As of December 31,				
	2014	2015	2016	2017	2018
	(In billions of Won)				
Working capital ⁽²⁾	₩ 10,833	₩ 9,148	₩ 10,711	₩ 12,354	₩ 14,721
Total current assets	33,208	29,502	29,655	31,844	34,152
Property, plant and equipment, net	35,241	34,523	33,770	31,884	30,018
Total non-current assets	52,636	51,246	50,483	47,941	44,625
Total assets	85,844	80,748	80,138	79,786	78,777
Short-term borrowings and current installments of long-term borrowings	12,195	12,371	10,195	11,275	10,290
Long-term borrowings, excluding current installments	15,233	12,849	12,510	9,789	9,920
Total liabilities	40,586	35,735	34,372	32,459	32,104
Share capital	482	482	482	482	482
Total equity	45,257	45,013	45,765	47,327	46,673

Selected consolidated statements of cash flows data

	For the Year Ended December 31,				
	2014	2015	2016	2017	2018
	(In billions of Won)				
Net cash provided by operating activities	₩ 3,412	₩ 7,602	₩ 5,269	₩ 5,607	₩ 5,870
Net cash used in investing activities	(3,745)	(4,535)	(3,755)	(3,818)	(2,648)
Net cash provided by (used in) financing activities	135	(2,242)	(3,951)	(1,566)	(3,195)
Net increase (decrease) in cash and cash equivalents	(186)	849	(2,424)	165	31
Cash and cash equivalents at beginning of the year	4,209	4,022	4,871	2,448	2,613
Cash and cash equivalents at end of the year	4,022	4,871	2,448	2,613	2,644

- (1) See Note 36 of Notes to Consolidated Financial Statements for method of calculation. The weighted average number of common shares outstanding used to calculate basic and diluted earnings per share was 79,801,539 shares as of December 31, 2014, 79,993,834 shares as of December 31, 2015, 79,996,389 shares as of December 31, 2016, 79,998,600 shares as of December 31, 2017 and 80,000,606 shares as of December 31, 2018.
- (2) "Working capital" means current assets minus current liabilities.

Item 3.B. Capitalization and Indebtedness

Not applicable

Item 3.C. Reasons for Offer and Use of Proceeds

Not applicable

Item 3.D. Risk Factors

You should carefully consider the risks described below.

The global economic downturn may adversely affect our business and performance. The global economic outlook for the near future remains uncertain.

Our business is affected by highly cyclical market demand for our steel products from a number of industries, including the construction, automotive, shipbuilding and electrical appliances industries as well as downstream steel processors, which are sensitive to general conditions in the global economy. Macroeconomic factors, such as the economic growth rate, employment levels, interest rates, inflation rates, exchange rates, commodity prices, demographic trends and fiscal policies of governments can have a significant effect on such industries. From time to time, these industries have experienced significant and sometimes prolonged downturns, which in turn have negatively impacted our steel business. Global economic conditions have deteriorated in recent years, with global financial and capital markets experiencing substantial volatility. Such developments have been caused by, and continue to be exacerbated by, among other things, the slowdown of economic growth in China and other major emerging market economies, adverse economic and political conditions in Europe and Latin America and continuing geopolitical and social instability in North Korea and various parts of the Middle East, as well as uncertainty regarding the timing and method of the United Kingdom's exit from the European Union ("Brexit"), and a deterioration in economic and trade relations between the United States and its major trading partners, including China, Canada and Mexico.

An actual or anticipated further deterioration of global economic conditions may result in a decline in demand for our products that could have a negative impact on the prices at which they can be sold. In such a case, we will likely face pressure to reduce prices and we may need to rationalize our production capacity and reduce fixed costs. In the past, we have adjusted our crude steel production levels and sales prices in response to sluggish demand from our customers in industries adversely impacted by the deteriorating economic conditions. We produced 42.2 million tons of crude

steel and stainless steel in 2016, 42.2 million tons in 2017 and 42.9 million tons in 2018. The average unit sales prices for our semi-finished and finished steel products were Won 745 thousand per ton in 2016, Won 904 thousand per ton in 2017 and Won 934 thousand per ton in 2018.

We expect fluctuation in demand for our steel products and trading services to continue to prevail at least in the near future. We may decide to further adjust our future crude steel production or our sales prices on an on-going basis subject to market demand for our products, the production outlook of the global steel industry and global economic conditions in general. In addition, economic downturns in the Korean and global economies could result in market conditions characterized by weaker demand for steel products from a number of industries as well as falling prices for export and import products and reduced trade levels. Deterioration of market conditions may result in changes in assumptions underlying the carrying value of certain assets, which in turn could result in impairment of such assets, including intangible assets such as goodwill. In addition, our ability to reduce expenditures for production facilities and research and development during an industry downturn is limited because of the need to maintain our competitive position. If we are unable to reduce our expenses sufficiently to offset reductions in price and sales volume, our margins will suffer and our business, financial condition and results of operations may be materially and adversely affected.

Korea is our most important market, and our current business and future growth could be materially and adversely affected if economic conditions in Korea deteriorate.

We are incorporated in Korea, and a substantial portion of our operations and assets are located in Korea. Korea is our most important market, accounting for 38.4% of our total revenue from steel products produced and sold by us in 2018. Domestic demand for our products is affected by the condition of major steel consuming industries, such as construction, shipbuilding, automotive, electrical appliances and downstream steel processors, and the Korean economy in general. In addition, the trading operations of POSCO International Corporation ("POSCO International" and formerly known as POSCO Daewoo Corporation) are affected by the general level of trade between Korea and other countries, which in turn tends to fluctuate based on general conditions in the Korean and global economies. As a result, we are subject to political, economic, legal and regulatory risks specific to Korea, and our performance and successful fulfillment of our operational strategies are largely dependent on the overall Korean economy. The economic indicators in Korea in recent years have shown mixed signs, and future growth of the Korean economy is subject to many factors beyond our control, including developments in the global economy.

In recent years, adverse conditions and volatility in the worldwide financial markets, fluctuations in oil and commodity prices and the general weakness of the global economy have contributed to the uncertainty of global economic prospects in general and have adversely affected, and may continue to adversely affect, the Korean economy. The value of the Won relative to major foreign currencies has also fluctuated significantly and, as a result of changing global and Korean economic conditions, there has been volatility in the stock prices of Korean companies in recent years. Future declines in the Korea Composite Stock Price Index (the "KOSPI") and large amounts of sales of Korean securities by foreign investors and subsequent repatriation of the proceeds of such sales may adversely affect the value of the Won, the foreign currency reserves held by financial institutions in Korea and the ability of Korean companies to raise capital. Any future deterioration of the Korean or global economy could adversely affect our business, financial condition and results of operations.

Developments that could have an adverse impact on Korea's economy include:

- declines in consumer confidence and a slowdown in consumer spending;
- deterioration in economic or diplomatic relations between Korea and its trading partners or allies, including deterioration resulting from territorial or trade disputes or disagreements in foreign policy (such as the controversy between Korea and China regarding the deployment of a Terminal High Altitude Area Defense system in Korea by the United States in

March 2017 and the ensuing economic and other retaliatory measures by China against Korea during the remainder of 2017);

- adverse conditions in the economies of countries and regions that are important export markets for Korea, such as China, the United States, Europe and Japan, or in emerging market economies in Asia or elsewhere, as well as increased uncertainties related to Brexit;
- adverse changes or volatility in foreign currency reserve levels, commodity prices (including oil prices), exchange rates (including fluctuation of the U.S. dollar, Euro or Japanese Yen exchange rates or revaluation of the Chinese Renminbi), interest rates, inflation rates or stock markets;
- increased sovereign default risk in select countries and the resulting adverse effects on the global financial markets;
- investigations of large Korean business groups and their senior management for possible misconduct;
- a continuing rise in the level of household debt and increasing delinquencies and credit defaults by retail and small- and medium-sized enterprise borrowers in Korea;
- social and labor unrest;
- decreases in the market prices of Korean real estate;
- the economic impact of any pending or future free trade agreements or of any changes to existing free trade agreements;
- a decrease in tax revenue or a substantial increase in the Government's expenditures for fiscal stimulus measures, unemployment compensation and other economic and social programs that would lead to an increased government budget deficit;
- financial problems or lack of progress in the restructuring of Korean business groups, other large troubled companies, their suppliers or the financial sector;
- loss of investor confidence arising from corporate accounting irregularities or corporate governance issues concerning certain Korean companies;
- increases in social expenditures to support an aging population in Korea or decreases in economic productivity due to the declining population size in Korea;
- geo-political uncertainty and risk of further attacks by terrorist groups around the world;
- the occurrence of severe health epidemics in Korea or other parts of the world, such as the Middle East Respiratory Syndrome outbreak in Korea in 2015;
- natural or man-made disasters that have a significant adverse economic or other impact on Korea or its major trading partners;
- political uncertainty or increasing strife among or within political parties in Korea;
- hostilities or political or social tensions involving oil producing countries in the Middle East and North Africa and any material disruption in the global supply of oil or sudden increase in the price of oil;
- increased reliance on exports to service foreign currency debts, which could cause friction with Korea's trading partners;
- the continued growth of the Chinese economy, to the extent its benefits (such as increased exports to China) are outweighed by its costs (such as competition in export markets or for foreign investment and the relocation of manufacturing bases from Korea to China);

- political or social tensions involving Russia and any resulting adverse effects on the global supply of oil or the global financial markets; and
- an increase in the level of tensions or an outbreak of hostilities between North Korea and Korea or the United States.

We rely on export sales for a significant portion of our total sales. Adverse economic and financial developments in Asia in the future may have an adverse effect on demand for our products in Asia and increase our foreign exchange risks.

Our export sales and overseas sales to customers abroad accounted for 61.6% of our total revenue from steel products produced and sold by us in 2018. Our export sales volume to customers in Asia, including China, Japan, Indonesia, Thailand and Malaysia, accounted for 62.6% of our total export sales revenue from steel products produced and exported by us in 2018, and we expect our sales to these countries to remain important in the future. In particular, our export volume to China has increased in recent years and accounted for 28.9% of our total export sales revenue from steel products produced and exported by us in 2018. Accordingly, adverse economic and financial developments in these countries may have an adverse effect on demand for our products. Unfavorable or uncertain economic and market conditions, which can be caused, among others, by difficulties in the financial sector, corporate, political or other scandals that may reduce confidence in the markets, declines in business confidence, increases in inflation, natural disasters or pandemics, outbreaks of hostilities or other geopolitical instability. Deterioration in economic or diplomatic relations between Korea and its trading partners or allies, including deterioration resulting from territorial or trade disputes or disagreements in foreign policy (such as the controversy between Korea and China, which is Korea's largest export market, regarding the deployment of a Terminal High Altitude Area Defense system in Korea by the United States in March 2017 and the ensuing economic and other retaliatory actions by China against Korea during the remainder of 2017), or a combination of these or other factors, have, in the past adversely affected, and may in the future adversely affect, demand for our products.

Economic weakness in Asia may also adversely affect our sales to the Korean companies that export to the region, especially companies in the construction, shipbuilding, automotive, electrical appliances and downstream steel processing industries. Weaker demand in these countries, combined with an increase in global production capacity, may also reduce export prices in Dollar terms of our principal products sold to customers in Asia. For a discussion of production over-capacity in the global steel industry, see “— We operate in the highly competitive steel, trading and construction industries, and our failure to successfully compete would adversely affect our market position and business.” We attempt to maintain and expand our export sales to generate foreign currency receipts to cover our foreign currency purchases and debt service requirements. Consequently, any decrease in our export sales could also increase our foreign exchange risks.

Depreciation of the value of the Won against the Dollar and other major foreign currencies may have a material adverse effect on the results of our operations and on the price of the ADSs.

Our consolidated financial statements are prepared from our local currency denominated financial results, assets and liabilities and our subsidiaries around the world, which are then translated into Won. A substantial proportion of our consolidated financial results is accounted for in currencies other than the Won. Accordingly, our consolidated financial results and assets and liabilities may be materially affected by changes in the exchange rates of foreign currencies. In 2018, 61.6% of our total revenue from steel products produced and sold by us was in overseas markets outside of Korea. To the extent that we incur costs in one currency and make sales in another, our profit margins may be affected by changes in the exchange rates between the two currencies. Since the currency in which sales are recorded may not be the same as the currency in which expenses are incurred, foreign

exchange rate fluctuations may materially affect our results of operations. Depreciation of the Won may materially affect the results of our operations because, among other things, it causes:

- an increase in the amount of Won required for us to make interest and principal payments on our foreign currency-denominated debt;
- an increase in Won terms in the costs of raw materials and equipment that we purchase from overseas sources and a substantial portion of our freight costs, which are denominated primarily in Dollars; and
- foreign exchange translation losses on foreign-currency denominated liabilities, which lower our earnings for accounting purposes.

Appreciation of the Won against major currencies, on the other hand, causes:

- our export products to be less competitive by raising our prices in Dollar, Yen and Renminbi terms; and
- a reduction in net sales and accounts receivables in Won from export sales, which are primarily denominated in Dollars and to a lesser extent in Yen and Renminbi.

The overall net impact from fluctuations of the Won against major currencies is difficult to estimate and varies from year to year. We strive to naturally offset our foreign exchange risk by matching foreign currency receivables with our foreign currency payables and our overseas subsidiaries have sought to further mitigate the adverse impact of exchange rate fluctuations by conducting business transactions in the local currency of the respective market in which the transactions occur. In particular, POSCO International's exposure to fluctuations in exchange rates, including the Won/Dollar exchange rate, is limited because trading transactions typically involve matched purchase and sale contracts, which result in limited settlement exposure, and because POSCO International's contracts with domestic suppliers of products for export and with domestic purchasers of imported products are generally denominated in Dollars. Although the impact of exchange rate fluctuations is partially mitigated by such strategies, we and our subsidiaries, particularly POSCO International and POSCO Engineering & Construction Co., Ltd. ("POSCO E&C"), also periodically enter into derivative contracts, primarily foreign currency swaps and forward exchange contracts, to further hedge some of our foreign exchange risks. However, our results of operations have historically been affected by exchange rate fluctuations and there can be no assurance that such strategies will be sufficient to reduce or eliminate the adverse impact of such fluctuations in the future.

Fluctuations in the exchange rate between the Won and the Dollar will also affect the Dollar equivalent of the Won price of the shares of our common stock on the KRX KOSPI Market and, as a result, will likely affect the market price of the ADSs. These fluctuations will also affect the Dollar conversion by the depositary for the ADRs of cash dividends, if any, paid in Won on shares of common stock represented by the ADSs.

We are dependent on imported raw materials, and significant increases in market prices of essential raw materials could adversely affect our margins and profits.

We purchase substantially all of the principal raw materials we use from sources outside Korea, including iron ore and coal. POSCO imported approximately 54 million dry metric tons of iron ore and 29 million wet metric tons of coal in 2018. Iron ore is imported primarily from Australia, Brazil and Canada. Coal is imported primarily from Australia, Canada and Russia. Although we have not experienced significant unanticipated supply disruptions in the past, supply disruptions, which could be caused by political or other events in the countries from which we import these materials, could adversely affect our operations. In addition, we are particularly exposed to increases in the prices of coal, iron ore and nickel, which represent the largest components of our cost of goods sold. The prices

of our key raw materials have fluctuated significantly in recent years. For example, the average market price of coal per wet metric ton (Premium Low Vol Coking Coal, FOB Australia Index announced by Platts) was US\$143 in 2016, US\$188 in 2017 and US\$207 in 2018. The average market price of iron ore per dry metric ton (Iron Ore 62% Fe, CFR China Index announced by Platts) was US\$58 in 2016, US\$71 in 2017 and US\$69 in 2018.

Our long-term supply contracts generally have terms of three to ten years and provide for periodic price adjustments to the then-market prices. We typically adjust the prices on a quarterly basis and maintain approximately one month of inventory of raw materials. Such price adjustments are driven by various factors, including the global economic outlook, global market prices of raw materials and steel products, supply and demand outlook of raw materials and production costs of raw materials. For both coal and iron ore, we typically agree on the purchase price with the suppliers primarily based on the spot market price periodically announced by Platts (Premium Low Vol Coking Coal, FOB Australia Index and Iron Ore 62% Fe, CFR China Index). As of December 31, 2018, 100 million tons of iron ore and 14 million tons of coal remained to be purchased under long-term supply contracts. Future increases in prices of our key raw materials and our inability to pass along such increases to our customers could adversely affect our margins and profits. Increased prices may also cause potential customers to defer purchase of steel products, while rapidly falling prices may increase loss on valuation of raw material inventory purchased when prices were higher, either of which could have an adverse effect on our business, financial condition and results of operations.

We operate in the highly competitive steel, trading and construction industries, and our failure to successfully compete would adversely affect our market position and business.

Steel. The markets for our steel products are highly competitive and we face intense global competition. China is the largest steel producing country in the world by a significant margin, with the balance between its domestic production and demand being an important factor in the determination of global steel prices. In recent years, a slowdown in domestic demand for steel products in China resulting from slowed economic growth, combined with an expansion in steel production capacity, has led to production over-capacity in the Chinese steel industry, which in turn has led the Chinese government to pursue aggressive consolidation in the Chinese steel industry, such as the consolidation of Baosteel Group and Wuhan Iron and Steel in 2016, that has resulted in fewer but larger steel manufacturers that are able to compete more effectively in the global steel industry. In addition, the global steel industry has experienced consolidation in the past, including through the mergers of Mittal and Arcelor in 2006 and Nippon Steel and Sumitomo Metal in 2012. Competition from such global steel manufacturers with expanded production capacity as well as competitors from emerging markets, especially from China and India, has resulted in significant price competition and may result in declining margins and reductions in revenue in the future. Our larger competitors may use their resources, which may be greater than ours, against us in a variety of ways, including by making additional acquisitions, investing more aggressively in product development and capacity and displacing demand for our export products.

In the past, increased production capacity, combined with decreased demand resulting from a slowdown of the global economy, has from time to time resulted in production over-capacity in the global steel industry which in turn resulted in downward pressure on global steel prices. For example, the global steel prices decreased in the fourth quarter of 2018 in part due to a decrease in demand from China as well as an increase in the production capacity of Chinese manufacturers that survived the consolidation of the Chinese steel industry. Production over-capacity in global steel industry may intensify if global economic growth slows or demand from developing countries, particularly from China, continues to lag behind the growth in production capacity. Production over-capacity in the global steel industry is likely to:

- reduce export prices in Dollar terms of our principal products, which in turn may reduce our sales prices in Korea;

- increase competition in the Korean market as foreign producers seek to export steel products to Korea as other markets experience a slowdown;
- negatively affect demand for our products abroad and our ability to expand export sales; and
- affect our ability to increase steel production in general.

Steel also competes with other natural and synthetic materials that may be used as steel substitutes, such as aluminum, cement, composites, glass, plastic and wood. Government regulatory initiatives mandating the use of such materials instead of steel, whether for environmental or other reasons, as well as the development of attractive alternative substitutes for steel products, may reduce demand for steel products and increase competition in the global steel industry.

As part of our strategy to compete in this challenging landscape, we will continue to invest in developing innovative products that offer the greatest potential returns and enhance the overall quality of our products, as well as make additional investments in the development of new manufacturing technologies. However, there is no assurance that we will be able to continue to compete successfully in this economic environment or that a slowdown of the global economy or production over-capacity will not have a material adverse effect on our business, results of operations or financial condition.

Trading. POSCO International competes principally with other Korean general trading companies that are affiliated with major domestic business groups, as well as global trading companies based in other countries. In the domestic market, competition for export transactions on behalf of domestic suppliers and import transactions on behalf of domestic purchasers was limited, as most affiliated general trading companies of large Korean business groups generally relied on affiliate transactions for the bulk of their trading business. However, in recent years, many of these Korean general trading companies have reduced their reliance on their affiliated business group and transactions carried out on behalf of their member companies and instead have generally evolved to focus on segments of the import and export markets in which they have a competitive advantage. As a result, competition among Korean general trading companies in the area of traditional trade has become more intense.

The overseas trading markets in which POSCO International operates are also highly competitive. POSCO International's principal competitors in overseas trading markets include Korean trading companies that operate in various international markets, as well as foreign trading companies, particularly those based in Japan. As POSCO International diversifies into businesses other than traditional trading such as natural resources development, it also increasingly competes with other Korean and international companies involved in these businesses. Some of POSCO International's competitors may be more experienced and have greater financial resources and pricing flexibility than POSCO International, as well as more extensive global networks and wider access to customers. There is no assurance that POSCO International will be able to continue to compete successfully in this economic environment or that the prolonged slowdown of the global economy will not have a material adverse effect on its business, results of operations or financial condition. In 2018, we recognized impairment of goodwill of Won 158 billion related to a decrease in value-in-use of POSCO International.

Construction. POSCO E&C, our consolidated subsidiary, operates in the highly competitive construction industry. Competition is based primarily on price, reputation for quality, reliability, punctuality and financial strength of contractors. Intense competition among construction companies may result in, among other things, a decrease in the price POSCO E&C can charge for its services, difficulty in winning bids for construction projects, an increase in construction costs and difficulty in obtaining high-quality contractors and qualified employees.

In Korea, POSCO E&C's main competition in the construction of residential and non-residential buildings, EPC (or engineering, procurement and construction) projects, urban planning and development projects and civil works projects consists of approximately ten major domestic

construction companies, many of which are member companies of other large business groups in Korea and are capable of undertaking larger-scale, higher-value-added projects that offer greater potential returns. A series of measures introduced by the Government over the past few years to regulate housing prices in Korea, as well as increasing popularity of low-bid contracts in civil works project mandates, have contributed to increased competition in the Korean construction industry in recent years.

Competition for new project awards in overseas markets is also intense. In these markets, POSCO E&C faces competition from local construction companies and other major Korean construction companies with overseas operations, as well as international construction companies from other countries. Construction companies from other developed countries may be more experienced, have greater financial resources and possess more sophisticated technology than POSCO E&C, while construction companies from developing countries often have the advantage of lower wage costs. Some of these competitors have achieved higher market penetration than POSCO E&C has in specific markets in which it competes, and POSCO E&C may need to accept lower margins in order for it to compete successfully against them. POSCO E&C's failure to successfully compete in the domestic or overseas construction markets could adversely affect its market position and its results of operations and financial condition.

We may not be able to successfully execute our diversification strategy.

In part to prepare for the eventual maturation of the Korean steel market, we have made investments in the past decade to secure new growth engines by diversifying into new businesses related to our steel operations that we believe will offer greater potential returns, such as participation in EPC projects in the steel sector and natural resources development, as well as entering into new businesses not related to our steel operations such as power generation and alternative energy solutions, LNG and agricultural trading and production of anode and cathode materials for rechargeable batteries as well as other comprehensive materials such as lithium, magnesium sheet, nickel and cobalt. From time to time, we may selectively acquire or invest in companies to pursue such diversification strategy.

The success of our diversification strategy will depend, in part, on our ability to realize the anticipated growth opportunities and synergies. Some of our diversification efforts have not been successful. For example, we incurred impairment loss of Won 810 billion in 2018 related to our synthetic natural gas production facility in Gwangyang due to our discontinuation of the business which we had launched in 2011, which was adversely impacted by a decline in the market price of liquefied natural gas ("LNG"). The realization of the anticipated benefits depends on numerous factors, some of which are outside our control, including the availability of qualified personnel, establishment of new relationships and expansion of existing relationships with various customers and suppliers, procurement of necessary technology and know-how to engage in such businesses and decreases in the prices of competing products or services that make our products or services less competitive. The realization of the anticipated benefits may be impeded, delayed or reduced as a result of numerous factors, some of which are outside our control. These factors include:

- difficulties in integrating the operations of the acquired business, including information and accounting systems, personnel, policies and procedures, and in reorganizing or reducing overlapping operations, marketing networks and administrative functions, which may require significant amounts of time, financial resources and management attention;
- unforeseen contingent risks or latent liabilities relating to the acquisition that may become apparent in the future;
- difficulties in managing a larger business; and
- loss of key management personnel or customers.

In addition, in order to finance these acquisitions, we intend to use cash on hand, funds from operations, issuances of equity and debt securities, and, if necessary, financings from banks and other sources as well as entering into consortiums with financial investors. However, no assurance can be given that we will be able to obtain sufficient financing for such acquisitions or investments on terms commercially acceptable to us or at all. We cannot assure you that our diversification strategy can be completed profitably or that the diversification efforts will not adversely affect our combined business, financial condition and results of operations.

Expansion of our production operations abroad is important to our long-term success, and our limited experience in the operation of our business outside Korea increases the risk that our international expansion efforts will not be successful.

We conduct international trading and construction operations abroad, and our business relies on a global trading network comprised of overseas subsidiaries, branches and representative offices. Although many of our subsidiaries and overseas branches are located in developed countries, we also operate in numerous countries with developing economies. In addition, we intend to continue to expand our steel production operations internationally by carefully seeking out promising investment opportunities, particularly in China, India, Southeast Asia and Latin America, in part to prepare for the eventual maturation of the Korean steel market. We may enter into additional joint ventures with foreign steel producers that would enable us to rely on these businesses to conduct our operations, establish local networks and coordinate our sales and marketing efforts abroad. To the extent that we enter into these arrangements, our success will depend in part on the willingness of our partner companies to dedicate sufficient resources to their partnership with us.

In other situations, we may decide to establish manufacturing facilities by ourselves instead of relying on partners. The demand and market acceptance for our products produced abroad are subject to a high level of uncertainty and are substantially dependent upon the market condition of the global steel industry. We cannot assure you that our international expansion plan will be profitable or that we can recoup the costs related to such investments.

Expansion of our trading, construction and production operations abroad requires management attention and resources. In addition, we face additional risks associated with our expansion outside Korea, including:

- challenges caused by distance, language and cultural differences;
- higher costs associated with doing business internationally;
- legal and regulatory restrictions, including foreign exchange controls that might prevent us from repatriating cash earned in countries outside Korea;
- longer payment cycles in some countries;
- credit risk and higher levels of payment fraud;
- currency exchange risks;
- potentially adverse tax consequences;
- political and economic instability; and
- seasonal reductions in business activity during the summer months in some countries.

We have limited insurance coverage and may incur significant losses resulting from operating hazards, product liability claims from customers or business interruptions.

The normal operation of our manufacturing facilities may be interrupted by accidents caused by operating hazards, power supply disruptions and equipment failures, as well as natural disasters. As

with other industrial companies, our operations involve the use, handling, generation, processing, storage, transportation and disposal of hazardous materials, which may result in fires, explosions, spills and other unexpected or dangerous accidents causing property damage as well as personal injuries or death. We are also exposed to risks associated with product liability claims in the event that the use of the products we sell results in injury. We maintain property insurance for our property, plant and equipment that we believe to be consistent with market practice in Korea. However, we may not have adequate resources to satisfy a judgment in excess of our insurance coverage in the event of a successful claim against us. Any occurrence of accidents or other events affecting our operations could result in potentially significant monetary damages, diversion of resources, production disruption and delay in delivery of our products, which may have a material adverse effect on our business, financial condition and results of operations.

Further increases in, or new impositions of, anti-dumping, safeguard or countervailing duty proceedings may have an adverse impact on our export sales.

As a steel producer with global sales and operations, we are involved in trade remedy proceedings in markets worldwide, including in the United States. We proactively participate in and plan for such proceedings to minimize any adverse effects and associated risks. While there has been an increase in the number of trade cases in recent years, and an increased focus on trade issues by government officials, all such cases have been product and market-specific, and thus have been limited in scope relative to our global sales and operations. We continue to carefully monitor developments with respect to trade remedy policy in all markets in which we participate and, where necessary, vigorously defend our rights through litigation before tribunals such as the U.S. Court of International Trade. Our products that are subject to anti-dumping duties, safeguard duties, countervailing duties, quotas or tariffs in the aggregate currently do not account for a material portion of our total sales, and such proceedings have not had a material adverse impact on our business and operations in recent years. However, there can be no assurance that increases in, or new impositions of, anti-dumping duties, safeguard duties, countervailing duties, quotas or tariffs on our exports of products abroad may not have a material adverse impact on our exports in the future.

We participate in overseas natural resources exploration, development and production projects, which expose us to various risks.

As part of our efforts to diversify our operations, we carefully seek out promising overseas natural resources exploration, development and production opportunities. For instance, we purchased lithium mining rights at the Salar del Hombre Muerto salt flat in northern Argentina in August 2018 for \$280 million. We also participate in natural resources projects as part of consortia or through acquisitions of minority interests, such as a gas field exploration project in Myanmar through POSCO International. We may also selectively acquire or invest in companies or businesses that engage in such activities. To the extent that we enter into these arrangements, our success in these endeavors will depend in part on the willingness of our partner companies to dedicate sufficient resources to their partnership with us, as well as our ability to finance such investments.

The demand and market acceptance for such activities abroad are subject to a substantially higher level of uncertainty than our traditional steel business and are substantially dependent upon the market condition of the global natural resources industry as well as the political and social environment of the target countries. The performance of projects in which we participate may be adversely affected by the occurrence of military hostility, political unrest or acts of terrorism. In addition, some of our current exploration, development and production projects involve drilling exploratory wells on properties with no proven amount of natural resource reserves. Although all drilling, whether developmental or exploratory, involves risks, exploratory drilling involves greater risks of dry holes or failure to find commercial quantities of natural resources. Other risks to which such activities are subject include obtaining required regulatory approvals and licenses, securing and maintaining

adequate property rights to land and natural resources, and managing local opposition to project development. A decrease in the market price of raw materials may also adversely impact the value of our investments related to natural resources projects, potentially resulting in impairment losses. For example, in 2018, we recognized impairment of industrial property rights of Won 78 billion related to our investment in Hume Coal Pty Limited, a coal mining company in Australia, and Won 50 billion in connection with a shale oil and gas project in Canada. We have limited experience in this business, and we cannot assure you that our overseas natural resources exploration, development and production projects will be profitable, that we will be able to meet the financing requirements for such projects, or that we can recoup the costs related to such investments, which in turn could materially and adversely affect our business, financial condition and results of operations.

We may encounter problems with joint overseas natural resources exploration, development and production projects and large-scale infrastructure projects, which may materially and adversely affect our business.

We typically pursue our natural resources exploration, development and production projects jointly with consortium partners or through acquisition of minority interests in such projects, and we expect to be involved in other joint projects in the future. We sometimes hold a majority interest in the projects among the consortium partners, but we often lack a controlling interest in the joint projects. Therefore, we may not be able to require that our joint ventures sell assets or return invested capital, make additional capital contributions or take any other action without the vote of at least a majority of our consortium partners. If there are disagreements between our consortium partners and us regarding the business and operations of the joint projects, we cannot assure you that we will be able to resolve them in a manner that will be in our best interests. Certain major decisions, such as selling a stake in the joint project, may require the consent of all other partners. These limitations may adversely affect our ability to obtain the economic and other benefits we seek from participating in these projects.

In addition, our consortium partners may:

- have economic or business interests or goals that are inconsistent with ours;
- take actions contrary to our instructions, requests, policies or objectives;
- be unable or unwilling to fulfill their obligations;
- have financial difficulties; or
- have disputes with us as to their rights, responsibilities and obligations.

Any of these and other factors may have a material adverse effect on the performance of our joint projects and expose us to a number of risks, including the risk that the partners may be incapable of providing the required financial support to the partnerships and the risk that the partners may not be able to fulfill their other obligations, resulting in disputes not only between our partners and us, but also between the joint ventures and their customers. Such a material adverse effect on the performance of our joint projects may in turn materially and adversely affect our business, results of operations and financial condition.

Cyclical fluctuations based on macroeconomic factors may adversely affect POSCO E&C's business and performance.

We engage in engineering and construction activities through POSCO E&C. The Construction Segment is highly cyclical and tends to fluctuate based on macroeconomic factors, such as consumer confidence and income, employment levels, interest rates, inflation rates, demographic trends and policies of the Government. From time to time, the construction industry has experienced significant and sometimes prolonged downturns, and our construction revenues have fluctuated in the past

depending on the level of public and private sector construction activities in Korea and abroad. In addition, the performance of POSCO E&C's domestic residential property business is highly dependent on the general condition of the real estate market in Korea. Although the construction industry in Korea has shown signs of recovery in recent years, the demand for construction activities abroad remains weak and the overall prospects for Korean construction companies in 2019 and beyond remain uncertain. A prolonged general downturn in the construction market resulting in weaker demand may adversely affect our business, results of operations or financial condition.

Many of POSCO E&C's domestic and overseas construction projects are on a fixed-price basis, which could result in losses for us in the event that unforeseen additional expenses arise with respect to the project.

Many of POSCO E&C's domestic and overseas construction projects are carried out on a fixed-price basis according to a predetermined timetable, pursuant to the terms of a fixed-price contract. Under such fixed-price contracts, POSCO E&C retains all cost savings on completed contracts but is also liable for the full amount of all cost overruns and may be required to pay damages for late delivery. The pricing of fixed-price contracts is crucial to POSCO E&C's profitability, as is its ability to quantify risks to be borne by it and to provide for contingencies in the contract accordingly.

POSCO E&C attempts to anticipate costs of labor, raw materials, parts and components in its bids on fixed-price contracts. However, the costs incurred and gross profits realized on a fixed-price contract may vary from its estimates due to factors such as:

- unanticipated variations in labor and equipment productivity over the term of a contract;
- unanticipated increases in labor, raw material, parts and components, subcontracting and overhead costs, including as a result of bad weather;
- delivery delays and corrective measures for poor workmanship; and
- errors in estimates and bidding.

If unforeseen additional expenses arise over the course of a construction project, such expenses are usually borne by POSCO E&C, and its profit from the project will be correspondingly reduced or eliminated. For example, we incurred losses in recent years in connection with a delay in the construction of CSP-Companhia Siderurgia do Pecem steel plant complex in Brazil. If POSCO E&C experiences significant unforeseen additional expenses with respect to its fixed price projects, it may incur losses on such projects, which could have a material adverse effect on its financial condition and results of operations.

We are subject to environmental regulations, and our operations could expose us to substantial liabilities.

We are subject to national and local environmental laws and regulations, including increasing pressure to reduce emission of carbon dioxide relating to our manufacturing process, and our steel manufacturing and construction operations could expose us to risk of substantial liability relating to environmental or health and safety issues, such as those resulting from discharge of pollutants and carbon dioxide into the environment, the handling, storage and disposal of solid or hazardous materials or wastes and the investigation and remediation of contaminated sites. We may be responsible for the investigation and remediation of environmental conditions at currently and formerly operated manufacturing or construction sites. For example, we incurred expenses in recent years relating to contamination of land near our magnesium smelting plant located in Gangneung, Korea and gas treatment plant located in our Pohang Works. We may also be subject to associated liabilities, including liabilities for natural resource damage, third party property damage or personal injury resulting from lawsuits brought by the Government or private litigants. In the course of our operations,

hazardous wastes may be generated at third party-owned or operated sites, and hazardous wastes may be disposed of or treated at third party-owned or operated disposal sites. If those sites become contaminated, we could also be held responsible for the cost of investigation and remediation of such sites, for any associated natural resource damage, and for civil or criminal fines or penalties.

If our cybersecurity is breached, we may incur significant legal and financial exposure, damage to our reputation and a loss of confidence of our customers.

Our business involves the storage and transmission of confidential information relating to us as well as our customers and suppliers, and any breach in our cybersecurity could expose us to a risk of loss, the improper use or disclosure of such information, ensuing potential liability or litigation, any of which could harm our reputation and adversely affect our business. Although there has been no material instance where an unauthorized party was able to obtain access to our data or our customers' data, there can be no assurance that we will not be vulnerable to cyber-attacks in the future.

Our cybersecurity measures may also fail due to employee error, malfeasance or otherwise. Instituting appropriate access controls and safeguards across our information technology infrastructure is challenging. Furthermore, outside parties may attempt to fraudulently induce employees to disclose sensitive information in order to gain access to our data or our customers' data or accounts or may otherwise obtain access to such data or accounts. Because the techniques used to obtain unauthorized access, disable or degrade service or sabotage systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or implement adequate preventative measures. If an actual or perceived breach of our cybersecurity occurs or the market perception of the effectiveness of our cybersecurity measures is adversely affected, we may incur significant legal and financial exposure, including legal claims and regulatory fines and penalties, damage to our reputation and a loss of confidence of our customers, which could have an adverse effect on our business, financial condition and results of operations.

Failure to protect our intellectual property rights could impair our competitiveness and harm our business and future prospects.

We believe that developing new steel manufacturing technologies that can be differentiated from those of our competitors, such as FINEX, automotive steel manufacturing technology and high-manganese steel manufacturing technology, is critical to the success of our business. We take active measures to obtain protection of our intellectual property by obtaining patents and undertaking monitoring activities in our major markets. However, we cannot assure you that the measures we take will effectively deter competitors from improper use of our proprietary technologies. Our competitors may misappropriate our intellectual property, disputes as to ownership of intellectual property may arise and our intellectual property may otherwise become known or independently developed by our competitors. Any failure to protect our intellectual property could impair our competitiveness and harm our business and future prospects.

We rely on trade secrets and other unpatented proprietary know-how to maintain our competitive position, and unauthorized disclosure of our trade secrets or other unpatented proprietary know-how could negatively affect our business.

We rely on trade secrets and unpatented proprietary know-how and information. We enter into confidentiality agreements with each of our employees and consultants upon the commencement of an employment or consulting relationship. These agreements generally provide that all inventions, ideas, discoveries, improvements and patentable material made or conceived by the individual arising out of the employment or consulting relationship and all confidential information developed or made known to the individual during the term of the relationship is our exclusive property. We cannot assure the enforceability of these types of agreements, or that they will not be breached. We also cannot be certain that we will have adequate remedies for any breach. The disclosure of our trade secrets or other know-how as a result of such a breach could adversely affect our business.

We face the risk of litigation proceedings relating to infringement of intellectual property rights of third parties, which, if determined adversely to us, could cause us to lose significant rights, pay significant damage awards or suspend the sale of certain products.

Our success depends largely on our ability to develop and use our technology and know-how in a proprietary manner without infringing the intellectual property rights of third parties. The validity and scope of claims relating to technology and patents involve complex scientific, legal and factual questions and analysis and, therefore, may be highly uncertain. In addition, because patent applications in many jurisdictions are kept confidential for an extended period before they are published, we may be unaware of other persons' pending patent applications that relate to our products or manufacturing processes. Accordingly, we face the risk of litigation proceedings relating to infringement of intellectual property rights of third parties.

The plaintiffs in actions relating to infringement of intellectual property rights typically seek injunctions and substantial damages. Although patent and other intellectual property disputes are often settled through licensing or similar arrangements, there can be no assurance that such licenses can be obtained on acceptable terms or at all. Accordingly, regardless of the scope or validity of disputed patents or the merits of any patent infringement claims by potential or actual litigants, we may have to engage in protracted litigation. The defense and prosecution of intellectual property suits, patent opposition proceedings and related legal and administrative proceedings can be both costly and time consuming and may significantly divert the efforts and resources of our technical and management personnel. An adverse determination in any such litigation or proceedings could subject us to pay substantial damages to third parties, require us to seek licenses from third parties and pay ongoing royalties or redesign certain products, or subject us to injunctions prohibiting the manufacture and sale of our products or the use of technologies in certain jurisdictions. The occurrence of any of the foregoing could have a material adverse effect on our reputation, business, financial condition and results of operations.

We may be exposed to potential claims for unpaid wages and become subject to additional labor costs arising from the Supreme Court of Korea's interpretation of ordinary wages.

Under the Labor Standards Act, an employee's "ordinary wage" is used as the basis for calculating various statutory benefits. Prior to the Supreme Court of Korea's decision described below, we and other companies in Korea had interpreted the previous guidelines issued by the Ministry of Employment and Labor as excluding fixed bonuses that are paid other than on a monthly basis, such as bi monthly, quarterly or biannually paid bonuses, from employees' ordinary wages.

On December 18, 2013, the Supreme Court of Korea ruled that regularly paid bonuses, including those that are paid other than on a monthly basis, are included in the scope of employees' ordinary wages if these bonuses are paid (i) "regularly," (ii) "uniformly" and (iii) on a "fixed basis," notwithstanding differential amounts based on seniority. Under this decision, any provision of a collective bargaining agreement or other agreements that attempt to exclude such regular bonuses from employees' ordinary wages will be deemed void for violation of the mandatory provisions of Korean law.

The Supreme Court of Korea's decision clarified that if payment of a regular bonus is limited only to those working for the employer on a specific date, such bonus is not fixed and thus does not constitute part of an employee's ordinary wage. The Ministry of Employment and Labor subsequently published guidelines on January 23, 2014 (the "Guidelines"). According to the Guidelines, the Government excludes, from ordinary wages, regular bonuses contingent on employment on a specific date. Based on the Supreme Court of Korea's decision and the Guidelines, we believe that regular bonuses we have paid to our employees are likely not required to be included in their ordinary wages because we have paid regular bonuses only to those working for us on the date of payment calculation, the 15th day of each month. However, if we are nonetheless determined to have underpaid

employees by under-calculating their ordinary wages over the past three years or in the future, we may be liable for additional payments reflecting the expanded scope of employees' ordinary wages. Any such additional payments may have an adverse effect on our financial condition and results of operations.

Escalations in tensions with North Korea could have an adverse effect on us and the market value of our common shares and ADSs.

Relations between Korea and North Korea have been tense throughout Korea's modern history. The level of tension between the two Koreas has fluctuated and may increase abruptly as a result of current and future events. In particular, there have been heightened security concerns in recent years stemming from North Korea's nuclear weapon and ballistic missile programs as well as its hostile military actions against Korea. Some of the significant incidents in recent years include the following:

- North Korea renounced its obligations under the Nuclear Non-Proliferation Treaty in January 2003 and conducted six rounds of nuclear tests since October 2006, including claimed detonations of hydrogen bombs, which are more powerful than plutonium bombs, and warheads that can be mounted on ballistic missiles. Over the years, North Korea has also conducted a series of ballistic missile tests, including missiles launched from submarines and intercontinental ballistic missiles that it claims can reach the United States mainland. In response, the Government has repeatedly condemned the provocations and flagrant violations of relevant United Nations Security Council resolutions. In February 2016, the Government also closed the inter-Korea Gaesong Industrial Complex in response to North Korea's fourth nuclear test in January 2016. Internationally, the United Nations Security Council has passed a series of resolutions condemning North Korea's actions and significantly expanding the scope of sanctions applicable to North Korea, most recently in December 2017 in response to North Korea's intercontinental ballistic missile test in November 2017. Over the years, the United States and the European Union have also expanded their sanctions applicable to North Korea.
- In March 2010, a Korean naval vessel was destroyed by an underwater explosion, killing many of the crewmen on board. The Government formally accused North Korea of causing the sinking, while North Korea denied responsibility. Moreover, in November 2010, North Korea fired more than one hundred artillery shells that hit Korea's Yeonpyeong Island near the Northern Limit Line, which acts as the de facto maritime boundary between Korea and North Korea on the west coast of the Korean peninsula, causing casualties and significant property damage. The Government condemned North Korea for the attack and vowed stern retaliation should there be further provocation.

North Korea's economy also faces severe challenges, which may further aggravate social and political pressures within North Korea.

Although bilateral summit meetings were held between Korea and North Korea in April, May and September 2018 and between the United States and North Korea in June 2018 and February 2019, there can be no assurance that the level of tensions affecting the Korean peninsula will not escalate in the future. Any increase in tensions, which may occur, for example, if North Korea experiences a leadership crisis, high-level contacts between Korea or the United States and North Korea break down or further military hostilities occur, could have a material adverse effect on the Korean economy and on our business, financial condition and results of operations and the market value of our common stock and ADSs.

If you surrender your ADRs to withdraw shares of our common stock, you may not be allowed to deposit the shares again to obtain ADRs.

Under the deposit agreement, holders of shares of our common stock may deposit those shares with the ADR depository's custodian in Korea and obtain ADRs, and holders of ADRs may surrender

ADRs to the ADR depositary and receive shares of our common stock. However, under current Korean laws and regulations, the depositary bank is required to obtain our prior consent for the number of shares to be deposited in any given proposed deposit that exceeds the difference between (i) the aggregate number of shares deposited by us for the issuance of ADSs (including deposits in connection with the initial and all subsequent offerings of ADSs and stock dividends or other distributions related to these ADSs) and (ii) the number of shares on deposit with the depositary bank at the time of such proposed deposit. It is possible that we may not give the consent. As a result, if you surrender ADRs and withdraw shares of common stock, you may not be able to deposit the shares again to obtain ADRs. See “Item 10. Additional Information — Item 10.D. Exchange Controls.”

You may not be able to exercise preemptive rights for additional shares of common stock and may suffer dilution of your equity interest in us.

The Commercial Code and our articles of incorporation require us, with some exceptions, to offer shareholders the right to subscribe for new shares in proportion to their existing ownership percentage whenever new shares are issued. If we issue new shares to persons other than our shareholders (See “Item 10.B. Memorandum and Articles of Association — Preemptive Rights and Issuance of Additional Shares”), a holder of our ADSs will experience dilution of such holding. If none of these exceptions is available, we will be required to grant preemptive rights when issuing additional common shares under Korean law. Under the deposit agreement governing the ADSs, if we offer any rights to subscribe for additional shares of our common stock or any rights of any other nature, the ADR depositary, after consultation with us, may make the rights available to you or use reasonable efforts to dispose of the rights on your behalf and make the net proceeds available to you. The ADR depositary, however, is not required to make available to you any rights to purchase any additional shares unless it deems that doing so is lawful and feasible and:

- a registration statement filed by us under the Securities Act is in effect with respect to those shares; or
- the offering and sale of those shares is exempt from or is not subject to the registration requirements of the Securities Act.

We are under no obligation to file any registration statement under the Securities Act to enable you to exercise preemptive rights in respect of the common shares underlying the ADSs, and we cannot assure you that any registration statement would be filed or that an exemption from the registration requirement under the Securities Act would be available. Accordingly, if a registration statement is required for you to exercise preemptive rights but is not filed by us, you will not be able to exercise your preemptive rights for additional shares and may suffer dilution of your equity interest in us.

U.S. investors may have difficulty enforcing civil liabilities against us and our directors and senior management.

We are incorporated in Korea with our principal executive offices located in Seoul. The majority of our directors and senior management are residents of jurisdictions outside the United States, and the majority of our assets and the assets of such persons are located outside the United States. As a result, U.S. investors may find it difficult to effect service of process within the United States upon us or such persons or to enforce outside the United States judgments obtained against us or such persons in U.S. courts, including actions predicated upon the civil liability provisions of the U.S. federal securities laws. It may also be difficult for an investor to enforce in U.S. courts judgments obtained against us or such persons in courts in jurisdictions outside the United States, including actions predicated upon the civil liability provisions of the U.S. federal securities laws. It may also be difficult for a U.S. investor to bring an action in a Korean court predicated upon the civil liability provisions of the U.S. federal securities laws against our directors and senior management and non-U.S. experts named in this annual report.

We expect to continue operations and investments relating to countries targeted by United States and European Union economic sanctions.

The U.S. Department of the Treasury's Office of Foreign Assets Control, or "OFAC," enforces certain laws and regulations ("OFAC Sanctions") that impose restrictions upon U.S. persons and, in some instances, foreign entities owned or controlled by U.S. persons, with respect to activities or transactions with certain countries, governments, entities and individuals that are the subject of OFAC Sanctions ("U.S. Sanctions Targets"). U.S. persons are also generally strictly prohibited from facilitating such activities or transactions. Similarly, the European Union enforces certain laws and regulations ("E.U. Sanctions") that impose restrictions upon nationals of E.U. member states, persons located within E.U. member states, entities incorporated or constituted under the law of an E.U. member state, or business conducted in whole or in part in E.U. member states with respect to activities or transactions with certain countries, governments, entities and individuals that are the subject of E.U. Sanctions ("E.U. Sanctions Targets" and together with U.S. Sanctions Targets, "Sanctions Targets"). E.U. persons are also generally prohibited from activities that promote such activities or transactions.

We engage in limited business activities in countries that are deemed Sanctions Targets, including Iran and Cuba. We produce and export, typically through our sales subsidiaries, steel products to such countries, including automotive steel sheets and other steel materials to Iranian entities. Our subsidiaries also engage in limited business activities in countries that are deemed Sanctions Targets. In particular, POSCO International engages in the trading of steel, raw materials and other items with entities in countries that are deemed Sanctions Targets, including Iran and Cuba. We believe that such activities and investments do not involve any U.S. goods or services. Our activities in Iran and Cuba accounted for approximately 0.5% of our consolidated revenues in 2016, 0.6% in 2017 and 0.3% in 2018.

We expect to continue to engage in business activities and make investments in countries that are deemed Sanctions Targets over the foreseeable future. Although we believe that OFAC Sanctions under their current terms are not applicable to our current activities, our reputation may be adversely affected, and some of our U.S. investors may be required to divest their investments in us under the laws of certain U.S. states or under internal investment policies or may decide for reputational reasons to divest such investments. We are aware of initiatives by U.S. governmental entities and U.S. institutional investors, such as pension funds, to adopt or consider adopting laws, regulations or policies prohibiting transactions with or investment in, or requiring divestment from, entities doing business with countries identified as state sponsors of terrorism. We cannot assure you that the foregoing will not occur or that such occurrence will not have a material adverse effect on the value of our securities.

This annual report contains "forward-looking statements" that are subject to various risks and uncertainties.

This annual report contains "forward-looking statements" that are based on our current expectations, assumptions, estimates and projections about our company and our industry. The forward-looking statements are subject to various risks and uncertainties. These forward-looking statements include, but are not limited to, those statements using words such as "anticipate," "believe," "continues," "expect," "estimate," "intend," "project," "aim," "plan," "likely to," "target," "contemplate," "predict," "potential" and similar expressions and future or conditional verbs such as "will," "would," "should," "could," "might," "can," "may," or similar expressions generally intended to identify forward-looking statements. Those statements include, among other things, the discussions of our business strategy and expectations concerning our market position, future operations, margins, profitability, liquidity and capital resources. We caution you that reliance on any forward-looking statement involves risks and uncertainties, and that although we believe that the assumptions on which our forward-looking statements are based are reasonable, any of those assumptions could prove to be inaccurate, and, as a result, the forward-looking statements based on those assumptions could be

incorrect. The uncertainties in this regard include, but are not limited to, those identified in the risk factors discussed above. In light of these and other uncertainties, you should not conclude that we will necessarily achieve any plans and objectives or projected financial results referred to in any of the forward-looking statements. We do not undertake to release the results of any revisions of these forward-looking statements to reflect future events or circumstances.

Item 4. Information on the Company

Item 4.A. History and Development of the Company

We were established by the Government on April 1, 1968, under the Commercial Code, to manufacture and distribute steel rolled products and plates in the domestic and overseas markets. The Government owned more than 70% of our equity until 1988, when the Government reduced its ownership of our common stock to 35% through a public offering and listing our shares on the KRX KOSPI Market. In December 1998, the Government sold all of our common stock it owned directly, and The Korea Development Bank completed the sale of our shares that it owned in September 2000. The Government no longer holds any direct interest in us, and our outstanding common stock is currently held by individuals and institutions. See “Item 7. Major Shareholders and Related Party Transactions — Item 7A. Major Stockholders.”

Our legal and commercial name is POSCO. Our principal executive offices are located at POSCO Center, 440 Teheran-ro, Gangnam-gu, Seoul, Korea 06194, and our telephone number is +82-2-3457-0114. The address of our English website is <http://www.posco.com>.

The SEC maintains a website (<http://www.sec.gov>), which contains reports, information statements and other information regarding issuers that file electronically with the SEC.

Item 4.B. Business Overview

The Company

We are the largest fully integrated steel producer in Korea, and one of the largest steel producers in the world, based on annual crude steel production. We produced approximately 42.9 million tons of crude steel and stainless steel in 2018, a substantial portion of which was produced at Pohang Works and Gwangyang Works. As of December 31, 2018, we had approximately 47.6 million tons of annual crude steel and stainless steel production capacity, including 17.6 million tons of production capacity of Pohang Works and 24.8 million tons of production capacity of Gwangyang Works. We believe Pohang Works and Gwangyang Works are two of the most technologically advanced integrated steel facilities in the world. We manufacture and sell a diversified line of steel products, including cold rolled and hot rolled products, stainless steel products, plates, wire rods and silicon steel sheets, and we are able to meet a broad range of customer needs from manufacturing industries that consume steel, including automotive, shipbuilding, home appliance, engineering and machinery industries.

Korea is our most important market. Domestic sales accounted for 38.4% of our total revenue from steel products produced and sold by us in 2018 and 39.0% in 2017. On a non-consolidated basis, we believe that our steel products constituted approximately 50% of the total sales volume of such steel products sold in Korea in 2018 and approximately 44% in 2017. Our export sales and overseas sales to customers abroad accounted for 61.6% of our total revenue from steel products produced and sold by us in 2018 and 61.0% in 2017. Our major export market is Asia, with China accounting for 28.9%, Asia other than China and Japan accounting for 23.4%, and Japan accounting for 10.3% of our total steel export revenue from steel products produced and exported by us in 2018 and China accounting for 28.5%, Asia other than China and Japan accounting for 23.3%, and Japan accounting for 11.3% of our total steel export revenue from steel products produced and exported by us in 2017.

We also engage in businesses that complement our steel manufacturing operations as well as carefully seek out promising investment opportunities to diversify our businesses both vertically and horizontally, in part to prepare for the eventual maturation of the Korean steel market. POSCO International is a global trading company that primarily engages in trading of steel and raw materials as well as investing in energy and mineral development projects throughout the world. POSCO E&C is one of the leading engineering and construction companies in Korea that primarily engages in the planning, design and construction of industrial plants and architectural works and civil engineering. POSCO Energy Corporation is the largest private power generation company in Korea.

We generated revenue of Won 65,155 billion and profit of Won 1,932 billion in 2018, compared to revenue of Won 60,187 billion and profit of Won 2,909 billion in 2017. We had total assets of Won 78,777 billion and total equity of Won 46,673 billion as of December 31, 2018, compared to total assets of Won 79,786 billion and total equity of Won 47,327 billion as of December 31, 2017.

Major Products

We manufacture and sell a broad line of steel products, including the following:

- cold rolled products;
- hot rolled products;
- stainless steel products;
- plates;
- wire rods; and
- silicon steel sheets.

The table below sets out our revenue of steel products produced by us and directly sold to external customers (either by us or through POSCO Processing & Service Co., Ltd. ("POSCO P&S"), our former subsidiary that primarily engaged in sales of steel products produced by us prior to the transfer of its steel product sales business to POSCO International in March 2017) which are recognized as external revenue of the Steel Segment, by major steel product categories for the periods indicated. Such amounts do not include steel products produced by us and sold to our consolidated subsidiaries (including POSCO International) other than POSCO P&S. Although our external revenue of the Steel Segment increased in 2017 compared to 2016 and 2018 compared to 2017, they were negatively impacted in 2017 and 2018 by the recognition of the external revenue of POSCO P&S's steel product sales business under the Trading Segment commencing March 2017 following the transfer of such business to POSCO International.

	For the Year Ended December 31,					
	2016		2017		2018	
	Billions of Won	%	Billions of Won	%	Billions of Won	%
Steel Products						
Cold rolled products	₩ 8,467	31.5%	₩ 9,441	31.2%	₩ 10,585	32.7%
Hot rolled products	4,377	16.3	5,101	16.9	5,620	17.4
Stainless steel products	6,064	22.6	6,624	21.9	6,624	20.5
Plates	2,762	10.3	3,087	10.2	3,587	11.1
Wire rods	1,747	6.5	1,880	6.2	1,882	5.8
Silicon steel sheets	1,100	4.1	1,025	3.4	1,012	3.1
Sub-total	24,517	91.3	27,159	89.8	29,309	90.6
Others	2,327	8.7	3,072	10.2	3,049	9.4
Total	₩ 26,844	100.0%	₩ 30,230	100.0%	₩ 32,358	100.0%

The table below sets out our sales volume of the principal categories of steel products produced by us and directly sold to external customers (either by us or through POSCO P&S prior to the transfer

of its steel product sales business to POSCO International in March 2017), which are recognized as external sales volume of the Steel Segment, by major steel product categories for the periods indicated. Such amounts do not include steel products produced by us and sold to our consolidated subsidiaries (including POSCO International) other than POSCO P&S. In 2017 and 2018, our external sales volume of the Steel Segment was negatively impacted by the recognition of the external sales volume of POSCO P&S's steel product sales business under the Trading Segment commencing March 2017 following the transfer of such business to POSCO International.

	For the Year Ended December 31,					
	2016		2017		2018	
	Thousands of Tons	%	Thousands of Tons	%	Thousands of Tons	%
Steel Products						
Cold rolled products	12,713	38.7%	11,279	37.5%	12,300	39.2%
Hot rolled products	8,632	26.2	7,786	25.9	8,153	26.0
Stainless steel products	3,027	9.2	2,874	9.6	2,853	9.1
Plates	4,748	14.4	4,896	16.3	4,957	15.8
Wire rods	2,737	8.3	2,333	7.8	2,227	7.1
Silicon steel sheets	1,032	3.1	877	2.9	892	2.8
Total ⁽¹⁾	32,888	100.0%	30,046	100.0%	31,381	100%

(1) Not including sales volume of steel products categorized under "others."

In addition to steel products produced by us and directly sold to external customers (either by us or through POSCO P&S prior to the transfer of its steel product sales business to POSCO International in March 2017), we engage our consolidated sales subsidiaries (including POSCO International) to sell our steel products produced by us. Our revenue from steel products produced by us and sold to our consolidated sales subsidiaries that in turn sold them to their external customers amounted to Won 6,403 billion in 2016, Won 7,385 billion in 2017 and Won 7,492 billion in 2018. Sales of such steel products by our consolidated sales subsidiaries to external customers are recognized as external revenue of the Trading Segment.

Cold Rolled Products

Cold rolled coils and further refined galvanized cold rolled products are used mainly in the automotive industry to produce car body panels. Other users include the household goods, electrical appliances, engineering and metal goods industries.

Our deliveries of cold rolled products produced by us and directly sold to external customers amounted to 12.3 million tons in 2018, representing 39.2% of our total sales volume of principal steel products produced by us and directly sold to external customers.

Cold rolled products constitute our largest product category in terms of sales volume and revenue from steel products produced by us and directly sold to external customers. In 2018, our sales volume of cold rolled products produced by us and directly sold to external customers increased by 9.1% compared to our sales volume in 2017 primarily due to an increase in sales of cold rolled products manufactured and sold by our Chinese subsidiaries.

Including sales of cold rolled products produced by us and sold through our consolidated sales subsidiaries in addition to cold rolled products produced by us and directly sold to external customers, we believe we had a domestic market share for cold rolled products of approximately 61% on a non-consolidated basis in 2018.

Hot Rolled Products

Hot rolled coils and sheets have many different industrial applications. They are used to manufacture structural steel used in the construction of buildings, industrial pipes and tanks, and

automobile chassis. Hot rolled coil is also manufactured in a wide range of widths and thicknesses as the feedstock for higher value-added products such as cold rolled products and silicon steel sheets.

Our deliveries of hot rolled products produced by us and directly sold to external customers amounted to 8.2 million tons in 2018, representing 26.0% of our total sales volume of principal steel products produced by us and directly sold to external customers. The largest customers of our hot rolled products are downstream steelmakers in Korea which use the products to manufacture pipes and cold rolled products.

Hot rolled products constitute our second largest product category in terms of sales volume and third largest product category in terms of revenue from steel products produced by us and directly sold to external customers. In 2018, our sales volume of hot rolled products produced by us and directly sold to external customers increased by 4.7% compared to our sales volume in 2017 primarily due to completion of rationalization of furnace no. 3 at Pohang Works, which in turn led to increases in our production and sales volume of hot rolled products.

Including sales of hot rolled products produced by us and sold through our consolidated sales subsidiaries in addition to hot rolled products produced by us and directly sold to external customers, we believe we had a domestic market share for hot rolled products of approximately 52% on a non-consolidated basis in 2018.

Stainless Steel Products

Stainless steel products are used to manufacture household goods and are also used by the chemical industry, paper mills, the aviation industry, the automotive industry, the construction industry and the food processing industry.

Our deliveries of stainless steel products produced by us and directly sold to external customers amounted to 2.9 million tons in 2018, representing 9.1% of our total sales volume of principal steel products produced by us and directly sold to external customers.

Stainless steel products constitute our second largest product category in terms of revenue from steel products produced by us and directly sold to external customers. Although sales of stainless steel products accounted for only 9.1% of total sales volume of the principal steel products produced by us and directly sold to external customers in 2018, they represented 20.5% of our total revenue from steel products in 2018. In 2018, our sales volume of stainless steel products produced by us and directly sold to external customers decreased by 0.8% compared to our sales volume in 2017, in part due to a decrease in demand from the automotive industry.

Including sales of stainless steel products produced by us and sold through our consolidated sales subsidiaries in addition to stainless steel products produced by us and directly sold to external customers, we believe we had a domestic market share for stainless steel products of approximately 40% on a non-consolidated basis in 2018.

Plates

Plates are used in shipbuilding, structural steelwork, offshore oil and gas production, power generation, mining, and the manufacture of earth-moving and mechanical handling equipment, boiler and pressure vessels and other industrial machinery.

Our deliveries of plates produced by us and directly sold to external customers amounted to 5.0 million tons in 2018, representing 15.8% of our total sales volume of principal steel products produced by us and directly sold to external customers. The Korean shipbuilding industry, which uses plates to manufacture chemical tankers, rigs, bulk carriers and containers, and the construction industry are our largest customers of plates.

In 2018, our sales volume of plates produced by us and directly sold to external customers increased by 1.2% compared to our sales volume in 2017 primarily due to an increase in demand from the shipbuilding industry.

Including sales of plates produced by us and sold through our consolidated sales subsidiaries in addition to plates produced by us and directly sold to external customers, we believe we had a domestic market share for plates of approximately 49% on a non-consolidated basis in 2018.

Wire Rods

Wire rods are used mainly by manufacturers of wire, fasteners, nails, bolts, nuts and welding rods. Wire rods are also used in the manufacture of coil springs, tension bars and tire cords in the automotive industry.

Our deliveries of wire rods produced by us and directly sold to external customers amounted to 2.2 million tons in 2018, representing 7.1% of our total sales volume of principal steel products produced by us and directly sold to external customers. The largest customers for our wire rods are manufacturers of wire ropes and fasteners.

In 2018, our sales volume of wire rods produced by us and directly sold to external customers decreased by 4.6% compared to 2017 primarily due to decreases in sales of our wire rods in Vietnam and Japan.

Including sales of wire rods produced by us and sold through our consolidated sales subsidiaries in addition to wire rods produced by us and directly sold to external customers, we believe we had a domestic market share for wire rods of approximately 59% on a non-consolidated basis in 2018.

Silicon Steel Sheets

Silicon steel sheets are used mainly in the manufacture of power transformers and generators and rotating machines.

Our deliveries of silicon steel sheets produced by us and directly sold to external customers amounted to 0.9 million tons in 2018, representing 2.8% of our total sales volume of principal steel products produced by us and directly sold to external customers.

In 2018, our sales volume of silicon steel sheets produced by us and directly sold to external customers increased by 1.7% compared to 2017 primarily due to an increase in demand for silicon steel sheets in India.

Including sales of silicon steel sheets produced by us and sold through our consolidated sales subsidiaries in addition to silicon steel sheets produced by us and directly sold to external customers, we believe we had a domestic market share for silicon steel sheets of approximately 80% on a non-consolidated basis in 2018.

Others

Other products include lower value-added semi-finished products such as pig iron, billets, blooms and slab.

Markets

Korea is our most important market. Domestic sales represented 38.4% of our total revenue from steel products produced and sold by us in 2018. Our export sales and overseas sales to

customers abroad represented 61.6% of our total revenue from steel products in 2018. Our sales strategy has been to devote our production primarily to satisfy domestic demand, while seeking export sales to utilize capacity to the fullest extent and to expand our international market presence.

Domestic Market

We primarily sell in Korea higher value-added and other finished products to end-users and semi-finished products to other steel manufacturers for further processing. Local distribution companies and sales affiliates sell finished steel products to low-volume customers. We provide service technicians for large customers and distributors in each important product area.

The table below sets out our estimate of the market share of our steel products in Korea for the periods indicated based on sales volume.

Source	For the Year Ended December 31,		
	2016	2017	2018
POSCO's sales ⁽¹⁾	40.6%	43.4%	49.5%
Other domestic steel companies' sales	27.6	28.2	28.0
Imports	31.8	28.4	22.5
Total	100.0%	100.0%	100.0%

- (1) POSCO's sales volume includes steel products produced by us (but not by our subsidiaries) and sold through our consolidated sales subsidiaries in addition to steel products produced by us (but not by our subsidiaries) and directly sold to external customers.

Exports

Our export sales and overseas sales to customers abroad represented 61.6% of our total revenue from steel products produced and sold by us in 2018, 62.6% of which was generated from exports sales and overseas sales to customers in Asian countries. Our export sales and overseas sales to customers abroad in terms of revenue from such products increased by 6.9% from Won 22,963 billion in 2017 to Won 24,551 billion in 2018.

The tables below set out our export sales and overseas sales to customers abroad in terms of revenue from steel products produced and sold by us (including our consolidated sales subsidiaries), by geographical market and by product for the periods indicated.

Region	For the Year Ended December 31,					
	2016		2017		2018	
	Billions of Won	%	Billions of Won	%	Billions of Won	%
China	₩ 5,840	29.0%	₩ 6,542	28.5%	₩ 7,097	28.9%
Asia (other than China and Japan)	4,821	23.9	5,354	23.3	5,749	23.4
Japan	2,089	10.4	2,601	11.3	2,530	10.3
Europe	1,914	9.5	2,181	9.5	2,212	9.0
Middle East	187	0.9	163	0.7	204	0.8
North America	2,019	10.0	1,947	8.5	1,861	7.6
Others	3,292	16.3	4,176	18.2	4,898	19.9
Total	₩ 20,163	100.0%	₩ 22,963	100.0%	₩ 24,551	100.0%

	For the Year Ended December 31,					
	2016		2017		2018	
	Billions of Won	%	Billions of Won	%	Billions of Won	%
Steel Products						
Cold rolled products	₩ 6,852	34.0%	₩ 9,224	40.2%	₩ 10,499	42.8%
Hot rolled products	2,999	14.9	2,604	11.3	2,738	11.2
Stainless steel products	5,227	25.9	5,345	23.3	5,661	23.1
Plates	1,486	7.4	2,000	8.7	1,812	7.4
Wire rods	585	2.9	606	2.6	677	2.8
Silicon steel sheets	821	4.1	950	4.1	1,021	4.2
Others	2,194	10.9	2,235	9.7	2,143	8.7
Total	₩ 20,163	100.0%	₩ 22,963	100.0%	₩ 24,551	100.0%

We distribute our export products mostly through Korean trading companies, including POSCO International, and our overseas sales subsidiaries. Our largest export market in 2018 was China, which accounted for 28.9% of our export revenue from steel products produced and sold by us. The principal products exported to China were cold rolled products, including continuous galvanized products. Our exports to China increased by 8.5% from Won 6,542 billion in 2017 to Won 7,097 billion in 2018 primarily due to increases in sales of cold rolled products to steel processing companies in China.

Our second largest export market in 2018 was Asia (other than China and Japan), which accounted for 23.4% of our export revenue from steel products produced and sold by us. The principal products exported to Asia (other than China and Japan) were cold rolled products, including continuous galvanized products. Our exports to Asia (other than China and Japan) increased by 7.4% from Won 5,354 billion in 2017 to Won 5,749 billion in 2018 primarily due to increases in sales of steel products in Thailand and Vietnam.

Anti-Dumping, Safeguard and Countervailing Duty Proceedings

From time to time, our exporting activities have become subject to anti-dumping, safeguard and countervailing proceedings. As a steel producer with global sales and operations, we are involved in trade remedy proceedings in markets worldwide, including in the United States. We proactively participate in and plan for such proceedings to minimize any adverse effects and associated risks. While there has been an increase in the number of trade cases in recent years, and an increased focus on trade issues by government officials, all such cases have been product and market-specific, and thus have been limited in scope relative to our global sales and operations. We continue to carefully monitor developments with respect to trade remedy policy in all markets in which we participate and, where necessary, vigorously defend our rights through litigation before tribunals such as the U.S. Court of International Trade. Our products that are subject to anti-dumping duties, safeguard duties, countervailing duties, quotas or tariffs in the aggregate currently do not account for a material portion of our total sales, and such proceedings have not had a material adverse impact on our business and operations in recent years.

Pricing Policy

We determine the sales price of our products based on market conditions. In setting prices, we take into account our costs, including those of raw materials, supply and demand in the Korean market, exchange rates, and conditions in the international steel market. Our prices can fluctuate considerably over time, depending on market conditions and other factors. The prices of our higher value-added steel products in the largest markets are determined considering the prices of similar products charged by our competitors.

Both our export prices and domestic sales prices decreased in 2016, reflecting production over-capacity in the global steel industry. In 2017 and the first three quarters of 2018, our export prices

and domestic sales prices generally increased, as consolidation of the steel industry in China led to a decrease in export volume from China, which in turn had a positive impact on global steel prices until the fourth quarter of 2018. The global steel prices decreased in the fourth quarter of 2018 in part due to a decrease in demand from China as well as an increase in the production capacity of Chinese manufacturers that survived the consolidation of the Chinese steel industry. We will continue to adjust our sales prices in the future subject to market demand for our products, prices of raw materials, the production outlook of the global steel industry and global economic conditions in general.

Raw Materials

Steel Production

The principal raw materials used in producing steel through the basic oxygen steelmaking method are iron ore and coal. We require approximately 1.7 tons of iron ore and 0.7 tons of coal to produce one ton of steel. We import all of the coal and virtually all of the iron ore that we use. In 2018, POSCO imported approximately 54 million dry metric tons of iron ore and 29 million wet metric tons of coal. Iron ore is imported primarily from Australia, Brazil and Canada. Coal is imported primarily from Australia, Canada and Russia.

We purchase a substantial portion of our iron ore and coal imports pursuant to long-term contracts. Our long-term supply contracts generally have terms of three to ten years and provide for periodic price adjustments to the then-market prices. We typically adjust the prices on a quarterly basis and maintain approximately one month of inventory of raw materials. Such price adjustments are driven by various factors, including the global economic outlook, global market prices of raw materials and steel products, supply and demand outlook of raw materials and production costs of raw materials. For both coal and iron ore, we typically agree on the purchase price with the suppliers primarily based on the spot market price periodically announced by Platts (Premium Low Vol Coking Coal, FOB Australia Index and Iron Ore 62% Fe, CFR China Index). We or the suppliers may cancel the long-term contracts only if performance under the contracts is prevented by causes beyond our or their control and these causes continue for a specified period.

We also engage in exploration and production projects abroad to enhance our ability to meet the requirements for high-quality raw materials, by acquiring mining rights of raw materials or by investing in projects either as part of a consortium or through an acquisition of a minority interest. In 2018, we purchased approximately 36% of our iron ore imports and 18% of our coal imports from foreign mines in which we have made investments. Our major investments to procure supplies of coal, iron ore and nickel are primarily located in Australia, Brazil, New Caledonia and Canada. We will continue to selectively seek opportunities to enter into additional strategic relationships that would enhance our ability to meet the requirements for principal raw materials.

The average market price of coal per wet metric ton (Premium Low Vol Coking Coal, FOB Australia Index announced by Platts) was US\$143 in 2016, US\$188 in 2017 and US\$207 in 2018. The average market price of iron ore per dry metric ton (Iron Ore 62% Fe, CFR China Index announced by Platts) was US\$58 in 2016, US\$71 in 2017 and US\$69 in 2018. We currently do not depend on any single country or supplier for our coal or iron ore.

Stainless Steel Production

The principal raw materials for the production of stainless steel are ferronickel, ferrochrome and stainless steel scrap. We purchase a majority of our ferronickel primarily from suppliers in Korea that procure nickel ore from New Caledonia, and the remainder primarily from leading suppliers in Indonesia, Japan and Ukraine. Our primary suppliers of ferrochrome are located in South Africa, India and Kazakhstan. Our stainless steel scraps are primarily supplied by domestic and overseas suppliers in Japan and Southeast Asia. Revert scraps from the Pohang Steelworks are also used for our

stainless steel production. The average market price of nickel per ton on the London Metal Exchange was US\$9,609 in 2016, US\$10,411 in 2017 and US\$13,122 in 2018.

Transportation

In order to meet our transportation needs for iron ore and coal, we have entered into long-term contracts with shipping companies in Korea to retain a fleet of dedicated vessels. Such contracts are on consecutive voyage basis with maximum capacity loading, where the shipping company is compensated for the maximum amount of cargo on each trip regardless of whether the vessels are loaded to such amount. These dedicated vessels transported approximately 73% of the total requirements in 2018, and the remaining approximately 27% was transported by vessels retained through short to medium term contracts, depending on market conditions. We plan to continue to optimize the fleet of dedicated vessels that we use by 2020 in order to cope with changes in the global shipping environment, as well as upgrade some of the existing vessels with others that utilize more energy-efficient technologies.

The Steelmaking Process

Our major production facilities, Pohang Works and Gwangyang Works, produce steel by the basic oxygen steelmaking method. The stainless steel plant at Pohang Works produces stainless steel by the electric arc furnace method. Continuous casting improves product quality by imparting a homogenous structure to the steel. Pohang Works and Gwangyang Works produce all of their products through the continuous casting.

Steel — Basic Oxygen Steelmaking Method

First, molten pig iron is produced in a blast furnace from iron ore, which is the basic raw material used in steelmaking. Molten pig iron is then refined into molten steel in converters by blowing pure oxygen at high pressure to remove impurities. Different desired steel properties may also be obtained by regulating the chemical contents.

At this point, molten steel is made into semi-finished products such as slabs, blooms or billets at the continuous casting machine. Slabs, blooms and billets are produced at different standardized sizes and shapes. Slabs, blooms and billets are semi-finished lower margin products that we either use to produce our further processed products or sell to other steelmakers that produce further processed steel products.

Slabs are processed to produce hot rolled coil products at hot strip mills or to produce plates at plate mills. Hot rolled coils are an intermediate stage product that may either be sold to our customers as various finished products or be further processed by us or our customers into higher value-added products, such as cold rolled sheets and silicon steel sheets. Blooms and billets are processed into wire rods at wire rod mills.

Stainless Steel — Electric Arc Furnace Method

Stainless steel is produced from stainless steel scrap, chrome, nickel and steel scrap using an electric arc furnace. Stainless steel is then processed into higher value-added products by methods similar to those used for steel production. Stainless steel slabs are produced at a continuous casting mill. The slabs are processed at hot rolling mills into stainless steel hot coil, which can be further processed at cold strip mills to produce stainless cold rolled steel products.

Competition

Domestic Market

We are the largest fully integrated steel producer in Korea. In hot rolled products, where we believe we had a market share of approximately 52% on a non-consolidated basis in 2018, we face

competition from a Korean steel producer that operates mini-mills and produces hot rolled coil products from slabs and from various foreign producers, primarily from China and Japan. In cold rolled products and stainless steel products, where we believe we had a market share of approximately 61% and 40%, respectively, on a non-consolidated basis in 2018, we compete with smaller specialized domestic manufacturers and various foreign producers, primarily from China and Japan. For a discussion of domestic market shares, see “— Markets — Domestic Market.”

We may face increased competition in the future from new specialized or integrated domestic manufacturers of steel products in the Korean market. Our biggest competitor in Korea is Hyundai Steel Co., Ltd. with an annual crude steel production of approximately 21 million tons.

The Korean Government does not impose quotas on or provide subsidies to local steel producers. As a World Trade Organization signatory, Korea has also removed all steel tariffs.

Export Markets

The competitors in our export markets include all the leading steel manufacturers of the world. In the past decade, there has been a trend toward industry consolidation among our competitors, and smaller competitors in the global steel market today may become larger competitors in the future. In recent years, a slowdown in domestic demand for steel products in China resulting from slowed economic growth, combined with an expansion in steel production capacity, has led to production over-capacity in the Chinese steel industry, which in turn has led the Chinese government to pursue aggressive consolidation in the Chinese steel industry, such as the consolidation of Baosteel Group and Wuhan Iron and Steel in 2016, that has resulted in fewer but larger steel manufacturers that are able to compete more effectively in the global steel industry. Competition from global steel manufacturers with significant production capacity such as ArcelorMittal S.A. and Nippon Steel & Sumitomo Metal Corporation, as well as competitors from emerging markets, especially from China and India, could result in a significant increase in competition. Major competitive factors include range of products offered, quality, price, delivery performance and customer service. Our larger competitors may use their resources, which may be greater than ours, against us in a variety of ways, including by making additional acquisitions, investing more aggressively in product development and capacity and displacing demand for our export products.

Various export markets currently impose tariffs on different types of steel products. However, we do not believe that tariffs significantly affect our ability to compete in these markets.

Subsidiaries and Global Joint Ventures

Steel Production

In order to effectively implement our strategic initiatives and to solidify our leadership position in the global steel industry, we have established various subsidiaries and joint ventures in Korea and elsewhere around the world that engage in steel production activities.

China. We entered into an agreement with Sagang Group Co. to establish Zhangjiagang Pohang Stainless Steel Co., Ltd., a joint venture company in China for the manufacture and sale of stainless cold rolled steel products. We have an 82.5% interest in the joint venture (including 23.9% interest held by POSCO China Holding Corporation), which commenced production of stainless cold rolled steel products in December 1998. As of December 31, 2018, Zhangjiagang Pohang Stainless Steel had an annual production capacity of 1,100 thousand tons of stainless steel products and it produced 1,158 thousand tons of stainless steel products in 2018. See “— Production Facilities Abroad — Zhangjiagang Pohang Stainless Steel.”

Indonesia. We entered into an agreement with PT. Krakatau Steel (Persero) Tbk. to establish PT. Krakatau POSCO Co., Ltd. (“PT. Krakatau POSCO”), a joint venture company in Indonesia for the

manufacture and sale of plates and slabs. We hold a 70.0% interest in the joint venture. We completed the construction of a steel manufacturing plant in December 2013. As of December 31, 2018, PT. Krakatau POSCO had an annual production capacity of 3,000 thousand tons of plates and slabs and it produced 3,009 thousand tons of plates and slabs in 2018. See “— Production Facilities Abroad — PT. Krakatau POSCO.”

Vietnam. We established POSCO SS VINA Co., Ltd., a wholly owned subsidiary engaged in the manufacture and sale of shape steel and steel reinforcement products. The plant became operational in June 2015. As of December 31, 2018, POSCO SS VINA Co., Ltd. had an annual production capacity of 1,100 thousand tons of shape steel and steel reinforcement products and it produced 965 thousand tons of shape steel and steel reinforcement products in 2018. See “Production Facilities Abroad — POSCO SS VINA.”

Trading

Our trading activities consist primarily of trading activities of POSCO International. Our consolidated subsidiaries that also engage in trading activities include POSCO Asia Co., Ltd. located in Hong Kong, POSCO Japan Co., Ltd. located in Tokyo, Japan, POSCO America Corporation located in Georgia, U.S.A., POSCO (Thailand) Company Limited located in Chonburi, Thailand and POSCO Singapore LNG Trading Pte. Ltd. in Singapore.

POSCO International is a global trading company that primarily engages in trading of steel and raw materials as well as investing in energy and mineral development projects. It also manufactures and sells textiles and agricultural commodities. POSCO International was established in December 2000 when the international trading and construction businesses of Daewoo Corporation were spun off into three separate companies as part of a debt workout program of Daewoo Corporation. In order to expand and strengthen its core business and to further promote efficiency within the POSCO Group, POSCO International acquired the steel product sales business from POSCO P&S in March 2017.

The following table sets forth a breakdown of POSCO International's total consolidated sales by export sales, domestic sales and third-country trades as well as product category for the periods indicated:

	For the Year Ended December 31,								
Product Category	2016		2017		2018				
	(in billions of Won, except percentages)								
Export trading sales:									
Steel and metal	₩	4,185	25.4%	₩	5,059	22.4%	₩	5,354	21.3%
Chemical and commodities		1,277	7.7		1,429	6.3		1,563	6.2
Automobile and machinery parts		1,986	12.0		2,224	9.9		1,795	7.1
Electronics and miscellaneous items		3	0.0		—	—		—	—
Natural resources items		2	0.0		—	—		—	—
Other goods		—	—		—	—		0	0.0
Sub-total		7,453	45.2		8,712	38.6		8,712	34.6
Domestic trading sales:									
Steel and metal	₩	473	2.9%	₩	2,322	10.3%	₩	3,316	13.2%
Chemical and commodities		90	0.5		23	0.1		19	0.1
Automobile and machinery parts		40	0.2		59	0.2		36	0.1
Electronics and miscellaneous items		—	—		—	—		—	—
Other goods		—	—		17	0.1		—	—
Sub-total		603	3.7		2,421	10.7		3,371	13.4
Manufactured product sales	₩	13	0.1	₩	502	2.2	₩	547	2.2
Others	₩	90	0.5	₩	253	1.1	₩	222	0.9
Third-Country Trades:									
Trading ⁽¹⁾	₩	10,376	62.9%	₩	14,969	66.3%	₩	17,390	69.1%
Natural resources development ⁽¹⁾		1,504	9.1		573	2.5		829	3.3
Manufactured product trading		192	1.2		221	1.0		329	1.3
Total third-country trades		12,072	73.2		15,763	69.8		18,547	73.7
Total sales prior to consolidation adjustments		20,229	122.7		27,650	122.4		31,399	124.7
Consolidation adjustments		(3,737)	(22.7)		(5,079)	(22.4)		(6,225)	(24.7)
Total sales	₩	16,492	100.0%	₩	22,572	100.0%	₩	25,174	100.0%

(1) In 2016, revenues from trading of raw materials were included as natural resources development revenues. However, in 2017 and 2018, revenues from trading of raw materials were included as trading revenues.

Trading Activities. POSCO International's trading activities consist of exporting and importing a wide variety of products and commodities, including iron and steel, raw materials for steel production, non-ferrous metals, chemicals, automotive parts, machinery and plant equipment, electronics products, agricultural commodities and textiles. POSCO International is also engaged in third-country trade that does not involve exports from or imports to Korea. The products are obtained from and supplied to numerous suppliers and purchasers in Korea and overseas, which are procured through a global trading network comprised of overseas trading subsidiaries, branches and representative offices. Such subsidiaries and offices support POSCO International's trading activities by locating suitable local suppliers and purchasers on behalf of customers, identifying business opportunities and providing information regarding local market conditions.

In most cases, POSCO International enters into trading transactions after the underlying sale and purchase contracts have been matched, which mitigates inventory and price risks to POSCO International. POSCO International typically enters into trading transactions as a principal, and in limited cases as an import or export agent. When acting as a principal or an agent, POSCO International derives its gross trading profit from the margin between the selling price of the products and the purchase price it pays for such products. In the case of principal transactions, the selling price is recorded as sales and the purchase price is recorded as cost of sales, while only the margin is recorded as sales in the case of agency transactions in which POSCO International does not assume

the risks and rewards of ownership of the goods. In the instances in which it acts as an arranger for a third country transaction, POSCO International derives its gross trading profit from, and records as sales, the commission paid to it by the customer. The sizes of margins and commissions for POSCO International's trading activities vary depending on a number of factors, including prevailing supply and demand conditions for the product involved, the cost of financing, insurance, storage and transport and the creditworthiness of the customer, and tends to decline as the product or market matures.

In connection with its export and import transactions, POSCO International has accounts receivable and payable in a number of currencies, but principally in Dollars. POSCO International's exposure to fluctuations in exchange rates, including the Won/Dollar exchange rate, is limited because trading transactions typically involve matched purchase and sale contracts, which result in limited settlement exposure, and because POSCO International's contracts with domestic suppliers of products for export and with domestic purchasers of imported products are generally denominated in Dollars. Although the impact of exchange rate fluctuations is substantially mitigated by such strategies, POSCO International also periodically enters into derivative contracts, primarily currency forward contracts, to further hedge its foreign exchange risks.

In connection with its trading activities, POSCO International arranges insurance and product transport at the request of customers, the costs of which generally become reflected in the sales price of the relevant products, and also provides financing services to its purchasers and suppliers as necessary. In the case of trading transactions involving large-scale industrial or construction projects, POSCO International also provides necessary project planning and organizing services to its customers.

Natural Resources Development Activities. POSCO International also invests in energy and mineral development projects throughout the world. In particular, POSCO International holds interests in several gas field projects in Myanmar, where production of gas commenced in July 2013. POSCO International recognized revenues of approximately Won 530 billion in 2016, Won 498 billion in 2017 and Won 474 billion in 2018 from the Myanmar gas field projects. Such natural resources development projects, while entailing higher risks than the traditional trading business, offer higher potential returns. POSCO International intends to continue to expand its operations by carefully seeking out promising energy development projects abroad.

Competition. POSCO International competes principally with other Korean general trading companies that are affiliated with major domestic business groups, as well as global trading companies based in other countries. In the domestic market, competition for export transactions on behalf of domestic suppliers and import transactions on behalf of domestic purchasers was limited, as most affiliated general trading companies of large Korean business groups generally relied on affiliate transactions for the bulk of their trading business. However, in recent years, many of these Korean general trading companies have reduced their reliance on their affiliated business group and transactions carried out on behalf of their member companies and instead have generally evolved to focus on segments of the import and export markets in which they have a competitive advantage. As a result, competition among Korean general trading companies in the area of traditional trade has become more intense. POSCO International's principal competitors in the overseas trading markets include Korean trading companies that operate in various international markets, as well as foreign trading companies, particularly those based in Japan. As POSCO International diversifies into businesses other than traditional trading such as natural resources development, it also increasingly competes with other Korean and international companies involved in these businesses.

Construction

POSCO E&C is one of the leading engineering and construction companies in Korea, primarily engaged in the planning, design and construction of industrial plants and architectural works and civil

engineering projects. In particular, POSCO E&C has established itself as one of the premier engineering and construction companies in Korea through:

- its strong and stable customer base; and
- its cutting-edge technological expertise obtained from construction of advanced integrated steel plants, as well as participation in numerous modernization and rationalization projects at our Pohang Works and Gwangyang Works.

Leveraging its technical know-how and track record of building some of the leading industrial complexes in Korea, POSCO E&C has also focused on diversifying its operations into construction of high-end apartment complexes and participating in a wider range of architectural works and civil engineering projects, as well as engaging in urban planning and development projects and expanding its operations abroad. In September 2015, we completed the sale of our 38.0% interest in POSCO E&C to PIF, the sovereign wealth fund of Saudi Arabia, for US\$1.05 billion. In connection with the sale, POSCO E&C and PIF agreed to jointly explore additional business opportunities in Saudi Arabia, including participating in various infrastructure projects sponsored by the Saudi Arabian government.

POSCO E&C also has substantial experience in the energy field obtained from the construction of various power plants for member companies of the POSCO Group, specializing primarily in engineering and construction of LNG and coal-fired thermal power plants. In recent years, POSCO E&C has obtained various orders for such power plants, including LNG-fired power plants in Incheon, Korea, coal-fired thermal power plants in Ventanas and Angamos, Chile and an integrated cycle power plant and an LNG terminal facility in Colón, Panama. In response to increasing demand from the energy industry, POSCO E&C plans to continue to target opportunities in power plant construction, especially in Asia and Africa, which it believes offers significant growth potential. In order to further promote efficiency among the member companies of the POSCO Group as well as to enhance the engineering expertise of POSCO E&C, POSCO Engineering Co., Ltd. merged into POSCO E&C in February 2017.

Competition. Competition in the construction industry is based primarily on price, reputation for quality, reliability, punctuality and financial strength of contractors. In Korea, POSCO E&C's main competition in the construction of residential and non-residential buildings, EPC projects, urban planning and development projects and civil works projects consists of approximately ten major domestic construction companies, all of which are member companies of other large business groups in Korea and are capable of undertaking larger-scale, higher-value-added projects that offer greater potential returns. A series of measures introduced by the Government over the past few years to regulate housing prices in Korea, as well as an increasing popularity of low-bid contracts in civil works project mandates, have contributed to increased competition in the Korean construction industry in recent years. In the overseas markets, POSCO E&C faces competition from local construction companies and other major Korean construction companies with overseas operations, as well as international construction companies from other countries.

Others

As part of our diversification efforts, we strive to identify business opportunities that supplement our steel, trading and construction segments, including power generation, LNG logistics, manufacturing of various industrial materials and network and system integration.

POSCO Energy Corporation. In 2006, we acquired the largest domestic private power utility company that operates LNG combined cycle power generation facilities with total power generation capacity of 1,800 megawatts and subsequently renamed it POSCO Energy Corporation. Since our acquisition, POSCO Energy Corporation has expanded its power generation capacity by constructing additional power plants in Korea and Southeast Asia. POSCO Energy Corporation's total power generation capacity was approximately 4,570 megawatts as of December 31, 2018. POSCO Energy

Corporation is also selectively seeking opportunities to expand into solar, wind and other renewable energy businesses in order to become an integrated provider of energy solutions.

LNG Logistics. We operate an LNG receiving terminal with an aggregate capacity to process up to 2.4 million tons of LNG annually in Gwangyang. In order to achieve maximum operational efficiency of our LNG terminal, we participate in the LNG trading and LNG ship gas trial businesses. In April 2019, our board of directors resolved to transfer our LNG logistics business to POSCO Energy Corporation. The transfer is expected to be completed in September 2019.

Others. POSCO Chemical Co., Ltd. (formerly known as POSCO Chemtech Co., Ltd.) specializes in the manufacturing of refractories and lime used in steel manufacturing processes as well as a wide range of chemical products. It also expanded into the anode and cathode manufacturing business in 2018 following its merger with POSCO ESM Co., Ltd., our former subsidiary specializing in the production of battery materials. POSCO M-Tech Co., Ltd. produces aluminum deoxidizers, substances used to remove excess oxygen during the steel manufacturing process to improve durability of steel products, and it also provides integrated steel product packing solutions for steel production facilities. POSCO ICT Co., Ltd. provides information and technology consulting and system network integration and outsourcing services.

Insurance

We maintain property insurance for our property, plant and equipment that we believe to be consistent with market practice in Korea.

Item 4.C. Organizational Structure

The following table sets out the jurisdiction of incorporation and our ownership interests of our significant subsidiaries:

Name	Jurisdiction of Incorporation	Percentage of Ownership
POSCO International Corporation	Korea	62.9%
POSCO Engineering & Construction Co., Ltd	Korea	52.8%
POSCO Energy Corporation	Korea	89.0%
PT. Krakatau POSCO	Indonesia	70.0%
POSCO Asia Co., Ltd.	Hong Kong	100.0%
POSCO Maharashtra Steel Private Limited	India	100.0%
Zhangjiagang Pohang Stainless Steel Co., Ltd.	China	82.5% ⁽¹⁾
POSCO Chemical Co., Ltd.	Korea	60.0%
POSCO SS VINA Co., Ltd.	Vietnam	100.0%

(1) POSCO holds a 58.6% interest and POSCO-China holds a 23.9% interest.

Item 4.D. Property, Plants and Equipment

Our principal properties are Pohang Works, which is located at Youngil Bay on the southeastern coast of Korea, and Gwangyang Works, which is located in Gwangyang City in the southwestern region of Korea. We also maintain and operate production properties abroad, including plants operated by Zhangjiagang Pohang Stainless Steel in China, PT. Krakatau POSCO in Indonesia and POSCO SS Vina in Vietnam. We may increase our production capacity in the future when we increase our capacity as part of our facilities expansion or as a result of continued modernization and rationalization of our existing facilities. For a discussion of major items of our capital expenditures currently in progress, see “Item 5. Operating and Financial Review and Prospects — Item 5.B. Liquidity and Capital Resources — Liquidity — Capital Expenditures and Capital Expansion.”

We are vigorous in our efforts to engage in environmentally responsible management of, and to protect the environment from damage resulting from, our operations. Our levels of pollution control are higher than those mandated by Government standards. We established an on-line environmental monitoring system with real-time feedback on pollutant levels and a forecast system of pollutant concentration in surrounding areas. We also undergo periodic environmental inspection by both internal and external inspectors in accordance with ISO 14001 standards to monitor execution and maintenance of our environmental management plan. We also operate a certification program targeting our suppliers and outsourcing partners, pursuant to which they are encouraged to establish environmental management systems of their own.

Production Facilities in Korea

Pohang Works

Construction of Pohang Works began in 1970 and ended in 1983. Pohang Works currently has an annual crude steel and stainless steel production capacity of 17.6 million tons. Pohang Works produces a wide variety of steel products. Products produced at Pohang Works include hot rolled sheets, plates, wire rods and cold rolled sheets, as well as specialty steel products such as stainless steel sheets and silicon steel sheets. These products can also be customized to meet the specifications of our customers.

Situated on a site of 8.9 million square meters at Youngil Bay on the southeastern coast of Korea, Pohang Works consists of iron-making, crude steelmaking and continuous casting and other rolling facilities. Pohang Works also has docking facilities capable of accommodating large ships for unloading raw materials, storage areas for raw materials and separate docking facilities for ships carrying products for export. Pohang Works is equipped with a highly advanced computerized production-management system allowing constant monitoring and control of the production process.

Gwangyang Works

Construction of Gwangyang Works began in 1985 and ended in 1992. Gwangyang Works currently has an annual crude steel production capacity of 24.8 million tons. Gwangyang Works specializes in high volume production of a limited number of steel products. Products manufactured at Gwangyang Works include both hot and cold rolled types.

Situated on a site of 13.7 million square meters reclaimed from the sea in Gwangyang City in the southwestern region of Korea, Gwangyang Works is comprised of iron-making plants, steelmaking plants, continuous casting plants, hot strip mills and thin-slab hot rolling plants. The site also features docking and unloading facilities for raw materials capable of accommodating large ships for unloading raw materials, storage areas for raw materials and separate docking facilities for ships carrying products for export.

We believe Gwangyang Works is one of the most technologically advanced integrated steel facilities in the world. Gwangyang Works has a completely automated, linear production system that enables the whole production process, from iron-making to finished products, to take place without interruption. This advanced system reduces the production time for hot rolled products to only four hours. Like Pohang Works, Gwangyang Works is equipped with a highly advanced computerized production-management system allowing constant monitoring and control of the production process.

Capacity Utilization Rates

The following table sets out the capacity utilization rates of our production facilities in Korea for the periods indicated.

	As of or for the Year Ended December 31,		
	2016	2017	2018
Crude steel and stainless steel production capacity as of end of the year (million tons per year)	42.39	42.39	42.39
Actual crude steel and stainless steel output (million tons)	37.50	37.21	37.74
Capacity utilization rate (%) ⁽¹⁾	88.5%	87.8%	89.0%

(1) Calculated by dividing actual crude steel and stainless steel output by the actual crude steel and stainless steel production capacity for the relevant period as determined by us.

Production Facilities Abroad

Our various subsidiaries and joint ventures around the world, including Zhangjiagang Pohang Stainless Steel Co., Ltd. in China, PT. Krakatau POSCO in Indonesia and POSCO SS Vina Co., Ltd. in Vietnam, engage in steel production activities. For a discussion of such operations, see “Item 4. Information on the Company — Item 4.B. Business Overview — Subsidiaries and Joint Ventures.”

Zhangjiagang Pohang Stainless Steel

The following table sets out Zhangjiagang’s capacity utilization rates for the periods indicated.

	As of or for the Year Ended December 31,		
	2016	2017	2018
Crude steel and stainless steel production capacity as of end of the year (million tons per year)	1.10	1.10	1.10
Actual crude steel and stainless steel output (million tons)	1.16	1.16	1.16
Capacity utilization rate (%) ⁽¹⁾	105.2%	105.4%	105.3%

(1) Calculated by dividing actual crude steel and stainless steel output by the actual crude steel and stainless steel production capacity for the relevant period as determined by us.

PT. Krakatau POSCO

The following table sets out PT. Krakatau POSCO’s capacity utilization rates for the periods indicated.

	As of or for the Year Ended December 31,		
	2016	2017	2018
Crude steel production capacity as of end of the year (million tons per year)	3.00	3.00	3.00
Actual crude steel output (million tons)	2.91	2.92	3.01
Capacity utilization rate (%) ⁽¹⁾	97.0%	97.4%	100.3%

(1) Calculated by dividing actual crude steel output by the actual crude steel production capacity for the relevant period as determined by us.

POSCO SS VINA Co., Ltd.

The following table sets out POSCO SS VINA's capacity utilization rates for the periods indicated.

	As of or for the Year Ended December 31,		
	2016	2017	2018
Crude steel production capacity as of end of the year (million tons per year)	1.10	1.10	1.10
Actual crude steel output (million tons)	0.64	0.91	0.97
Capacity utilization rate (%) ⁽¹⁾	58.0%	82.3%	87.7%

(1) Calculated by dividing actual crude steel output by the actual crude steel production capacity for the relevant period as determined by us.

Item 4A. Unresolved Staff Comments

We do not have any unresolved comments from the Securities and Exchange Commission staff regarding our periodic reports under the Exchange Act of 1934.

Item 5. Operating and Financial Review and Prospects

Item 5.A. Operating Results

The following discussion and analysis is based on our consolidated financial statements, which have been prepared in accordance with IFRS, as issued by the IASB. Unless otherwise noted, the amounts included in Item 5.A. are presented on a consolidated basis.

Overview

We are the largest fully integrated steel producer in Korea. We have four reportable operating segments — a steel segment, a trading segment, a construction segment and a segment that contains operations of all other entities which fall below the reporting thresholds. The steel segment includes production of steel products and sale of such products. The trading segment consists primarily of global trading activities and natural resources development activities of POSCO International. POSCO International exports and imports a wide range of steel products that are both obtained from and supplied to POSCO, as well as between other suppliers and purchasers in Korea and overseas. The construction segment includes planning, designing and construction of industrial plants, civil engineering projects and commercial and residential buildings, both in Korea and overseas. The “others” segment includes power generation, LNG logistics, manufacturing of various industrial materials and network and system integration. See Note 40 of Notes to Consolidated Financial Statements.

One of the major factors contributing to our historical performance has been the growth of the Korean economy, and our future performance will depend at least in part on Korea's general economic growth and prospects. For a description of recent developments that have had and may continue to have an adverse effect on our results of operations and financial condition, see “Item 3. Key Information — Item 3.D. Risk Factors — Korea is our most important market, and our current business and future growth could be materially and adversely affected if economic conditions in Korea deteriorate.” A number of other factors have had or are expected to have a material impact on our results of operations, financial condition and capital expenditures. These factors include:

- our sales volume, unit prices and product mix;
- costs and production efficiency; and
- exchange rate fluctuations.

As a result of these factors, our financial results in the past may not be indicative of future results or trends in those results.

Sales Volume, Prices and Product Mix

In recent years, our net sales have been affected by the following factors:

- the demand for our products in the Korean market and our capacity to meet that demand;
- our ability to compete for sales in the export market;
- price levels; and
- our ability to improve our product mix.

Domestic demand for our products is affected by the condition of major steel consuming industries, such as construction, shipbuilding, automotive, electrical appliances and downstream steel processors, and the Korean economy in general.

In 2017, unit sales prices in Won for each of our principal product lines of steel products produced by us and directly sold to external customers increased. The weighted average unit price for such products increased by 21.3% from 2016 to 2017, despite an appreciation in the average value of the Won against the Dollar in 2017 that decreased our export prices in Won terms. The average exchange rate of the Won against the Dollar, as announced by Seoul Money Brokerage Services, Ltd., appreciated from Won 1,160.5 to US\$1.00 in 2016 to Won 1,130.8 to US\$1.00 in 2017.

The unit sales price of hot rolled products, which accounted for 25.9% of total sales volume of the principal steel products produced by us and directly sold to external customers, increased by 29.2% in 2017. The unit sales price of wire rods, which accounted for 7.8% of total sales volume of such products, increased by 26.2% in 2017. The unit sales price of cold rolled products, which accounted for 37.5% of total sales volume of such products, increased by 25.7% in 2017. The unit sales price of stainless steel products, which accounted for 9.6% of total sales volume of such products, increased by 15.0% in 2017. The unit sales price of silicon steel products, which accounted for 2.9% of total sales volume of such products, increased by 9.7% in 2017. The unit sales price of plates, which accounted for 16.3% of total sales volume of such products, increased by 8.4% in 2017.

In 2018, unit sales prices in Won for each of our principal product lines of steel products produced by us and directly sold to external customers, other than silicon steel products, increased. The weighted average unit price for such products increased by 3.3% from 2017 to 2018, despite an appreciation in the average value of the Won against the Dollar in 2018 that decreased our export prices in Won terms. The average exchange rate of the Won against the Dollar, as announced by Seoul Money Brokerage Services, Ltd., appreciated from Won 1,130.8 to US\$1.00 in 2017 to Won 1,100.3 to US\$1.00 in 2018.

The unit sales price of plates, which accounted for 15.8% of total sales volume of the principal steel products produced by us and directly sold to external customers, increased by 14.8% in 2018. The unit sales price of hot rolled products, which accounted for 26.0% of total sales volume of such products, increased by 5.2% in 2018. The unit sales price of wire rods, which accounted for 7.1% of total sales volume of such products, increased by 4.9% in 2018. The unit sales price of cold rolled products, which accounted for 39.2% of total sales volume of such products, increased by 2.8% in 2018. The unit sales price of stainless steel products, which accounted for 9.1% of total sales volume of such products, increased by 0.8% in 2018. On the other hand, the unit sales price of silicon steel products, which accounted for 2.8% of total sales volume of such products, decreased by 2.9% in 2018.

The table below sets out the average unit sales prices for our semi-finished and finished steel products for the periods indicated.

Products	For the Year Ended December 31,		
	2016	2017	2018
	(In thousands of Won per ton)		
Cold rolled products	₩ 666	₩ 837	₩ 861
Hot rolled products	507	655	689
Stainless steel products	2,003	2,304	2,322
Plates	582	631	724
Wire rods	638	806	845
Silicon steel sheets	1,065	1,169	1,135
Average ⁽¹⁾	₩ 745	₩ 904	₩ 934

(1) "Average" prices are based on the weighted average, by sales volume, of our sales for the listed principal products produced by us and directly sold to external customers. See "Item 4. Information on the Company — Item 4.B. Business Overview — Major Products." The average unit sales price calculation does not include sales results of steel products categorized as "others."

Costs and Production Efficiency

Our major costs and operating expenses are raw material purchases, depreciation, labor and other purchases. The table below sets out our cost of sales and selling and administrative expenses as a percentage of our revenue as well as gross profit margin and operating profit margin for the periods indicated.

	For the Year Ended December 31,		
	2016	2017	2018
	(Percentage of net sales)		
Cost of sales	87.4%	86.3%	87.7%
Selling and administrative expenses	7.3	6.2	3.7
Gross margin	12.6	13.7	12.3
Operating profit margin	4.3	7.0	6.2

Our operating profit margin increased from 4.3% in 2016 to 7.0% in 2017, but decreased to 6.2% in 2018 as discussed below.

We are closely monitoring changes in market conditions and we implemented the following measures in recent years to improve our profit margins:

- pursuing cost reduction through enhancing product designs, improving productivity and reducing fixed costs;
- focusing on marketing activities to increase the sales of higher margin, higher value-added products and to strengthen our domestic market position;
- pursuing synergies among member companies of the POSCO Group through corporate restructurings; and
- establishing a special sales committee to more effectively respond to changes in market trends and preparing responses to various scenarios of future sales.

Production capacity represents our maximum production capacity that can be achieved with an optimal level of operations of our facilities. The table below sets out certain information regarding our production capacity and efficiency in the production of steel products for the periods indicated.

	For the Year Ended December 31,		
	2016	2017	2018
Crude steel and stainless steel production capacity (million tons per year)	47.6	47.6	47.6
POSCO	42.4	42.4	42.4
Zhangjiagang Pohang Stainless Steel Co., Ltd.	1.1	1.1	1.1
PT. Krakatau POSCO	3.0	3.0	3.0
POSCO SS VINA Co., Ltd.	1.1	1.1	1.1
Actual crude steel and stainless steel output (million tons)	42.2	42.2	42.9
POSCO	37.5	37.2	37.7
Zhangjiagang Pohang Stainless Steel Co., Ltd.	1.2	1.2	1.2
PT. Krakatau POSCO	2.9	2.9	3.0
POSCO SS VINA Co., Ltd.	0.6	0.9	1.0
Capacity utilization rate (%)	88.7%	88.7%	90.1%
POSCO	88.5%	87.8%	89.0%
Zhangjiagang Pohang Stainless Steel Co., Ltd.	105.2%	105.4%	105.3%
PT. Krakatau POSCO	97.0%	97.4%	100.3%
POSCO SS VINA Co., Ltd.	58.0%	82.3%	87.7%

Exchange Rate Fluctuations

Our consolidated financial statements are prepared from our local currency denominated financial results, assets and liabilities and our subsidiaries around the world, which are then translated into Won. A substantial proportion of our consolidated financial results is accounted for in currencies other than the Won. Accordingly, our consolidated financial results and assets and liabilities may be materially affected by changes in the exchange rates of foreign currencies. In 2018, 61.6% of our total revenue from steel products produced and sold by us was in overseas markets outside of Korea. To the extent that we incur costs in one currency and make sales in another, our profit margins may be affected by changes in the exchange rates between the two currencies. Since the currency in which sales are recorded may not be the same as the currency in which expenses are incurred, foreign exchange rate fluctuations may materially affect our results of operations. Depreciation of the Won may materially affect the results of our operations because, among other things, it causes:

- an increase in the amount of Won required for us to make interest and principal payments on our foreign currency-denominated debt;
- an increase in Won terms in the costs of raw materials and equipment that we purchase from overseas sources and a substantial portion of our freight costs, which are denominated primarily in Dollars; and
- foreign exchange translation losses on foreign-currency denominated liabilities, which lower our earnings for accounting purposes.

Appreciation of the Won against major currencies, on the other hand, causes:

- our export products to be less competitive by raising our prices in Dollar, Yen and Renminbi terms; and
- a reduction in net sales and accounts receivables in Won from export sales, which are primarily denominated in Dollars and to a lesser extent in Yen and Renminbi.

The overall net impact from fluctuations of the Won against major currencies is difficult to estimate and varies from year to year. We strive to naturally offset our foreign exchange risk by matching foreign currency receivables with our foreign currency payables and our overseas subsidiaries have sought to further mitigate the adverse impact of exchange rate fluctuations by

conducting business transactions in the local currency of the respective market in which the transactions occur. In particular, POSCO International's exposure to fluctuations in exchange rates, including the Won/Dollar exchange rate, is limited because trading transactions typically involve matched purchase and sale contracts, which result in limited settlement exposure, and because POSCO International's contracts with domestic suppliers of products for export and with domestic purchasers of imported products are generally denominated in Dollars. Although the impact of exchange rate fluctuations is partially mitigated by such strategies, we and our subsidiaries, particularly POSCO International and POSCO E&C, also periodically enter into derivative contracts, primarily foreign currency swaps and forward exchange contracts, to further hedge some of our foreign exchange risks. However, our results of operations have historically been affected by exchange rate fluctuations and there can be no assurance that such strategies will be sufficient to reduce or eliminate the adverse impact of such fluctuations in the future.

Inflation

Inflation in Korea, which was 1.0% in 2016, 1.9% in 2017 and 1.5% in 2018, has not had a material impact on our results of operations in recent years.

Critical Accounting Estimates

We have prepared our consolidated financial statements in accordance with IFRS as issued by the IASB. These accounting principles require us to make certain estimates and judgments that affect the reported amounts in our consolidated financial statements. Our estimates and judgments are based on historical experience, forecasted future events and various other assumptions that we believe to be reasonable under the circumstances. Estimates and judgments may differ under different assumptions or conditions. We evaluate our estimates and judgments on an ongoing basis. We believe the critical accounting policies discussed below are the most important to the portrayal of our financial condition and results of operations. Each of them is dependent on projections of future market conditions, and they often require us to make difficult, subjective and complex judgments.

Allowance for Doubtful Accounts

We maintain an allowance for doubtful accounts for exposures in our receivable balances that represent our estimate of probable losses in our short-term and long-term receivable balances from the inability of our customers to make required payments. If the financial condition of our customers were to deteriorate and negatively impact their ability to make payments, additional allowances may be required. Determining the allowance for doubtful accounts requires significant management judgment and estimates including, among others, the credit worthiness of our customers, experience of historical collection patterns, potential events and circumstances affecting future collections and the ongoing risk assessment of our customer's ability to pay.

Trade account receivables are analyzed on a regular basis and, upon our becoming aware of a customer's inability to meet its financial commitments to us, the value of the receivable is reduced through a charge to the allowance for doubtful accounts. In addition, we record a charge to the allowance for doubtful accounts upon receipt of customer claims in connection with sales that management estimates are unlikely to be collected in full. As of December 31, 2018, the percentage of allowance for doubtful accounts to trade accounts and notes receivable and other receivables was 7.12%. Our allowance for doubtful accounts decreased by 16.2%, or Won 178 billion, from Won 1,094 billion as of December 31, 2017 to Won 917 billion as of December 31, 2018. See Note 23 of Notes to Consolidated Financial Statements.

Lifetime expected credit losses are expected credit losses from any default that may occur over the expected life of a financial instrument. 12-month expected credit losses are portions of lifetime

expected credit losses that result from defaults that may occur within the 12 months after the reporting date. The expected life of a financial instrument is the entire contractual period over which we are exposed to credit risk. Expected credit losses are probability-weighted estimates of credit losses. Credit losses are measured as the present value of all cash shortfalls, such as the difference between cash flows specified under contracts and cash flows that we expect to receive.

The actual average annual uncollected percentage rate of accounts receivables resulting in write-offs for the three years in the period ended December 31, 2018 was 1.14%. These historical results, as well as current known conditions impacting the collectability of our accounts receivable balances, are significant factors for us when we estimate the amount of the necessary allowance for doubtful accounts. Historically, losses from uncollectible accounts receivables have been within expectations and in line with the allowances established. However, unforeseen circumstances such as adverse market conditions that deviate significantly from our estimates may require us to change the timing of, and make additional allowances to, our receivable balances. In this case, our results of operations, financial condition and net worth could be materially and adversely affected.

Valuation of Financial Instruments including Debt and Equity Securities and Derivatives

We invest in various financial instruments including debt and equity securities and derivatives. Depending on the accounting treatment specific to each type of financial instrument, an estimate of fair value is required to determine the instrument's effect on our consolidated financial statements.

If available, quoted market prices provide the best indication of fair value. We determine the fair value of our financial instruments using quoted market prices when available, including quotes from dealers trading those securities. If quoted market prices are not available, we determine the fair value based on pricing or valuation models, quoted prices of instruments with similar characteristics, or discounted cash flows. Determining the fair value of unlisted financial instruments involves a significant degree of management resources and judgment as no quoted prices exist and such securities are generally very thinly traded. Derivatives for which quoted market prices are not available are valued using valuation models such as the discounted cash flow method. The key inputs used in the valuation of such derivatives depend upon the type of derivative and the nature of the underlying instrument and include interest rate yield curves, foreign exchange rates, the spot price of the underlying instrument, volatility and correlation. The fair values based on pricing and valuation models and discounted cash flow analysis are subject to various assumptions used that, if changed, could significantly affect the fair value of the investments.

We assess at the end of each reporting period whether there is objective evidence that a financial asset or a group of financial assets is impaired. In the case of equity investments classified as available-for-sale, a significant or prolonged decline in the fair value of the security below its cost is also evidence that the asset is impaired. As part of this impairment review, the investee's operating results, net asset value and future performance forecasts as well as general market conditions are taken into consideration in order to assess whether there is any objective evidence such as significant financial difficulty of the issuer.

We have estimated fair values of material non-marketable securities. We estimated these fair values based on pricing or valuation models, quoted prices of instruments with similar characteristics, or discounted cash flow models. The discounted cash flow model valuation technique is based on the estimated cash flow projections of the underlying investee. Key assumptions and estimates include market conditions, revenue growth rates, operating margin rates, income tax rates, depreciation and amortization rates, the level of capital expenditures, working capital amounts and the discount rates. These estimates are based on historical results of the investee and other market data. In these cash flows projections, the two most significant estimates are the discount rates and revenue growth rates. If the discount rates used in these valuations were increased by 1%, then the estimated fair values would have decreased by approximately 10% in total. In addition, if the revenue growth rate assumptions

were decreased by 1% in the cash flow models, then the estimated fair values would have decreased by approximately 13% in total.

We recognized impairment losses on available-for-sale financial assets of Won 248 billion in 2016 and Won 123 billion in 2017, but we did not recognize any such impairment loss in 2018 due to our adoption of IFRS 9 “Financial Instruments,” effective as of January 1, 2018, which classifies available-for-sale financial assets as financial assets at fair value through other comprehensive income. See Notes 2 and 33 of Notes to Consolidated Financial Statements.

Our estimates and assumptions used to evaluate impairment of investments are made taking into consideration our assessment of the latest information available. However, unforeseen circumstances such as adverse market conditions that deviate significantly from our estimates may require us to recognize additional losses on impairment of investments. We base our fair value estimates on assumptions we believe to be reasonable, but which are unpredictable and inherently uncertain. The use of alternative estimates and assumptions could increase or decrease the estimated fair values of our investments and potentially result in different impacts on our results of operations.

Long-lived Assets

At each reporting date, we review the carrying amounts of our tangible and intangible assets (excluding goodwill) to determine whether there is any indication that the carrying amount of those assets may not be recoverable through continuing use. If any such indication exists, the recoverable amount of the asset (or cash generating unit) is reviewed in order to determine the amount of the impairment, if any. The recoverable amount is the higher of the asset’s net selling price (fair value less costs to sell) and its value in use. When the book value of long-lived asset exceeds the recoverable amount of the asset due to obsolescence, physical damage or a decline in market value and such amount is material, the impairment of the asset is recognized and the asset’s carrying value is reduced to its recoverable amount and the resulting impairment loss is charged to current operations. Such recoverable amount is based on our estimates of the future use of assets and is subject to changes in market conditions. Based on an impairment test as of December 31, 2018, we recognized impairment loss on property, plant and equipment amounting to Won 810 billion in 2018, which related primarily to our synthetic natural gas production facility in Gwangyang due to our discontinuation of such business that we had launched in 2011, which was adversely impacted by a decline in the market price of LNG. In addition, we recognized impairment loss on industrial property rights of Won 78 billion related to our investment in Hume Coal Pty Limited, a coal mining company in Australia, as well as impairment loss on property, plant and equipment of Won 54 billion in 2018 in connection with the restructuring of our fuel cell business.

The depreciable lives and salvage values of our long-lived assets are estimated and reviewed each year based on industry practices and prior experience to reflect economic lives of long-lived assets. Our estimates of the useful lives and recoverable amount of long-lived assets are based on historical trends adjusted to reflect our best estimate of future market and operating conditions. Also, our estimates include the expected future period in which the future cash flows are expected to be generated from continuing use of the assets that we review for impairment and cash outflows to prepare the assets for use that can be directly attributed or allocated on a reasonable and consistent basis. If applicable, estimates also include net cash flows to be received or paid for the disposal of the assets at the end of their useful lives. As a result of the impairment review, when the sum of the discounted future cash flows expected to be generated by the assets is less than the book value of the assets, we recognize impairment losses based on the recoverable amount of those assets. We make a number of significant assumptions and estimates in the application of the discounted cash flow model to forecast cash flows, including business prospects, market conditions, selling prices and sales volume of products, costs of production and funding sources. The estimated cash flow forecast amounts are derived from the most recent financial budgets for the next three to five years. Beyond the specifically forecasted period, we extrapolate the cash flows for the remaining years based on an

estimated growth rate. This estimated growth rate does not exceed the long-term average growth rate of our industry. As of December 31, 2018, for the applicable cash generating units, we estimated a discount rate of 4.6% to 10.4% and a revenue growth rate of 0.6% to 2.0%. Further impairment charges may be required if triggering events occur, such as adverse market conditions, that suggest deterioration in an asset's recoverability or fair value. Results in actual transactions could differ from those estimates used to evaluate the impairment of such long-lived assets. If our future cash flow projections are not realized, either because of an extended recessionary period or other unforeseen events, impairment charges may be required in future periods.

If the estimated discount rates used in these valuations were increased by 1%, then the estimated recoverable amount would have decreased by 4.2% to 4.9% in total. If the estimated revenue growth rate were decreased by 1%, then the estimated recoverable amount would have decreased by 1.9% to 8.5% in total. We believe that any reasonably possible negative change in the key assumptions on which the recoverable amount is based would result in impairment loss of long-lived assets.

Goodwill

Goodwill is tested for impairment annually at the level of the groups of cash generating units or whenever changes in circumstances indicate that the carrying amount may not be recoverable. The recoverable amounts of the groups of cash-generating units are determined from the higher of their fair value less cost to sell or their value-in-use calculations. The key assumptions for the value in use calculations are those regarding the discount rates, growth rates and expected changes to selling prices and direct costs during the period.

Our management estimates discount rates using post-tax rates that reflect current market rates for investments of similar risk. Growth rates are based on industry growth forecasts, and changes in selling prices and direct costs are based on historical experience and expectations of future changes in the market. Cash flow forecasts are derived from the most recent financial budgets for the next five years. Beyond the specifically forecasted period, we extrapolate cash flows for the remaining years based on an estimated growth rate. This rate does not exceed the average long-term growth rate for the relevant markets. Once recognized, impairment losses recognized for goodwill are not reversed.

In validating the value in use determined for the cash generating units, the sensitivity of key assumptions used in the discounted cash-flow model such as discount rates and the terminal growth rate was evaluated. If the estimated average discount rates used in these valuations were increased by 0.25%, the estimated value-in-use for the respective cash generating units would have decreased by 2.72% to 3.71% in total. If the estimated terminal growth rates were decreased by 0.25%, the estimated value-in-use for the respective cash generating units would have decreased by 1.49% to 1.76% in total. Based on an impairment test as of December 31, 2018, we recognized impairment loss on goodwill of Won 158 billion incurred by POSCO International and Won 66 billion incurred by POSCO E&C in connection with decreases in value-in-use of such entities, as well as impairment of industrial property rights of Won 78 billion related to our investment in Hume Coal Pty Limited, a coal mining company in Australia. We believe that determining the existence and impairment of goodwill is a critical accounting estimate because significant management judgment is involved in the evaluation of the value of the cash-generating groups, and any reasonably possible changes in the key assumptions on which the recoverable amount is based would cause a change in impairment loss on goodwill. See Note 15 of Notes to Consolidated Financial Statements.

Inventories

Inventories are stated at the lower of cost or net realizable value. Costs of inventories are determined using the moving-weighted average or weighted average method. Materials-in-transit are determined using the specific identification method. Amounts of inventory are written down to net

realizable value due to losses occurring in the normal course of business and the allowance is reported as a contra inventory account, while the related charge is recognized in cost of goods sold.

The net realizable value is determined based on the latest selling price available at the end of each quarter taking into account the directly attributable selling costs. The latest selling price is the base price which is the negotiated selling price based upon the recent transactions entered into with major customers. Considering that our inventory turnover is approximately two months and inventories at the balance sheet date would be sold during the following two months, we perform valuation of inventories using the base price as of the balance sheet date and adjust for significant changes in selling price occurring subsequent to the reporting date. The selling price range used for determining the net realizable value of our inventories ranged from 92.9% to 116.1% of the inventory cost amount. For inventories in which expected selling prices are less than the cost amount, the necessary adjustment to write-down the inventories to net realizable value is made. There was no recovery in 2016, 2017 and 2018. The valuation losses of inventories recognized within cost of goods sold were Won 152 billion in 2016, Won 79 billion in 2017 and Won 142 billion in 2018.

Investments in Associates and Joint Ventures

We hold a significant amount of investments in associates and joint ventures, which interests are accounted for using the equity method. As of December 31, 2018, the book value of our investments in associates and joint ventures was Won 3,650 billion. The carrying amounts of our investments in associates and joint ventures are reviewed at the end of the reporting period to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated.

We estimate the recoverable amount of an individual asset. If it is impossible to measure the individual recoverable amount of an asset, then we estimate the recoverable amount of cash-generating unit ("CGU"), which is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell. The value in use is estimated by applying a post-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or CGU for which estimated future cash flows have not been adjusted, to the estimated future cash flows expected to be generated by the asset or CGU. We treat individual operating entities as CGUs, and an impairment loss is recognized if the carrying amount of an asset or a CGU exceeds its recoverable amount. Impairment losses are recognized in profit or loss.

As part of our impairment review, the operating results, net asset value and future performance forecasts of our associates and joint ventures as well as general market conditions are taken into consideration in order to assess whether there is any objective evidence of impairment, such as significant financial difficulty of the associate or joint venture. Unforeseen circumstances such as adverse market conditions that deviate significantly from our estimates may require us to recognize additional losses on impairment of our interest in our associates and joint ventures. We base our value in use estimates on assumptions we believe to be reasonable, but which are unpredictable and inherently uncertain. The use of alternative estimates and assumptions could increase or decrease the estimated fair values used to evaluate impairment of our interest in our associates and joint ventures and potentially have different impacts on our results of operations.

Revenue Recognized by the Input Method

POSCO E&C, our consolidated subsidiary, engages in various construction activities, including construction of industrial plants and civil engineering projects, and revenue recognition is different based on types of contracts. We recognize revenue over time when (i) our customers receive the benefits from our construction activities simultaneously with our performance of such activities, (ii) our

construction activities create or improve an asset when such asset is under the customer's control or (iii) our construction activities do not provide alternative benefits to us and we have an enforceable right to payment for performance completed to date.

In the case of construction contracts where we construct plants or other similar structures, our customers control the assets as they are being constructed. Under such contracts, we perform construction of the projects according to the customers' on-going specifications, and if a contract is terminated by the customer, we are entitled to reimbursement of all costs incurred to date, including a reasonable margin. When the revenue and costs of a contract can be reliably estimated, we recognize such estimated revenue and costs based on the progress of construction as of the end of the reporting period. The percentage of completion is determined based on the proportion that contract costs incurred for work performed to date bear to the estimated total contract costs. If the revenue and costs of a contract cannot be reliably estimated, revenue is recognized only to the extent the recovery of contract costs are probable. If the total contract cost is likely to exceed the total contract revenue, expected losses are immediately recognized as costs.

Our contract revenue recognition policy requires our management to exercise judgment in estimating the outcome of our contracts and measuring the percentage of completion and actual costs incurred in respect of our projects, which affects the amount and timing of recognition of revenues and cost of sales, provisions for estimated losses, charges against current earnings, trade account receivables and advances. For example, due to factors causing variation in costs for 2018, the estimated total contract costs were changed. Details of changes in estimated total contract costs and the impact on profit before income taxes for 2018 and future periods are as follows:

	Amount
	(In millions of Won)
Changes in estimated total contract costs	₩ 427,812
Changes in profit before income taxes of construction contracts:	
Current period	(38,720)
Future periods	69,428

The effect on current and future profit is estimated based on circumstances that have occurred from the commencement date of the contract to the end of 2018. The estimation is evaluated for total contract costs and expected total contract revenue as of the end of the period. Such estimate may change in future periods.

Our ability to measure reliably the estimated total cost of a project has a significant effect on the amount and timing of recognizing our sales and cost of sales. The timing of recognition of sales we report may differ materially from the timing of actual contract payments received. In addition, to the extent that sales recognized by us exceed the amount of payments to be received by us, such amount is reflected as trade account receivables on our balance sheet. To the extent payments received by us exceed the sales recognized, such amount is reflected under advances from customers on our balance sheet. Thus our ability to measure reliably the estimated total costs and the percentage of completion also affects the amount of our trade account receivables and advances from customers. For a discussion of uncertainty of estimates related to contract revenues and costs, see Note 29(d) of Notes to Consolidated Financial Statements.

Deferred Income Taxes

Our deferred income tax assets and liabilities reflect the tax consequences that would follow from the manner in which we expect, at the end of the reporting period, to recover or settle the carrying amount of our assets and liabilities. We recognize deferred income tax liability for all taxable temporary differences associated with investments in subsidiaries, associates and joint ventures, except to the extent that we are able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. We recognize

deferred income tax asset for deductible temporary differences to the extent that it is probable that the temporary difference will reverse in the foreseeable future and taxable profit will be available against which they can be utilized. However, deferred tax is not recognized for taxable temporary differences arising on the initial recognition of goodwill or the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting profit or loss nor taxable income. The carrying amount of a deferred income tax asset is reviewed at the end of each reporting period and is reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow the benefit of part or all of that deferred tax asset to be utilized.

We believe that recognition of deferred tax assets and liabilities is a significant accounting policy that requires our management's estimates and assumptions regarding, among other things, the level of future taxable income, interpretation of the tax laws and tax planning. Changes in tax laws, projected levels of taxable income and tax planning could affect the effective tax rate and tax balances recorded by us in the future.

Employee Benefits

Our accounting of employee benefits for defined benefit plans involves judgments about uncertain events including, but not limited to, discount rates, life expectancy, future pay inflation and expected rate of return on plan assets. The discount rates are determined by reference to the yield at the reporting date on high quality corporate bonds that have maturity dates approximating the terms of our benefits obligations and that are denominated in the same currency in which the benefits are expected to be paid. We determine the net interest expense (income) on the net defined benefit liability (asset) for the period by applying the discount rate used to measure the defined benefit obligation at the beginning of the annual period to the then-net defined benefit liability (asset), taking into account any changes in the net defined benefit liability (asset) during the period as a result of contributions and benefit payments, net interest expense, and other expenses related to defined benefit plans that are recognized in profit or loss. Due to changing market and economic conditions, the underlying key assumptions may differ from actual developments and may lead to significant changes in our defined benefit plan. We immediately recognize all actuarial gains and losses arising from defined benefit plans in retained earnings. If the estimated average discount rates by actuarial assumptions used in these valuations were increased by 1%, then the estimated provision for severance benefits would have decreased by Won 144 billion, or 6.7% in total, as of December 31, 2018. If the estimated future pay inflation rates were decreased by 1%, then the estimated provision for severance benefits would have decreased by Won 147 billion, or 6.9% in total, as of December 31, 2018.

Recent Accounting Changes

For a discussion of new standards, interpretations and amendments to existing standards that have been published, see Note 3 of Notes to Consolidated Financial Statements.

IFRS No. 16 "Leases"

IFRS No. 16 "Leases" replaces existing guidance regarding leases, including IAS No. 17 "Leases," IFRIC No. 4 "Determining whether an Arrangement contains a Lease," SIC No. 15 "Operating Leases-Incentives" and SIC No. 27 "Evaluating the Substance of Transactions Involving the Legal Form of a Lease."

IFRS No. 16 introduces a single accounting model that requires a lessee to recognize lease related assets and liabilities in the financial statements. A lessee is required to recognize as an asset its right to use the underlying leased asset and recognize as a liability its obligation to make lease payments. The lessee may elect not to apply the standard to short-term lease with a term of 12 months or less or low value assets. Accounting treatment for a lessor is similar to the existing standard which classifies leases into finance and operating leases.

We will apply IFRS No. 16 “Leases” beginning on January 1, 2019. Based on information currently available, we estimate that we will recognize right-of-use assets and lease liabilities of Won 619 billion as of January 1, 2019, which is the present value of the lease payments of Won 856 billion that are not paid at the date of initial application for the assets currently used as operating leases.

Explanatory Note Regarding Presentation of Certain Financial Information under K-IFRS

In addition to preparing financial statements in accordance with IFRS as issued by the IASB included in this annual report, we also prepare financial statements in accordance with K-IFRS as adopted by the KASB, which we are required to file with the Financial Services Commission and the Korea Exchange under the FSCMA.

K-IFRS differs in certain respects from IFRS as issued by the IASB in the presentation of operating profit. Additionally, under K-IFRS, revenue from the development and sale of real estate is recognized using the percentage of completion method. However, under IFRS as issued by the IASB, revenue from the development and sale of certain real estate is recognized when an individual unit of residential real estate is delivered to the buyer. As a result, our consolidated statements of comprehensive income and our consolidated statements of financial position prepared in accordance with IFRS as issued by the IASB included in this annual report differ from our consolidated statements of comprehensive income and consolidated statements of financial position prepared in accordance with K-IFRS. The table below sets forth a reconciliation of our operating profit and net income or loss as presented in our consolidated statements of comprehensive income prepared in accordance with IFRS as issued by the IASB for each of the years ended December 31, 2016, 2017 and 2018 to our operating profit and net income or loss in our consolidated statements of comprehensive income prepared in accordance with K-IFRS, for each of the corresponding years, taking into account such differences:

	For the Year Ended December 31,		
	2016	2017	2018
	(In millions of Won)		
Operating profit under IFRS as issued by the IASB	₩ 2,282,496	₩ 4,196,121	₩ 4,041,827
Additions:			
Impairment loss on other receivables	37,567	98,177	63,092
Impairment loss on assets held for sale	24,890	—	50,829
Loss on disposals of investments in subsidiaries, associates and joint ventures	22,499	19,985	5,226
Loss on disposals of property, plant and equipment	86,622	151,343	117,614
Impairment loss on property, plant and equipment	196,882	117,231	1,004,704
Impairment loss on investment property	318	—	51,461
Loss on disposals of investment property	21	1,966	9,154
Impairment loss on intangible assets	127,875	167,995	337,519
Increase to provisions	53,058	33,964	134,632
Loss on valuation of firm commitment	—	43,164	66,281
Donations	43,810	51,424	52,074
Idle tangible asset expenses	6,437	10,490	9,257
Others	143,083	93,814	175,711
	743,062	789,553	2,077,554
Deductions:			
Gain on disposals of assets held for sale	(23,112)	(1,180)	(27,171)
Gain on disposals of investment in subsidiaries, associates and joint ventures	(23,305)	(81,794)	(45,241)
Gain on disposals of property, plant and equipment	(23,826)	(32,145)	(53,139)
Gain on disposals of intangible assets	(671)	(23,391)	(117,139)
Gain on valuation of firm commitment	—	(56,301)	(39,028)
Gain on insurance proceeds	(22,400)	(5,878)	(14,034)
Others	(109,164)	(247,792)	(227,834)
	(202,478)	(448,481)	(523,586)
Revenue recognition related to development and sale of real estate	143,742	468,233	(176,859)
Cost of sales recognition related to development and sale of real estate	(122,497)	(383,592)	123,664
Operating profit under K-IFRS	₩ 2,844,325	₩ 4,621,834	₩ 5,542,600
Net income (loss) under IFRS as issued by the IASB	₩ 1,032,065	₩ 2,909,311	₩ 1,932,386
Adjustments related to development and sale of real estate:			
Revenue	143,742	468,233	(176,859)
Cost of sales	(122,497)	(383,592)	123,664
Income tax	(5,141)	(20,483)	12,873
Net income (loss) under K-IFRS	₩ 1,048,169	₩ 2,973,469	₩ 1,892,064

Operating Results — 2017 Compared to 2018

The following table presents our statement of comprehensive income information and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes 2017 versus 2018	
	2017	2018	Amount	%
	(In billions of Won)			
Revenue	₩ 60,187	₩ 65,155	₩ 4,968	8.3%
Cost of sales	51,916	57,129	5,123	10.0
Gross profit	8,271	8,026	(246)	(3.0)
Selling and administrative expenses:				
Impairment loss on trade accounts and notes receivable	174	75	(99)	(56.9)
Other administrative expenses	2,003	1,986	(17)	(0.9)
Selling expenses	1,557	369	(1,188)	(76.3)
Other operating income and expenses:				
Impairment loss on other receivables	98	63	(35)	(35.7)
Other operating income	448	524	75	16.7
Other operating expenses	691	2,014	1,323	191.4
Operating profit	4,196	4,042	(154)	(3.7)
Share of profit of equity-accounted investees, net	11	113	102	968.6
Finance income	2,373	1,706	(667)	(28.1)
Finance costs	2,484	2,244	(240)	(9.7)
Profit before income tax	4,095	3,616	(479)	(11.7)
Income tax expense	1,186	1,684	498	42.0
Profit	2,909	1,932	(977)	(33.6)
Profit for the period attributable to owners of the controlling company	2,756	1,712	(1,044)	(37.9)
Profit for the period attributable to non-controlling interests . . .	153	220	67	44.0

Revenue

The following table presents our revenue by segment and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
	(In billions of Won)		Amount	%
Steel Segment:				
External revenue	₩ 30,230	₩ 32,358	₩ 2,128	7.0%
Internal revenue	17,381	18,063	682	3.9
Total revenue from Steel Segment	47,611	50,421	2,810	5.9
Trading Segment:				
External revenue	20,802	22,408	1,606	7.7%
Internal revenue	14,076	15,911	1,835	13.0
Total revenue from Trading Segment	34,878	38,319	3,441	9.9
Construction Segment:				
External revenue	6,887	6,769	(117)	(1.7)
Internal revenue	399	551	152	38.2
Total revenue from Construction Segment	7,286	7,321	35	0.5
Others Segment:				
External revenue	2,736	3,443	707	25.8
Internal revenue	2,549	2,755	207	8.1
Total revenue from Others Segment	5,285	6,198	913	17.3
Total revenue prior to consolidation adjustments and basis difference	95,060	102,259	7,199	7.6
Consolidation adjustments	(34,405)	(37,281)	(2,876)	8.4
Basis difference adjustments ⁽¹⁾	(468)	177	645	N.A. ⁽²⁾
Revenue	₩ 60,187	₩ 65,155	4,968	8.3%

(1) Basis difference adjustments are related to the difference in recognizing revenue and expenses of the Construction Segment in connection with development and sale of certain residential real estate between the report reviewed by the chief executive officer and the consolidated financial statements. See Notes 3 and 40 of Notes to Consolidated Financial Statements.

(2) N.A. means not applicable.

Our revenue increased by 8.3%, or Won 4,968 billion, from Won 60,187 billion in 2017 to Won 65,155 billion in 2018 due to increases in external revenues from the Steel Segment, the Trading Segment and the Others Segment, which were offset in part by a decrease in external revenue from the Construction Segment. Specifically:

Steel Segment. External revenue from the Steel Segment, which does not include internal revenue from inter-company transactions that are eliminated during consolidation and basis difference adjustments, increased by 7.0%, or Won 2,128 billion, from Won 30,230 billion in 2017 to Won 32,358 billion in 2018 due to an increase in our sales volume of the steel products produced by us and directly sold to external customers (including miscellaneous steel products not included in any of our major product categories), as well as an increase in the average unit sales price per ton of the principal steel products produced by us and directly sold to external customers. The overall sales volume of the principal steel products produced by us and directly sold to external customers increased by 4.4% from 30.0 million tons in 2017 to 31.4 million tons in 2018, while the weighted average unit sales price per ton of the principal steel products produced by us and directly sold to external customers increased by 3.3% from Won 903,897 per ton in 2017 to Won 933,990 per ton in 2018. Such factors were principally attributable to the following:

- The sales volume of each of our major product categories, other than wire rods and stainless steel products, increased from 2017 to 2018. The sales volume of cold rolled products, hot rolled products, silicon steel products and plates produced by us and directly sold to external customers increased by 9.1%, 4.7%, 1.7% and 1.2%, respectively, from 2017 to 2018. On the other hand, the sales volume of wire rods and stainless steel products produced by us and directly sold to external customers decreased by 4.6% and 0.8%, respectively, from 2017 to 2018. For a discussion of changes in sales volume of each of our principal product lines, see “Item 4.B. Business Overview — Major Products.”
- The unit sales prices in Won of each of our major product categories, other than silicon steel products, increased from 2017 to 2018. The unit sales prices in Won of plates, hot rolled products, wire rods, cold rolled products and stainless steel products produced by us and directly sold to external customers increased by 14.8%, 5.2%, 4.9%, 2.8% and 0.8%, respectively, from 2017 to 2018. On the other hand, the unit sales price in Won of silicon steel products produced by us and directly sold to external customers decreased by 2.9% from 2017 to 2018. For a discussion of changes in the unit sales prices of each of our principal product lines, see “— Overview — Sales Volume, Prices and Product Mix” above.

Total revenue from the Steel Segment, which includes internal revenue from inter-company transactions, increased by 5.9%, or Won 2,810 billion, from Won 47,611 billion in 2017 to Won 50,421 billion in 2018 as internal revenue from inter-company transactions increased by 3.9%, or Won 682 billion, from Won 17,381 billion in 2017 to Won 18,063 billion in 2018.

Trading Segment. External revenue from the Trading Segment, which does not include internal revenue from inter-company transactions that are eliminated during consolidation and basis difference adjustments, increased by 7.7%, or Won 1,606 billion, from Won 20,802 billion in 2017 to Won 22,408 billion in 2018 primarily due to an increase in third-country trades by POSCO International and our other trading subsidiaries from 2017 to 2018, reflecting an increase in trading of agricultural products and steel slabs, as well as the recognition of the sales of POSCO P&S’s steel product sales business under the Trading Segment commencing March 2017 following the transfer of such business to POSCO International.

Total revenue from the Trading Segment, which includes internal revenue from inter-company transactions, increased by 9.9%, or Won 3,441 billion, from Won 34,878 billion in 2017 to Won 38,319 billion in 2018 as internal revenue from inter-company transactions increased by 13.0%, or Won 1,835 billion, from Won 14,076 billion in 2017 to Won 15,911 billion in 2018.

Construction Segment. External revenue from the Construction Segment, which does not include internal revenue from inter-company transactions that are eliminated during consolidation and basis difference adjustments, decreased by 1.7%, or Won 117 billion, from Won 6,887 billion in 2017 to Won 6,769 billion in 2018 primarily due to a decrease in POSCO E&C's construction activities in Brazil following the completion of construction of CSP-Companhia Siderurgia do Pecem steel plant complex in 2017.

Total revenue from the Construction Segment, which includes internal revenue from inter-company transactions, increased by 0.5%, or Won 35 billion, from Won 7,286 billion in 2017 to Won 7,321 billion in 2018 as internal revenue from inter-company transactions increased by 38.2%, or Won 152 billion, from Won 399 billion in 2017 to Won 551 billion in 2018. Such increase in internal revenue reflected an increase in the amount of construction activities for member companies of the POSCO Group in 2018 compared to 2017, which was partially offset by a decrease in external revenue as discussed above.

Others Segment. The Others Segment primarily includes power generation, LNG logistics, manufacturing of various industrial materials and information technology service. External revenue from the Others Segment, which does not include internal revenue from inter-company transactions that are eliminated during consolidation and basis difference adjustments, increased by 25.8%, or Won 707 billion, from Won 2,736 billion in 2017 to Won 3,443 billion in 2018 primarily due to increases in revenue of POSCO Energy Corporation and POSCO Chemical Co., Ltd.

Total revenue from the Others Segment, which includes internal revenue from inter-company transactions, increased by 17.3%, or Won 913 billion, from Won 5,285 billion in 2017 to Won 6,198 billion in 2018 as internal revenue from inter-company transactions increased by 8.1% or Won 207 billion, from Won 2,549 billion in 2017 to Won 2,755 billion in 2018. Such increase primarily reflected an increase in inter-company sales of coal coking by-products from POSCO Chemical Co., Ltd. to POSCO.

Cost of Sales

Our cost of sales increased by 10.0%, or Won 5,213 billion, from Won 51,916 billion in 2017 to Won 57,129 billion in 2018. The increase in cost of sales was primarily due to increases in the average price in Won terms of key raw materials that were used to manufacture our finished goods sold as well as in our sales volume of steel products. Following our adoption of IFRS No. 15 "Revenue from Contracts with Customers" starting on January 1, 2018, we also began classifying a substantial majority of our freight and custody expenses as cost of sales, which had all been recognized as selling expenses in 2017. We recognized Won 1,415 billion as freight and custody expenses in 2018, of which we recognized Won 1,230 billion as cost of sales and Won 185 billion as selling expenses.

The following table presents a breakdown of our cost of sales by segment, prior to adjusting for inter-company transactions that are eliminated during consolidation and basis difference, and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
			Amount	%
		(In billions of Won)		
Steel Segment	₩ 41,479	₩ 44,377	₩ 2,898	7.0%
Trading Segment	33,388	37,202	3,814	11.4
Construction Segment	6,598	6,651	53	0.8
Others Segment	4,636	5,603	967	20.9
Consolidation adjustments	(33,802)	(36,828)	(3,026)	9.0
Basis difference adjustments ⁽¹⁾	(383)	124	507	N.A. ⁽²⁾
Cost of sales	₩ 51,916	₩ 57,129	₩ 5,213	10.0%

- (1) Basis difference adjustments are related to the difference in recognizing revenue and expenses of the Construction Segment in connection with development and sale of certain residential real estate between the report reviewed by the chief executive officer and the consolidated financial statements. See Notes 3 and 40 of Notes to Consolidated Financial Statements.
- (2) N.A. means not applicable.

Steel Segment. The cost of sales of our Steel Segment, prior to consolidation and basis difference adjustments, increased by 7.0%, or Won 2,898 billion, from Won 41,479 billion in 2017 to Won 44,377 billion in 2018 primarily due to increases in our sales volume of the principal steel products produced by us and sold to external and internal customers and in the average price in Won terms of key raw materials that were used to manufacture our finished goods sold, as well as our classification of Won 919 billion of freight and custody expenses of the Steel Segment as cost of sales (instead of selling expenses) following our adoption of IFRS 15 starting in 2018.

Trading Segment. The cost of sales of our Trading Segment, prior to consolidation and basis difference adjustments, increased by 11.4%, or Won 3,814 billion, from Won 33,388 billion in 2017 to Won 37,202 billion in 2018 primarily due to an increase in the volume of export and import products sold, as well as our classification of Won 307 billion of freight and custody expenses of the Trading Segment as cost of sales (instead of selling expenses) following our adoption of IFRS 15 starting in 2018.

Construction Segment. The cost of sales of our Construction Segment, prior to consolidation and basis difference adjustments, increased by 0.8%, or Won 53 billion, from Won 6,598 billion in 2017 to Won 6,651 billion in 2018 in line with an increase in the amount of construction activities described above.

Others Segment. The cost of sales of our Others Segment, prior to consolidation and basis difference adjustments, increased by 20.9%, or Won 967 billion, from Won 4,636 billion in 2017 to Won 5,603 billion in 2018 primarily due to increases in the average price in Won terms of key raw materials used by POSCO Energy Corporation.

Gross Profit

Our gross profit decreased by 3.0%, or Won 246 billion, from Won 8,271 billion in 2017 to Won 8,026 billion in 2018 due to decreases in gross profit of each of our four segments, particularly from the Trading Segment. Our gross margin decreased from 13.7% in 2017 to 12.3% in 2018.

The following table presents our gross profit by segment, prior to adjusting for inter-company transactions that are eliminated during consolidation and basis difference, and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
			Amount	%
	(In billions of Won)			
Steel Segment	₩ 6,132	₩ 6,044	₩ (88)	(1.4)%
Trading Segment	1,490	1,117	(374)	(25.1)
Construction Segment	688	669	(18)	(2.6)
Others Segment	649	595	(54)	(8.3)
Consolidation adjustments	(603)	(453)	150	(24.8)
Basis difference adjustments ⁽¹⁾	(85)	53	138	N.A. ⁽²⁾
Gross profit	₩ 8,271	₩ 8,026	₩ (246)	(3.0)

- (1) Basis difference adjustments are related to the difference in recognizing revenue and expenses of the Construction Segment in connection with development and sale of certain residential real estate between the report reviewed by the chief

executive officer and the consolidated financial statements. See Notes 3 and 40 of Notes to Consolidated Financial Statements.

(2) N.A. means not applicable.

Steel Segment. The gross profit of our Steel Segment, prior to consolidation and basis difference adjustments, decreased by 1.4%, or Won 88 billion, from Won 6,132 billion in 2017 to Won 6,044 billion in 2018 primarily due to our classification of Won 919 billion of freight and custody expenses of the Steel Segment as cost of sales (instead of selling expenses) following our adoption of IFRS 15 starting in 2018, which was largely offset by the impact from our external revenue from the Steel Segment increasing at a greater rate than its cost of sales (excluding freight and custody expenses), prior to consolidation and basis difference adjustments, as discussed above. Due to such factors, the gross margin of our Steel Segment, which is gross profit as a percentage of total revenue prior to consolidation and basis difference adjustments, decreased from 12.9% in 2017 to 12.0% in 2018.

Trading Segment. The gross profit of our Trading Segment, prior to consolidation and basis difference adjustments, decreased by 25.1%, or Won 374 billion, from Won 1,490 billion in 2017 to Won 1,117 billion in 2018 primarily due to a decrease in trading margins resulting from our classification of Won 307 billion of freight and custody expenses of the Trading Segment as cost of sales (instead of selling expenses) following our adoption of IFRS 15 starting in 2018. The gross margin of our Trading Segment, prior to consolidation and basis difference adjustments, decreased from 4.3% in 2017 to 2.9% in 2018.

Construction Segment. The gross profit of our Construction Segment, prior to consolidation and basis difference adjustments, decreased by 2.6%, or Won 18 billion, from Won 688 billion in 2017 to Won 669 billion in 2018 primarily due to a decrease in POSCO E&C's construction activities overseas as well as a decrease in its participation of construction projects with higher margins in 2018. The gross margin of our Construction Segment, prior to consolidation and basis difference adjustments, decreased from 9.4% in 2017 to 9.1% in 2018.

Others Segment. The gross profit of our Others Segment, prior to consolidation and basis difference adjustments, decreased by 8.3%, or Won 54 billion, from Won 649 billion in 2017 to Won 595 billion in 2018 primarily due to a decrease in gross profit of POSCO Energy Corporation. The gross margin of our Others Segment, prior to consolidation and basis difference adjustments, decreased from 12.3% in 2017 to 9.6% in 2018.

Selling and Administrative Expenses

The following table presents a breakdown of our selling and administrative expenses and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
			Amount	%
	(In billions of Won)			
Impairment loss on trade accounts and notes receivable	₩ 174	₩ 75	₩ (99)	(56.9)%
Freight and custody expenses	₩ 1,337	₩ 185	₩ (1,152)	(86.2)%
Sales commissions	116	79	(37)	(31.8)
Sales promotion	12	14	1	11.1
Sales insurance premium	37	37	1	1.9
Contract cost	23	17	(6)	(26.3)
Others	32	37	5	15.7
Total selling expenses	₩ 1,557	₩ 369	(1,188)	(76.3)
Wages and salaries	₩ 775	₩ 813	₩ 39	5.0%
Expenses related to post-employment benefits	79	73	(5)	(6.8)
Other employee benefits	160	176	16	10.2
Depreciation	97	101	4	4.1
Amortization	146	112	(34)	(23.2)
Taxes and public dues	73	72	(1)	(9.6)
Rental	70	70	(0)	(0.7)
Advertising	120	107	(13)	(10.7)
Research and development	126	108	(17)	(13.9)
Service fees	193	166	(27)	(14.2)
Others	164	186	22	13.4
Total other administrative expenses	₩ 2,003	₩ 1,986	(17)	(0.9)
Total selling and administrative expenses	₩ 3,734	₩ 2,430	(1,304)	(34.9)

Our selling and administrative expenses decreased by 34.9%, or Won 1,304 billion, from Won 3,734 billion in 2017 to Won 2,430 billion in 2018 primarily due to our classification of a substantial majority of our freight and custody expenses as cost of sales starting in 2018 (as compared to the entire amount as selling expenses in 2017), as well as decreases in impairment loss on trade accounts and notes receivable, sales commissions, amortization expenses and service fees, which were partially offset by an increase in wages and salaries. Such factors were principally attributable to the following:

- Our freight and custody expenses decreased by 86.2%, or Won 1,152 billion, from Won 1,337 billion in 2017 to Won 185 billion in 2018 primarily due to our classification of Won 1,230 billion of freight and custody expenses as cost of sales starting in 2018.
- Our impairment loss on trade accounts and notes receivable decreased by 56.9%, or Won 99 billion, from Won 174 billion in 2017 to Won 75 billion in 2018 primarily due to a decrease in impairment loss on trade accounts and notes receivable of POSCO International.
- Our sales commissions decreased by 31.8%, or Won 37 billion, from Won 116 billion in 2017 to Won 79 billion in 2018 primarily due to a large one-time sales commission in 2017 that did not reoccur in 2018, as well as an increase in transactions without sales commissions.
- Our amortization expenses decreased by 23.2%, or Won 34 billion, from Won 146 billion in 2017 to Won 112 billion in 2018 primarily due to a decrease in amortization of intangible assets related to upgrading of our information technology infrastructure.
- Our wages and salaries increased by 5.0%, or Won 39 billion, From Won 775 billion in 2017 to Won 813 billion in 2018 primarily due to an increase in employee incentive bonuses.

Other Operating Income and Expenses

The following table presents our impairment loss on other receivables and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
	(In billions of Won)		Amount	%
Impairment loss on other receivables	₩ 98	₩ 63	₩ (35)	(35.7)%

Our impairment loss on other receivables decreased by 35.7%, or Won 35 billion, from Won 98 billion in 2017 to Won 63 billion in 2018. In 2017, our impairment loss on other receivables related primarily to joint venture projects of POSCO E&C. In 2018, our impairment loss on other receivables related primarily to uncollectible loans made by POSCO E&C to PT. POSCO E&C Indonesia.

The following table presents a breakdown of our other operating income and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
	(In billions of Won)		Amount	%
Gain on disposal of assets held for sale	₩ 1	₩ 27	₩ 26	2,202.6%
Gain on disposal of investments in subsidiaries, associates and joint ventures	82	45	(37)	(44.7)
Gain on disposal of property, plant and equipment	32	53	21	65.3
Gain on disposal of intangible assets	23	117	94	400.8
Gain on valuation of firm commitment	56	39	(17)	(30.7)
Gain on insurance proceeds	6	14	8	138.8
Others	248	228	(20)	(8.1)
Total other operating income	₩448	₩524	75	16.7

Our other operating income increased by 16.7%, or Won 75 billion, from Won 448 billion in 2017 to Won 524 billion in 2018 primarily due to increases in gain on disposal of intangible assets, gain on disposal of assets held for sale and gain on disposal of property, plant and equipment, which were partially offset by a decrease in gain on disposal of investments in subsidiaries, associates and joint ventures. Such factors were principally attributable to the following:

- Our gain on disposal of intangible assets increased significantly, by Won 94 billion, from Won 23 billion in 2017 to Won 117 billion in 2018 primarily due to an increase in gain from disposal of our carbon credits.
- Our gain on disposal of assets held for sale increased significantly, by Won 26 billion, from Won 1 billion in 2017 to Won 27 billion in 2018 primarily due to the disposal of assets of POSPower Co., Ltd. in 2018, compared to no such gain from our disposal of assets held for sale in 2017.
- Our gain on disposal of property, plant and equipment increased by 65.3%, or Won 21 billion, from Won 32 billion in 2017 to Won 53 billion in 2018 primarily due to an increase in gains from sales of corporate housing units to employees.
- Our gain on disposal of investments in subsidiaries, associates and joint ventures decreased by 44.7%, or Won 37 billion, from Won 82 billion in 2017 to Won 45 billion in 2018 primarily due to a decrease in disposition of our interests in some of our subsidiaries and associates as part of our reorganization efforts.

The following table presents a breakdown of our other operating expenses and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
		(In billions of Won)	Amount	%
Impairment losses on assets held for sale	₩ —	₩ 51	₩ 51	N.A. ⁽¹⁾ %
Loss on disposal of investments in subsidiaries, associates and joint ventures	20	5	(15)	(73.9)
Loss on disposal of property, plant and equipment	151	118	(34)	(22.3)
Impairment losses on property, plant and equipment	117	1,005	887	757.0
Loss on disposals of investment property	2	9	7	365.6
Impairment losses on investment property	—	51	51	N.A. ⁽¹⁾
Impairment losses on intangible assets	168	338	170	100.9
Increase to provisions	34	135	101	296.4
Loss on valuation of firm commitment	43	66	23	53.6
Donations	51	52	1	1.3
Idle tangible assets expenses	10	9	(1)	(11.8)
Others	94	176	82	87.3
Total other operating expenses	₩ 691	₩ 2,014	1,323	191.4

(1) N.A. means not applicable.

Our other operating expenses increased by 191.4%, or Won 1,323 billion, from Won 691 billion in 2017 to Won 2,014 billion in 2018 primarily due to increases in impairment losses on property, plant and equipment, impairment losses on intangible assets and increase to provisions, which were partially offset by a decrease in loss on disposal of property, plant and equipment. Such factors were principally attributable to the following:

- Our impairment losses on property, plant and equipment increased significantly, by Won 887 billion, from Won 117 billion in 2017 to Won 1,005 billion in 2018. In 2017, our impairment losses on property, plant and equipment related primarily to SkyCube operated by Suncheon Eco Trans Co., Ltd. as well as disposal plans regarding certain assets. In 2018, we recognized impairment losses on property, plant and equipment of Won 810 billion related to our synthetic natural gas production facility in Gwangyang due to our discontinuation of such business, as well as impairment losses of Won 54 billion related to the operating loss of POSCO Energy Corporation's fuel cell business.
- Our impairment losses on intangible assets increased significantly, by Won 170 billion, from Won 168 billion in 2017 to Won 338 billion in 2018. In 2017, our impairment losses on intangible assets related primarily to losses of POSCO Engineering, which merged into POSCO E&C. In 2018, our impairment losses on intangible assets related primarily to impairment losses on goodwill of Won 158 billion incurred by POSCO International and Won 66 billion incurred by POSCO E&C in connection with a decrease in value-in-use of such entities due to reduced expected cash flow arising from the uncertain global economic climate, as well as impairment of industrial property rights of Won 78 billion related to our investment in Hume Coal Pty Limited, a coal mining company in Australia.
- Our increase to provisions increased significantly, by Won 101 billion, from Won 34 billion in 2017 to Won 135 billion in 2018 primarily due to an increase in provisions related to our synthetic natural gas production facility in Gwangyang due to our discontinuation of such business in 2018.
- Our loss on disposal of property, plant and equipment decreased by 22.3%, or Won 34 billion, from Won 151 billion in 2017 to Won 118 billion in 2018. In 2017, our loss on disposal of property, plant and equipment related primarily to our blast furnace upgrading

project at Pohang Works. In 2018, our loss on disposal of property, plant and equipment related primarily to rationalization of the LNG plants at Gwangyang Works.

Operating Profit

Due to the factors described above, our operating profit decreased by 3.7%, or Won 154 billion, from Won 4,196 billion in 2017 to Won 4,042 billion in 2018. Our operating margin decreased from 7.0% in 2017 to 6.2% in 2018.

Share of Profit (Loss) of Equity-Accounted Investees

Our share of profit of equity-accounted investees increased significantly, by Won 102 billion, from Won 11 billion in 2017 to Won 113 billion in 2018. In 2017, we recognized a net gain for our proportionate share of equity-accounted investees of Won 11 billion primarily due to our share of gains of KOBRASCO (Won 56 billion), Roy Hill Holdings Pty Ltd. (Won 46 billion), South-East Asia Gas Pipeline Company Ltd. (Won 43 billion) and POSCO Mitsubishi Carbon Technology Ltd. (Won 28 billion), which were partially offset by our share of loss of CSP-Compania Siderurgica do Pecem (Won 148 billion). In 2018, we recognized a net gain for our proportionate share of equity-accounted investees of Won 113 billion primarily due to our share of gains of KOBRASCO (Won 75 billion), POSCO Mitsubishi Carbon Technology Ltd. (Won 70 billion), Roy Hill Holdings Pty Ltd. (Won 59 billion) and AES-VCM Mong Duong Power Company Limited (Won 30 billion), which were partially offset by our share of loss of CSP-Compania Siderurgica do Pecem (Won 110 billion). See Note 11 of Notes to Consolidated Financial Statements.

Finance Income and Finance Costs

The following table presents a breakdown of our finance income and costs and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
			Amount	%
	(In billions of Won)			
Interest income	₩ 212	₩ 337	₩ 125	58.7%
Dividend income	93	63	(30)	(31.9)
Gain on foreign currency transactions	786	716	(70)	(8.9)
Gain on foreign currency translations	564	212	(352)	(62.3)
Gain on derivatives transactions	211	248	37	17.5
Gain on valuation of derivatives	65	97	32	49.8
Gain on disposals of available-for-sale financial assets	426	—	(426)	(100.0)
Gain on valuations of financial assets at fair value through profit or loss	—	16	16	N.A. ⁽¹⁾
Others	16	16	(0)	(1.6)
Total finance income	₩ 2,373	₩1,706	(667)	(28.1)
Interest expenses	₩ 653	₩ 741	88	13.5%
Loss on foreign currency transactions	757	811	54	7.2
Loss on foreign currency translations	423	322	(101)	(23.9)
Loss on derivatives transactions	236	209	(28)	(11.6)
Loss on valuation of derivatives	226	41	(186)	(82.0)
Impairment losses on available-for-sale financial assets	123	—	(123)	(100.0)
Loss on valuations of financial assets at fair value through profit or loss	—	59	59	N.A. ⁽¹⁾
Others	66	62	(4)	(6.1)
Total finance costs	₩ 2,484	₩2,244	(240)	(9.7)

(1) N.A. means not applicable.

We recognized a net gain on foreign currency translations of Won 141 billion in 2017 compared to a net loss on foreign currency translations of Won 109 billion in 2018, and we recorded a net gain on foreign currency transactions of Won 29 billion in 2017 compared to a net loss on foreign currency transactions of Won 95 billion in 2018, as the Won appreciated against the Dollar in 2017 but depreciated in 2018. In terms of the market average exchange rates announced by Seoul Money Brokerage Services, Ltd., the Won appreciated from Won 1,208.5 to US\$1.00 as of December 31, 2016 to Won 1,071.4 to US\$1.00 as of December 31, 2017 but depreciated to Won 1,118.1 to US\$1.00 as of December 31, 2018. Against such fluctuations, we recognized a net loss on valuations of derivatives of Won 162 billion in 2017 compared to a net gain on valuations of derivatives of Won 56 billion in 2018, as well as a net loss on transactions of derivatives of Won 26 billion in 2017 compared to a net gain on transactions of derivatives of Won 39 billion in 2018.

We recognized a gain on disposals of available-for-sale financial assets of Won 426 billion in 2017 related primarily to disposals of our interests in Hyundai Heavy Industries Co., Ltd. and KB Financial Group Inc., compared to no such gain in 2018.

Our interest income increased by 58.7%, or Won 125 billion, from Won 212 billion in 2017 to Won 337 billion in 2018 primarily due to an increase in interest-earning financial assets, as well as a general increase in interest rates in Korea in 2018.

We recognized impairment losses on available-for-sale financial assets of Won 123 billion in 2017 related primarily to a significant and prolonged decline in the fair value of shares of Congonhas Minérios S.A. below cost, compared to no such impairment loss in 2018.

Profit before Income Taxes

Due to the factors described above, our profit before income taxes decreased by 11.7%, or Won 479 billion, from Won 4,095 billion in 2017 to Won 3,616 billion in 2018.

The following table presents our profit and loss by segment, prior to adjusting for goodwill and corporate fair-value adjustments, elimination of inter-segment profits, income tax expense and basis difference, and changes therein for 2017 and 2018.

	For the Year Ended December 31,		Changes	
	2017	2018	2017 versus 2018	
			Amount	%
		(In billions of Won)		
Steel Segment	₩ 2,791	₩ 1,268	₩(1,523)	(54.6)%
Trading Segment	113	49	(63)	(56.3)
Construction Segment	25	0	(24)	(99.0)
Others Segment	233	14	(219)	(94.2)
Goodwill and corporate fair value adjustments	(84)	(78)	7	(7.8)
Elimination of inter-segment profits	(103)	638	741	N.A. ⁽¹⁾
Income tax expense	1,206	1,671	465	38.5
Basis difference adjustments ⁽²⁾	(85)	53	137	N.A. ⁽¹⁾
Profit before income taxes	₩ 4,095	₩ 3,616	(479)	(11.7)

(1) N.A. means not applicable.

(2) Basis difference adjustments are related to the difference in recognizing revenue and expenses of the Construction Segment in connection with development and sale of certain residential real estate between the report reviewed by the chief executive officer and the consolidated financial statements. See Notes 3 and 40 of Notes to Consolidated Financial Statements.

Income Tax Expense

Our income tax expense increased by 42.0%, or Won 498 billion, from Won 1,186 billion in 2017 to Won 1,684 billion in 2018. Our effective tax rate increased from 29.0% in 2017 to 46.6% in 2018 primarily due to the following:

- an increase in income tax expenses from Won 28 billion in 2017 to Won 272 billion in 2018 (that resulted in an increase in effective tax rate of 6.8%) in connection with non-deductible impairment losses on property, plant and equipment we recognized on our synthetic natural gas production facility in Gwangyang in 2018.
- a tax effect of Won 130 billion in 2018 in connection with the reconciliation of discrepancies in the interpretation of certain tax laws between the tax authority and us (that resulted in an increase in effective tax rate of 3.6%) compared to no such effect in 2017.

See Note 35 of Notes to Consolidated Financial Statements.

Profit

Due to the factors described above, our profit decreased by 33.6%, or Won 977 billion, from Won 2,909 billion in 2017 to Won 1,932 billion in 2018.

Operating Results — 2016 Compared to 2017

The following table presents our statement of comprehensive income information and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes	
	2016	2017	2016 versus 2017	
			Amount	%
	(In billions of Won)			
Revenue	₩52,940	₩60,187	₩7,247	13.7%
Cost of sales	46,271	51,916	5,645	12.2
Gross profit	6,668	8,271	1,603	24.0
Administrative expenses	2,292	2,177	(115)	(5.0)
Selling expenses	1,554	1,557	3	0.2
Other operating income	215	451	236	109.7
Other operating expenses	756	792	36	4.8
Operating profit	2,282	4,196	1,914	83.8
Share of gain (loss) of equity-accounted investees	(89)	11	100	N.A. ⁽¹⁾
Finance income	2,232	2,373	141	6.3
Finance costs	3,014	2,484	(530)	(17.6)
Profit before income tax	1,412	4,096	2,683	190.1
Income tax expense	380	1,186	806	212.4
Profit (loss)	1,032	2,909	1,877	181.9
Profit for the period attributable to owners of the controlling company	1,355	2,756	1,401	103.4
Loss for the period attributable to non-controlling interests	(323)	153	476	N.A. ⁽¹⁾

(1) N.A. means not applicable.

Revenue

The following table presents our revenue by segment and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes	
	2016	2017	2016 versus 2017	
	(In billions of Won)		Amount	%
Steel Segment:				
External revenue	₩ 26,844	₩ 30,230	₩ 3,386	12.6%
Internal revenue	16,062	17,381	1,319	8.2
Total revenue from Steel Segment	42,906	47,611	4,705	11.0
Trading Segment:				
External revenue	16,774	20,802	4,028	24.0
Internal revenue	9,646	14,076	4,430	45.9
Total revenue from Trading Segment	26,420	34,878	8,458	32.0
Construction Segment:				
External revenue	6,768	6,887	119	1.7
Internal revenue	714	399	(315)	(44.1)
Total revenue from Construction Segment	7,482	7,286	(196)	(2.6)
Others Segment:				
External revenue	2,697	2,736	39	1.4
Internal revenue	2,380	2,549	169	7.1
Total revenue from Others Segment	5,077	5,285	208	4.1
Total revenue prior to consolidation adjustments and basis difference	81,885	95,060	13,175	16.1
Consolidation adjustments	(28,802)	(34,405)	(5,603)	19.5
Basis difference ⁽¹⁾	(144)	(468)	(324)	225.7
Revenue	₩ 52,940	₩ 60,187	₩ 7,247	13.7%

(1) Basis difference is related to the difference in recognizing revenue and expenses of the Construction Segment in connection with development and sale of certain residential real estate between the report reviewed by the chief executive officer and the consolidated financial statements. See Notes 3 and 40 of Notes to Consolidated Financial Statements.

Our revenue increased by 13.7%, or Won 7,247 billion, from Won 52,940 billion in 2016 to Won 60,187 billion in 2017 due to increases in external revenues from each of our four segments. Specifically:

Steel Segment. External revenue from the Steel Segment, which does not include internal revenue from inter-company transactions that are eliminated during consolidation, increased by 12.6%, or Won 3,386 billion, from Won 26,844 billion in 2016 to Won 30,230 billion in 2017 due to an increase in the average unit sales price per ton of the principal steel products produced by us and directly sold to external customers, which was offset in part by a decrease in our sales volume of the steel products produced by us and directly sold to external customers (including miscellaneous steel products not included in any of our major product categories). The weighted average unit sales price per ton of the principal steel products produced by us and directly sold to external customers increased by 21.3% from Won 745,476 per ton in 2016 to Won 903,897 per ton in 2017, while the overall sales volume of the principal steel products produced by us and directly sold to external customers decreased by 8.6% from 32.9 million tons in 2016 to 30.0 million tons in 2017. Such factors were principally attributable to the following:

- The unit sales prices in Won of each of our major product categories increased from 2016 to 2017. Hot rolled products, wire rods, cold rolled products, stainless steel products, silicon steel sheets and plates produced by us and directly sold to external customers increased by

29.2%, 26.2%, 25.7%, 15.0%, 9.7% and 8.4%, respectively, from 2016 to 2017. For a discussion of changes in the unit sales prices of each of our principal product lines, see “— Overview — Sales Volume, Prices and Product Mix” above.

- The sales volume of each of our major product categories, other than plates, decreased from 2016 to 2017, primarily due to the recognition of the sales volume of POSCO P&S, our former subsidiary that primarily engaged in sales of steel products produced by us, under the Trading Segment commencing March 2017 following the transfer of such business to POSCO International and, to a lesser extent, a reduction in our production due to facility revamping and rationalization of certain production facilities of Pohang Works and Gwangyang Works. The sales volume of silicon steel sheets, wire rods, cold rolled products, hot rolled products and stainless steel products produced by us and directly sold to external customers decreased by 15.1%, 14.7%, 11.3%, 9.8% and 5.1%, respectively, from 2016 to 2017. On the other hand, the sales volume of plates increased by 3.1% from 2016 to 2017. For a discussion of changes in sales volume of each of our principal product lines, see “Item 4.B. Business Overview — Major Products.”

Total revenue from the Steel Segment, which includes internal revenue from inter-company transactions, increased by 11.0%, or Won 4,705 billion, from Won 42,906 billion in 2016 to Won 47,611 billion in 2017 as internal revenue from inter-company transactions increased by 8.2%, or Won 1,319 billion, from Won 16,062 billion in 2016 to Won 17,381 billion in 2017. Such increase primarily reflected, in addition to factors discussed above, an increase in the average unit sales price of the steel products sold to POSCO International.

Trading Segment. External revenue from the Trading Segment, which does not include internal revenue from inter-company transactions that are eliminated during consolidation, increased by 24.0%, or Won 4,028 billion, from Won 16,774 billion in 2016 to Won 20,802 billion in 2017 primarily due to the recognition of the sales of POSCO P&S’s steel product sales business under the Trading Segment commencing March 2017 following the transfer of such business to POSCO International, as well as an increase in third-country trades by POSCO International and our other trading subsidiaries from 2016 to 2017, reflecting an increase in sales of slabs produced by CSP (Compania Siderurgica do Pecem) and PT. Krakatau POSCO as well as an increase in trading of petrochemical products.

Total revenue from the Trading Segment, which includes internal revenue from inter-company transactions, increased by 32.0%, or Won 8,458 billion, from Won 26,420 billion in 2016 to Won 34,878 billion in 2017 as internal revenue from inter-company transactions increased by 45.9%, or Won 4,430 billion, from Won 9,646 billion in 2016 to Won 14,076 billion in 2017 primarily due to an increase in our steel sales activities through trading subsidiaries.

Construction Segment. External revenue from the Construction Segment, which does not include internal revenue from inter-company transactions that are eliminated during consolidation, increased by 1.7%, or Won 119 billion, from Won 6,768 billion in 2016 to Won 6,887 billion in 2017 primarily due to a general increase in POSCO E&C’s construction activities reflecting favorable market conditions in the domestic construction industry as well as an increase in demand for EPC projects in Korea and abroad.

Total revenue from the Construction Segment, which includes internal revenue from inter-company transactions, decreased by 2.6%, or Won 196 billion, from Won 7,482 billion in 2016 to Won 7,286 billion in 2017 as internal revenue from inter-company transactions decreased by 44.1%, or Won 315 billion, from Won 714 billion in 2016 to Won 399 billion in 2017. Such decrease in internal revenue reflected a decrease in the amount of construction activities for member companies of the POSCO Group in 2017 compared to 2016.

Others Segment. The Others Segment primarily includes power generation, coal chemistry and carbon materials production and information technology service. External revenue from the Others

Segment, which does not include internal revenue from inter-company transactions that are eliminated during consolidation, increased by 1.4%, or Won 39 billion, from Won 2,697 billion in 2016 to Won 2,736 billion in 2017 primarily due to an increase in the unit price and sales volume of coal chemistry products of POSCO Chemical Co., Ltd.

Total revenue from the Others Segment, which includes internal revenue from inter-company transactions, increased by 4.1%, or Won 208 billion, from Won 5,077 billion in 2016 to Won 5,285 billion in 2017 as internal revenue from inter-company transactions increased by 7.1% or Won 169 billion, from Won 2,380 billion in 2016 to Won 2,549 billion in 2017. Such increase primarily reflected an increase in inter-company sales related to replacement of control systems at Pohang Works by POSCO ICT Co., Ltd.

Cost of Sales

Our cost of sales increased by 12.2%, or Won 5,644 billion, from Won 46,271 billion in 2016 to Won 51,916 billion in 2017. The increase in cost of sales was primarily due to increases in the average price in Won terms of key raw materials that were used to manufacture our finished goods sold, which were partially offset by a decrease in our sales volume of steel products.

The following table presents a breakdown of our cost of sales by segment, prior to adjusting for inter-company transactions that are eliminated during consolidation and basis difference, and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes	
	2016	2017	2016 versus 2017	
			Amount	%
	(In billions of Won)			
Steel Segment	₩ 37,437	₩ 41,479	₩ 4,042	10.8%
Trading Segment	25,090	33,388	8,298	33.1
Construction Segment	7,564	6,598	(966)	(12.8)
Others Segment	4,507	4,636	129	2.9
Consolidation adjustments	(28,204)	(33,802)	(5,598)	19.8
Basis difference ⁽¹⁾	(123)	(383)	(261)	211.4
Cost of sales	₩ 46,271	₩ 51,916	₩ 5,644	12.2%

(1) Basis difference is related to the difference in recognizing revenue and expenses of the Construction Segment in connection with development and sale of certain residential real estate between the report reviewed by the chief executive officer and the consolidated financial statements. See Notes 3 and 40 of Notes to Consolidated Financial Statements.

Steel Segment. The cost of sales of our Steel Segment, prior to consolidation adjustments, increased by 10.8%, or Won 4,042 billion, from Won 37,437 billion in 2016 to Won 41,479 billion in 2017 primarily due to increases in the average price in Won terms of key raw materials that were used to manufacture our finished goods sold, the impact of which was partially offset by a decrease in our sales volume of the principal steel products produced by us and sold to external and internal customers.

Trading Segment. The cost of sales of our Trading Segment, prior to consolidation adjustments, increased by 33.1%, or Won 8,298 billion, from Won 25,090 billion in 2016 to Won 33,388 billion in 2017 primarily due to the recognition of the cost of sales of POSCO P&S's steel product sales business under the Trading Segment commencing March 2017 following the transfer of such business to POSCO International as well as an increase in cost of export and import products sold.

Construction Segment. The cost of sales of our Construction Segment, prior to consolidation adjustments, decreased by 12.8%, or Won 966 billion, from Won 7,564 billion in 2016 to Won 6,598 billion in 2017, reflecting the recognition of additional costs related to certain EPC projects abroad in 2016 compared to no such costs in 2017.

Others Segment. The cost of sales of our Others Segment, prior to consolidation adjustments, increased by 2.9%, or Won 129 billion, from Won 4,507 billion in 2016 to Won 4,636 billion in 2017 primarily due to increases in the average price in Won terms of key raw materials used by POSCO Chemical Co., Ltd. to produce coal chemistry products.

Gross Profit

Our gross profit increased by 24.0%, or Won 1,603 billion, from Won 6,668 billion in 2016 to Won 8,271 billion in 2017 primarily due to increases in gross profit of each of our four segments. Our gross margin increased from 12.6% in 2016 to 13.7% in 2017.

The following table presents our gross profit by segment, prior to adjusting for inter-company transactions that are eliminated during consolidation and basis difference, and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes	
	2016	2017	2016 versus 2017	
			Amount	%
	(In billions of Won)			
Steel Segment	₩ 5,469	₩ 6,132	₩ 663	12.1%
Trading Segment	1,330	1,490	160	12.0
Construction Segment	(82)	688	770	N.A. ⁽²⁾
Others Segment	570	649	79	13.9
Consolidation adjustments	(598)	(603)	(5)	0.9
Basis difference ⁽¹⁾	(21)	(85)	(64)	298.4
Gross profit	₩ 6,668	₩ 8,271	₩ 1,603	24.0%

(1) Basis difference is related to the difference in recognizing revenue and expenses of the Construction Segment in connection with development and sale of certain residential real estate between the report reviewed by the chief executive officer and the consolidated financial statements. See Notes 3 and 40 of Notes to Consolidated Financial Statements.

(2) N.A. means not applicable.

Steel Segment. The gross profit of our Steel Segment, prior to consolidation adjustments, increased by 12.1%, or Won 663 billion, from Won 5,469 billion in 2016 to Won 6,132 billion in 2017 primarily due to an increase in the average unit sales price per ton of the principal steel products produced by us and sold to external and internal customers, which were partially offset by an increase in the average price in Won terms of coal and other key raw materials that were used to manufacture our finished steel products sold as well as a decrease in the overall sales volume of our principal steel products, as discussed above. The gross margin of our Steel Segment, which is gross profit as a percentage of total revenue prior to consolidation adjustments, increased from 12.7% in 2016 to 12.9% in 2017, as we focused our production and marketing efforts on selling higher margin, higher value added premium products in 2017.

Trading Segment. The gross profit of our Trading Segment, prior to consolidation adjustments, increased by 12.0%, or Won 160 billion, from Won 1,330 billion in 2016 to Won 1,490 billion in 2017, primarily due to the recognition of the cost of sales of POSCO P&S's steel product sales business under the Trading Segment commencing March 2017 following the transfer of such business to POSCO International as well as an increase in gross profit of the Myanmar gas fields, which were partially offset by a decrease in trading margins resulting from weaker demand and falling prices for export and import products. The gross margin of our Trading Segment, prior to consolidation adjustments, decreased from 5.0% in 2016 to 4.3% in 2017.

Construction Segment. Our Construction Segment recorded gross loss of Won 82 billion in 2016 compared to gross profit of Won 688 billion in 2017, and the gross margin, prior to consolidation

adjustments, improved from (1.1)% in 2016 to 9.4% in 2017, primarily due to our engagement in higher-margin construction activities in 2017 reflecting more favorable market conditions in the domestic residential construction industry as well as an increase in demand for EPC projects in Korea and abroad. In comparison, we recognized losses incurred in connection with overseas construction projects in 2016, in particular a loss of Won 157 billion related to delay in construction of the CSP-Companhia Siderurgia do Pecem steel plant complex in Brazil, as well as a decrease in the amount of relatively high-margin construction projects for member companies of the POSCO Group.

Others Segment. The gross profit of our Others Segment, prior to consolidation adjustments, increased by 13.9%, or Won 79 billion, from Won 570 billion in 2016 to Won 649 billion in 2017 primarily due to an increase in gross profits of POSCO Chemical Co., Ltd. and POSCO Energy Corporation. The gross margin of our Others Segment increased from 11.2% in 2016 to 12.3% in 2017.

Selling and Administrative Expenses

The following table presents a breakdown of our selling and administrative expenses and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes	
	2016	2017	2016 versus 2017	
			Amount	%
	(In billions of Won)			
Freight and custody expenses	₩ 1,342	₩ 1,337	₩ (5)	(0.4)%
Sales commissions	94	116	22	22.8
Sales promotion	11	12	1	16.3
Sales insurance premium	31	37	6	16.5
Contract cost	49	23	(26)	(53.4)
Others	26	32	6	25.6
Total selling expenses	₩ 1,554	₩ 1,557	3	0.2
Wages and salaries	₩ 770	₩ 775	₩ 5	0.7%
Expenses related to post-employment benefits	201	79	(122)	(60.9)
Other employee benefits	177	160	(17)	(9.5)
Depreciation	103	97	(6)	(6.0)
Amortization	140	146	6	4.8
Taxes and public dues	79	73	(6)	(7.7)
Rental	82	70	(12)	(14.7)
Advertising	86	120	34	39.0
Research and development	121	126	5	4.3
Service fees	201	193	(8)	(3.8)
Bad debt expenses	165	174	9	5.2
Others	167	164	(3)	(1.7)
Total administrative expenses	₩ 2,292	₩ 2,177	(115)	(5.0)
Total selling and administrative expenses	₩ 3,845	₩ 3,734	(111)	(2.9)

Our selling and administrative expenses decreased by 2.9%, or Won 111 billion, from Won 3,845 billion in 2016 to Won 3,734 billion in 2017 primarily due to decreases in expenses related to post-employment benefits, contract cost, other employment benefits and rental expenses, which were partially offset by increases in advertising expenses and sales commissions. Such factors were principally attributable to the following:

- Our expenses related to post-employment benefits decreased by 60.9%, or Won 122 billion, from Won 201 billion in 2016 to Won 79 billion in 2017 primarily due to expenses related to the early retirement programs of POSCO E&C and POSCO Engineering Co., Ltd. in 2016 compared to no such programs in 2017.
- Our contract cost decreased by 53.4%, or Won 26 billion, from Won 49 billion in 2016 to Won 23 billion in 2017 primarily due to a decrease in cost related to unsuccessful project bids.

- Our other employment benefits decreased by 9.5%, or Won 17 billion, from Won 177 billion in 2016 to Won 160 billion in 2017 primarily due to a decrease in employee incentive bonuses in 2017.
- Our rental expenses decreased by 14.7%, or Won 12 billion, from Won 82 billion in 2016 to Won 70 billion in 2017 primarily due to decreases in costs related to vehicle leases and leases related to information technology infrastructure.
- Our advertising expenses increased by 39.0%, or Won 34 billion, from Won 86 billion in 2016 to Won 120 billion in 2017 primarily due to an increase in our general advertising activities related to our sponsorship of the 2018 PyeongChang Olympic Games.
- Our sales commissions increased by 22.8%, or Won 22 billion, from Won 94 billion in 2016 to Won 116 billion in 2017 primarily reflecting a general increase in commissions related to increased sales revenue.

Other Operating Income and Expenses

The following table presents a breakdown of our other operating income and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes 2016 versus 2017	
	2016	2017	Amount	%
	(In billions of Won)			
Gain on disposal of assets held for sale	₩ 23	₩ 1	₩ (22)	(94.9)%
Gain on disposal of investments in subsidiaries, associates and joint ventures	23	82	59	251.0
Gain on disposal of property, plant and equipment	24	32	8	34.9
Gain on disposal of intangible assets	1	23	22	3,386.0
Recovery of allowance for other doubtful accounts	13	3	(10)	(78.3)
Gain on valuation of firm commitment	—	56	56	N.A. ⁽¹⁾
Gain on insurance proceeds	22	6	(16)	(73.8)
Others	109	248	138	127.0
Total other operating income	₩ 215	₩ 451	236	109.7

(1) N.A. means not applicable.

Our other operating income increased by 109.7%, or Won 236 billion, from Won 215 billion in 2016 to Won 451 billion in 2017 primarily due to our recognition of a tax refund of Won 133 billion in 2017 as well as increases in gain on disposal of investments in subsidiaries, associates and joint ventures and gain on valuation of firm commitment, which were partially offset by a decrease in gain on disposal of assets held for sale. Such factors were principally attributable to the following:

- In 2017, we recognized a tax refund of Won 133 billion, which we categorized in “others,” related to a successful appeal of a tax audit, compared to no such refund in 2016.
- Our gain on disposal of investments in subsidiaries, associates and joint ventures increased by 251.0%, or Won 59 billion, from Won 23 billion in 2016 to Won 82 billion in 2017 primarily due to an increase in disposition of our interests in some of our subsidiaries and associates as part of our reorganization efforts.
- We recognized gain on valuation of firm commitment of Won 56 billion in 2017 compared to no such gain in 2016, reflecting our decision to adopt hedge accounting starting in 2017, pursuant to which gain on valuation of firm commitment contracts is recognized.
- Our gain on disposal of assets held for sale decreased by 94.9%, or Won 22 billion, from Won 23 billion in 2016 to Won 1 billion in 2017. We recognized a gain of Won 23 billion on

disposal of assets held for sale in 2016 primarily from the disposal of our 80.0% interest in POSCO LED Co., Ltd., compared to no gain of such magnitude from our disposal of assets held for sale in 2017.

The following table presents a breakdown of our other operating expenses and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes	
			2016 versus 2017	
	2016	2017	Amount	%
	(In billions of Won)			
Impairment losses on assets held for sale	₩ 25	₩ —	(25)	(100.0)%
Loss on disposal of investments in subsidiaries, associates and joint ventures	22	20	2	(11.2)
Loss on disposal of property, plant and equipment	87	151	64	74.7
Impairment losses on property, plant and equipment	197	117	(80)	(40.5)
Impairment losses on goodwill and intangible assets	128	168	40	31.4
Other bad debt expenses	50	101	51	100.9
Loss on valuation of firm commitment	—	43	43	N.A. ⁽¹⁾
Idle tangible assets expenses	6	10	4	63.0
Increase to provisions	53	34	(19)	(36.0)
Donations	44	51	7	17.4
Others	144	97	(48)	(33.2)
Total other operating expenses	₩ 756	₩ 792	36	4.8

(1) N.A. means not applicable.

Our other operating expenses increased by 4.8%, or Won 36 billion, from Won 756 billion in 2016 to Won 792 billion in 2017, primarily due to increases in our loss on disposal of property, plant and equipment, other bad debt expenses, loss on valuation of firm commitment and impairment losses on goodwill and intangible assets, which were partially offset by a decrease in impairment losses on property, plant and equipment and impairment losses on assets held for sale. Such factors were principally attributable to the following:

- Our loss on disposal of property, plant and equipment increased by 74.7%, or Won 64 billion, from Won 87 billion in 2016 to Won 151 billion in 2017 primarily due to our blast furnace upgrading project at Pohang Works.
- Our other bad debt expenses increased by 100.9%, or Won 51 billion, from Won 50 billion in 2016 to Won 101 billion in 2017. In 2016, our other bad debt expenses related primarily to financing of the Dongtan Metapolis project of POSCO E&C. In 2017, our bad debt expenses related primarily to joint venture projects of POSCO E&C.
- We recognized loss on valuation of firm commitment of Won 43 billion in 2017 compared to no such loss in 2016, reflecting our decision to adopt hedge accounting starting in 2017, pursuant to which loss on valuation of firm commitment contracts is recognized.
- Our impairment losses on goodwill and intangible assets increased by 31.4%, or Won 40 billion, from Won 128 billion in 2016 to Won 168 billion in 2017. In 2016, our impairment losses on goodwill and intangible assets related primarily to impairment losses on goodwill of Won 83 billion relating to POSCO Engineering Co., Ltd. In addition, we recognized full impairment losses of Won 12 billion relating to SANTOS CMI S.A. In 2017, our impairment losses on goodwill and intangible assets related primarily to losses of POSCO Engineering, which merged into POSCO E&C.
- Our impairment losses on property, plant and equipment decreased by 40.5%, or Won 80 billion, from Won 197 billion in 2016 to Won 117 billion in 2017. In 2016, we

recognized impairment losses on property, plant and equipment of Won 62 billion related to continuing operating loss of the fuel cell business of POSCO Energy. In addition, we recorded Won 58 billion of impairment losses in 2016 related to disposal plans of certain assets. In 2017, our impairment losses on property, plant and equipment related primarily to SkyCube operated by Suncheon Eco Trans Co., Ltd. as well as disposal plans regarding certain assets.

- We recognized impairment losses on assets held for sale of Won 25 billion in 2016 related primarily to a decrease in value of a building in Songdo, compared to no impairment losses on assets held for sale in 2017.

Operating Profit

Due to the factors described above, our operating profit increased by 83.8%, or Won 1,914 billion, from Won 2,282 billion in 2016 to Won 4,196 billion in 2017. Our operating margin increased from 4.3% in 2016 to 7.0% in 2017.

Share of Profit (Loss) of Equity-Accounted Investees

We recorded a net loss for our proportionate share of equity-accounted investees of Won 89 billion in 2016 compared to a net gain for our proportionate share of equity-accounted investees of Won 11 billion in 2017. In 2016, we recognized a net loss for our proportionate share of equity-accounted investees of Won 89 billion primarily due to our share of losses of POSCO Plantec Co., Ltd. (Won 172 billion) and DMSA/AMSA (Won 60 billion), which were partially offset by our share of profits of CSP-Compania Siderurgica do Pecem (Won 117 billion) and South-East Asia Gas Pipeline Company Ltd. (Won 47 billion). In 2017, we recognized a net gain for our proportionate share of equity-accounted investees of Won 11 billion primarily due to our share of gains of KOBRASCO (Won 56 billion), Roy Hill Holdings Pty Ltd. (Won 46 billion), South-East Asia Gas Pipeline Company Ltd. (Won 43 billion) and POSCO Mitsubishi Carbon Technology Ltd. (Won 28 billion), which were partially offset by our share of loss of CSP-Compania Siderurgica do Pecem (Won 148 billion). See Note 11 of Notes to Consolidated Financial Statements.

Finance Income and Finance Costs

The following table presents a breakdown of our finance income and costs and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes	
	2016		2016 versus 2017	
	2016	2017	Amount	%
	(In billions of Won)			
Interest income	₩ 182	₩ 212	₩ 30	16.4%
Dividend income	41	93	52	126.7
Gain on foreign currency transactions	1,033	786	(247)	(23.9)
Gain on foreign currency translations	378	564	186	49.3
Gain on derivatives transactions	317	211	(106)	(33.4)
Gain on valuation of derivatives	147	65	(82)	(56.0)
Gain on disposals of available-for-sale financial assets	131	426	295	225.4
Others	4	16	13	337.6
Total finance income	₩ 2,232	₩ 2,373	141	6.3
Interest expenses	₩ 659	₩ 653	(6)	(0.9)%
Loss on foreign currency transactions	1,147	757	(391)	(34.0)
Loss on foreign currency translations	405	423	17	4.3
Loss on derivatives transactions	338	236	(102)	(30.2)
Loss on valuation of derivatives	163	226	64	39.2
Impairment losses on available-for-sale financial assets	248	123	(125)	(50.4)
Others	53	66	12	22.7
Total finance costs	₩ 3,014	₩ 2,484	(530)	(17.6)

We recognized a net loss on foreign currency translations of Won 28 billion in 2016 compared to a net gain on foreign currency translations of Won 141 billion in 2017, and we recorded a net loss on foreign currency transactions of Won 115 billion in 2016 compared to a net gain on foreign currency transactions of Won 29 billion in 2017, as the Won depreciated against the Dollar in 2016 but appreciated in 2017. In terms of the market average exchange rates announced by Seoul Money Brokerage Services, Ltd., the Won depreciated from Won 1,172.0 to US\$1.00 as of December 31, 2015 to Won 1,208.5 to US\$1.00 as of December 31, 2016 but appreciated to Won 1,071.4 to US\$1.00 as of December 31, 2017. Against such fluctuations, our net loss on valuation of derivatives increased by 939.2%, or Won 146 billion, from Won 16 billion in 2016 to Won 162 billion in 2017, and our net loss on transactions of derivatives increased by 17.2%, or Won 4 billion, from Won 22 billion in 2016 to Won 26 billion in 2017.

Our gain on disposal of available-for-sale financial assets increased by 225.4%, or Won 295 billion, from Won 131 billion in 2016 to Won 426 billion in 2017. In 2016, our gain on disposals of available-for-sale financial assets related primarily to disposals of our interests in Hana Financial Group Inc. and Shinhan Financial Group Co., Ltd. In 2017, our gain on disposal of available-for-sale financial assets related primarily to disposals of our interests in Hyundai Heavy Industries Co., Ltd. and KB Financial Group Inc.

Our impairment losses on available-for-sale financial assets decreased by 50.4%, or Won 125 billion, from Won 248 billion in 2016 to Won 123 billion in 2017. In 2016, our impairment loss related primarily to a significant and prolonged decline in the fair value of shares of Nippon Steel & Sumitomo Metal Corporation below cost. In 2017, our impairment loss related primarily to a significant and prolonged decline in the fair value of shares of Congonhas Minérios S.A. below cost.

Our dividend income increased by 126.7%, or Won 52 billion, from Won 41 billion in 2016 to Won 93 billion in 2017 primarily due to increases in dividends from Nippon Steel & Sumitomo Metal Corporation and KB Financial Group Inc.

Our interest income increased by 16.4%, or Won 30 billion, from Won 182 billion in 2016 to Won 212 billion in 2017 primarily due to a general increase in interest rates in Korea in 2017.

Profit before Income Taxes

Due to the factors described above, our profit before income taxes increased by 190.1%, or Won 2,683 billion, from Won 1,412 billion in 2016 to Won 4,095 billion in 2017.

The following table presents our profit and loss by segment, prior to adjusting for goodwill and corporate fair-value adjustments, elimination of inter-segment profits, income tax expense and basis difference, and changes therein for 2016 and 2017.

	For the Year Ended December 31,		Changes	
	2016	2017	2016 versus 2017	
			Amount	%
	(In billions of Won)			
Steel Segment	₩ 1,511	₩2,791	₩ 1,279	84.7%
Trading Segment	53	113	59	111.6
Construction Segment	(1,404)	25	1,428	N.A. ⁽¹⁾
Others Segment	(26)	233	259	N.A. ⁽¹⁾
Goodwill and corporate fair value adjustments	(123)	(84)	39	N.A. ⁽¹⁾
Elimination of inter-segment profits	1,036	(103)	(1,139)	N.A. ⁽¹⁾
Income tax expense	385	1,206	822	213.6
Basis difference ⁽²⁾	(21)	(85)	(63)	298.4
Profit before income taxes	₩ 1,412	₩4,095	2,683	190.1

(1) N.A. means not applicable.

(2) Basis difference is related to the difference in recognizing revenue and expenses of the Construction Segment in connection with development and sale of certain residential real estate between the report reviewed by the chief executive officer and the consolidated financial statements. See Notes 3 and 40 of Notes to Consolidated Financial Statements.

Income Tax Expense

Our income tax expense increased by 212.4%, or Won 806 billion, from Won 380 billion in 2016 to Won 1,186 billion in 2017. Our effective tax rate increased from 26.9% in 2016 to 29.0% in 2017 primarily due to the effect of tax rate change of Won 176 billion in 2017 (that resulted in an increase in effective tax rate of 4.3%). In 2017, the Government announced a revision of tax law which includes new highest corporate income tax rate of 25% for taxable income in excess of Won 300 billion from fiscal year 2018 compared to 22% prior to such change. Such impact was offset in part by a decrease in tax related to investments in subsidiaries, associates and joint ventures from Won 77 billion in 2016 to Won 55 billion in 2017 (that resulted in a decrease in effective tax rate of 4.1%). See Note 35 of Notes to Consolidated Financial Statements.

Profit

Due to the factors described above, our profit increased by 181.9%, or Won 1,877 billion, from Won 1,032 billion in 2016 to Won 2,909 billion in 2017.

Item 5.B. *Liquidity and Capital Resources*

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

	For the Year Ended December 31,		
	2016	2017	2018
	(In billions of Won)		
Net cash provided by operating activities	₩ 5,269	₩ 5,607	₩ 5,870
Net cash used in investing activities	(3,755)	(3,818)	(2,648)
Net cash used in financing activities	(3,951)	(1,566)	(3,195)
Effect of exchange rate fluctuations on cash held	13	(59)	5
Cash and cash equivalents at beginning of period	4,871	2,448	2,613
Cash and cash equivalents at end of period	2,448	2,613	2,644
Net increase (decrease) in cash and cash equivalents	(2,424)	165	31

Capital Requirements

Historically, uses of cash consisted principally of purchases of property, plant and equipment and other assets and repayments of outstanding debt and payments of dividends.

Net cash used in investing activities was Won 3,755 billion in 2016, Won 3,818 billion in 2017 and Won 2,648 billion in 2018. These amounts included acquisition of property, plant and equipment of Won 2,324 billion in 2016, Won 2,288 billion in 2017 and Won 2,136 billion in 2018. We plan to spend approximately Won 6.1 trillion in capital expenditures in 2019, which we may adjust on an on-going basis subject to market demand for our products, the production outlook of the global steel industry and global economic conditions in general. We may delay or not implement some of our current capital expenditure plans based on our assessment of such market conditions. We had net acquisitions of short-term financial instruments of Won 1,401 billion in 2016, Won 1,697 billion in 2017 and Won 1,068 billion in 2018. We also had net acquisition of available-for-sale investments of Won 48 billion in 2016, net disposals of available-for-sale investments of Won 941 billion in 2017 and net acquisitions of securities of Won 100 billion in 2018.

In our financing activities, we used cash of Won 4,275 billion in 2016, Won 3,136 billion in 2017 and Won 3,136 billion in 2018 for repayments of borrowings. We paid dividends on common stock in the amount of Won 709 billion in 2016, Won 863 billion in 2017 and Won 724 billion in 2018.

In recent years, we have also selectively considered various opportunities to acquire or invest in companies that may complement our businesses, as well as invest in overseas resources development projects. We may require additional capital for such acquisitions or entering into other strategic relationships. Other than capital required for such activities, we anticipate that capital expenditures, repayments of outstanding debt and payments of cash dividends will represent the most significant uses of funds for the next several years.

Payments of contractual obligations and commitments will also require considerable resources. In our ordinary course of business, we routinely enter into commercial commitments for various aspects of our operations, as well as issue guarantees for indebtedness of our related parties and others. For our contingent liabilities on outstanding guarantees provided by us, see Note 38(b) of Notes to Consolidated Financial Statements. The following table sets forth the amount of long-term debt, capital lease and operating lease obligations as of December 31, 2018.

	Payments Due by Period				
	Total	Less than 1 Year	1 to 3 Years	4 to 5 Years	More than 5 Years
	(In billions of Won)				
Long-term debt obligations ^(a)	₩ 13,118	₩ 2,842	₩ 6,519	₩ 2,858	₩ 899
Interest payments on long-term debt ^(b)	1,787	656	838	237	56
Capital lease obligations	101	10	43	42	6
Operating lease obligations	8,561	1,437	2,365	1,520	3,239
Purchase obligations ^(c)	21,660	9,501	6,342	3,436	2,381
Long-term shipping service contract	18,930	2,479	4,443	3,804	8,204
Accrued severance benefits ^(d)	2,968	110	327	408	2,123
Total	₩ 67,125	₩ 17,035	₩ 20,877	₩ 12,305	₩ 16,908

- (a) Includes the current portion and premium on bond redemption but excludes amortization of discount on debentures and issuance costs.
- (b) As of December 31, 2018, a portion of our long-term debt carried variable interest rates. We used the interest rate in effect as of December 31, 2018 in calculating the interest payments on long-term debt for the periods indicated.
- (c) Our purchase obligations include supply contracts to purchase iron ore, coal, nickel, LNG and other raw materials. These contracts generally have terms of one to ten years and the long-term contracts provide for periodic price adjustments according to the market prices. As of December 31, 2018, 100 million tons of iron ore and 14 million tons of coal remained to be purchased under long-term contracts. In addition, we entered into an agreement with Tangguh LNG Consortium in Indonesia to purchase 550 thousand tons of LNG for 20 years commencing in August 2005. The purchase price under the agreement with Tangguh LNG Consortium is variable based on the monthly standard oil price (as represented by the Japan Customs cleared Crude Price), subject to a ceiling. We used the market price and exchange rate in effect as of December 31, 2018 in calculating the iron ore, coal and LNG purchase obligations described above for the periods indicated.
- (d) Represents, as of December 31, 2018, the expected amount of severance benefits that we will be required to pay under applicable Korean law to all of our employees when they reach their normal retirement age. The amounts were determined based on the employees' current salary rates and the number of service years that will be accumulated upon their retirement. These amounts do not include amounts that may be paid to employees who cease to work at the company before their normal retirement age.

Capital Resources

We have traditionally met our working capital and other capital requirements principally from cash provided by operations, while raising the remainder of our requirements primarily through long-term debt and short-term borrowings. We expect that these sources will continue to be our principal sources of cash in the future. From time to time, we may also generate cash through issuance of hybrid bonds and sale of treasury shares and our holdings in available-for-sale securities.

Our net cash provided by operating activities increased by 6.4%, or Won 338 billion, from Won 5,269 billion in 2016 to Won 5,607 billion in 2017. Our gross cash flow from our sales activities increased as discussed above. In addition, our cost of sales decreased as a percentage of sales revenue from 87.4% in 2016 to 86.2% in 2017, further enhancing our net cash provided by operating activities. However, our outstanding notes payable and our subsidiaries' outstanding notes payable decreased in 2017, which in turn negatively impacted our net cash provided by operating activities.

Our net cash provided by operating activities increased by 4.7%, or Won 263 billion, from Won 5,607 billion in 2017 to Won 5,870 billion in 2018. Our gross cash flow from our sales activities

increased as discussed above. In addition, our outstanding trade accounts and notes payable increased in 2018, as we lengthened payment terms of some of our key suppliers, which further enhanced our net cash provided by operating activities. However, our inventory of raw materials and materials-in-transit increased in 2018, which in turn negatively impacted our cash provided by operating activities.

We had net repayments of borrowings, after adjusting for proceeds from borrowings, of Won 2,286 billion in 2016, Won 1,410 billion in 2017 and Won 374 billion in 2018. We had net repayment of short-term borrowings, after deducting for proceeds of short-term borrowings, of Won 886 billion in 2016, net proceeds of short-term borrowings, after deducting for repayment of short-term borrowings, of Won 558 billion in 2017, and net repayment of short-term borrowings, after deducting for proceeds of short-term borrowings, of Won 855 billion in 2018. Long-term borrowings, excluding current installments, were Won 12,510 billion as of December 31, 2016, Won 9,789 billion as of December 31, 2017 and Won 9,920 billion as of December 31, 2018. Total short-term borrowings and current installments of long-term borrowings were Won 10,195 billion as of December 31, 2016, Won 11,275 billion as of December 31, 2017 and Won 10,290 billion as of December 31, 2018. Outstanding hybrid bonds were Won 997 billion as of December 31, 2016 and 2017 and Won 199 billion as of December 31, 2018. Our net borrowings-to-equity ratio, which is calculated by deducting cash and cash equivalents from total borrowings and dividing the net amount with our total equity, was 44.26% as of December 31, 2016, 38.99% as of December 31, 2017 and 37.64% as of December 31, 2018.

We periodically increase our short-term borrowings and adjust our long-term debt financing levels depending on changes in our capital requirements. From time to time, we also generate cash from the sale of our treasury shares. We believe that we have sufficient working capital for our current requirements and that we have a variety of alternatives available to us to satisfy our liquidity requirements to the extent that they are not met by funds generated by operations, including the issuance of debt and equity securities and bank borrowings denominated in Won and various foreign currencies. However, our ability to rely on some of these alternatives could be affected by factors such as the liquidity of the Korean and the global financial markets, prevailing interest rates, our credit rating and the Government's policies regarding Won currency and foreign currency borrowings.

Liquidity

We had working capital (current assets minus current liabilities) of Won 10,711 billion as of December 31, 2016, Won 12,354 billion as of December 31, 2017 and Won 14,721 billion as of December 31, 2018. Our holdings of cash and cash equivalents (which do not include cash and cash equivalents categorized under "assets held for sale") were Won 2,448 billion as of December 31, 2016, Won 2,613 billion as of December 31, 2017 and Won 2,644 billion as of December 31, 2018. See Notes 5 and 10 of Notes to Consolidated Financial Statements. Our holding of other receivables and other short-term financial assets were Won 6,765 billion as of December 31, 2016, Won 8,682 billion as of December 31, 2017 and Won 9,467 billion as of December 31, 2018. As of December 31, 2018, approximately 18% of our cash and cash equivalents, other receivables and other short-term financial assets were held outside of Korea, which we expect to use in our operations abroad, including capital expenditure activities. In the event that such assets are needed for our operations in Korea, such amounts are typically not restricted under local laws from being used in Korea. In addition, we believe that there are no material tax implications in the event our foreign subsidiaries elect to grant cash dividends to us. POSCO had total available credit lines of Won 1,375 billion as of December 31, 2018, Won 300 billion of which was used as of such date. We have not had, and do not believe that we will have, difficulty gaining access to short-term financing sufficient to meet our current requirements.

Our liquidity is affected by exchange rate fluctuations. See "— Overview — Exchange Rate Fluctuations."

Capital Expenditures and Capacity Expansion

Cash used for acquisitions of property, plant and equipment was Won 2,324 billion in 2016, Won 2,288 billion in 2017 and Won 2,136 billion in 2018. We plan to spend approximately Won 6.1 trillion in capital expenditures in 2019, which we may adjust on an on-going basis subject to market demand for our products, the production outlook of the global steel industry and global economic conditions in general. We may delay or not implement some of our current capital expenditure plans based on our assessment of such market conditions.

Our current plan for capital investment in production facilities emphasizes capacity rationalization, increased production of higher value-added products, improvements in the efficiency of older facilities in order to reduce operating costs and construction and expansion of facilities related to our non-steel businesses. The following table sets out the major items of our capital expenditures as of December 31, 2018:

Project	Expected Completion Date	Total Cost of Project	Estimated Remaining Cost of Completion as of December 31, 2018
(In billions of Won)			
Rationalization of furnace no. 3 at Gwangyang Works and construction of facilities for removing nitrogen oxide during iron ore processing at Pohang Works	December 2021	₩ 2,155	₩ 1,683
Construction of by-product gas plant at Pohang Works and expansion of hyper-strength steel manufacturing facilities at Gwangyang Works	November 2021	506	400
Construction of anode materials production facilities	May 2019	135	67

Additional major capital expenditure projects that we plan to start in 2019 include the following:

Project	Expected Spending in 2019	Expected Spending in 2020	Expected Spending in 2021	Total
(In billions of Won)				
Rationalization and upgrading of facilities at Gwangyang Works and Pohang Works related to periodic maintenance and improvement of steel products	₩ 146	₩ 950	₩ 823	₩ 1,919
Rationalization and upgrading of facilities at Gwangyang Works and Pohang Works related to improvement of steel products	48	54	462	564
Construction and expansion of cathode materials production facilities	21	122	—	143

Item 5.C. Research and Development, Patents and Licenses, Etc.

We maintain a research and development program to carry out basic research and applied technology development activities. As of December 31, 2018, POSCO Technical Research Laboratories employed 950 personnel, including 516 researchers. Our technology development department also works closely with the Pohang University of Science & Technology, Korea's first research-oriented college founded by us in 1986, and the Research Institute of Industrial Science and Technology, Korea's first private comprehensive research institute founded by us in 1987. We also established POSCO Research Institute (POSRI) in 1994, which engages in research activities and consulting services.

Our research and development program has filed approximately 44,000 industrial rights applications relating to steel-making technology, approximately 15,000 of which were registered as of December 31, 2018, and has successfully applied many of these to the improvement of our manufacturing process.

Item 5.D. Trend Information

These matters are discussed under Item 5.A. and Item 5.B. above where relevant.

Item 5.E. Off-balance Sheet Arrangements

As of December 31, 2017 and 2018, we did not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Item 5.F. Tabular Disclosure of Contractual Obligations

These matters are discussed under Item 5.B. above where relevant.

Item 5.G. Safe Harbor

See “Item 3. Key Information — Item 3.D. Risk Factors — This annual report contains “forward-looking statements” that are subject to various risks and uncertainties.”

Item 6. Directors, Senior Management and Employees**Item 6.A. Directors and Senior Management****Board of Directors**

Our board of directors has the ultimate responsibility for the management of our business affairs. Our board consists of five directors who are our executive officers (“Inside Directors”) and seven directors who are outside directors (“Outside Directors”). Our shareholders elect both the Inside Directors and Outside Directors at a general meeting of shareholders. Candidates for Inside Directors are recommended to shareholders by the board of directors after the board reviews such candidates’ qualifications, and candidates for Outside Directors are recommended to the shareholders by a separate board committee consisting of three Outside Directors and one Inside Director (“Director Candidate Recommendation and Management Committee”) after the committee reviews such candidates’ qualifications. Pursuant to the Korean Commercial Act and our articles of incorporation, any shareholder holding our outstanding shares with voting rights may suggest candidates for Outside Directors to the Director Candidate Recommendation and Management Committee.

Our board of directors maintains the following five sub-committees:

- the Director Candidate Recommendation and Management Committee;
- the Evaluation and Compensation Committee;
- the Finance and Related Party Transactions Committee;
- the Executive Management Committee; and
- the Audit Committee.

Our board committees are described in greater detail below under “— Item 6.C. Board Practices.”

Under the Commercial Code and our articles of incorporation, one Chairman should be elected among the Outside Directors and several Representative Directors may be elected among the Inside Directors by our board of directors’ resolution.

Inside Directors

As of March 31, 2019, our Inside Directors are:

Name	Position	Responsibilities and Division	Years as Director	Age	Expiration of Term of Office
Choi, Jeong-Woo	Chief Executive Officer and Representative Director	—	1	61	March 2021
Chang, In-Hwa	President and Representative Director	Head of Steel Business Unit	2	63	March 2020
Chon, Jung-Son	Senior Executive Vice President	Head of Corporate Strategy & Planning Division	1	56	March 2020
Kim, Hag-Dong	Senior Executive Vice President	Head of Production Division	0	59	March 2020
Jeong, Tak	Senior Executive Vice President	Head of Marketing Division	0	59	March 2020

All Inside Directors are engaged in our business on a full-time basis.

Outside Directors

Our current Outside Directors are set out in the table below. Each of our Outside Directors meets the applicable independence standards set forth under the rules of the FSCMA.

Name	Position	Principal Occupation	Years as Director	Age	Expiration of Term of Office
Kim, Shin-Bae	Chairman	Former Vice Chairman, SK Group	2	64	March 2022
Kim, Joo-Hyun	Director	President, the Financial News	4	66	March 2021
Bahk, Byong-Won	Director	Former Chairman, Korea Employers Federation	4	66	March 2021
Chung, Moon-Ki	Director	Professor of Accounting, Sungkyunkwan University	2	59	March 2022
Chang, Seung-Wha	Director	Professor of Law, Seoul National University	1	55	March 2020
Kim, Sung-Jin	Director	Former Minister, Ministry of Oceans and Fisheries	1	69	March 2021
Pahk, Hee-Jae	Director	Professor of Mechanical Engineering, Seoul National University	0	57	March 2022

The term of office of the Directors elected in March 2019 is up to three years. Each Director's term expires at the close of the ordinary general meeting of shareholders convened in respect of the fiscal year that is the last one to end during such Director's tenure.

Senior Management

In addition to the Inside Directors who are also our executive officers, we have the following executive officers as of March 31, 2019:

Name	Position	Responsibility and Division	Age
Oh, Gyu-Seok	Senior Executive Vice President	Head of New Growth Business Unit	55
Oh, Hyoung-Soo	Senior Executive Vice President	Head of Pohang Works	58
Kim, Jhi-Yong	Senior Executive Vice President	President, PT Krakatau POSCO Co., Ltd.	56
Han, Sung-Hee	Senior Executive Vice President	Head of Management Support Division	57

Name	Position	Responsibility and Division	Age
Choi, Joo	Senior Executive Vice President	Head of Technical Research Laboratories	59
Yoo, Byeong-Og	Senior Executive Vice President	Head of Purchasing and Investment Division	56
Lee, Si-Woo	Senior Executive Vice President	Head of Gwangyang Works	58
Lee, Duk-Lak	Executive Vice President	Head of Technology Strategy Office	58
Kim, Gyo-Sung	Executive Vice President	Head of Automotive Steel Research Lab	57
Lee, Sung-Wook	Executive Vice President	Head of Legal Affairs Office	54
Yang, Weon-Jun	Executive Vice President	Head of Corporate Citizenship Office	53
Bae, Jae-Tak	Executive Vice President	Head of Stainless Steel Marketing Office	54
Lim, Seung-Kyu	Executive Vice President	Head of Finance Office	55
Choo, Se-Don	Executive Vice President	Head of Steel Solution Research Lab	57
Jung, Duk-Kyoon	Executive Vice President	Head of Information Planning Office	56
Choi, In-Suk	Executive Vice President	Deputy Head of Pohang Works (Administration)	55
Lee, Ju-Tae	Executive Vice President	Head of Corporate Strategy Office	54
Yun, Yang-Su	Executive Vice President	Head of Automotive Materials Marketing Office	55
Kim, Soon-Ki	Executive Vice President	Head of Labor and Cooperation Office	54
Lee, Jeon-Hyeok	Executive Vice President	Head of Global Infra Business Management Office	55
Kim, Bok-Tae	Executive Vice President	Head of Sales and Production Coordination Office	56
Chun, Sung-Lae	Executive Vice President	Head of Hot Rolled Steel & Wire Rod Marketing Office	55
Kim, Jeoung-Su	Executive Vice President	Deputy Head of Gwangyang Works (Administration)	55
Kim, Kwang-Moo	Executive Vice President	Head of Steel Business Planning & Coordination Office	54
Kim, Kyung-Han	Executive Vice President	Head of International Trade Office	53
Jung, Hae-Seong	Senior Vice President	Head of Raw Materials Office II	54
Park, Hyeon	Senior Vice President	Head of LiB Materials Business Office	51
Kim, Min-Chul	Senior Vice President	Head of Investment Planning & Engineering Office	56
Lee, Jae-Yeol	Senior Vice President	Head of Administration Support & External Relations Office	57
Lee, Jean-Su	Senior Vice President	Head of Surface Treatment Department, Gwangyang Works	55
Kim, Young-Joong	Senior Vice President	Head of Marketing Strategy Office	53
Choi, Hyeon-Soo	Senior Vice President	Head of Europe Office	59
Kim, Ki-Soo	Senior Vice President	Head of Process and Engineering Research Lab	53
Choi, Yong-Jun	Senior Vice President	Deputy Head of Pohang Works (Hot and Cold Rolling)	54
Song, Yong-Sam	Senior Vice President	Head of Electrical and Electronic Materials Marketing Office	55
Lee, Yu-Kyung	Senior Vice President	Head of Plant, Equipment and Materials Procurement Office	51
Lee, Hee-Geun	Senior Vice President	Deputy Head of Pohang Works (Iron and Steel Making)	56
Lee, Ju-Hyeob	Senior Vice President	Deputy Head of Pohang Works (Stainless Steel Production)	54
An, Geun-Sik	Senior Vice President	Head of Global Quality & Service Management Office	57
Lee, Kyung-Sub	Senior Vice President	Head of Investment Strategy Office	53
Jung, Bum-Su	Senior Vice President	Deputy Head of Gwangyang Works (Maintenance)	54
Nam, Jae-Bok	Senior Vice President	Giga Steel Commercialization TF Team Leader, Gwangyang Works	57
Hong, Sam-Young	Senior Vice President	Deputy Head of Gwangyang Works (Hot and Cold Rolling)	57
Lee, Sang-Ho	Senior Vice President	Head of Production Division, PT Krakatau POSCO Co., Ltd.	54
Kim, Sang-Gyun	Senior Vice President	Head of Construction Steel Materials Marketing Office	54
Lee, Baik-Hee	Senior Vice President	Deputy Head of Gwangyang Works (Iron and Steel Making)	54

Name	Position	Responsibility and Division	Age
Ahn, Sang-Bog	Senior Vice President	Head of Steel Product Research Lab	56
Han, Soo-Ho	Senior Vice President	PT KP Downstream Construction Cooperation TF Team Leader	57
Choi, Young	Senior Vice President	Head of Communication Office	50
Lee, Cheol-Ho	Senior Vice President	Head of Labor and Management Development Group	53
Yoon, Chang-Woo	Senior Vice President	Head of Marketing Division, PT Krakatau POSCO Co., Ltd.	54
Jeong, Dae-Hyung	Senior Vice President	Head of Business Assessment Office	50
Yang, Byeong-Ho	Senior Vice President	Head of Human Resources and Corporate Culture Office	52
Kim, Sang-Chul	Senior Vice President	Head of Energy and Shipbuilding Materials Marketing Office	51
Cho, Ju-Ik	Senior Vice President	Head of New Growth Planning Office	53
Kim, Yong-Soo	Senior Vice President	Head of Human Resources Management Office	53
Oh, Kyung-Shik	Senior Vice President	PosMC Technology Development TF Team Leader, Pohang Works	60
Kim, Kyeong-Chan	Senior Vice President	Head of Steel Business Planning & Coordination Group	49
Choi, Jong-Kyo	Senior Vice President	High Manganese Steel Solutions TF Team Leader	57
Chung, Kyung-Jin	Senior Vice President	Head of Corporate Audit Office	53
Song, Chi-Young	Senior Vice President	Deputy Head of Pohang Works (Safety and Environment)	54
Choun, Si-Youl	Senior Vice President	Head of Steel Production Strategy Office	53
Kang, Sung-Wook	Senior Vice President	Head of Raw Materials Office I	53
Lee, Chan-Gi	Senior Vice President	Deputy Head of Pohang Works (Maintenance)	55
Lee, Chang-Hyun	Senior Vice President	Deputy Head of Gwangyang Works (Safety and Environment)	57
Park, Sung-Jin	Senior Vice President	Head of Industry-Academy-Research Cooperation Office	51

Item 6.B. Compensation

Compensation of Directors and Officers

Salaries and bonuses for Inside Directors and salaries for Outside Directors are paid in accordance with standards decided by the board of directors within the limitation of directors remuneration approved by the annual general meeting of shareholders. In addition, executive officers' compensation is paid in accordance with standards decided by the board of directors. In 2018, the aggregate compensation paid and accrued to all Directors and executive officers was approximately Won 48 billion and the aggregate amount set aside or accrued by us to provide pension and retirement benefits to such persons was Won 12 billion.

Among those who received total annual compensation exceeding Won 500 million in 2018, the highest-paid five individuals were as follows:

Name	Position	Total Compensation in 2018	Long-term Incentive Compensation for Payment Subsequent to 2018 (In millions of Won)
Kwon, Oh-Joon	Former Chief Executive Officer and Representative Director	₩5,068	₩436
Choi, Jeong-Woo	Chief Executive Officer and Representative Director	1,822	284
Ahn, Dong-II	Former Senior Executive Vice President	1,581	302
Oh, In-Hwan	President and Representative Director	1,252	266
Kim, Jung-Sik	Former Executive Vice President	1,207	247

We have also granted stock options to some of our Directors and executive officers. See “— Item 6.E. Share Ownership” for a list of stock options granted to our Directors and executive officers. At the annual shareholders’ meeting held in February 2006 our shareholders elected to terminate the stock option program. Stock options granted prior to this meeting remain valid and outstanding pursuant to the articles of incorporation in effect at the time of the issuance of the stock option.

Item 6.C. Board Practices

Director Candidate Recommendation and Management Committee

The Director Candidate Recommendation and Management Committee is composed of three Outside Directors, Bahk, Byong-Won, Kim, Joo-Hyun and Pahk, Hee-Jae, and one Inside Director, Chon, Jung-Son. The Director Candidate Recommendation and Management Committee reviews the qualifications of potential candidates and proposes nominees to serve on our board of directors as an Outside Director. It also reviews operational matters of our board of directors. Any shareholder holding our outstanding shares with voting rights may suggest candidates for Outside Directors to the Director Candidate Recommendation and Management Committee.

Evaluation and Compensation Committee

The Evaluation and Compensation Committee is composed of four Outside Directors, Chang, Seung-Wha, Kim, Shin-Bae, Chung, Moon-Ki and Kim, Sung-Jin. The Evaluation and Compensation Committee’s primary responsibilities include establishing evaluation procedures and compensation plans for executive officers and taking necessary measures to execute such plans.

Finance and Related Party Transactions Committee

The Finance and Related Party Transactions Committee is composed of three Outside Directors, Kim, Joo-Hyun, Kim, Sung-Jin and Pahk, Hee-Jae and one Inside Director, Chang, In-Hwa. This committee is an operational committee that oversees decisions with respect to finance and operational matters, including making assessments with respect to potential capital investments and evaluating prospective capital-raising activities. It also reviews related party and other internal transactions and ensures compliance with the Monopoly Regulation and Fair Trade Act.

Executive Management Committee

The Executive Management Committee is composed of five Inside Directors, Choi, Jeong-Woo, Chang, In-Hwa, Chon, Jung-Son, Kim, Hag-Dong and Jeong, Tak. This committee oversees decisions with respect to our operational and management matters, including review of management’s proposals of new strategic initiatives, as well as deliberation over critical internal matters related to organization structure and development of personnel.

Audit Committee

Under Korean law and our articles of incorporation, we are required to have an Audit Committee. The Audit Committee may be composed of three or more directors; all members of the Audit Committee must be Outside Directors. Audit Committee members must also meet the applicable independence criteria set forth under the rules and regulations of the Sarbanes-Oxley Act of 2002. Members of the Audit Committee are elected by the shareholders at the ordinary general meeting of shareholders. We currently have an Audit Committee composed of three Outside Directors. Members of our Audit Committee are Chung, Moon-Ki, Bahk, Byong-Won and Chang, Seung-Wha.

The duties of the Audit Committee include:

- engaging independent auditors;

- approving independent audit fees;
- approving audit and non-audit services;
- reviewing annual financial statements;
- reviewing audit results and reports, including management comments and recommendations;
- reviewing our system of controls and policies, including those covering conflicts of interest and business ethics; and
- examining improprieties or suspected improprieties.

In addition, in connection with general meetings of stockholders, the committee examines the agenda for, and financial statements and other reports to be submitted by, the board of directors at each general meeting of stockholders. Our internal and external auditors report directly to the Audit Committee. The committee holds regular meetings at least once each quarter, and more frequently as needed.

Item 6.D. *Employees*

As of December 31, 2018, we had 33,784 employees, including 16,634 persons employed by our subsidiaries. Of the total number of employees, approximately 80% are technicians and skilled laborers and 20% are administrative staff. We use subcontractors for maintenance, cleaning and transport activities. We had 32,287 employees, including 15,232 persons employed by our subsidiaries, as of December 31, 2017, and 31,768 employees, including 15,184 persons employed by our subsidiaries, as of December 31, 2016.

We consider our relations with our work force to be satisfactory. We have never experienced a work stoppage or strike. Wages of our employees are among the highest of manufacturing companies in Korea. In addition to a base monthly wage, employees receive periodic bonuses and allowances. Base wages are determined annually following negotiations between the management and the majority labor union. A limited number of our employees are members of the Federation of Korean Metal Workers' Trade Unions or the Korean Metal Workers' Union. The Federation of Korean Metal Workers' Trade Unions currently negotiates the terms of employment with the management.

In accordance with the National Pension Act of Korea, we contribute an amount equal to 4.5% of an employee's standard monthly wages, and each employee contributes 4.5% of his or her standard monthly wages, into his or her personal pension account. Our employees, including executive officers as well as non-executive employees, are subject to a pension insurance system, under which we make monthly contributions to the pension accounts of the employees, and upon retirement, such employees are paid from their pension accounts. Prior to 2011, our executive and non-executive employees were subject to a lump-sum severance payment system, under which they were entitled to receive a lump-sum severance payment upon termination of their employment, based on their length of service and salary level at the time of termination. Starting in 2011, in accordance with the Korean Employee Retirement Income Security Act, we replaced such lump-sum severance payment system with our current pension insurance system in the form of either a defined benefit plan or a defined contribution plan. Our employees have the option of choosing either the defined benefit plan or the defined contribution plan. See Note 21 of Notes to Consolidated Financial Statements. Lump-sum severance amounts previously accrued prior to our adoption of the current pension insurance system continue to remain payable. We also provide a wide range of fringe benefits to our employees, including housing, housing loans, company-provided hospitals and schools, a company-sponsored pension program, an employee welfare fund, industrial disaster insurance and cultural and athletic facilities.

As of December 31, 2018, our employees owned, through our employee stock ownership association, approximately 1.69% of our common stock in their employee accounts.

Item 6.E. Share Ownership

The persons who are currently our Directors or executive officers held, as a group, 16,565 common shares as of March 31, 2019, the most recent practicable date for which this information is available. The table below shows the ownership of our common shares by our Directors and executive officers.

Name	Number of Common Shares
Kim, Hag-Dong	960
Choi, Jeong-Woo	911
Chang, In-Hwa	889
Choi, Joo	796
Kim, Soon-Ki	707
Jeong, Tak	699
Kim, Gyo-Sung	685
Yoo, Byeong-Og	649
Lee, Si-Woo	566
Song, Chi-Young	500
Jung, Bum-Su	483
Yang, Weon Jun	476
Lee, Duk-Lak	474
Jung, Hae-Seong	450
Choo, Se-Don	405
Park, Hyeon	403
Lim, Seung-Kyu	392
Kim, Jhi-Yong	385
Kim, Min-Chul	380
Lee, Cheol-Ho	379
Lee, Yu-Kyung	377
Han, Soo-Ho	359
Lee, Ju-Tae	323
Lee, Jae-Yeol	298
Oh, Hyoung-Soo	273
Choi, In-Suk	269
Chon, Jung-Son	262
Kim, Jeoung-Su	243
Kim, Bok-Tae	238
Chun, Sung-Lae	227
Choi, Jong-Kyo	224
Lee, Baik-Hee	214
Choi, Young	205
An, Geun-Sik	200
Kim, Sang-Gyun	180
Han, Sung-Hee	174
Bae, Jae-Tak	126
Yun, Yang-Su	112
Lee, Jeon-Hyeok	89
Kang, Sung-Wook	83
Kim, Ki-Soo	79
Kim, Kwang-Moo	73
Lee, Chan-Gi	73
Song, Yong-Sam	60
Lee, Jean-Su	53
Lee, Kyung-Sub	31
Choun, Si-Youl	31
Choi, Yong-Jun	27
Choi, Hyeon-Soo	25
Kim, Yong-Soo	12
Jung, Duk-Kyoon	10
Nam, Jae-Bok	10
Hong, Sam-Young	10
Lee, Sang-Ho	4
Oh, Kyung-Shik	2
Total	16,565

Item 7. Major Shareholders and Related Party Transactions

Item 7.A. Major Shareholders

The following table sets forth certain information relating to the shareholders of our common stock issued as of December 31, 2018.

Shareholders	Number of Shares Owned	Percentage
National Pension Service	9,342,192	10.72%
BlackRock Fund Advisors and subsidiaries ⁽¹⁾	4,549,553	5.22
Nippon Steel & Sumitomo Metal Corporation ⁽¹⁾	2,894,712	3.32
GIC Private Limited	2,016,887	2.31
KB Financial Group Inc. and subsidiaries	2,001,820	2.30
Directors and executive officers as a group	16,565	0.02
Public ⁽¹⁾	59,179,403	67.88
POSCO (held in the form of treasury stock)	7,185,703	8.24
Total issued shares of common stock	87,186,835	100.00%

(1) Includes ADRs.

As of December 31, 2018, there were 9,215,072 shares of common stock outstanding in the form of ADRs, representing 10.57% of the total issued shares of common stock.

Item 7.B. Related Party Transactions

We have issued guarantees in favor of affiliated and related companies, and we have also engaged in various transactions with our subsidiaries and affiliated companies. See Notes 37 and 38 of Notes to Consolidated Financial Statements.

As of December 31, 2016, 2017 and 2018, we had no loans outstanding to our executive officers and Directors.

Item 7.C. Interests of Experts and Counsel

Not applicable

Item 8. Financial Information

Item 8.A. Consolidated Statements and Other Financial Information

See “Item 18. Financial Statements” and pages F-1 through F-130.

Legal Proceedings

As a steel producer with global sales and operations, we are involved in trade remedy proceedings in markets worldwide, including in the United States. We proactively participate in and plan for such proceedings to minimize any adverse effects and associated risks. While there has been an increase in the number of trade cases in recent years, and an increased focus on trade issues by government officials, all such cases have been product and market-specific, and thus have been limited in scope relative to our global sales and operations. We continue to carefully monitor developments with respect to trade remedy policy in all markets in which we participate and, where necessary, vigorously defend our rights through litigation before tribunals such as the U.S. Court of International Trade. Our products that are subject to anti-dumping, safeguard or countervailing duty proceedings in the aggregate currently do not account for a material portion of our total sales, and such proceedings have not had a material adverse impact on our business and operations in recent years. However, there can be no assurance that increases in, or new impositions of, anti-dumping duties, safeguard duties, countervailing duties, quotas or tariffs on our exports of products abroad may not

have a material adverse impact on our exports in the future. See “Item 4. Information on the Company — Item 4.B. Business Overview — Markets — Exports.”

In 2013, the Korea Fair Trade Commission imposed a total fine of Won 108.6 billion on us and POSCO Coated & Color Steel Co., Ltd. (“POSCO Coated & Color Steel”), our consolidated subsidiary, as well as two corrective orders on us for alleged antitrust violations in Korea relating to galvanized steel sheets and color sheets. Subsequent to paying such fines, we and POSCO Coated & Color Steel each filed for judicial review of such fines in the Seoul High Court in February 2013. In July 2015, the Seoul High Court ruled in our favor for the Won 89.3 billion fine imposed on us, which was subsequently appealed by the Korea Fair Trade Commission to the Supreme Court of Korea. In November 2016, the Supreme Court of Korea vacated the Seoul High Court’s ruling and remanded the proceeding in November 2016. In February 2019, the Seoul High Court revoked the fine and one of the two corrective orders initially imposed on us, which was subsequently appealed by both us and the Korea Fair Trade Commission. We intend to continue to vigorously defend against such administrative action. In January 2016, the Seoul High Court ruled against POSCO Coated & Color Steel with respect to the fine of Won 19.3 billion imposed against it. POSCO Coated & Color Steel appealed with respect to Won 3.0 billion of such fine, which it lost in November 2016.

In May 2002, Industrial Development Bank of India brought a suit against Daewoo International Corporation (currently, POSCO International), Daewoo Motors India Ltd., Daewoo Corporation and Daewoo Construction & Engineering Co., Ltd. in the India Delhi Mumbai Court, regarding its loans to Daewoo Motors India Ltd. guaranteed by Daewoo Co., Ltd. (predecessor of POSCO International). The total claim amount is 4.46 billion Indian Rupees, and POSCO International recorded provision of Won 21 billion relating to its portion of the guarantee alleged by Industrial Development Bank of India. Daewoo International Corporation challenged the jurisdiction of the court in 2003. The outcome of such lawsuits remains uncertain and POSCO International’s provision is classified as a non-current liability as of December 31, 2018.

In January 2019, the Financial Supervisory Service initiated a review and investigation of POSCO E&C’s annual report and related financial statements for the year ended December 31, 2015, which is currently ongoing. We cannot predict the outcome of this review and investigation, and there can be no assurance that such review and investigation will not result in imposition of penalties or corrective actions on POSCO E&C or us by the Financial Supervisory Service.

In March 2019, affiliates of Gale Investments Company, LLC, a former joint venture partner of POSCO E&C in the urban planning and development project in Songdo International City in Incheon (the “Songdo Project”), filed a claim in the United States District Court for the Southern District of New York and filed a request for arbitration pursuant to the rules of the International Court of Arbitration of the International Chamber of Commerce against POSCO E&C, claiming POSCO E&C wrongfully seized and sold certain properties of the claimants. In December 2013, POSCO E&C and one of the claimants entered into a series of loan facility agreements with several lenders to finance the Songdo Project, with their respective stakes in the joint venture pledged as collateral. The loan facility agreements entitled POSCO E&C to certain subrogation rights related to guaranteeing the obligations of the claimant to repay the principal amounts of the loans. In 2017, upon default of certain series of the loans, POSCO E&C exercised such subrogation rights, claimed the pledged assets of the claimant and sold such assets. The claimants are seeking damages of approximately Won 2,400 billion allegedly resulting from POSCO E&C’s purported wrongful seizure and sale of such properties as well as alleged overcharges made by POSCO E&C while serving as the construction contractor for the Songdo Project. POSCO E&C believes that its actions were legally permissible and plans to vigorously defend against the claims made by the claimants.

Except as described above, we are not involved in any pending or threatened legal or arbitration proceedings that may have, or have had during the last 12 months, a material adverse effect on our results of operations or financial position.

Dividends

The amount of dividends paid on our common stock is subject to approval at the annual general meeting of shareholders, which is typically held in February or March of the following year. In addition to our annual dividends, our board of directors is authorized to declare and distribute quarterly dividends under our articles of incorporation. If we decide to pay quarterly dividends, our articles of incorporation authorize us to pay them in cash to the shareholders of record as of the end of March, June and September of the relevant fiscal year. We may pay cash dividends out of retained earnings that have not been appropriated to statutory reserves.

The table below sets out the annual dividends declared on the outstanding common stock to shareholders of record on December 31 of the years indicated and the interim dividends (including quarterly dividends starting in the second half of 2016), declared on the outstanding common stock to applicable shareholders of record of the years indicated. A total of 87,186,835 shares of common stock were issued as of December 31, 2018. Of these shares and as of such date, 80,001,132 shares were outstanding and 7,185,703 shares were held by us in treasury. The annual dividends set out for each of the years below were paid in the immediately following year.

Year	Annual Dividend per Common Stock to Public	Interim Dividend per Common Stock (In Won)	Average Total Dividend per Common Stock
2014	6,000	2,000	8,000
2015	6,000	2,000	8,000
2016	5,750	2,250	8,000
2017	3,500	4,500	8,000
2018	5,000	5,000	10,000

Owners of the ADSs are entitled to receive any dividends payable in respect of the underlying shares of common stock.

Historically, we have paid to holders of record of our common stock an annual dividend. However, we can give no assurance that we will continue to declare and pay any dividends in the future.

Item 8.B. *Significant Changes*

Except as disclosed elsewhere in this annual report, we have not experienced any significant changes since the date of our Consolidated Financial Statements included in this annual report.

Item 9. *The Offer and Listing*

Item 9.A. *Offer and Listing Details*

Notes

Not applicable

Common Stock

The principal trading market for our common stock is the KRX KOSPI Market. Our common stock, which is in registered form and has a par value of Won 5,000 per share, has been listed on the KRX KOSPI Market since June 1988 under the identifying code 005490.

ADSs

Our common stock is also listed on the New York Stock Exchange in the form of ADSs. The ADSs have been issued by Citibank, N.A. as ADR depositary and are listed on the New York Stock

Exchange under the symbol “PKX.” One ADS represents one-fourth of one share of common stock. As of December 31, 2018, 36,860,288 ADSs representing 9,215,072 common shares were outstanding, representing 10.6% of total issued shares of common stock.

Item 9.B. *Plan of Distribution*

Not applicable

Item 9.C. *Markets*

See “Item 9.A. Offering and Listing Details.”

Item 9.D. *Selling Shareholders*

Not applicable

Item 9.E. *Dilution*

Not applicable

Item 9.F. *Expenses of the Issuer*

Not applicable

Item 10. *Additional Information*

Item 10.A. *Share Capital*

Currently, our authorized share capital is 200,000,000 shares, which consists of shares of common stock, par value Won 5,000 per share (“Common Shares”) and shares of non-voting stock, par value Won 5,000 per share (“Non-Voting Preferred Shares”). Our Non-Voting Preferred Shares have a preferential right to dividend payments. Common Shares and Non-Voting Preferred Shares together are referred to as “Shares.” Under our articles of incorporation, we are authorized to issue Non-Voting Preferred Shares up to the limit prescribed by applicable law, the aggregate of which currently is one-quarter of our total issued and outstanding capital stock. As of December 31, 2018, 87,186,835 Common Shares were issued, of which 7,185,703 shares were held by us in treasury. We have never issued any Non-Voting Preferred Shares. All of the issued and outstanding Common Shares are fully-paid and non-assessable and are in registered form. We issue share certificates in denominations of 1, 5, 10, 50, 100, 500, 1,000 and 10,000 shares.

Item 10.B. *Memorandum and Articles of Association*

Under Article 2 of our articles of incorporation, the primary purpose of POSCO is to engage in, among others: manufacturing, marketing, promoting, selling and distributing iron, steel and rolled products; harbor loading and unloading, transportation and warehousing businesses; power generation and distribution as well as resources development; technology license sales and engineering businesses; and any other activities that are related, directly or indirectly, to the attainment and continuation of the foregoing.

The following provides information relating to our capital stock, including brief summaries of material provisions of our articles of incorporation, the FSCMA, the Commercial Code and related laws, all as currently in effect. The following summaries are subject to, and are qualified in their entirety by reference to, our articles of incorporation and the applicable provisions of the FSCMA and the Commercial Code. We have filed copies of our articles of incorporation and these laws (except for the newly enacted the FSCMA) as exhibits to registration statements under the Securities Act or the Securities Exchange Act previously filed by us.

Board of Directors

Under our articles of incorporation and the Commercial Code, any director who has a special interest in a proposal or a resolution is prohibited from voting on such proposal or resolution at the meeting of the board of directors. Any resolution of the board of directors must be approved by an affirmative majority vote of the directors present at the meeting of the board of directors. The compensation for directors, including severance benefits, is paid within the limitation approved by the annual general meeting of shareholders.

Dividends

We distribute dividends to our shareholders in proportion to the number of shares owned by each shareholder. The Common Shares represented by the ADSs have the same dividend rights as other outstanding Common Shares.

Holders of Non-Voting Preferred Shares are entitled to receive dividends in priority to the holders of Common Shares in an amount not less than 9% of the par value of the Non-Voting Preferred Shares as determined by the board of directors at the time of their issuance. If the amount available for dividends is less than the aggregate amount of such minimum dividend, we do not have to declare dividends on the Non-Voting Preferred Shares.

We may declare dividends annually at the annual general meeting of shareholders which is held within three months after the end of the fiscal year. We pay the annual dividend shortly after the annual general meeting to the shareholders of record as of the end of the preceding fiscal year. In addition, we may declare quarterly dividends pursuant to a board resolution each fiscal year to the eligible shareholders recorded as of the end of March, June and September of the relevant fiscal year. We may distribute the annual dividend in cash, Shares or other form of property. However, we may distribute the quarterly dividend only in cash. A dividend of Shares must be distributed at par value and may not exceed one-half of the annual and quarterly dividends declared each fiscal year in the aggregate. We have no obligation to pay any dividend unclaimed for five years from the payment date.

Under the Commercial Code, we may pay dividends only to the extent the net asset amount in our balance sheets exceeds the sum of the following: (i) our stated capital, (ii) the total amount of our capital surplus reserve and earned surplus reserve accumulated up to the end of the relevant dividend period, (iii) the legal reserve to be set aside for dividends, and (iv) unrealized profits determined in the Presidential Decree to the Commercial Code. We may not pay dividends unless we have set aside as earned surplus reserve an amount equal to at least 10% of the cash portion of dividends or unless we have accumulated earned surplus reserve of not less than one-half of our stated capital. We may not use legal reserve to pay cash dividends but may transfer amounts from legal reserve to capital stock or use legal reserve to reduce an accumulated deficit.

Distribution of Free Shares

In addition to paying dividends in Shares out of our retained or current earnings, we may also distribute to our shareholders an amount transferred from our capital surplus or legal reserve to our stated capital in the form of free shares. We must distribute such free shares to all our shareholders in proportion to their existing shareholdings.

Preemptive Rights and Issuance of Additional Shares

We may issue authorized but unissued shares at times and, unless otherwise provided in the Commercial Code or our articles of incorporation, on the terms our board of directors may determine. All our shareholders are generally entitled to subscribe for any newly issued Shares in proportion to their existing shareholdings. We must offer new Shares on uniform terms to all shareholders who have preemptive rights and are listed on our shareholders' register as of the relevant record date. Under the

Commercial Code, we may vary, without shareholders' approval, the terms of these preemptive rights for different classes of shares. We must give public notice of the preemptive rights regarding new Shares and their transferability at least two weeks before the relevant record date. Our board of directors may determine how to distribute Shares for which preemptive rights have not been exercised or where fractions of Shares occur.

Under our articles of incorporation, we may issue new Shares pursuant to a board resolution to persons other than existing shareholders, who in these circumstances will not have preemptive rights, if the new Shares are:

- offered publicly or to underwriters for underwriting pursuant to the FSCMA and other applicable regulations;
- issued to members of our employee stock ownership association pursuant to the FSCMA and other applicable regulations;
- represented by depositary receipts pursuant to the FSCMA and other applicable regulations and other applicable regulations;
- issued in a general public offering pursuant to a board resolution in accordance with the FSCMA and other applicable regulations, the amount of which is no more than 10% of the outstanding Shares;
- issued to our creditors pursuant to a debt-equity swap;
- issued to domestic or foreign entities pursuant to a joint venture agreement, strategic coalition or technology license or transfer agreement when deemed necessary for management purposes; or
- issued to domestic or foreign financial institutions when necessary for raising funds in emergency cases.

In addition, we may issue convertible bonds or bonds with warrants, each up to an aggregate principal amount of Won 2 trillion, to persons other than existing shareholders.

Members of our employee stock ownership association, whether or not they are our shareholders, generally have a preemptive right to subscribe for up to 20% of the Shares publicly offered pursuant to the FSCMA. This right is exercisable only to the extent that the total number of Shares so acquired and held by members of our employee stock ownership association does not exceed 20% of the total number of Shares then issued. As of December 31, 2018, our employees owned, through our employee stock ownership association, approximately 1.69% of our common stock in their employee accounts.

General Meeting of Shareholders

We hold the annual general meeting of shareholders within three months after the end of each fiscal year. The record date of the register of shareholders is December 31 of each year, and such shareholders listed on the register of shareholder as of the record date are entitled to exercise their right at the general meeting of shareholders. Subject to a board resolution, court approval or other applicable laws and regulations, we may hold an extraordinary general meeting of shareholders:

- as necessary;
- at the request of holders of an aggregate of 3% or more of our outstanding Shares;
- at the request of shareholders holding an aggregate of 1.5% or more of our outstanding Shares for at least six months; or
- at the request of our Audit Committee.

Holders of Non-Voting Preferred Shares may request a general meeting of shareholders only after the Non-Voting Preferred Shares become entitled to vote or “enfranchised,” as described under “— Voting Rights” below.

We must give shareholders written notice or electronic document setting out the date, place and agenda of the meeting at least two weeks before the date of the general meeting of shareholders. However, for holders of 1% or less of the total number of issued and outstanding voting Shares, we may give notice by placing at least two public notices in at least two daily newspapers or by notices to be posted on the electronic disclosure database system maintained by the Financial Supervisory Service or the Korea Exchange at least two weeks in advance of the meeting. Currently, we use *The Seoul Shinmun* published in Seoul, *The Maeil Shinmun* published in Taegu and *The Kwangju Ilbo* published in Kwangju for this purpose. Shareholders not on the shareholders’ register as of the record date are not entitled to receive notice of the general meeting of shareholders or attend or vote at the meeting. Holders of Non-Voting Preferred Shares, unless enfranchised, are not entitled to receive notice of general meetings of shareholders, but may attend such meetings. Our general meetings of shareholders are held either in Pohang or Seoul.

Voting Rights

Holders of our Common Shares are entitled to one vote for each Common Share, except that voting rights of Common Shares held by us, or by a corporate shareholder that is 10% (or more) owned by us either directly or indirectly, may not be exercised. The Commercial Code permitted cumulative voting, under which voting method each shareholder would have multiple voting rights corresponding to the number of directors to be appointed in the voting and may exercise all voting rights cumulatively to elect one director.

Our shareholders may adopt resolutions at a general meeting by an affirmative majority vote of the voting Shares present or represented at the meeting, where the affirmative votes also represent at least one-fourth of our total voting Shares then issued and outstanding. However, under the Commercial Code and our articles of incorporation, the following matters, among others, require approval by the holders of at least two-thirds of the voting Shares present or represented at a meeting, where the affirmative votes also represent at least one-third of our total voting Shares then issued and outstanding:

- amending our articles of incorporation;
- removing a director;
- effecting any dissolution, merger or consolidation of us;
- transferring the whole or any significant part of our business;
- acquisition of all or a part of the business of any other company that may have a material impact on our business;
- issuing any new Shares at a price lower than their par value; or
- approving matters required to be approved at a general meeting of shareholders, which have material effects on our assets, as determined by the board of directors.

In general, holders of Non-Voting Preferred Shares are not entitled to vote on any resolution or receive notice of any general meeting of shareholders. However, in the case of amendments to our articles of incorporation, or any merger or consolidation of us, or in some other cases that affect the rights or interests of the Non-Voting Preferred Shares, approval of the holders of Non-Voting Preferred Shares is required. We may obtain the approval by a resolution of holders of at least two-thirds of the Non-Voting Preferred Shares present or represented at a class meeting of the holders of Non-Voting Preferred Shares, where the affirmative votes also represent at least one-third of our total issued and outstanding Non-Voting Preferred Shares.

Shareholders may exercise their voting rights by proxy. When a shareholder is a corporate entity, such shareholder may give proxies to its officers or directors.

Holders of ADRs exercise their voting rights through the ADR depositary, an agent of which is the record holder of the underlying Common Shares. Subject to the provisions of the deposit agreement, ADR holders are entitled to instruct the ADR depositary how to vote the Common Shares underlying their ADSs.

Rights of Dissenting Shareholders

In some limited circumstances, including the transfer of the whole or any significant part of our business and our merger or consolidation with another company, dissenting shareholders have the right to require us to purchase their Shares. Only the shareholders who have executed a share purchase agreement evidencing their acquisition of the relevant Shares on or prior to the day immediately following the public disclosure of the board resolutions approving any of the aforementioned transactions have the rights to require us to purchase their Shares. To exercise this right, shareholders, including holders of Non-Voting Preferred Shares, must submit to us a written notice of their intention to dissent before the general meeting of shareholders. Within 20 days after the relevant resolution is passed at a meeting, the dissenting shareholders must request us in writing to purchase their Shares. We are obligated to purchase the Shares of dissenting shareholders within one month after the expiration of the 20-day period. The purchase price for the Shares is required to be determined through negotiation between the dissenting shareholders and us. If we cannot agree on a price through negotiation, the purchase price will be the average of (1) the weighted average of the daily Share prices on the Korea Exchange for the two-month period before the date of the adoption of the relevant board resolution, (2) the weighted average of the daily Share price on the Korea Exchange for the one month period before the date of the adoption of the relevant resolution and (3) the weighted average of the daily Share price on the Korea Exchange for the one week period before such date of the adoption of the relevant resolution. However, the court may determine this price if we or dissenting shareholders do not accept the purchase price. Holders of ADSs will not be able to exercise dissenter's rights unless they have withdrawn the underlying common stock and become our direct shareholders.

Register of Shareholders and Record Dates

We maintain the register of our shareholders electronically through Kookmin Bank, our transfer agent. Kookmin Bank performs electronic registration of our Shares, manages the electronic register of our shareholders and oversees other matters related to our Shares.

The record date for annual dividends is December 31. For the purpose of determining the shareholders entitled to annual dividends, the register of shareholders may be closed for the period from January 1 to January 15 of each year. Further, for the purpose of determining the shareholders entitled to some other rights pertaining to the Shares, we may, on at least two weeks' public notice, set a record date and/or close the register of shareholders for not more than three months. The trading of Shares may continue while the register of shareholders is closed.

Annual Report

At least one week before the annual general meeting of shareholders, we must make our annual report and audited financial statements available for inspection at our principal office and at all of our branch offices. In addition, copies of annual reports, the audited financial statements and any resolutions adopted at the general meeting of shareholders will be available to our shareholders.

Under the FSCMA, we must file with the Financial Services Commission and the Korea Exchange (1) an annual business report within 90 days after the end of our fiscal year, (2) a half-year report within 45 days after the end of the first six months of our fiscal year, and (3) quarterly reports

within 45 days after the end of the third month and the ninth month of our fiscal year. Copies of these reports are or will be available for public inspection at websites of the Financial Services Commission and the Korea Exchange.

Transfer of Shares

Under the Commercial Code, the transfer of Shares is effected by electronic registration of such transfer. However, to assert shareholders' rights against us, the transferee must have his name and address registered on our register of shareholders. For this purpose, a shareholder is required to file his name, address and seal with our transfer agent. A non-Korean shareholder may file a specimen signature in place of a seal, unless he is a citizen of a country with a sealing system similar to that of Korea. In addition, a non-resident shareholder must appoint an agent authorized to receive notices on his behalf in Korea and file a mailing address in Korea. The above requirements do not apply to the holders of ADSs.

Under current Korean regulations, the Korea Securities Depository, foreign exchange banks (including domestic branches of foreign banks), financial investment companies with a brokerage, dealing or collective investment license and internationally recognized custodians may act as agents and provide related services for foreign shareholders. Certain foreign exchange controls and securities regulations apply to the transfer of Shares by non-residents or non-Koreans. See "Item 10. Additional Information — Item 10.D. Exchange Controls."

Our transfer agent is Kookmin Bank, located at 26, Gukjegeumyung-ro 8-gil, Yeongdeungpo-gu, Seoul, Korea.

Acquisition of Shares by Us

We may acquire our own Shares, subject to the approval by the general meeting of shareholders. In addition, we may acquire Shares through purchases on the Korea Exchange or through a tender offer or by acquiring the interests in a trust account holding our own Shares through agreements with trust companies and asset management companies. The aggregate purchase price for the Shares may not exceed the total amount available for distribution of dividends available at the end of the preceding fiscal year less the amount of dividends and mandatory reserves required to be set aside for that fiscal year, subject to certain procedural requirements.

In accordance with the Commercial Code, we may resell or transfer any Shares acquired by us to a third party, subject to the approval by the board of directors. In general, corporate entities in which we own more than 50% equity interest may not acquire our Shares. Under the FSCMA, we are subject to certain selling restrictions for the Shares acquired by us.

Liquidation Rights

In the event of our liquidation, after payment of all debts, liquidation expenses and taxes, our remaining assets will be distributed among shareholders in proportion to their shareholdings. Holders of Non-Voting Preferred Shares have no preference in liquidation.

Item 10.C. Material Contracts

None.

Item 10.D. Exchange Controls

Shares and ADSs

The Foreign Exchange Transaction Act and the Presidential Decree and regulations under that Act and Decree (collectively, "Foreign Exchange Transaction Laws") and the Foreign Investment

Promotion Law regulate investment in Korean securities by non-residents and issuance of securities outside Korea by Korean companies. Under the Foreign Exchange Transaction Laws, non-residents may invest in Korean securities subject to procedural requirements in accordance with these laws. The Financial Services Commission has also adopted, pursuant to its authority under the FSCMA, regulations that restrict investment by foreigners in Korean securities.

Subject to certain limitations, the Ministry of Economy and Finance has the authority to take the following actions under the Foreign Exchange Transaction Laws:

- if the Government deems it necessary on account of war, armed conflict, natural disaster or grave and sudden and significant changes in domestic or foreign economic circumstances or similar events or circumstances, the Ministry of Economy and Finance may (i) temporarily suspend performance under any or all foreign exchange transactions, in whole or in part, to which the Foreign Exchange Transaction Laws apply (including suspension of payment and receipt of foreign exchange), (ii) impose an obligation to deposit, safe-keep or sell precious metal or any other means of payment to The Bank of Korea, a foreign exchange stabilization fund or certain other governmental agencies or financial companies or (iii) require Korean creditors to collect debts owned by non-Korean debtors and deposit them in their bank accounts in Korea; and
- if the Government concludes that the international balance of payments and international financial markets are experiencing or are likely to experience significant disruption or that the movement of capital between Korea and other countries is likely to adversely affect its currency policies, exchange rate policies or other macroeconomic policies, the Ministry of Economy and Finance may take action to require any person who intends to effect a capital transaction to obtain permission or to require any person who effects a capital transaction to deposit a portion of the means of payment acquired in such transactions with The Bank of Korea, a foreign exchange stabilization fund or certain other governmental agencies or financial companies.

Government Review of Issuance of ADSs

In order for us to issue shares represented by ADSs, we are required to file a prior report of the issuance with our designated foreign exchange bank or the Ministry of Economy and Finance, depending on the issuance amount. No further Korean governmental approval is necessary for the initial offering and issuance of the ADSs.

Under current Korean laws and regulations, the depositary bank is required to obtain our prior consent for the number of shares to be deposited in any given proposed deposit which exceeds the difference between (1) the aggregate number of shares deposited by us for the issuance of ADSs (including deposits in connection with the initial and all subsequent offerings of ADSs and stock dividends or other distributions related to these ADSs) and (2) the number of shares on deposit with the depositary bank at the time of such proposed deposit. We can give no assurance that we would grant our consent, if our consent is required.

Reporting Requirements for Holders of Substantial Interests

Under the FSCMA, any person whose direct or beneficial ownership of a listed company's shares with voting rights, whether in the form of shares or ADSs, certificates representing the rights to subscribe for Shares and equity-related debt securities including convertible bonds and bonds with warrants (collectively, "Equity Securities") together with the Equity Securities beneficially owned by certain related persons or by any person acting in concert with the person accounts for 5% or more of the total outstanding Equity Securities of such listed company is required to report the status and the purpose (whether or not to exert an influence on management control over the issuer) of the holdings to the Financial Services Commission and the Korea Exchange within five business days after

reaching the 5% ownership interest. In addition, any change in the purpose of holding such ownership interest or a change in the ownership interest subsequent to the report which equals or exceeds 1% of the total outstanding Equity Securities is required to be reported to the Financial Services Commission and the Korea Exchange within five business days from the date of the change. However, the reporting deadline of such reporting requirement is extended to the tenth day of the month immediately following the month of such change in their shareholding for (1) certain professional investors, as specified by Presidential Decrees under the FSCMA, or (2) persons who hold shares for purposes other than management control. Those who report the purpose of shareholding as management control of the issuer are prohibited from exercising their voting rights and acquiring additional shares for five days subsequent to their report under the FSCMA.

Violation of these reporting requirements may subject a person to criminal sanctions such as fines or imprisonment and may result in a loss of voting rights with respect to the ownership of Equity Securities exceeding 5%. Furthermore, the Financial Services Commission may issue an order to dispose of Equity Securities for which the reporting requirements were violated.

In addition to the reporting requirements described above, any person whose direct or beneficial ownership of a listed company's voting stock accounts for 10% or more of the total issued and outstanding voting stock (a "major stockholder") must report the status of his or her shareholding to the Securities and Futures Commission and the Korea Exchange within five business days after he or she becomes a major stockholder. In addition, any change in his or her ownership interest subsequent to the report must be reported to the Securities and Futures Commission and the Korea Exchange within five business days. Violation of these reporting requirements may subject a person to criminal sanctions such as fines or imprisonment.

Under the KRX regulations, if a company listed on the KRX KOSPI Market has submitted public disclosure of material matters to a foreign financial investment supervisory authority pursuant to the laws of the foreign jurisdiction, then it must submit a copy of the public disclosure and a Korean translation thereof to the Korea Exchange. In addition, if a company listed on the KRX KOSPI Market is approved for listing on a foreign stock exchange or determined to be de-listed from the foreign stock exchange or actually lists on, or de-lists from, a foreign stock exchange, then it must submit to the Korea Exchange a copy, together with a Korean translation thereof, of all documents submitted to, or received from, the relevant foreign government, supervisory authority or stock exchange.

Restrictions Applicable to ADSs

No Korean governmental approval is necessary for the sale and purchase of ADSs in the secondary market outside Korea or for the withdrawal of shares underlying ADSs and the delivery inside Korea of shares in connection with the withdrawal, provided that a foreigner who intends to acquire the shares must obtain an investment registration card from the Financial Supervisory Service as described below. The acquisition of the shares by a foreigner must be immediately reported by the foreigner or his standing proxy in Korea to the Governor of the Financial Supervisory Service ("Governor").

Persons who have acquired shares as a result of the withdrawal of shares underlying the ADSs may exercise their preemptive rights for new shares, participate in free distributions and receive dividends on shares without any further governmental approval.

In addition, under the Financial Services Commission regulations, effective as of November 30, 2006, we are required to file a securities registration statement with the Financial Services Commission and such securities registration statement has to become effective pursuant to the FSCMA in order for us to issue shares represented by ADSs, except in certain limited circumstances.

Restrictions Applicable to Shares

Under the Foreign Exchange Transaction Laws and the Financial Services Commission regulations (together, the “Investment Rules”), foreigners may invest, with limited exceptions and subject to procedural requirements, in all shares of Korean companies, whether listed on the KRX KOSPI Market or the KRX KOSDAQ Market, unless prohibited by specific laws. Foreign investors may trade shares listed on the KRX KOSPI Market or the KRX KOSDAQ Market only through the KRX KOSPI Market or the KRX KOSDAQ Market, except in limited circumstances, including, among others:

- odd-lot trading of shares;
- acquisition of shares (“Converted Shares”) by exercise of warrant, conversion right under convertible bonds, exchange right under exchangeable bonds or withdrawal right under depositary receipts issued outside of Korea by a Korean company;
- acquisition of shares as a result of inheritance, donation, bequest or exercise of shareholders’ rights, including preemptive rights or rights to participate in free distributions and receive dividends;
- over-the-counter transactions between foreigners of shares of a public service corporation for which the ceiling on aggregate acquisition by foreigners, as explained below, has been reached or exceeded with certain exceptions;
- acquisition of shares by direct investment as defined in the Foreign Investment Promotion Law or disposal of such shares;
- disposal of shares pursuant to the exercise of appraisal rights of dissenting shareholders;
- acquisition or disposal of shares in connection with a tender offer;
- acquisition of underlying shares by a foreign depositary in connection with the issuance of depositary receipts;
- acquisition and disposal of shares through overseas stock exchange market if such shares are simultaneously listed on the KRX KOSPI Market or the KRX KOSDAQ Market and such overseas stock exchange; and
- arm’s length transactions between foreigners, if all of such foreigners belong to an investment group managed by the same person.

For over-the-counter transactions between foreign investors outside the KRX KOSPI Market or the KRX KOSDAQ Market involving shares of a public service corporation for which the limit on aggregate foreign ownership has been reached or exceeded, an investment broker licensed in Korea must act as an intermediary. Odd-lot trading of shares outside the KRX KOSPI Market or the KRX KOSDAQ Market must involve an investment dealer licensed in Korea. Foreign investors are prohibited from engaging in margin trading by borrowing shares from investment brokers or investment dealers with respect to shares that are subject to foreign ownership limitation.

The Investment Rules require a foreign investor who wishes to invest in or dispose of shares for the first time on the Korea Exchange (including Converted Shares) to register its identity with the Financial Supervisory Service prior to making any such investment or disposal; however, the registration requirement does not apply to foreign investors who acquire Converted Shares with the intention of selling such Converted Shares within three months from the date of acquisition of the Converted Shares or who acquire the shares in an over-the-counter transaction or dispose of shares where such acquisition or disposal is deemed to be a foreign direct investment pursuant to the Foreign Investment Promotion Law. Upon registration, the Financial Supervisory Service will issue to the foreign investor an investment registration card which must be presented each time the foreign investor opens a brokerage account with a financial investment company with a brokerage license or dealing

license in Korea. Foreigners eligible to obtain an investment registration card include foreign nationals who are individuals residing abroad for more than six months, foreign governments, foreign municipal authorities, foreign public institutions, international financial institutions or similar international organizations, corporations incorporated under foreign laws and any person in any additional category designated by the Enforcement Decree to the FSCMA. All Korean offices of a foreign corporation as a group are treated as a separate foreigner from the offices of the corporation outside Korea. However, a foreign corporation or depository issuing depository receipts may obtain one or more investment registration cards in its name in certain circumstances as described in the relevant regulations.

Upon a foreign investor's purchase of shares through the Korea Exchange, no separate report by the investor is required because the investment registration card system is designed to control and oversee foreign investment through a computer system. However, a foreign investor's acquisition or sale of shares outside the Korea Exchange (as discussed above) must be reported by the foreign investor or his standing proxy to the Governor at the time of each such acquisition or sale; provided, however, that a foreign investor must ensure that any acquisition or sale by it of shares outside the Korea Exchange in the case of trades in connection with a tender offer, odd-lot trading of shares or trades of shares of certain public service corporations for which the aggregate foreign ownership limit has been reached or exceeded, is reported to the Governor by the Korea Securities Depository, financial investment companies with a dealing or brokerage license or securities finance companies engaged to facilitate such transaction. A foreign investor must appoint one or more standing proxies from among the Korea Securities Depository, foreign exchange banks (including domestic branches of foreign banks), financial investment companies with a dealing, brokerage or collective investment license (including domestic branches of foreign financial investment companies) and internationally recognized custodians which will act as a standing proxy to exercise shareholders' rights or perform any matters related to the foregoing activities if the foreign investor does not perform these activities himself. However, a foreign investor may be exempted from complying with these standing proxy rules with the approval of the Governor in cases deemed inevitable by reason of conflict between laws of Korea and those of the home country of the foreign investor.

Certificates evidencing shares of Korean companies owned by a foreign investor must be kept in custody with an eligible custodian in Korea. Only foreign exchange banks (including domestic branches of foreign banks), financial investment companies with a dealing, brokerage or collective investment license (including domestic branches of foreign financial investment companies), the Korea Securities Depository and internationally recognized custodians are eligible to act as a custodian of shares for a non-resident or foreign investor. A foreign investor must ensure that his custodian deposits its shares with the Korea Securities Depository. However, a foreign investor may be exempted from complying with this deposit requirement with the approval of the Governor in circumstances where compliance with that requirement is made impracticable, including cases where compliance would contravene the laws of the home country of such foreign investor.

Under the Investment Rules, with certain exceptions, foreign investors may acquire shares of a Korean company without being subject to any foreign investment ceiling. As one such exception, designated public service corporations are subject to a 40% ceiling on the acquisition of shares by foreigners in the aggregate. Designated public service corporations may set a ceiling on the acquisition of shares by a single foreign investor according to its articles of incorporation. Furthermore, an investment by a foreign investor of not less than 10% of the outstanding shares with voting rights, or in the amount of not less than Won 100 million, of a Korean company is defined as a foreign direct investment under the Foreign Investment Promotion Law, which is, in general, subject to report to, and acceptance by, the Ministry of Trade, Industry & Energy. The acquisition of shares of a Korean company by a foreign investor may also be subject to certain foreign shareholding restrictions in the event that the restrictions are prescribed in each specific law which regulates the business of the Korean company. Changes in ownership of a Korean company by a foreign direct investor, as well as changes in certain aspects of the foreign direct investment (including changes in the foreign direct investor's name, address or business), are also subject to reporting requirements.

Under the Foreign Exchange Transaction Laws, a foreign investor who intends to acquire shares must designate a foreign exchange bank at which he must open a foreign currency account and a Won account exclusively for stock investments. No approval is required for remittance into Korea and deposit of foreign currency funds in the foreign currency account. Foreign currency funds may be transferred from the foreign currency account at the time required to place a deposit for, or settle the purchase price of, a stock purchase transaction to a Won account opened in the name of a financial investment company with a dealing, brokerage or collective investment license. Funds in the foreign currency account may be remitted abroad without any governmental approval.

Dividends on Shares are paid in Won. No governmental approval is required for foreign investors to receive dividends on, or the Won proceeds of the sale of, any shares to be paid, received and retained in Korea. Dividends paid on, and the Won proceeds of the sale of, any shares held by a non-resident of Korea must be deposited either in a Won account with the investor's financial investment company with a dealing, brokerage or collective investment license or his Won Account. Funds in the investor's Won Account may be transferred to his foreign currency account or withdrawn for local living expenses up to certain limitations. Funds in the Won Account may also be used for future investment in shares or for payment of the subscription price of new shares obtained through the exercise of preemptive rights.

Financial investment companies with a dealing, brokerage or collective investment license are allowed to open foreign currency accounts with foreign exchange banks exclusively for accommodating foreign investors' stock investments in Korea. Through these accounts, these financial investment companies may enter into foreign exchange transactions on a limited basis, such as conversion of foreign currency funds and Won funds, either as counterparty to or on behalf of foreign investors, without the investors having to open their own accounts with foreign exchange banks.

Item 10.E. *Taxation*

The following summary is based upon tax laws of the United States and Korea as in effect on the date of this annual report on Form 20-F, and is subject to any change in United States or Korean law that may come into effect after such date. Investors in the shares of common stock or ADSs are advised to consult their own tax advisers as to the United States, Korean or other tax consequences of the purchase, ownership and disposition of such securities, including the effect of any foreign, state or local tax laws.

Korean Taxation

The following is a summary of the principal Korean tax consequences to owners of the common shares or ADSs, as the case may be, who are non-resident individuals or non-Korean corporations without a permanent establishment in Korea to which the relevant income is attributable or with which the relevant income is effectively connected ("Non-resident Holders"). The statements regarding Korean tax laws set forth below are based on the laws in force and as interpreted by the Korean taxation authorities as of the date hereof. This summary is not exhaustive of all possible tax considerations which may apply to a particular investor and potential investors are advised to satisfy themselves as to the overall tax consequences of the acquisition, ownership and disposition of the common shares or ADSs, including specifically the tax consequences under Korean law, the laws of the jurisdiction of which they are resident, and any tax treaty between Korea and their country of residence, by consulting their own tax advisers.

Tax on Dividends

Dividends on the common shares or ADSs paid (whether in cash or in shares) to a Non-resident Holder will be subject to Korean withholding taxes at the rate of 22% (including local income tax) or

such lower rate as is applicable under a treaty between Korea and such Non-resident Holder's country of tax residence. Free distributions of shares representing a capitalization of certain capital surplus reserves may be subject to Korean withholding taxes.

The tax is withheld by the payer of the dividend. While it is the payer which is required to withhold the tax, Korean law generally entitles the person who was subject to the withholding of Korean tax to recover from the Government any part of the Korean tax withheld, upon providing evidence that it was entitled to have tax withheld at a lower rate, if certain conditions are met.

Tax on Capital Gains

As a general rule, capital gains earned by Non-resident Holders upon transfer of the common shares or ADSs are subject to Korean withholding tax at the lower of (i) 11% (including local income tax) of the gross proceeds realized or (ii) 22% (including local income tax) of the net realized gains (subject to the production of satisfactory evidence of the acquisition costs and certain direct transaction costs), unless exempt from Korean income taxation under the effective Korean tax treaty with the Non-resident Holder's country of tax residence or Korean tax law.

However, a Non-resident Holder will not be subject to Korean income taxation on capital gains realized upon the sale of the common shares through the KRX KOSPI Market if the Non-resident Holder (i) has no permanent establishment in Korea and (ii) did not or has not owned (together with any shares owned by any entity with a specified special relationship with such Non-resident Holder) 25% or more of the total issued and outstanding shares of us at any time during the calendar year in which the sale occurs and during the five calendar years prior to the calendar year in which the sale occurs.

It should be noted that capital gains earned by you (regardless of whether you have a permanent establishment in Korea) from a transfer of ADSs outside Korea will generally be exempt from Korean income taxation, provided that the ADSs are deemed to have been issued overseas. If and when an owner of the underlying common shares transfers the ADSs following the conversion of the underlying shares for ADSs, such person will not be exempt from Korean income taxation.

Inheritance Tax and Gift Tax

Korean inheritance tax is imposed upon (1) all assets (wherever located) of the deceased if at the time of his death he was a tax resident of Korea and (2) all property located in Korea which passes on death (irrespective of the domicile of the deceased). Gift tax is imposed in similar circumstances to the above. The taxes are imposed if the value of the relevant property is above a certain limit and the rate varies from 10% to 50% depending on the value of the property.

Under Korean inheritance and gift tax laws, securities issued by a Korean corporation are deemed to be located in Korea irrespective of where they are physically located or by whom they are owned and consequently, the Korea inheritance and gift taxes will be imposed on transfers of the securities by inheritance or gift.

Securities Transaction Tax

Securities transaction tax is imposed on the transfer of shares issued by a Korean corporation or the right to subscribe for such shares generally at the rate of 0.5% of the sales price. In the case of the transfer of shares listed on the KRX KOSPI Market (such as the common shares), the securities transaction tax is imposed generally at the rate of (i) 0.3% of the sales price of such shares (including agricultural and fishery special surtax thereon) if traded on the KRX KOSPI Market or (ii) subject to certain exceptions, 0.5% of the sales price of such shares if traded outside the KRX KOSPI Market.

Securities transaction tax or the agricultural and fishery special surtax is not applicable if (i) the shares or rights to subscribe for shares are listed on a designated foreign stock exchange and (ii) the sale of the shares takes place on such exchange.

Securities transaction tax, if applicable, must be paid by the transferor of the shares or rights, in principle. When the transfer is effected through a securities settlement company, such settlement company is generally required to withhold and pay (to the tax authority) the tax, and when such transfer is made through a financial investment company with a brokerage license only, such company is required to withhold and pay the tax. Where the transfer is effected by a Non-resident Holder without a permanent establishment in Korea, other than through a securities settlement company or a financial investment company with a brokerage license, the transferee is required to withhold the securities transaction tax. Failure to do so will result in the imposition of penalties equal to the sum of (i) between 10% to 40% of the tax amount due, depending on the nature of the improper reporting, and (ii) 10.95% per annum on the tax amount due for the default period.

Tax Treaties

Currently, Korea has income tax treaties with a number of countries, including, inter alia, Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Luxembourg, Ireland, the Netherlands, New Zealand, Norway, Singapore, Sweden, Switzerland, the United Kingdom and the United States of America, under which the rate of withholding tax on dividend and interest is reduced, generally to between 5% and 16.5% (including local income tax), and the tax on capital gains derived by a non-resident from the transfer of securities issued by a Korean company is often eliminated.

Each Non-resident Holder of common shares should inquire for itself whether it is entitled to the benefits of a tax treaty with Korea. It is the responsibility of the party claiming the benefits of a tax treaty in respect of interest, dividend, capital gains or “other income” to submit to us (or our agent), the purchaser or the financial investment company with a brokerage license, as the case may be, prior to or at the time of payment, such evidence of tax residence of the party claiming the treaty benefit as the Korean tax authorities may require in support of its claim for treaty protection. In the absence of sufficient proof, we (or our agent), the purchaser or the financial investment company with a brokerage license, as the case may be, must withhold tax at the normal rates.

For a non-resident of Korea to obtain the benefits of treaty-reduced tax rates on certain Korean source income (e.g., capital gains and interest) under an applicable tax treaty, Korean tax law requires such non-resident (or its agents) to submit to the payer of such Korean source income an application for treaty-reduced tax rates prior to receipt of such Korean source income; provided, however, that an owner of ADSs who is a non-resident of Korea is not required to submit such application, if the Korean source income on the ADSs is paid through an account opened at the Korea Securities Depository by a foreign depository. The payer of such Korean source income, in turn, is required to submit such application to the relevant district tax office by the ninth day of the month following the date of the first payment of such income.

If Korean source income is paid to a non-resident through an overseas investment vehicle, such investment vehicle must obtain an application for tax exemption or reduced tax rates from each non-resident, who is the beneficial owner of such investment vehicle and submit to the payer of such Korean source incomes an overseas investment vehicle report, together with the applications for tax exemptions or reduced tax rates prepared by the non-resident beneficial owner. An overseas investment vehicle means an organization established outside of Korea that manages funds collected through investment solicitation by way of acquiring, disposing, or otherwise investing in investment targets and then distributes the outcome of such management to investors. An application for tax exemption or reduced tax rates submitted by the non-resident remains effective for three years from submission, and if any material changes occur with respect to information provided in the application, an application reflecting such change must be newly submitted.

At present, Korea has not entered into any tax treaty relating to inheritance or gift tax.

United States Taxation

This summary describes the material U.S. federal income tax consequences for a U.S. holder (as defined below) of owning our shares of common stock or ADSs. This summary applies to you only if you hold shares of common stock or ADSs as capital assets for tax purposes. This summary does not apply to you if you are a member of a class of holders subject to special rules, such as:

- a dealer in securities or currencies;
- a trader in securities that elects to use a mark-to-market method of accounting for your securities holdings;
- a bank;
- a life insurance company;
- a tax-exempt organization;
- a person that holds shares of common stock or ADSs that are a hedge or that are hedged against interest rate or currency risks;
- a person that holds shares of common stock or ADSs as part of a straddle or conversion transaction for tax purposes;
- a person whose functional currency for tax purposes is not the Dollar;
- a person that owns or is deemed to own 10% or more of any class of our stock or 10% or more of the combined voting power or value of all of our classes of stock; or
- an entity treated as a partnership for U.S. federal income tax purposes that holds shares of common stock or ADSs, or an investor therein.

This summary is based on laws, treaties and regulatory interpretations in effect on the date hereof, all of which are subject to change, possibly on a retroactive basis.

Please consult your own tax advisers concerning the U.S. federal, state, local and other foreign tax consequences of purchasing, owning and disposing of shares of common stock or ADSs in your particular circumstances.

For purposes of this summary, you are a “U.S. holder” if you are a beneficial owner of a share of common stock or ADS that is:

- a citizen or resident of the United States;
- a U.S. domestic corporation; or
- otherwise subject to U.S. federal income tax on a net income basis with respect to income from the shares of common stock or ADS.

Shares of Common Stock and ADSs

In general, if you are the beneficial owner of ADSs, you will be treated as the beneficial owner of the shares of common stock represented by those ADSs for U.S. federal income tax purposes, and no gain or loss will be recognized if you exchange an ADS for the shares of common stock represented by that ADS.

Dividends

The gross amount of cash dividends that you receive (prior to deduction of Korean taxes) generally will be subject to U.S. federal income taxation as foreign source dividend income. Dividends

paid in Won will be included in your income in a Dollar amount calculated by reference to the exchange rate in effect on the date of your (or, in the case of ADSs, the depositary's) receipt of the dividend, regardless of whether the payment is in fact converted into Dollars. If such a dividend is converted into Dollars on the date of receipt, you generally should not be required to recognize foreign currency gain or loss in respect of the dividend income. U.S. holders should consult their own tax advisers regarding the treatment of any foreign currency gain or loss on any Won received by U.S. holders that are converted into Dollars on a date subsequent to receipt.

Subject to certain exceptions for short-term and hedged positions, the Dollar amount of dividends received by an individual U.S. holder with respect to the ADSs and common stock will be subject to taxation at a preferential rate applicable to long-term capital gains if the dividends are "qualified dividends." Dividends paid on the ADSs and common stock will be treated as qualified dividends if (i) we are eligible for the benefits of a comprehensive income tax treaty with the United States that the Internal Revenue Service has approved for the purposes of the qualified dividend rules and (ii) we were not, in the year prior to the year in which the dividend is paid, and are not, in the year in which the dividend is paid, a passive foreign investment company ("PFIC"). The income tax treaty between Korea and the United States ("Treaty") has been approved for the purposes of the qualified dividend rules, and we believe we are eligible for benefits under the Treaty. Based on our audited financial statements and relevant market and shareholder data, we believe that we were not treated as a PFIC for U.S. federal income tax purposes with respect to our 2017 or 2018 taxable year. In addition, based on our current expectations regarding the value and nature of our assets, the sources and nature of our income, and relevant market and shareholder data, we do not anticipate becoming a PFIC for our 2019 taxable year. You should consult your own tax advisers regarding the availability of the reduced dividend tax rate in the light of your own particular circumstances.

Distributions of additional shares in respect of shares of common stock or ADSs that are made as part of a pro-rata distribution to all of our shareholders generally will not be subject to U.S. federal income tax.

Sales and Other Dispositions

For U.S. federal income tax purposes, you will recognize taxable gain or loss on any sale, exchange or other taxable disposition of common stock or ADSs equal to the difference, if any, between the amount realized on the sale or exchange and your adjusted tax basis in the common stock or ADSs. Any gain realized by a U.S. holder on the sale or other disposition of common stock or ADSs generally will be treated as U.S. source income for U.S. foreign tax credit purposes. This gain or loss will be capital gain or loss, and will be long-term capital gain or loss to the extent that the shares of common stock or ADSs sold or disposed of were held for more than one year. Your ability to offset capital losses against ordinary income is limited. Long-term capital gain recognized by an individual U.S. holder generally is subject to taxation at a reduced rate.

Foreign Tax Credit Considerations

You should consult your own tax advisers to determine whether you are subject to any special rules that limit your ability to make effective use of foreign tax credits, including the possible adverse impact of failing to take advantage of benefits under the income tax treaty between the United States and Korea. If no such rules apply, you generally may claim a credit, up to any applicable reduced rates provided under the Treaty, against your U.S. federal income tax liability for Korean taxes withheld from dividends on shares of common stock or ADSs, so long as you have owned the shares of common stock or ADSs (and not entered into specified kinds of hedging transactions) for at least a 16-day period that includes the ex-dividend date. Instead of claiming a credit, you may, at your election, deduct such Korean taxes in computing your taxable income, provided that you do not elect to claim a foreign tax credit for any foreign income taxes paid or accrued for the relevant tax year and subject to

generally applicable limitations under U.S. tax law. Foreign tax credits will not be allowed for withholding taxes imposed in respect of certain short-term or hedged positions in securities and may not be allowed in respect of arrangements in which your expected economic profit is insubstantial. You may not be able to use the foreign tax credit associated with any Korean withholding tax imposed on a distribution of additional shares that is not subject to U.S. federal income tax unless you can use the credit against U.S. federal income tax due on other foreign-source income.

Any Korean securities transaction tax or agriculture and fishery special tax that you pay will not be creditable for foreign tax credit purposes.

The calculation of foreign tax credits and, in the case of a U.S. holder that elects to deduct foreign taxes, the availability of deductions, involves the application of complex rules that depend on a U.S. holder's particular circumstances. You should consult your own tax advisers regarding the creditability or deductibility of such taxes.

Specified Foreign Financial Assets

Certain U.S. holders that own "specified foreign financial assets" with an aggregate value in excess of US\$50,000 are generally required to file an information statement along with their tax returns, currently on Form 8938, with respect to such assets. "Specified foreign financial assets" include any financial accounts held at a non-U.S. financial institution, as well as securities issued by a non-U.S. issuer (which would include the common stock or ADSs) that are not held in accounts maintained by financial institutions. Higher reporting thresholds apply to certain individuals living abroad and to certain married individuals. Regulations extend this reporting requirement to certain entities that are treated as formed or availed of to hold direct or indirect interests in specified foreign financial assets based on certain objective criteria. U.S. holders who fail to report the required information could be subject to substantial penalties. In addition, the statute of limitations for assessment of tax would be suspended, in whole or part. Prospective investors should consult their own tax advisors concerning the application of these rules to their investment in the common stock or ADSs, including the application of the rules to their particular circumstances.

U.S. Information Reporting and Backup Withholding Rules

Payments in respect of shares of common stock or ADSs that are made within the United States or through certain U.S.-related financial intermediaries are subject to information reporting and may be subject to backup withholding unless the holder (1) is a corporation or other exempt recipient and demonstrates this when required or (2) provides a taxpayer identification number and certifies that no loss of exemption from backup withholding has occurred. Holders that are not U.S. persons generally are not subject to information reporting or backup withholding. However, such a holder may be required to provide a certification of its non-U.S. status in connection with payments received within the United States or through a U.S.-related financial intermediary.

Item 10.F. Dividends and Paying Agents

See "Item 8.A. Consolidated Statements and Other Financial Information — Dividends" above for information concerning our dividend policies and our payment of dividends. See "Item 10.B. Memorandum and Articles of Association — Dividends" for a discussion of the process by which dividends are paid on shares of our common stock. The paying agent for payment of our dividends on ADSs in the United States is the Citibank, N.A.

Item 10.G. Statements by Experts

Not applicable

Item 10.H. Documents on Display

We file reports, including annual reports on Form 20-F, and other information with the SEC pursuant to the rules and regulations of the SEC that apply to foreign private issuers. You may read and copy any materials filed with the SEC at the Public Reference Rooms in Washington, D.C. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. Any filings we make electronically will be available to the public over the Internet at the SEC's website at <http://www.sec.gov>.

Item 10.I. Subsidiary Information

Not applicable

Item 11. Quantitative and Qualitative Disclosures about Market Risk

We are exposed to foreign exchange rate and interest rate risk primarily associated with underlying liabilities, and to changes in the commodity prices of principal raw materials. Following evaluation of these positions, we selectively enter into derivative financial instruments to manage the related risk exposures, primarily with respect to foreign exchange rate and interest rate risks, which are entered into with major financial institutions in order to minimize the risk of credit loss. Our market risk management policy determines the market risk tolerance level, measuring period, controlling responsibilities, management procedures, hedging period and hedging ratio very specifically. We also prohibit all speculative hedging transactions and evaluate and manage foreign exchange exposures to receivables and payables.

None of our loss exposures related to derivative contracts are unlimited, and we do not believe that our net derivative positions could result in a material loss to our profit before income tax or total equity due to significant fluctuations of major currencies against the Korean Won. Due to the nature of our derivative contracts primarily as hedging instruments that manage foreign exchange risks, net gain or net loss on derivatives transactions and valuation of derivatives are typically offset by net loss or net gain on foreign currency transaction and translation. We recorded net loss on derivatives transactions of Won 22 billion and net loss on valuation of derivatives of Won 16 billion in 2016, net loss on valuation of derivatives of Won 162 billion and net loss on derivatives transactions of Won 26 billion in 2017 and net gain on valuation of derivatives of Won 56 billion and net gain on derivatives transactions of Won 39 billion in 2018.

Exchange Rate Risk

Korea is our most important market and, therefore, a substantial portion of our cash flow is denominated in Won. Most of our exports are denominated in Dollars. Japan is also an important market for us, and we derive significant cash flow denominated in Yen. We are exposed to foreign exchange risk related to foreign currency denominated liabilities and anticipated foreign exchange payments. Anticipated foreign exchange payments, which represent a substantial sum and are mostly denominated in Dollars, relate primarily to imported raw material costs and freight costs. Foreign currency denominated liabilities relate primarily to foreign currency denominated debt.

We strive to naturally offset our foreign exchange risk by matching foreign currency receivables with our foreign currency payables and our overseas subsidiaries have sought to further mitigate the adverse impact of exchange rate fluctuations by conducting business transactions in the local currency of the respective market in which the transactions occur. In particular, POSCO International's exposure to fluctuations in exchange rates, including the Won/Dollar exchange rate, is limited because trading transactions typically involve matched purchase and sale contracts, which result in limited settlement exposure, and because POSCO International's contracts with domestic suppliers of products for export and with domestic purchasers of imported products are generally denominated in Dollars. Although the impact of exchange rate fluctuations is partially mitigated by such strategies, we and our subsidiaries,

particularly POSCO International and POSCO E&C, also periodically enter into derivative contracts, primarily foreign currency swaps and forward exchange contracts, to further hedge some of our foreign exchange risks.

Our foreign currency exposure and changes in gain or loss resulting from a 10% foreign exchange rate change against the Korean Won are as follows:

	For the Years Ended December 31,					
	2016		2017		2018	
	Increase	Decrease	Increase	Decrease	Increase	Decrease
	(In billions of Won)					
US Dollars	₩ (163)	₩ 163	₩ (173)	₩ 173	₩ (204)	₩ 204
Japanese Yen	(78)	78	(54)	54	(29)	29
Euro	(9)	9	10	(10)	15	(15)

Interest Rate Risk

We are also subject to market risk exposure arising from changing interest rates. In particular, we are exposed to interest rate risk on our existing floating rate borrowings and on additional debt financings that we may periodically undertake for various reasons, including capital expenditures and refinancing of our existing borrowings. A rise in interest rates will increase the cost of our existing variable rate borrowings. If interest rates on borrowings with floating rates had been 1% higher or lower with all other variables held constant, the impact on the gain or loss of the applicable period would be as follows:

	For the Years Ended December 31,		
	2016	2017	2018
	(In billions of Won)		
Increase or decrease in annual profit and net equity	₩ 120	₩ 100	₩ 85

A reduction of interest rates also increases the fair value of our debt portfolio, which is primarily of a fixed interest nature. From time to time, we use, to a limited extent, interest rate swaps to reduce interest rate volatility on some of our debt and manage our interest expense by achieving a balanced mixture of floating and fixed rate debt.

The following table summarizes the carrying amounts, fair values, principal cash flows by maturity date and weighted average interest rates of our short-term and long-term liabilities as of December 31, 2018 which are sensitive to exchange rates and/or interest rates. The information is presented in Won, which is our reporting currency.

	Maturities										
							December 31, 2018		December 31, 2017		
	2019	2020	2021	2022	2023	Thereafter	Total	Fair Value	Total	Fair Value	
	(In billions of Won except rates)										
Local currency:											
Fixed rate	2,426	736	1,871	254	150	270	5,707	5,620	5,983	5,882	
Average weighted rate ⁽¹⁾	2.78%	2.87%	3.15%	2.68%	2.79%	2.98%	2.92%		3.12%		
Variable rate	333	32	68	11	60	8	512	511	1,062	1,062	
Average weighted rate ⁽¹⁾	2.82%	2.53%	2.22%	3.26%	3.49%	1.83%	2.80%		2.98%		
Sub-total	2,759	768	1,939	265	210	278	6,219	6,131	7,045	6,944	
Foreign currency, principally Dollars and Yen:											
Fixed rate	3,052	1,011	1,180	1	658	124	6,026	5,944	5,157	5,016	
Average weighted rate ⁽¹⁾	2.87%	3.86%	3.92%	1.34%	3.98%	2.51%	3.33%		3.05%		
Variable rate	3,748	525	852	4	475	2,360	7,964	7,966	8,861	8,871	
Average weighted rate ⁽¹⁾	2.54%	4.19%	4.53%	5.11%	3.09%	8.98%	4.80%		4.33%		
Sub-total	6,800	1,536	2,032	5	1,133	2,484	13,990	13,910	14,018	13,887	
Total	9,559	2,304	3,971	270	1,343	2,762	20,209	20,041	21,063	20,831	

(1) Weighted average rates of the portfolio at the period end.

Item 12. Description of Securities Other than Equity Securities

Not applicable

Item 12.A. Debt Securities

Not applicable

Item 12.B. Warrants and Rights

Not applicable

Item 12.C. Other Securities

Not applicable

Item 12.D. *American Depositary Shares*

Fees and Charges

We switched our depositary from The Bank of New York Mellon to Citibank, N.A. in July 2013. Holders of our ADSs are required to pay the following service fees to the depositary:

Services	Fees
Issuance of ADSs upon deposit of shares	Up to \$5.00 per 100 ADSs issued
Delivery of deposited shares against surrender of ADSs	Up to \$5.00 per 100 ADSs surrendered
Distributions of cash dividends or other cash distributions	Up to \$5.00 per 100 ADSs held
Distribution of ADSs pursuant to (i) stock dividends or other free stock distributions, or (ii) exercise of rights to purchase additional ADSs	Up to \$5.00 per 100 ADSs held
Distribution of securities other than ADSs or rights to purchase additional ADSs	Up to \$5.00 per 100 ADSs held
General depositary services	Up to \$5.00 per 100 ADSs held

Holders of our ADSs are also responsible for paying certain fees and expenses incurred by the depositary such as:

- fees for the transfer and registration of shares charged by the registrar and transfer agent for the shares in Korea (i.e., upon deposit and withdrawal of shares);
- expenses incurred for converting foreign currency into Dollars;
- expenses for cable, telex and fax transmissions and for delivery of securities;
- taxes (including applicable interest and penalties) and other governmental charges;
- fees and expenses incurred in connection with compliance with exchange control regulations and other regulatory requirements; and
- fees and expenses incurred in connection with the delivery or servicing of shares on deposit.

Depositary fees payable upon the issuance and surrender of ADSs are typically paid to the depositary by the brokers (on behalf of their clients) receiving the newly issued ADSs from the depositary and by the brokers (on behalf of their clients) delivering the ADSs to the depositary for surrender. The brokers in turn charge these fees to their clients. Depositary fees payable in connection with distributions of cash or securities to ADS holders and the depositary services fee are charged by the depositary to the holders of record of ADSs as of the applicable ADS record date.

The depositary fees payable for cash distributions are generally deducted from the cash being distributed. In the case of distributions other than cash (i.e., stock dividend, rights), the depositary charges the applicable fee to the ADS record date holders concurrent with the distribution. In the case of ADSs registered in the name of the investor (whether certificated or uncertificated in direct registration), the depositary sends invoices to the applicable record date ADS holders. In the case of ADSs held in brokerage and custodian accounts (via the Korea Securities Depositary, or KSD), the depositary generally collects its fees through the systems provided by KSD (whose nominee is the registered holder of the ADSs held in KSD) from the brokers and custodians holding ADSs in their KSD accounts. The brokers and custodians who hold their clients' ADSs in KSD accounts in turn charge their clients' accounts the amount of the fees paid to the depositary.

In the event of refusal to pay the depositary fees, the depositary may, under the terms of the deposit agreement, refuse the requested service until payment is received or may set off the amount of the depositary fees from any distribution to be made to such holder of ADSs.

The fees and charges that holders of our ADSs may be required to pay may vary over time and may be changed by us and by the depositary. Holders of our ADSs will receive prior notice of such changes.

Fees and Payments from the Depositary to Us

In 2018, we received approximately \$1.5 million from the depositary for reimbursement of various costs, including preparation of SEC filing and submission, listing fees, proxy process expenses (printing, postage and distribution), legal fees and contributions for our investor relations activities.

In addition, as part of its service to us, the depositary waives its fees for the standard costs associated with the administration of the ADS facility, associated operating expenses, investor relations advice and access to an internet-based tool used in our investor relations activities.

PART II

Item 13. *Defaults, Dividend Arrearages and Delinquencies*

Not applicable

Item 14. *Material Modifications to the Rights of Security Holders and Use of Proceeds*

Not applicable

Item 15. *Controls and Procedures*

a. Disclosure Controls and Procedures

Our management has evaluated, with the participation of our chief executive officer and chief financial officer, the effectiveness of our disclosure controls and procedures, as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, as of December 31, 2018. There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, even effective disclosure controls and procedures can only provide reasonable assurance of achieving their control objectives. Based upon our evaluation, our chief executive officer and chief financial officer concluded that our disclosure controls and procedures were effective as of the end of the period covered by this report. Our disclosure controls and procedures are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Commission's rules and forms, and that it is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate to allow timely decisions regarding required disclosure.

b. Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is a process designed by, and under the supervision of, our principal executive, principal operating and principal financial officers, and effected by our board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

Our internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (3) provide reasonable

assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting is not intended to provide absolute assurance that a misstatement of our financial statements would be prevented or detected. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management has completed an assessment of the effectiveness of our internal control over financial reporting as of December 31, 2018 based on criteria in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management concluded that our internal control over financial reporting was effective as of December 31, 2018.

c. Report of the Independent Registered Public Accounting Firm

The report of our independent registered public accounting firm, KPMG Samjong Accounting Corp. (“KPMG”), on the effectiveness of our internal control over financial reporting as of December 31, 2018 is included in Item 18 of this Form 20-F.

d. Changes in Internal Control Over Financial Reporting

There has been no change in our internal control over financial reporting that occurred during the year covered by this annual report that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting. Our adoption of Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission did not have, and is not reasonably likely to have, any material effect on our internal control over financial reporting.

Item 16. *[Reserved]*

Item 16.A. *Audit Committee Financial Expert*

The board of directors has determined that Chung, Moon-Ki is an audit committee financial expert and is independent within the meaning of applicable SEC rules.

Item 16.B. *Code of Ethics*

We have adopted a code of business conduct and ethics, as defined in Item 16B. of Form 20-F under the Securities Exchange Act of 1934, as amended. Our code of business conduct and ethics, called Code of Ethics, applies to our chief executive officer and chief financial officer, as well as to our directors, other officers and employees. Our Code of Ethics is available on our website at <http://www.posco.com>. If we amend the provisions of our Code of Ethics that apply to our chief executive officer or chief financial officer and persons performing similar functions, or if we grant any waiver of such provisions, we will disclose such amendment or waiver on our website at the same address.

Item 16.C. Principal Accountant Fees and Services**Audit and Non-Audit Fees**

The following table sets forth the fees billed to us by our independent registered public accounting firm, KPMG, in 2017 and 2018:

	For the Year Ended December 31,	
	2017	2018
	(In millions of Won)	
Audit fees	₩5,480	₩6,019
Audit-related fees	—	167
Tax fees	805	841
Other fees	684	989
Total fees	₩6,969	₩8,016

Audit fees in 2017 and 2018 as set forth in the above table are the aggregate fees billed by KPMG in connection with the audit of our annual financial statements and the annual financial statements of other related companies and review of interim financial statements.

Audit-related fees in 2018 as set forth in the above table are fees billed by KPMG for issuing comfort letters in connection with our securities offering.

Tax fees in 2017 and 2018 as set forth in the above table are fees billed by KPMG for our tax compliance and tax planning, as well as compliance related to transfer pricing.

Other fees in 2017 and 2018 as set forth in the above table are fees billed by KPMG in connection with statutory audits unrelated to the audit of our annual financial statements.

Audit Committee Pre-Approval Policies and Procedures

Under our Audit Committee's pre-approval policies and procedures, all audit and non-audit services to be provided to us by an independent registered public accounting firm must be pre-approved by our Audit Committee. Our Audit Committee does not pre-approve any audit and non-audit services that are prohibited from being provided to us by an independent registered public accounting firm under the rules of SEC and applicable law.

Item 16.D. Exemptions from the Listing Standards for Audit Committees

Not applicable

Item 16.E. Purchases of Equity Securities by the Issuer and Affiliated Purchasers

The following table sets forth the repurchases of common shares by us or any affiliated purchasers during the fiscal year ended December 31, 2018:

Period	Total Number of Shares Purchased	Average Price Paid Per Share (In Won)	Total Number of Shares Purchased as Part of Publicly Announced Plans	Maximum Number of Shares that May Yet Be Purchased Under the Plans
January 1 to January 31	—	—	—	—
February 1 to February 29	—	—	—	—
March 1 to March 31	—	—	—	—
April 1 to April 30	—	—	—	—
May 1 to May 31	—	—	—	—
June 1 to June 30	—	—	—	—
July 1 to July 31	—	—	—	—
August 1 to August 31	—	—	—	—
September 1 to September 30	—	—	—	—
October 1 to October 31	—	—	—	—
November 1 to November 30	—	—	—	—
December 1 to December 31	—	—	—	—
Total	—	—	—	—

Item 16.F. Change in Registrant's Certifying Accountant

Not applicable

Item 16.G. Corporate Governance

Pursuant to the rules of the New York Stock Exchange applicable to foreign private issuers like us that are listed on the New York Stock Exchange, we are required to disclose significant differences between the New York Stock Exchange's corporate governance standards and those that we follow under Korean law and in accordance with our own internal procedures. The following is a summary of such significant differences.

NYSE Corporate Governance Standards	POSCO's Corporate Governance Practice
Director Independence	
Listed companies must have a majority of independent directors	Our articles of incorporation provide that our board of directors must comprise no less than a majority of Outside Directors. Our Outside Directors must meet the criteria for outside directorship set forth under the Korean Securities and Exchange Act. The majority of our board of directors is independent (as defined in accordance with the New York Stock Exchange's standards), and seven out of 12 directors are Outside Directors. Under our articles of incorporation, we may have up to five Inside Directors and eight Outside Directors.
Nomination/Corporate Governance Committee	
A nomination/corporate governance committee of independent directors is required. The committee must have a charter that addresses the purpose, responsibilities (including development of corporate governance guidelines) and annual performance evaluation of the committee.	We have not established a separate nomination corporate governance committee. However, we maintain a Director Candidate Recommendation and Management Committee composed of three Outside Directors and one Inside Director.

NYSE Corporate Governance Standards

Compensation Committee

A compensation committee of independent directors is required. The committee must have a charter that addresses the purpose, responsibilities and annual performance evaluation of the committee. The charter must be made available on the company's website. In addition, in accordance with the U.S. Securities and Exchange Commission rules adopted pursuant to Section 952 of the Dodd-Frank Act, the New York Stock Exchange listing standards were amended to expand the factors relevant in determining whether a committee member has a relationship with the company that will materially affect that member's duties to the compensation committee.

Additionally, the committee may obtain or retain the advice of a compensation adviser only after taking into consideration all factors relevant to determining that adviser's independence from management.

Executive Session

Non-management directors must meet in regularly scheduled executive sessions without management. Independent directors should meet alone in an executive session at least once a year.

Audit Committee

Listed companies must have an audit committee that satisfies the independence and other requirements of Rule 10A-3 under the Exchange Act. All members must be independent. The committee must have a charter addressing the committee's purpose, an annual performance evaluation of the committee, and the duties and responsibilities of the committee. The charter must be made available on the company's website.

Audit Committee Additional Requirements

Listed companies must have an audit committee that is composed of at least three directors.

Shareholder Approval of Equity Compensation Plan

Listed companies must allow their shareholders to exercise their voting rights with respect to any material revision to the company's equity compensation plan.

Shareholder Approval of Equity Offerings

Listed companies must allow its shareholders to exercise their voting rights with respect to equity offerings that do not qualify as public offerings for cash, and offerings of equity of related parties.

Corporate Governance Guidelines

Listed companies must adopt and disclose corporate governance guidelines.

Code of Business Conduct and Ethics

Listed companies must adopt and disclose a code of business conduct and ethics for directors, officers and employees, and promptly disclose any waivers of the code for directors or executive officers.

Item 16.H. Mine Safety Disclosure

Not applicable

POSCO's Corporate Governance Practice

We maintain an Evaluation and Compensation Committee composed of four Outside Directors.

Our Outside Directors hold meetings solely attended by Outside Directors in accordance with operation guidelines of our board of directors.

We maintain an Audit Committee comprised of three Outside Directors who meet the applicable independence criteria set forth under Rule 10A-3 under the Exchange Act.

Our Audit Committee has three members, as described above.

We currently have an Employee Stock Ownership Program. Matters related to the Employee Stock Ownership Program are not subject to shareholders' approval under Korean law.

Our board of directors is generally authorized to issue new shares, subject to certain limitations as provided by our articles of incorporation.

We have adopted a Corporate Governance Charter setting forth our practices with respect to relevant corporate governance matters. Our Corporate Governance Charter is in compliance with Korean law but does not meet all requirements established by the New York Stock Exchange for U.S. companies listed on the exchange. A copy of our Corporate Governance Charter is available on our website at <http://www.posco.com>.

We have adopted a Code of Ethics for all directors, officers and employees. A copy of our Code of Ethics is available on our website at <http://www.posco.com>.

PART III

Item 17. *Financial Statements*

Not applicable

Item 18. *Financial Statements*

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Item 19. *Exhibits*

1.1 — Articles of Incorporation of POSCO (English translation)	
2.1 — Form of Common Stock Certificate (including English translation) (incorporated by reference to Exhibit 4.3 to the Registrant's Registration Statement No. 33-81554)* (P)	
2.2 — Form of Deposit Agreement (including Form of American Depositary Receipts) (incorporated by reference to the Registrant's Registration Statement (File No. 333-189473) on Form F-6)*	
8.1 — List of consolidated subsidiaries	
12.1 — Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	
12.2 — Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	
13.1 — Certification pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	
101.INS — XBRL Instance Document	
101.SCH — XBRL Taxonomy Extension Schema Document	
101.CAL — XBRL Taxonomy Extension Calculation Linkbase Document	
101.DEF — XBRL Taxonomy Extension Definition Linkbase Document	
101.LAB — XBRL Taxonomy Extension Label Linkbase Document	
101.PRE — XBRL Taxonomy Extension Presentation Linkbase Document	

* Filed previously

(P) Paper filing

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Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
POSCO:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated statements of financial position of POSCO and subsidiaries (the Company) as of December 31, 2017 and 2018 and the related consolidated statements of comprehensive income, changes in equity and cash flows for each of the years in the three-year period ended December 31, 2018 and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2018 and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2018, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated April 30, 2019 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Policies

As discussed in Note 2 to the consolidated financial statements, the Company has changed its methods of accounting for revenue recognition and financial instruments in 2018 due to the adoption of IFRS No. 15 "Revenue from Contracts with Customers" and IFRS No. 9 "Financial Instruments".

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG Samjong Accounting Corp.

We have served as the Company's auditor since 2008.

Seoul, Korea
April 30, 2019

Report of Independent Registered Public Accounting Firm on Internal Control over Financial Reporting

To the Shareholders and Board of Directors
POSCO:

Opinion on Internal Control over Financial Reporting

We have audited POSCO and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated statements of financial position of the Company as of December 31, 2017 and 2018, the related consolidated statements of comprehensive income, changes in equity and cash flows for each of the years in the three-year period ended December 31, 2018 and the related notes (collectively, the consolidated financial statements), and our report dated April 30, 2019 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are

being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG Samjong Accounting Corp.

Seoul, Korea
April 30, 2019

POSCO and Subsidiaries
Consolidated Statements of Financial Position
As of December 31, 2017 and 2018

	Notes	December 31, 2017	December 31, 2018
		(in millions of Won)	
Assets			
Cash and cash equivalents	4,5,23	₩ 2,612,530	2,643,865
Trade accounts and notes receivable, net	6,17,23,29,37	8,824,563	9,130,204
Other receivables, net	7,23,37	1,636,006	1,385,629
Other short-term financial assets	8,23	7,045,880	8,081,096
Inventories	9	10,793,781	12,153,303
Current income tax assets	35	38,489	51,557
Assets held for sale	10	71,768	21,854
Other current assets	16	821,242	684,464
Total current assets		<u>31,844,259</u>	<u>34,151,972</u>
Long-term trade accounts and notes receivable, net	6,23	731,570	427,125
Other receivables, net	7,23,37	879,176	863,240
Other long-term financial assets	8,23	1,911,684	1,647,898
Investments in associates and joint ventures	11	3,557,932	3,650,003
Investment property, net	13	1,064,914	928,615
Property, plant and equipment, net	14,32	31,883,535	30,018,273
Intangible assets, net	15,32	5,952,269	5,170,825
Defined benefit assets, net	21	8,224	1,489
Deferred tax assets	35	1,463,055	1,408,787
Other non-current assets	16	489,011	508,764
Total non-current assets		<u>47,941,370</u>	<u>44,625,019</u>
Total assets		<u>₩79,785,629</u>	<u>78,776,991</u>

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries
Consolidated Statements of Financial Position, Continued
As of December 31, 2017 and 2018

	Notes	December 31, 2017	December 31, 2018
		(in millions of Won)	
Liabilities			
Trade accounts and notes payable	23,37	₩ 3,465,146	4,006,135
Short-term borrowings and current installments of long-term borrowings	4,17,23	11,274,516	10,289,619
Other payables	18,23	1,753,461	1,720,097
Other short-term financial liabilities	19,23,37	129,812	77,800
Current income tax liabilities	35	515,538	948,166
Provisions	20	110,946	298,453
Other current liabilities	22,29	2,240,919	2,090,307
Total current liabilities		<u>19,490,338</u>	<u>19,430,577</u>
Long-term trade accounts and notes payable	23,37	12,532	29,825
Long-term borrowings, excluding current installments	4,17,23	9,789,141	9,919,651
Other payables	18,23	147,750	148,868
Other long-term financial liabilities	19,23	114,105	64,162
Defined benefit liabilities, net	21	137,193	140,933
Deferred tax liabilities	35	1,904,242	1,688,893
Long-term provisions	20	477,172	431,036
Other non-current liabilities	22	386,431	250,432
Total non-current liabilities		<u>12,968,566</u>	<u>12,673,800</u>
Total liabilities		<u>32,458,904</u>	<u>32,104,377</u>
Equity			
Share capital	24	482,403	482,403
Capital surplus	24	1,422,021	1,420,007
Hybrid bonds	25	996,919	199,384
Reserves	26	(682,556)	(1,404,368)
Treasury shares	27	(1,533,054)	(1,532,728)
Retained earnings		42,974,658	44,160,659
Equity attributable to owners of the controlling company		<u>43,660,391</u>	<u>43,325,357</u>
Non-controlling interests	25	3,666,334	3,347,257
Total equity		<u>47,326,725</u>	<u>46,672,614</u>
Total liabilities and equity		<u>₩ 79,785,629</u>	<u>78,776,991</u>

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries
Consolidated Statements of Comprehensive Income
For the years ended December 31, 2016, 2017 and 2018

	Notes	2016	2017	2018
		(in millions of Won, except per share information)		
Revenue	28,29,37	₩ 52,939,771	60,186,867	65,154,636
Cost of sales	29,31,34,37	(46,271,465)	(51,915,597)	(57,129,060)
Gross profit		6,668,306	8,271,270	8,025,576
Selling and administrative expenses	30,34			
Impairment loss on trade accounts and notes receivable	23	(165,150)	(173,694)	(74,781)
Other administrative expenses	31	(2,126,390)	(2,003,106)	(1,985,755)
Selling expenses		(1,553,686)	(1,557,277)	(369,245)
Other operating income and expenses	32,37			
Impairment loss on other receivables	23	(37,567)	(98,177)	(63,092)
Other operating income		202,478	448,481	523,586
Other operating expenses	34	(705,495)	(691,376)	(2,014,462)
Operating profit		2,282,496	4,196,121	4,041,827
Share of profit (loss) of equity-accounted investees, net	11	(88,677)	10,540	112,635
Finance income and costs	23,33			
Finance income		2,231,980	2,372,667	1,705,970
Finance costs		(3,014,190)	(2,484,277)	(2,244,416)
Profit before income taxes		1,411,609	4,095,051	3,616,016
Income tax expense	35	(379,544)	(1,185,740)	(1,683,630)
Profit		1,032,065	2,909,311	1,932,386
Other comprehensive income (loss)		1,032,065	2,909,311	1,932,386
Items that will not be reclassified subsequently to profit or loss:				
Remeasurements of defined benefit plans	21	20,540	(47,543)	(173,489)
Net changes in fair value of equity investments at fair value through other comprehensive income		—	—	(149,188)
Items that are or may be reclassified subsequently to profit or loss :				
Capital adjustment arising from investments in equity-method investees		134,590	(217,388)	(62,732)
Net changes in unrealized fair value of available-for-sale investments	23	310,608	(31,389)	—
Foreign currency translation differences		(11,491)	(264,695)	(42,908)
Gain or losses on valuation of derivatives	23	—	(143)	(212)
Other comprehensive income (loss), net of tax		454,247	(561,158)	(428,529)
Total comprehensive income		₩ 1,486,312	2,348,153	1,503,857
Profit attributable to :				
Owners of the controlling company		₩ 1,354,807	2,756,230	1,711,902
Non-controlling interests		(322,742)	153,081	220,484
Profit		₩ 1,032,065	2,909,311	1,932,386
Total comprehensive income attributable to :				
Owners of the controlling company		₩ 1,814,030	2,184,402	1,292,785
Non-controlling interests		(327,718)	163,751	211,072
Total comprehensive income		₩ 1,486,312	2,348,153	1,503,857
Basic and diluted earnings per share (in Won)	36	16,521	34,040	21,177

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries
Consolidated Statements of Changes in Equity
For the years ended December 31, 2016, 2017 and 2018

	Attributable to owners of the controlling company							Non-controlling interests	Total
	Share capital	Capital surplus	Hybrid bonds	Reserves	Treasury shares (in millions of Won)	Retained earnings	Subtotal		
Balance as of January 1, 2016	₩ 482,403	1,393,079	996,919	(594,756)	—	40,461,496	41,205,243	3,807,958	45,013,201
Comprehensive income (loss):									
Profit (loss)	—	—	—	—	—	1,354,807	1,354,807	(322,742)	1,032,065
Other comprehensive income (loss)									
Remeasurements of defined benefit plans, net of tax	—	—	—	—	—	9,787	9,787	10,753	20,540
Capital adjustment arising from investments in equity-accounted investees, net of tax	—	—	—	124,626	—	—	124,626	9,964	134,590
Net changes in the unrealized fair value of available-for-sale investments, net of tax	—	—	—	314,428	—	—	314,428	(3,820)	310,608
Foreign currency translation differences, net of tax	—	—	—	10,382	—	—	10,382	(21,873)	(11,491)
Total comprehensive income (loss)	—	—	—	449,436	—	1,364,594	1,814,030	(327,718)	1,486,312
Transactions with owners of the controlling company, recognized directly in equity:									
Year-end dividends	—	—	—	—	—	(479,974)	(479,974)	(50,333)	(530,307)
Interim dividends	—	—	—	—	—	(179,992)	(179,992)	—	(179,992)
Changes in subsidiaries	—	—	—	—	—	—	—	49,250	49,250
Changes in ownership interests in subsidiaries	—	8,650	—	—	—	—	8,650	(16,544)	(7,894)
Interest of hybrid bonds	—	—	—	—	—	(43,832)	(43,832)	(24,253)	(68,085)
Disposal of treasury shares	—	32	—	—	430	—	462	—	462
Others	—	5,486	—	1,335	—	3,420	10,241	(7,919)	2,322
Total transactions with owners of the controlling company	—	14,168	—	1,335	—	(700,378)	(684,445)	(49,799)	(734,244)
Balance as of December 31, 2016	₩ 482,403	1,407,247	996,919	(143,985)	(1,533,468)	41,125,712	42,334,828	3,430,441	45,765,269

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries
Consolidated Statements of Changes in Equity, Continued
For the years ended December 31, 2016, 2017 and 2018

	Attributable to owners of the controlling company						Non-controlling Interests	Total
	Share capital	Capital surplus	Hybrid bonds	Reserves	Treasury shares	Retained earnings		
						(in millions of Won)		
Balance as of January 1, 2017	₩482,403	1,407,247	996,919	(143,985)	(1,533,468)	41,125,712	42,334,828	45,765,269
Comprehensive income:								
Profit	—	—	—	—	—	2,756,230	2,756,230	2,909,311
Other comprehensive income (loss)								
Remeasurements of defined benefit plans, net of tax	—	—	—	—	—	(38,043)	(38,043)	(47,543)
Capital adjustment arising from investments in equity-accounted investees, net of tax	—	—	—	(214,794)	—	—	(214,794)	(217,388)
Net changes in the unrealized fair value of available-for-sale investments, net of tax	—	—	—	(45,953)	—	—	(45,953)	(31,389)
Foreign currency translation differences, net of tax	—	—	—	(272,902)	—	—	(272,902)	(264,695)
Gain or losses on valuation of derivatives, net of tax	—	—	—	(136)	—	—	(136)	(143)
Total comprehensive income	—	—	—	(533,785)	—	2,718,187	2,184,402	2,348,153
Transactions with owners of the controlling company, recognized directly in equity:								
Year-end dividends	—	—	—	—	—	(459,987)	(459,987)	(502,896)
Interim dividends	—	—	—	—	—	(359,993)	(359,993)	(359,993)
Changes in subsidiaries	—	—	—	—	—	—	—	(7,151)
Changes in ownership interests in subsidiaries	—	16,287	—	—	—	—	16,287	163,707
Interest of hybrid bonds	—	—	—	—	—	(43,600)	(43,600)	(67,787)
Disposal of treasury shares	—	126	—	—	414	—	540	540
Others	—	(1,639)	—	(4,786)	—	(5,661)	(12,086)	(13,117)
Total transactions with owners of the controlling company	—	14,774	—	(4,786)	414	(869,241)	(858,839)	(786,697)
Balance as of December 31, 2017	₩482,403	1,422,021	996,919	(682,556)	(1,533,054)	42,974,658	43,660,391	47,326,725

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries

Consolidated Statements of Changes in Equity, Continued

For the years ended December 31, 2016, 2017 and 2018

	Attributable to owners of the controlling company						Non-controlling Interests	Total
	Share capital	Capital surplus	Hybrid bonds	Reserves	Treasury shares (in millions of Won)	Retained earnings		
Balance as of January 1, 2018	₩482,403	1,422,021	996,919	(682,556)	(1,533,054)	42,974,658	3,666,334	47,326,725
Adjustment on initial application of IFRS No. 15, net of tax	—	—	—	—	—	(70,906)	(58,977)	(129,883)
Adjustment on initial application of IFRS No. 9, net of tax	—	—	—	(498,517)	—	447,067	(34,754)	(86,204)
Adjusted balance as of January 1, 2018	482,403	1,422,021	996,919	(1,181,073)	(1,533,054)	43,350,819	3,572,603	47,110,638
Comprehensive income:								
Profit	—	—	—	—	—	1,711,902	220,484	1,932,386
Other comprehensive income (loss)								
Remeasurements of defined benefit plans, net of tax	—	—	—	—	—	(145,488)	(28,001)	(173,489)
Capital adjustment arising from investments in equity-accounted investees, net of tax	—	—	—	(76,587)	—	—	13,855	(62,732)
Net changes in fair value of equity investments at fair value through other comprehensive income, net of tax	—	—	—	(104,293)	—	(46,883)	1,988	(149,188)
Foreign currency translation differences, net of tax	—	—	—	(45,650)	—	—	2,742	(42,908)
Gain or losses on valuation of derivatives, net of tax	—	—	—	(216)	—	—	4	(212)
Total comprehensive income	—	—	—	(226,746)	—	1,519,531	211,072	1,503,857
Transactions with owners of the controlling company, recognized directly in equity:								
Year-end dividends	—	—	—	—	—	(279,999)	(54,240)	(334,239)
Interim dividends	—	—	—	—	—	(400,003)	—	(400,003)
Changes in subsidiaries	—	—	—	—	—	—	(2,092)	(2,092)
Changes in ownership interests in subsidiaries	—	(1,497)	—	—	—	—	(654)	(2,151)
Repayment of hybrid bonds	—	(2,769)	(797,535)	—	—	—	(359,018)	(1,159,322)
Interest of hybrid bonds	—	—	—	—	—	(24,443)	(18,448)	(42,891)
Disposal of treasury shares	—	133	—	—	326	—	—	459
Others	—	2,119	—	3,451	—	(5,246)	(1,966)	(1,642)
Total transactions with owners of the controlling company	—	(2,014)	(797,535)	3,451	326	(709,691)	(436,418)	(1,941,881)
Balance as of December 31, 2018	₩482,403	1,420,007	199,384	(1,404,368)	(1,532,728)	44,160,659	3,347,257	46,672,614

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries
Consolidated Statements of Cash Flows
For the years ended December 31, 2016, 2017 and 2018

	Notes	2016	2017	2018
		(in millions of Won)		
Cash flows from operating activities				
Profit		₩1,032,065	2,909,311	1,932,386
Adjustments for:				
Depreciation		2,835,843	2,887,646	2,911,048
Amortization		378,004	409,774	356,581
Finance income		(882,905)	(1,376,324)	(737,745)
Finance costs		1,501,953	1,440,282	1,168,225
Income tax expense		379,544	1,185,740	1,683,630
Gain on disposal of property, plant and equipment		(23,826)	(32,145)	(53,139)
Loss on disposal of property, plant and equipment		86,622	151,343	117,614
Impairment losses on property, plant and equipment		196,882	117,231	1,004,704
Gain on disposal of investments in subsidiaries, associates and joint ventures		(23,305)	(81,794)	(45,241)
Loss on disposal of investments in subsidiaries, associates and joint ventures		22,499	19,985	5,226
Share of loss (profit) of equity-accounted investees		88,677	(10,540)	(112,635)
Expenses related to post-employment benefits		333,139	199,926	216,489
Increase to provisions		189,914	215,383	240,146
Impairment loss on trade and other receivables		202,717	271,871	137,873
Loss on valuation of inventories		152,249	78,560	141,799
Gain on disposal of intangible assets		(671)	(22,391)	(117,139)
Impairment losses on goodwill and intangible assets		127,875	167,995	337,519
Gain on disposal of assets held for sale		(23,112)	(1,180)	(27,171)
Impairment losses on assets held for sale		24,890	—	50,829
Others, net		8,804	(10,093)	77,945
		5,575,793	5,611,269	7,356,558
Changes in operating assets and liabilities	39	(404,570)	(1,841,633)	(2,105,726)
Interest received		206,839	244,980	352,337
Interest paid		(691,264)	(735,735)	(750,410)
Dividends received		152,559	225,514	224,410
Income taxes paid		(602,004)	(806,396)	(1,139,830)
Net cash provided by operating activities		₩5,269,418	5,607,310	5,869,725

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries
Consolidated Statements of Cash Flows, Continued
For the years ended December 31, 2016, 2017 and 2018

	Notes	2016	2017	2018
		(in millions of Won)		
Cash flows from investing activities				
Acquisitions of short-term financial instruments		₩(18,578,809)	(20,843,530)	(32,173,134)
Proceeds from disposal of short-term financial instruments		17,177,409	19,146,634	31,105,544
Increase in loans		(603,332)	(1,055,895)	(627,783)
Collection of loans		557,064	667,045	941,962
Acquisitions of securities		—	—	(321,916)
Acquisitions of available-for-sale investments		(328,151)	(66,278)	—
Proceeds from disposal of securities		—	—	221,646
Proceeds from disposal of available-for-sale investments		280,066	1,006,856	—
Acquisitions of investments in associates and joint ventures		(173,769)	(60,277)	(47,355)
Proceeds from disposal of investments in associates and joint ventures		7,914	74,881	88,852
Acquisitions of property, plant and equipment		(2,324,112)	(2,287,580)	(2,135,550)
Proceeds from disposal of property, plant and equipment		44,330	39,183	90,412
Acquisitions of investment property		(45,735)	(69,169)	(44,106)
Proceeds from disposal of investment property		11,624	5,771	70,817
Acquisitions of intangible assets		(138,181)	(343,423)	(447,616)
Proceeds from disposal of intangible assets		8,672	28,502	77,654
Proceeds from disposal of assets held for sale		305,813	203,958	93,338
Increase in cash from (payment for) acquisition of business, net of cash acquired		4,503	(174,165)	—
Cash received (decrease in cash) from disposal of business, net of cash transferred		21,223	(53,008)	447,917
Others, net		18,844	(37,379)	11,348
Net cash used in investing activities		(3,754,627)	(3,817,874)	(2,647,970)
Cash flows from financing activities				
Proceeds from borrowings		1,988,665	1,725,983	2,762,446
Repayment of borrowings		(4,274,895)	(3,136,016)	(3,136,308)
Proceeds from (repayment of) short-term borrowings, net		(885,861)	558,083	(854,554)
Payment of cash dividends		(708,970)	(863,450)	(723,934)
Payment of interest of hybrid bonds		(68,097)	(67,783)	(46,166)
Repayment of hybrid bonds		—	—	(1,160,000)
Capital contribution from non-controlling interests and proceeds from disposal of subsidiary while maintaining control		24,704	266,219	5,808
Capital deduction from non-controlling interests and additional acquisition of interests in subsidiaries		(11,301)	(26,288)	(3,823)
Others, net		(15,212)	(22,276)	(38,517)
Net cash used in financing activities	39	(3,950,967)	(1,565,528)	(3,195,048)
Effect of exchange rate fluctuation on cash held		12,611	(58,997)	4,628
Net increase (decrease) in cash and cash equivalents		(2,423,565)	164,911	31,335
Cash and cash equivalents at beginning of the period	5	4,871,184	2,447,619	2,612,530
Cash and cash equivalents at end of the period	5	₩ 2,447,619	2,612,530	2,643,865

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements

As of December 31, 2016, 2017 and 2018

1. General Information

General information about POSCO, its 36 domestic subsidiaries including POSCO ENGINEERING & CONSTRUCTION CO., LTD., 136 foreign subsidiaries including POSCO America Corporation (collectively “the Company”) and its 126 associates and joint ventures are as follows:

(a) The controlling company

POSCO, the controlling company, was incorporated on April 1, 1968, under the Commercial Code of the Republic of Korea to manufacture and sell steel rolled products and plates in the domestic and foreign markets.

The shares of POSCO have been listed on the Korea Exchange since June 10, 1988. POSCO owns and operates two steel plants (Pohang and Gwangyang) and one office in Korea and it also operates internationally through six of its overseas liaison offices.

As of December 31, 2018, POSCO’s shareholders are as follows:

Shareholder’s name	Number of shares	Ownership (%)
National Pension Service	9,342,192	10.72
BlackRock Fund Advisors ^(*1,2,3)	4,549,553	5.22
Nippon Steel & Sumitomo Metal Corporation ^(*1)	2,894,712	3.32
GIC Private Limited	2,016,887	2.31
KB Financial Group Inc. and subsidiaries ^(*2)	2,001,820	2.30
Others	66,381,671	76.13
	<u>87,186,835</u>	<u>100.00</u>

(*1) Includes American Depositary Receipts (ADRs) of POSCO, each of which represents 0.25 share of POSCO’s common share which has par value of ₩5,000 per share.

(*2) Includes shares held by subsidiaries and others.

(*3) The number of shares held by the shareholder based on the information in the status report of large-scale shareholders filed with Korea Exchange on October 4, 2018.

As of December 31, 2018, the shares of POSCO are listed on the Korea Exchange, while its ADRs are listed on the New York Stock Exchange.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(b) Consolidated subsidiaries

Details of consolidated subsidiaries as of December 31, 2017 and 2018 are as follows:

		Ownership (%)						Region
		December 31, 2017			December 31, 2018			
		POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Domestic]	Principal operations							
POSCO ENGINEERING & CONSTRUCTION, CO., LTD.	Engineering and construction	52.80	—	52.80	52.80	—	52.80	Pohang
POSCO Processing & Service	Steel sales and trading	93.95	0.45	94.40	93.95	0.45	94.40	Seoul
POSCO COATED & COLOR STEEL Co., Ltd.	Coated steel manufacturing	56.87	—	56.87	56.87	—	56.87	Pohang
POSCO ICT	Computer hardware and software distribution	65.38	—	65.38	65.38	—	65.38	Pohang
POSCO Research Institute	Economic research and consulting	100.00	—	100.00	100.00	—	100.00	Seoul
POSMATE	Business facility maintenance	83.83	16.17	100.00	59.80	40.20	100.00	Seoul
POSCO A&C	Architecture and consulting	100.00	—	100.00	100.00	—	100.00	Seoul
POSCO Venture Capital Co., Ltd.	Investment in venture companies	95.00	—	95.00	95.00	—	95.00	Pohang
eNtoB Corporation	Electronic commerce	7.50	53.63	61.13	7.50	53.63	61.13	Seoul
POSCO CHEMTECH	Refractories manufacturing and sales	60.00	—	60.00	60.00	—	60.00	Pohang
POSCO-Terminal Co., Ltd.	Transporting and warehousing	51.00	—	51.00	51.00	—	51.00	Gwangyang
POSCO M-TECH	Packing materials manufacturing and sales	48.85	—	48.85	48.85	—	48.85	Pohang
POSCO ENERGY CO., LTD.	Generation of electricity	89.02	—	89.02	89.02	—	89.02	Seoul
POSCO NIPPON STEEL RHF JOINT VENTURE.CO., Ltd.	Steel byproduct manufacturing and sales	70.00	—	70.00	70.00	—	70.00	Pohang
MegaAsset Co., Ltd.	Real estate rental and sales	—	100.00	100.00	—	100.00	100.00	Incheon
Future Creation Fund Postech Early Stage account	Investment in venture companies	—	40.00	40.00	—	40.00	40.00	Seoul
POSCO WOMAN'S FUND	Investment in venture companies	—	40.00	40.00	—	40.00	40.00	Seoul
SPH Co, Ltd.	House manufacturing and management	—	100.00	100.00	—	100.00	100.00	Incheon
Posco Group University	Education service and real estate business	100.00	—	100.00	100.00	—	100.00	Incheon
HOTEL LAONZENA	Hotel business	—	100.00	100.00	—	100.00	100.00	Daegu
Growth Ladder POSCO K-Growth Global Fund	Investment in venture companies	—	50.00	50.00	—	50.00	50.00	Pohang
2015 POSCO New technology II Fund	Investment in venture companies	—	25.00	25.00	—	25.00	25.00	Pohang
Posco e&c Songdo International Building	Non-residential building rental	—	100.00	100.00	—	100.00	100.00	Seoul
POSCO ES MATERIALS CO., Ltd.	Secondary and storage battery manufacturing	75.32	—	75.32	90.00	—	90.00	Gumi

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

		Ownership (%)						Region
		December 31, 2017			December 31, 2018			
		Principal operations	POSCO	Subsidiaries	Total	POSCO	Subsidiaries	
[Domestic]								
POSCO Research & Technology	Intellectual Property Services and consulting	100.00	—	100.00	100.00	—	100.00	Seoul
Poscoene	Refuse derived fuel and power generation	—	100.00	100.00	—	100.00	100.00	Seoul
POSCO Humans	Construction	90.30	—	90.30	90.30	—	90.30	Pohang
Mapo Hibroad Parking Co., Ltd.	Construction	—	71.00	71.00	—	71.00	71.00	Seoul
BLUE O&M Co., Ltd.	Engineering service	—	100.00	100.00	—	100.00	100.00	Pohang
Busan E&E Co., Ltd.	Refuse derived fuel and power generation	70.00	—	70.00	70.00	—	70.00	Busan
POSCO Family Strategy Fund	Investment in venture companies	69.91	30.09	100.00	69.91	30.09	100.00	Pohang
POSCO DAEWOO Corporation	Trading, energy & resource development and others	62.90	0.04	62.94	62.90	0.04	62.94	Seoul
Pohang Scrap Recycling Distribution Center Co., Ltd.	Steel processing and sales	—	51.00	51.00	—	51.00	51.00	Pohang
PSC Energy Global Co., Ltd.	Investment in energy industry	—	100.00	100.00	—	100.00	100.00	Pohang
Suncheon Eco Trans Co., Ltd	Train manufacturing and management	100.00	—	100.00	100.00	—	100.00	Suncheon
Songdo Development PMC (Project Management Company) LLC.	Housing business agency	—	—	—	—	100.00	100.00	Incheon
POSPower Co., Ltd.(*)	Generation of electricity	—	100.00	100.00	—	—	—	Samcheok
POCA STEM Co., Ltd.	Stem cell medicine development	—	100.00	100.00	—	—	—	Seoul
Kyobo Securities Bond Plus 6M Professional Private Equity Trust W-2	Private equity trust	97.47	—	97.47	—	—	—	Seoul
Mirae Asset Smart Q Sigma 2.0 Professional Private Equity Trust	Private equity trust	99.01	—	99.01	—	—	—	Seoul
Kyobo Securities Bond Plus 6M Professional Private Equity Trust W-5	Private equity trust	—	99.67	99.67	—	—	—	Seoul
[Foreign]								
POSCO America Corporation	Steel trading	99.45	0.55	100.00	99.45	0.55	100.00	USA
POSCO AUSTRALIA PTY LTD	Raw material sales & mine development	100.00	—	100.00	100.00	—	100.00	Australia
POSCO Canada Ltd.	Coal sales	—	100.00	100.00	—	100.00	100.00	Canada
POSCAN Elkview	Coal sales	—	100.00	100.00	—	100.00	100.00	Canada
POSCO Asia Co., Ltd.	Steel and raw material trading	100.00	—	100.00	100.00	—	100.00	China
POSCO-CTPC Co., Ltd.	Steel manufacturing and sales	56.60	43.40	100.00	61.91	38.09	100.00	China
POSCO E&C Vietnam Co., Ltd.	Steel structure manufacturing and sales	—	100.00	100.00	—	100.00	100.00	Vietnam

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

		Ownership (%)						Region
		December 31, 2017			December 31, 2018			
		POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Foreign]	Principal operations							
Zhangjiagang Pohang Stainless Steel Co., Ltd.	Stainless steel manufacturing and sales	58.60	23.88	82.48	58.60	23.88	82.48	China
POSCO(Guangdong) Coated Steel Co., Ltd.	Plating steel sheet manufacturing and sales	87.04	10.04	97.08	87.04	10.04	97.08	China
POSCO (Thailand) Company Limited	Steel manufacturing and sales	88.58	11.42	100.00	88.58	11.42	100.00	Thailand
Myanmar POSCO Steel Co., Ltd	Zinc relief manufacturing and sales	70.00	—	70.00	70.00	—	70.00	Myanmar
POSCO-MKPC SDN BHD	Steel manufacturing and sales	44.69	25.31	70.00	44.69	25.31	70.00	Malaysia
Qingdao Pohang Stainless Steel Co., Ltd.	Stainless steel manufacturing and sales	70.00	30.00	100.00	70.00	30.00	100.00	China
POSCO(Suzhou) Automotive Processing Center Co., Ltd.	Steel manufacturing and sales	90.00	10.00	100.00	90.00	10.00	100.00	China
POSCO-China Qingdao Processing Center Co., Ltd.	Steel manufacturing and sales	—	100.00	100.00	—	100.00	100.00	China
POS-ORE PTY LTD	Iron ore sales and sales	—	100.00	100.00	—	100.00	100.00	Australia
POSCO-China Holding Corp.	Holding company	100.00	—	100.00	100.00	—	100.00	China
POSCO JAPAN Co., Ltd.	Steel trading	100.00	—	100.00	100.00	—	100.00	Japan
POS-CD PTY LTD	Coal sales	—	100.00	100.00	—	100.00	100.00	Australia
POS-GC PTY LTD	Coal sales	—	100.00	100.00	—	100.00	100.00	Australia
POSCO-India Private Limited	Steel manufacturing and sales	99.99	—	99.99	99.99	—	99.99	India
POSCO-India Pune Processing Center. Pvt. Ltd.	Steel manufacturing and sales	65.00	—	65.00	65.00	—	65.00	India
POSCO Japan PC CO., LTD	Steel manufacturing and sales	—	86.12	86.12	—	86.12	86.12	Japan
POSCO-CFPC Co., Ltd.	Steel manufacturing and sales	39.60	60.40	100.00	39.60	60.40	100.00	China
POSCO E&C CHINA Co., Ltd.	Civil engineering and construction	—	100.00	100.00	—	100.00	100.00	China
POSCO MPPC S.A. de C.V.	Steel manufacturing and sales	21.02	75.29	96.31	21.02	75.29	96.31	Mexico
Zhangjiagang Pohang Port Co., Ltd.	Loading and unloading service	—	100.00	100.00	—	100.00	100.00	China
POSCO-VIETNAM Co., Ltd.	Steel manufacturing and sales	100.00	—	100.00	100.00	—	100.00	Vietnam
POSCO MEXICO S.A. DE C.V.	Automotive steel sheet manufacturing and sales	84.84	15.16	100.00	83.28	14.88	98.16	Mexico
POSCO-Poland Wroclaw Processing Center Sp. z o. o.	Steel manufacturing and sales	60.00	—	60.00	60.00	—	60.00	Poland
POS-NP PTY LTD	Coal sales	—	100.00	100.00	—	100.00	100.00	Australia
POSCO DAEWOO WAIGAIQIAO SHANGHAI CO., LTD	Intermediary trade & bonded warehouse operation	—	100.00	100.00	—	100.00	100.00	China
PT. Bio Inti Agrindo	Forest resources development	—	85.00	85.00	—	85.00	85.00	Indonesia

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

		Ownership (%)						Region
		December 31, 2017			December 31, 2018			
		POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Foreign]	Principal operations							
POSCO ENGINEERING AND CONSTRUCTION AUSTRALIA (POSCO E&C AUSTRALIA) PTY LTD	Iron ore development and sales	—	100.00	100.00	—	100.00	100.00	Australia
POSCO-TISCO (JILIN) PROCESSING CENTER Co., Ltd.	Steel manufacturing and sales	50.00	10.00	60.00	50.00	10.00	60.00	China
POSCO Thainox Public Company Limited	STS cold-rolled steel manufacturing and sales	84.88	—	84.88	84.66	—	84.66	Thailand
Hunchun Posco Hyundai Logistics	Logistics	—	80.00	80.00	—	80.00	80.00	China
POSCO DAEWOO VIETNAM CO., LTD	Trading business	—	100.00	100.00	—	100.00	100.00	Vietnam
POSCO(Chongqing) Automotive Processing Center Co., Ltd.	Steel manufacturing and sales	90.00	10.00	100.00	90.00	10.00	100.00	China
SUZHOU POSCO-CORE TECHNOLOGY CO., LTD.	Component manufacturing and sales	—	100.00	100.00	—	100.00	100.00	China
PT.Krakatau Posco Chemtech Calcination	Quicklime manufacturing and sales	—	80.00	80.00	—	80.00	80.00	Indonesia
POSCO AFRICA (PROPRIETARY) LIMITED	Mine development	100.00	—	100.00	100.00	—	100.00	South Africa
POSCO ICT BRASIL	IT service and engineering	—	100.00	100.00	—	100.00	100.00	Brazil
LA-SRDC	Scrap manufacturing	—	100.00	100.00	—	100.00	100.00	USA
POSCO Center Beijing	Real estate development, rental and management	—	100.00	100.00	—	100.00	100.00	China
POSCO AMERICA COMERCIALIZADORA S DE RL DE CV	Human resource service	—	100.00	100.00	—	100.00	100.00	Mexico
POSCO(Guangdong) Automotive Steel Co., Ltd.	Steel manufacturing and sales	83.64	10.00	93.64	83.64	10.00	93.64	China
POSCO-Malaysia SDN. BHD.	Steel manufacturing and sales	81.79	13.63	95.42	81.79	13.63	95.42	Malaysia
PT KRAKATAU BLUE WATER	Wastewater treatment facilities operation and maintenance	—	67.00	67.00	—	67.00	67.00	Indonesia
POSCO DAEWOO MYANMAR CORPORATION LIMITED	Trading business	—	100.00	100.00	—	100.00	100.00	Myanmar
POSCO-Italy Processing Center	Stainless steel sheet manufacturing and sales	80.00	10.00	90.00	80.00	10.00	90.00	Italy
POSCO DAEWOO E&P CANADA CORPORATION	Crude oil and natural gas mining	—	100.00	100.00	—	100.00	100.00	Canada
Myanmar POSCO C&C Company, Limited.	Steel manufacturing and sales	—	70.00	70.00	—	70.00	70.00	Myanmar

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

	Principal operations	Ownership (%)						Region
		December 31, 2017			December 31, 2018			
		POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Foreign]								
POSCO ICT VIETNAM	IT service and electric control engineering	—	100.00	100.00	—	100.00	100.00	Vietnam
Daewoo Global Development. Pte., Ltd	Real estate development	—	81.51	81.51	—	81.51	81.51	Myanmar
Myanmar POSCO Engineering & Construction Company, Limited.	Construction and engineering service	—	100.00	100.00	—	100.00	100.00	Myanmar
POS-Minerals Corporation	Mine development management and sales	—	100.00	100.00	—	100.00	100.00	USA
POSCO(Wuhu) Automotive Processing Center Co., Ltd.	Steel manufacturing and sales	68.57	31.43	100.00	68.57	31.43	100.00	China
POSCO Engineering and Construction India Private Limited	Civil engineering and construction	—	100.00	100.00	—	100.00	100.00	India
POSCO COATED STEEL (THAILAND) CO., LTD.	Automotive steel sheet manufacturing and sales	100.00	—	100.00	100.00	—	100.00	Thailand
Daewoo Amara Company Limited	Real estate development	—	85.00	85.00	—	85.00	85.00	Myanmar
Daewoo Power and Infra (PTY) Limited	Electricity	—	100.00	100.00	—	100.00	100.00	South Africa
POSMATE-CHINA CO., LTD	Business facility maintenance	—	100.00	100.00	—	100.00	100.00	China
Daewoo Precious Resources Co., Ltd.	Resources development	—	70.00	70.00	—	70.00	70.00	Myanmar
POSCO-Mexico Villagran Wire-rod Processing Center	Steel manufacturing and sales	56.75	10.00	66.75	56.75	10.00	66.75	Mexico
POSCO ChengDu Processing Center	Steel manufacturing and sales	33.00	10.00	43.00	33.00	10.00	43.00	China
POSCO SUZHOU PROCESSING CENTER CO., LTD.	Steel manufacturing and sales	30.00	70.00	100.00	30.00	70.00	100.00	China
POSCO E&C SMART S DE RL DE CV	Civil engineering and construction	—	100.00	100.00	—	100.00	100.00	Mexico
POSCO Philippine Manila Processing Center, Inc.	Steel manufacturing and sales	—	100.00	100.00	—	100.00	100.00	Philippines
POSCO E&C HOLDINGS CO., Ltd.	Holding company	—	100.00	100.00	—	100.00	100.00	Thailand
POSCO E&C (THAILAND) CO., Ltd.	Construction and engineering	—	100.00	100.00	—	100.00	100.00	Thailand
Daewoo Power PNG Ltd.	Electricity production	—	100.00	100.00	—	100.00	100.00	Papua New Guinea
PT.Krakatau Posco Social Enterprise	Social enterprise	—	100.00	100.00	—	100.00	100.00	Indonesia
Ventanas Philippines Construction Inc	Construction	—	100.00	100.00	—	100.00	100.00	Philippines
POSCO E&C Mongolia	Construction and engineering service	—	100.00	100.00	—	100.00	100.00	Mongolia
POSCO Gulf SFC LLC	Steel manufacturing and sales	—	97.76	97.76	—	65.72	65.72	United Arab Emirates

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

		Ownership (%)						Region
		December 31, 2017			December 31, 2018			
		POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Foreign]	Principal operations							
SANPU TRADING Co., Ltd.	Raw material trading	—	70.04	70.04	—	70.04	70.04	China
Zhangjiagang BLZ Pohang International Trading	Steel Intermediate trade	—	100.00	100.00	—	100.00	100.00	China
POSCO RU Limited Liability Company	Trade and business development	100.00	—	100.00	100.00	—	100.00	Russia
Golden Lace DAEWOO Company Limited	Rice processing	—	60.00	60.00	—	60.00	60.00	Myanmar
POSCO ICT - China	IT service and DVR business	—	100.00	100.00	—	100.00	100.00	China
Pos-Sea Pte Ltd	Steel Intermediate trade	—	100.00	100.00	—	100.00	100.00	Singapore
POSCO Europe Steel Distribution Center	Logistics & Steel sales	50.00	20.00	70.00	50.00	20.00	70.00	Slovenia
POSCO ENGINEERING (THAILAND) CO., LTD.	Construction and engineering service	—	100.00	100.00	—	100.00	100.00	Thailand
POSCO VST CO., LTD.	Stainless steel sheet manufacturing and sales	95.65	—	95.65	95.65	—	95.65	Vietnam
POSCO DAEWOO UKRAINE LLC	Grain sales	—	100.00	100.00	—	100.00	100.00	Ukraine
Zhangjiagang Pohang Refractories Co., Ltd.	Refractory materials sales & furnace maintenance	—	51.00	51.00	—	51.00	51.00	China
POSCO Maharashtra Steel Private Limited	Steel manufacturing and sales	100.00	—	100.00	100.00	—	100.00	India
POSCO INDIA HOLDINGS PRIVATE LIMITED	Steel manufacturing and sales	93.34	1.98	95.32	93.34	1.98	95.32	India
POSCO TNPC Otomotiv Celik San. Ve Tic. A.S	Steel manufacturing and sales	100.00	—	100.00	100.00	—	100.00	Turkey
POSCO VIETNAM HOLDINGS CO., LTD	Steel manufacturing and sales	83.54	5.29	88.83	83.54	5.29	88.83	Vietnam
POSCO(Liaoning) Automotive Processing Center Co., Ltd.	Steel manufacturing and sales	90.00	10.00	100.00	90.00	10.00	100.00	China
POSCO-Indonesia Jakarta Processing Center	Steel manufacturing and sales	65.00	20.00	85.00	65.00	20.00	85.00	Indonesia
PT.MRI	Mine development	65.00	—	65.00	65.00	—	65.00	Indonesia
POSCO TMC INDIA PRIVATE LIMITED	Steel manufacturing and sales	—	100.00	100.00	—	100.00	100.00	India
POSCO-AAPC	Steel manufacturing and sales	—	97.80	97.80	—	97.80	97.80	USA
POSCO(Yantai) Automotive Processing Center Co., Ltd.	Steel manufacturing and sales	90.00	10.00	100.00	90.00	10.00	100.00	China
POSCO India Steel Distribution Center Private Ltd.	Steel logistics	—	100.00	100.00	—	100.00	100.00	India
POSCO China Dalian Plate Processing Center Co., Ltd.	Plate manufacturing and sales	80.00	10.00	90.00	79.52	11.70	91.22	China
POSCO-South Asia Company Limited	Steel sales	100.00	—	100.00	100.00	—	100.00	Thailand

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

		Ownership (%)						Region
		December 31, 2017			December 31, 2018			
		POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Foreign]	Principal operations							
POSCO SS VINA Co., Ltd	Steel manufacturing and sales	100.00	—	100.00	100.00	—	100.00	Vietnam
PT.POSCO ICT INDONESIA	IT service and electric control engineering	—	66.99	66.99	—	66.99	66.99	Indonesia
POSCO NCR Coal Ltd.	Coal sales	—	100.00	100.00	—	100.00	100.00	Canada
POSCO WA PTY LTD	Iron ore sales & mine development	100.00	—	100.00	100.00	—	100.00	Australia
POSCO AUSTRALIA GP PTY LIMITED	Resource development	—	100.00	100.00	—	100.00	100.00	Australia
POSCO DAEWOO POWER (PNGPOM) LTD.	Electricity production	—	100.00	100.00	—	100.00	100.00	Papua New Guinea
PT. KRAKATAU POSCO ENERGY	Electricity production construction and operation	—	90.00	90.00	—	90.00	90.00	Indonesia
POSCO DAEWOO AMERICA CORP.	Trading business	—	100.00	100.00	—	100.00	100.00	USA
POSCO DAEWOO DEUTSCHLAND GMBH	Trading business	—	100.00	100.00	—	100.00	100.00	Germany
POSCO DAEWOO JAPAN Corp	Trading business	—	100.00	100.00	—	100.00	100.00	Japan
POSCO DAEWOO SINGAPORE PTE LTD.	Trading business	—	100.00	100.00	—	100.00	100.00	Singapore
POSCO DAEWOO ITALIA S.R.L.	Trading business	—	100.00	100.00	—	100.00	100.00	Italy
POSCO DAEWOO CHINA CO., LTD	Trading business	—	100.00	100.00	—	100.00	100.00	China
Daewoo Textile LLC	Textile manufacturing	—	100.00	100.00	—	100.00	100.00	Uzbekistan
POSCO DAEWOO AUSTRALIA HOLDINGS PTY. LTD.	Resource development	—	100.00	100.00	—	100.00	100.00	Australia
POSCO MAURITIUS LIMITED	Coal development and sales	—	100.00	100.00	—	100.00	100.00	Mauritius
PT. KRAKATAU POSCO	Steel manufacturing and sales	70.00	—	70.00	70.00	—	70.00	Indonesia
POSCO DAEWOO MEXICO S.A. de C.V.	Trading business	—	100.00	100.00	—	100.00	100.00	Mexico
Daewoo International Guangzhou Corp.	Trading business	—	100.00	100.00	—	100.00	100.00	China
POSCO DAEWOO MALAYSIA SDN BHD	Trading business	—	100.00	100.00	—	100.00	100.00	Malaysia
PT.POSCO INDONESIA INTI	Mine development	99.99	—	99.99	99.99	—	99.99	Indonesia
POSCO DAEWOO SHANGHAI CO., LTD.	Trading business	—	100.00	100.00	—	100.00	100.00	China
PGSF, L.P.	Investment in bio tech Industry	—	100.00	100.00	—	100.00	100.00	USA
POSCO DAEWOO INDIA PVT., LTD.	Trading business	—	100.00	100.00	—	100.00	100.00	India
POSCO(Dalian) IT Center Development Co., Ltd.	Real estate development and investment	—	100.00	100.00	—	100.00	100.00	China

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

	Principal operations	Ownership (%)						Region
		December 31, 2017			December 31, 2018			
		POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Foreign]								
PT. POSCO E&C INDONESIA	Civil engineering and construction	—	100.00	100.00	—	100.00	100.00	Indonesia
HUME COAL PTY LTD	Raw material manufacturing	—	100.00	100.00	—	100.00	100.00	Australia
Brazil Sao Paulo Steel Processing Center	Steel manufacturing and sales	—	76.00	76.00	—	76.00	76.00	Brazil
DAESAN (CAMBODIA) Co., Ltd.	Real estate development and investment	—	100.00	100.00	—	100.00	100.00	Cambodia
POSCO ENGINEERING & CONSTRUCTION DO BRASIL LTDA.	Construction	—	100.00	100.00	—	100.00	100.00	Brazil
POSCO ASSAN TST STEEL INDUSTRY	Steel manufacturing and sales	60.00	10.00	70.00	60.00	10.00	70.00	Turkey
HONG KONG POSCO E&C (CHINA) INVESTMENT Co., Ltd.	Real estate development and investment	—	100.00	100.00	—	100.00	100.00	Hongkong
POS-LT Pty Ltd	Lithium mining investment	—	—	—	—	100.00	100.00	Australia
POSCO SINGAPORE LNG TRADING PTE. LTD.	LNG trading	—	—	—	50.00	50.00	100.00	Singapore
ZHEJIANG POSCO-HUAYOU ESM CO., LTD	Anode material manufacturing	—	—	—	100.00	—	100.00	China
POSCO Argentina S.A.U.	Mineral exploration/ manufacturing/sales	—	—	—	100.00	—	100.00	Argentina
POSCO RUS LLC	Trading and business development	90.00	10.00	100.00	—	—	—	Russia
POSCO-CDSFC	Steel structure manufacturing	50.20	49.80	100.00	—	—	—	China
POSCO MESDC S.A. DE C.V.	Logistics & Steel sales	—	56.80	56.80	—	—	—	Mexico
KIS Devonian Canada Corporation	Petroleum gas extraction	—	100.00	100.00	—	—	—	Canada
POSCO E&C VENEZUELA C.A.	Civil engineering and construction	—	100.00	100.00	—	—	—	Venezuela
PT PEN INDONESIA	Construction	—	100.00	100.00	—	—	—	Indonesia
POSCO Engineering and Construction — UZ	Civil engineering and construction	—	100.00	100.00	—	—	—	Uzbekistan

(*1) Reclassified to associate from subsidiary during the year ended December 31, 2018.

The equity of controlling company increased by ₩16,288 million (POSCO DAEWOO Corporation, POSMATE and others) and decreased by ₩1,497 million (POSCO Gulf SFC LLC and others) in 2017 and 2018, respectively, as a result of changes in the Company's ownership interests in subsidiaries that did not result in a loss of control.

Cash dividends paid to POSCO by subsidiaries in 2016, 2017 and 2018 amounted to ₩75,830 million, ₩70,087 million and ₩100,862 million, respectively.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

As of December 31, 2018, there are no restrictions on the ability of subsidiaries to transfer funds to the controlling company, such as in the form of cash dividends, repayment of loans or payment of advances.

(c) Details of non-controlling interest as of and for the years ended December 31, 2016, 2017 and 2018 are as follows:

1) December 31, 2016

	POSCO DAEWOO Corporation	PT. KRAKATAU POSCO	POSCO CHEMTECH	POSCO ENGINEERING & CONSTRUCTION CO., LTD.	POSCO ENERGY CO., LTD.	Others	Total
	(in millions of Won)						
Current assets	₩ 4,038,313	460,376	397,370	5,163,436	713,039	9,696,140	20,468,674
Non-current assets	4,510,085	3,304,292	243,401	1,710,398	3,038,665	7,749,277	20,556,118
Current liabilities	(3,662,811)	(1,120,077)	(109,016)	(3,284,090)	(937,668)	(9,669,053)	(18,782,715)
Non-current liabilities	(1,681,182)	(2,337,612)	(2,337)	(855,791)	(2,172,226)	(2,856,498)	(9,905,646)
Equity	3,204,405	306,979	529,418	2,733,953	641,810	4,919,866	12,336,431
Non-controlling interests	1,271,750	92,094	211,767	1,290,450	514,200	945,962	4,326,223
Sales	15,417,550	1,244,711	1,076,455	5,352,395	1,657,890	23,251,563	48,000,564
Profit (loss) for the period	113,832	(187,151)	41,829	(760,187)	(130,809)	(461,034)	(1,383,520)
Profit (loss) attributable to non-controlling interests	45,177	(56,145)	16,732	(358,815)	(14,357)	(312,297)	(679,705)
Cash flows from operating activities	337,338	45,672	30,295	(211,182)	18,107	53,050	273,280
Cash flows from investing activities	(35,054)	(8,804)	(42,021)	(102,939)	(1,047)	(253,206)	(443,071)
Cash flows from financing activities (before dividends to non-controlling interest)	(295,226)	(36,286)	(1,250)	(20,953)	(2,875)	204,797	(151,793)
Dividend to non-controlling interest	(22,597)	—	(4,726)	(14,800)	(24,378)	(7,349)	(73,850)
Effect of exchange rate fluctuation on cash held	10	67	1	760	—	1,687	2,525
Net increase (decrease) in cash and cash equivalents	(15,529)	649	(17,701)	(349,114)	(10,193)	(1,021)	(392,909)

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

2) December 31, 2017

	POSCO DAEWOO Corporation	PT. KRAKATAU POSCO	POSCO CHEMTECH	POSCO ENGINEERING & CONSTRUCTION CO., LTD.	POSCO ENERGY CO., LTD.	Others	Total
	(in millions of Won)						
Current assets	₩ 4,483,544	557,041	441,325	4,878,251	1,054,538	8,579,813	19,994,512
Non-current assets	4,590,394	2,771,504	316,724	2,444,616	2,859,824	6,676,559	19,659,621
Current liabilities	(4,221,443)	(1,237,255)	(145,649)	(3,896,680)	(785,462)	(8,313,902)	(18,600,391)
Non-current liabilities	(1,549,013)	(1,933,247)	(970)	(833,403)	(2,200,065)	(2,048,454)	(8,565,152)
Equity	3,303,482	158,043	611,430	2,592,784	928,835	4,894,016	12,488,590
Non-controlling interests	1,224,303	47,413	244,572	1,223,816	762,390	974,941	4,477,435
Sales	20,891,526	1,635,837	1,163,918	5,794,532	1,578,026	23,547,072	54,610,911
Profit (loss) for the period	115,321	(117,729)	101,019	169,011	70,795	258,053	596,470
Profit (loss) attributable to non-controlling interests	42,739	(35,318)	40,408	79,775	7,770	39,605	174,979
Cash flows from operating activities	128,875	(27,817)	20,042	(84,840)	30,295	140,418	206,973
Cash flows from investing activities	(86,365)	(5,502)	(18,699)	(171,924)	(2,792)	(63,621)	(348,903)
Cash flows from financing activities (before dividends to non-controlling interest)	(19,295)	31,782	8	150,801	220,317	(38,090)	345,523
Dividend to non-controlling interest	(22,597)	—	(7,088)	—	(24,183)	(12,777)	(66,645)
Effect of exchange rate fluctuation on cash held	(459)	(147)	(6)	(3,541)	—	(15,532)	(19,685)
Net increase (decrease) in cash and cash equivalents	159	(1,684)	(5,743)	(109,504)	223,637	10,398	117,263

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

3) December 31, 2018

	POSCO DAEWOO Corporation	PT. KRAKATAU POSCO	POSCO CHEMTECH	POSCO ENGINEERING & CONSTRUCTION CO., LTD.	POSCO ENERGY CO., LTD.	Others	Total
	(in millions of Won)						
Current assets	₩ 5,311,596	615,491	416,284	4,100,967	825,241	9,137,798	20,407,377
Non-current assets	4,363,490	2,730,865	460,905	1,911,844	2,767,203	5,493,324	17,727,631
Current liabilities	(4,724,056)	(1,368,498)	(140,268)	(3,007,029)	(1,197,845)	(8,026,474)	(18,464,170)
Non-current liabilities	(1,563,107)	(1,754,797)	(10,767)	(608,089)	(1,445,288)	(1,925,084)	(7,307,132)
Equity	3,387,923	223,061	726,154	2,397,693	949,311	4,679,564	12,363,706
Non-controlling interests	1,255,728	66,918	290,461	1,131,733	335,203	929,506	4,009,549
Sales	23,314,595	1,871,634	1,340,984	6,799,292	1,841,187	24,721,939	59,889,631
Profit (loss) for the period	113,196	54,257	142,918	290,131	(73,948)	(56,151)	470,403
Profit (loss) attributable to non-controlling interests	41,956	16,277	57,167	136,944	(8,116)	(101,156)	143,072
Cash flows from operating activities	(61,173)	89,131	29,865	207,729	16,211	14,869	296,632
Cash flows from investing activities	(12,780)	(6,432)	(15,801)	272,230	35,460	(13,199)	259,478
Cash flows from financing activities (before dividends to non-controlling interest)	99,496	(82,295)	—	(400,499)	(71,378)	(16,094)	(470,770)
Dividend to non-controlling interest	(22,862)	—	(8,270)	—	(19,813)	(6,906)	(57,851)
Effect of exchange rate fluctuation on cash held	807	21	(17)	1,257	—	1,682	3,750
Net increase (decrease) in cash and cash equivalents	3,488	425	5,777	80,717	(39,520)	(19,648)	31,239

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(d) Details of associates and joint ventures

1) Associates

Details of associates as of December 31, 2017 and 2018 are as follows:

Investee	Category of business	Ownership (%)		Region
		2017	2018	
[Domestic]				
New Songdo International City Development, LLC	Real estate rental	29.90	29.90	Seoul
Gale International Korea, LLC	Real estate rental	29.90	29.90	Seoul
SNNC	Raw material manufacturing and sales	49.00	49.00	Gwangyang
KONES, Corp.	Technical service	41.67	41.67	Gyeongju
CHUNGJU ENTERPRISE CITY DEVELOPMENT				
Co., Ltd	Real estate development	29.53	29.53	Chungju
DAEHO GLOBAL MANAGEMENT CO., LTD.	Investment advisory service	35.82	35.82	Pohang
Mokpo Deayang Industrial Corporation	Real estate development and rental	27.40	27.40	Mokpo
Gunggi Green Energy (*1)	Electricity generation	19.00	19.00	Hwaseong
Pohang Special Welding Co., Ltd.	Welding material and tools	50.00	50.00	Pohang
KoFC POSCO HANWHA KB Shared Growth NO. 2.	manufacturing and sales			
Private Equity Fund (*1)	Investment in new technologies	12.50	12.50	Seoul
EQP POSCO Global NO1 Natural Resources				
Private Equity Fund	Investment in new technologies	31.14	31.27	Seoul
KC Chemicals CORP. (*1)	Machinery manufacturing	19.00	19.00	Hwaseong
Garolim Tidal Power Plant Co., Ltd	Tidal power plant construction and	32.13	32.13	Seosan
	management			
POSTECH Social Enterprise Fund (*1)	Investment in new technologies	9.17	9.17	Seoul
QSONE Co., Ltd.	Real estate rental and facility	50.00	50.00	Seoul
	management			
Chun-cheon Energy Co., Ltd	Electricity generation	45.67	45.67	Chuncheon
Keystone NO. 1 Private Equity Fund	Private equity financial	40.45	40.45	Seoul
Noeul Green Energy (*1)	Electricity generation	10.00	10.00	Seoul
Posco-IDV Growth Ladder IP Fund (*1)	Investment in new technologies	17.86	17.86	Seoul
Daesung Steel (*1)	Steel sales	17.54	17.54	Busan
Pohang E&E Co., LTD	Investment in waste energy	30.00	30.00	Pohang
POSCO Energy Valley Fund	Investment in new technologies	20.00	20.00	Pohang
2016 PoscoPlutus New technology Fund	Investment in new technologies	25.17	25.17	Seoul
Hyundai Invest Guggenheim CLO Qualified Private				
Special Asset Trust No.2	Investment in new technologies	38.47	38.47	Seoul
PoscoPlutus Bio Fund (*1)	Investment in new technologies	11.97	11.97	Seoul
PoscoPlutus Project Fund (*1)	Investment in new technologies	11.91	11.91	Seoul
Posco Agri-Food Export Fund	Investment in new technologies	30.00	30.00	Seoul
PoscoPlutus Project 2nd Project Fund (*1)	Investment in new technologies	0.61	0.61	Seoul
Posco Culture Contents Fund	Investment in new technologies	31.67	31.67	Seoul
PCC_Centroid 1st Fund	Investment in new technologies	24.10	24.10	Seoul
PCC Amberstone Private Equity Fund 1 (*1)	Investment in new technologies	9.71	8.80	Seoul
UITrans LRT Co., Ltd.	Transporting	38.19	38.19	Seoul
POSCO Advanced Technical Staff Fund (*1)	Investment in new technologies	15.87	15.87	Seoul
POSCO 4th Industrial Revolution Fund (*1)	Investment in new technologies	20.00	19.05	Seoul
Clean Gimpo Co., Ltd.	Construction	29.58	29.58	Gimpo
Incheon-Gimpo Expressway Co., Ltd. (*1)	Construction	18.26	18.26	Anyang
Pureun Tongyeong Enviro Co., Ltd.	Sewerage treatment	20.40	20.40	Tongyeong
Pure Gimpo Co., Ltd.	Construction	28.79	28.79	Seoul
POSCO PLANTEC Co., Ltd. (*2)	Construction of industrial plant	73.94	73.94	Ulsan
Postech Early Stage Fund (*1)	Investment in new technologies	10.00	10.00	Pohang
Posgreen Co., Ltd. (*1)	Lime and plaster manufacturing	19.00	19.00	Gwangju

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

Investee	Category of business	Ownership (%)		Region
		2017	2018	
[Domestic]				
Clean Iksan Co., Ltd.	Construction	23.50	23.50	Iksan
Innovalley Co., Ltd.	Real estate development	28.77	28.77	Yongin
Applied Science Corp.	Machinery manufacturing	23.87	22.89	Paju
Pohang Techno Valley PFV Corporation ^{(*)3}	Real estate development, supply and rental	57.39	57.39	Pohang
BLUE OCEAN Private Equity Fund	Private equity financial	27.52	27.52	Seoul
Western Inland highway CO., LTD. ^{(*)4}	Construction	—	27.50	Incheon
Metropolitan Outer Ring Expressway co., ltd. ^{(*)4}	Investment in Expressway	—	47.58	Incheon
IT ENGINEERING CO., LTD. ^{(*)1,4}	Vehicle engineering	—	10.84	Seoul
PCC Bio 1ST Fund ^{(*)1,4}	Investment in new technologies	—	13.46	Seoul
INNOPOLIS Job Creation Fund II ^{(*)1,4}	Investment in new technologies	—	6.43	Seoul
POSPower Co., Ltd. ^{(*)5}	Generation of electricity	—	34.00	Samcheok
INKOTECH, INC. ^{(*)1,4}	Electricity generation and sales	—	10.00	Seoul
PCC Social Enterprise Fund II ^{(*)1,4}	Investment in venture companies	—	16.67	Seoul
PCC Amberstone Private Equity Fund II ^{(*)1,4}	Private equity trust	—	19.70	Seoul
Synapse Fund ^{(*)1,4}	Investment in new technologies	—	16.26	Seoul
NEXTRAIN Co., Ltd ^{(*)4}	Service maintenance and management	—	32.00	Incheon
TK CHEMICAL CORPORATION ^{(*)1,4}	Chemical	—	8.80	Daegu
Hanil-Daewoo Cement Co., Ltd. ^{(*)1,4}	Cement	—	15.00	Incheon
Pohang Techno Valley AMC ^{(*)6}	Construction	29.50	—	Pohang
[Foreign]				
VSC POSCO Steel Corporation	Steel processing and sales	50.00	50.00	Vietnam
POSCHROME (PROPRIETARY) LIMITED	Raw material manufacturing and sales	50.00	50.00	South Africa
CAML RESOURCES PTY LTD	Raw material manufacturing and sales	33.34	33.34	Australia
Nickel Mining Company SAS	Raw material manufacturing and sales	49.00	49.00	New Caledonia
PT. Wampu Electric Power	Construction and civil engineering	20.00	20.00	Indonesia
POSK (Pinghu) Steel Processing Center Co., Ltd. .	Steel processing and sales	20.00	20.00	China
PT.INDONESIA POS CHEMTECH CHOSUN Ref. ...	Refractory manufacturing and sales	30.19	30.19	Indonesia
NS-Thainox Auto Co., Ltd.	Steel manufacturing and sales	49.00	49.00	Vietnam
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd	Tinplate manufacturing and sales	34.00	34.00	China
PT. Tanggamus Electric Power ^{(*)1}	Construction and civil engineering	17.50	17.50	Indonesia
LLP POSUK Titanium	Titanium manufacturing and sales	36.83	36.83	Kazakhstan
LI3 ENERGY INC	Resource development	26.06	26.06	Peru
IMFA ALLOYS FINLEASE LTD	Raw material manufacturing and sales	24.00	24.00	India
KRAKATAU POS-CHEM DONG-SUH CHEMICAL ^{(*)1}	Chemical by-product manufacturing and sales	19.00	19.00	Indonesia
7623704 Canada Inc. ^{(*)1}	Investments management	10.40	10.40	Canada
Hamparan Mulya	Resource development	45.00	45.00	Indonesia
POS-SEAH STEEL WIRE (TIANJIN) CO., Ltd.	Steel manufacturing and sales	25.00	25.00	China
Eureka Moly LLC	Raw material manufacturing and sales	20.00	20.00	USA
PT. Batutua Tembaga Raya	Raw material manufacturing and sales	22.00	22.00	Indonesia
KIRIN VIETNAM CO., LTD ^{(*)1}	Panel manufacturing	19.00	19.00	Vietnam
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	Steel processing and sales	25.00	25.00	China
POS-SeAH Steel Wire (Thailand) Co., Ltd.	Steel manufacturing and sales	25.00	25.00	Thailand
Jupiter Mines Limited ^{(*)1}	Resource development	17.06	6.93	Australia
SAMHWAN VINA CO., LTD ^{(*)1}	Steel manufacturing and sales	19.00	19.00	Vietnam
JB CLARK HILLS	Construction	25.00	25.00	Philippines
Saudi-Korean Company for Maintenance Properties Management LLC ^{(*)1}	Building management	19.00	19.00	Saudi Arabia
Sebang Steel	Scrap sales	49.00	49.00	Japan

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

Investee	Category of business	Ownership (%)		Region
		2017	2018	
[Foreign]				
NCR LLC	Coal sales	29.41	29.41	Canada
AMCI (WA) PTY LTD	Iron ore sales & mine development	49.00	49.00	Australia
SHANGHAI LANSHENG DAEWOO CORP.	Trading	49.00	49.00	China
SHANGHAI WAIGAOQIAO FREE TRADE ZONE LANSHENG DAEWOO IN'L TRADING CO., LTD.	Trading	49.00	49.00	China
General Medicines Company Ltd.	Medicine manufacturing and sales	33.00	33.00	Sudan
KOREA LNG LTD.	Gas production and sales	20.00	20.00	England
AES-VCM Mong Duong Power Company Limited	Electricity generation	30.00	30.00	Vietnam
KG Power(M) SDN. BHD	Resource development	20.00	20.00	Malaysia
South-East Asia Gas Pipeline Company Ltd.	Pipeline construction and management	25.04	25.04	Myanmar
GLOBAL KOMSCO Daewoo LLC	Cotton celluloid manufacturing and sales	35.00	35.00	Uzbekistan
POSCO-Poggenamp Electrical Steel Pvt. Ltd.	Steel processing and sales	26.00	26.00	India
Qingdao Pohang DGENX Stainless SteelPipeCo., Ltd (*4)	Exhaust meter manufacturing	—	40.00	China
SHINPOONG DAEWOO PHARMA VIETNAM CO., LTD (*1,4)	Medicine production	—	3.42	Vietnam
ERAE Automotive Systems Mexico, S. DE R.L. DE C.V (*1,4)	Automobile parts manufacturing	—	7.65	Mexico

(*1) Considering the composition of board of directors, the Company is able to exercise significant influence even though the Company's percentage of ownership is below 20%.

(*2) On September 30, 2015, in order to improve its financial standing and normalize operation, the associates reached a workout agreement with its Creditor Financial Institutions Committee. As a result, the Company lost its control and classified its shares as investment in associate.

(*3) Considering the composition of board of directors, the Company does not have control and classified its shares as investment in an associate, even though the Company's percentage of ownership is over 50%.

(*4) These associates were newly established or acquired in 2018.

(*5) Reclassified to associate from subsidiary during the year ended December 31, 2018.

(*6) Excluded from associates due to liquidation during the year ended December 31, 2018.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

2) Joint ventures

Details of joint ventures as of December 31, 2017 and 2018 are as follows:

Investee	Category of business	Ownership (%)		Region
		2017	2018	
[Domestic]				
POSCO MITSUBISHI CARBON TECHNOLOGY	Steel processing and sales	60.00	60.00	Gwangyang
POSCO-SGI Falcon Pharmaceutic Bio Secondary Fund 1	Investment in new technologies	24.55	24.55	Seoul
POSCO-KB Shipbuilding Restructuring Fund	Investment in new technologies	18.75	18.75	Seoul
POSCO-NSC Venture Fund	Investment in new technologies	16.67	16.67	Seoul
PoscoPlutus Project 3rd Project fund	Investment in new technologies	5.96	5.96	Seoul
PCC Bio 2nd Fund ^{(*)1}	Investment in new technologies	—	19.72	Seoul
PCC Material 3rd Fund ^{(*)1}	Investment in new technologies	—	2.38	Seoul
PCC L&K IST FUND ^{(*)2}	Investment in new technologies	10.00	—	Seoul
[Foreign]				
KOBRASCO	Steel materials manufacturing and sales	50.00	50.00	Brazil
USS-POSCO Industries	Cold-rolled steel manufacturing and sales	50.00	50.00	USA
PT. POSMI Steel Indonesia	Steel processing and sales	36.69	36.69	Indonesia
United Spiral Pipe, LLC	Material manufacturing and sales	35.00	35.00	USA
CSP — Companhia Siderurgica do Pecem	Steel manufacturing and sales	20.00	20.00	Brazil
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	Steel processing and sales	25.00	25.00	China
POSCO-SAMSUNG-Slovakia Processing Center	Steel processing and sales	30.00	30.00	Slovakia
VNS-DAEWOO Co., Ltd.	Steel scrap processing and sales	40.00	50.00	Vietnam
YULCHON MEXICO S.A. DE C.V.	Tube for automobile manufacturing	19.00	19.00	Mexico
Hyunson Engineering & Construction HYENCO	Construction	4.90	4.89	Algeria
POSCO E&C Saudi Arabia	Civil engineering and construction	40.00	40.00	Saudi Arabia
Pos-Austem Suzhou Automotive Co., Ltd	Automotive parts manufacturing	19.90	19.90	China
POS-InfraAuto (Suzhou) Co., Ltd	Automotive parts manufacturing	16.20	16.20	China
POS-AUSTEM YANTAI AUTOMOTIVE CO., LTD . . .	Automotive parts manufacturing	11.10	11.10	China
POS-AUSTEM WUHAN AUTOMOTIVE CO., LTD . . .	Automotive parts manufacturing	13.00	13.00	China
Kwanika Copper Corporation	Energy & resource development	35.00	35.00	Canada
DMSA/AMSA	Energy & resource development	4.00	4.00	Madagascar
Roy Hill Holdings Pty Ltd	Energy & resource development	12.50	12.50	Australia
POSCO-NPS Niobium LLC	Mine development	50.00	50.00	USA
Korea Siberia Wood CJSC ^{(*)3}	Forest resource development	50.00	—	Russia

(*)1) These joint ventures were newly established in 2018.

(*)2) Excluded from joint ventures due to liquidation during the year ended December 31, 2018.

(*)3) Excluded from joint ventures due to the disposal of shares during the year ended December 31, 2018.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(e) Newly included subsidiaries

Consolidated subsidiaries acquired or newly established during the year ended December 31, 2018 are as follows:

Company	Date of addition	Ownership (%)	Reason
POS-LT PTY LTD	March 2018	100.00	New establishment
POSCO SINGAPORE LNG TRADING PTE. LTD.	June 2018	100.00	New establishment
ZHEJIANG POSCO-HUAYOU ESM CO., LTD	June 2018	100.00	New establishment
POSCO Argentina S.A.U.	October 2018	100.00	New establishment
Songdo Development PMC (Project Management Company) LLC.	October 2018	100.00	New establishment

(f) Excluded subsidiaries

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

Company	Date of exclusion	Reason
KIS Devonian Canada Corporation	February 2018	Merged into POSCO DAEWOO E&P CANADA CORPORATION
POSCO-CDSFC	February 2018	Merged into POSCO China Dalian Plate Processing Center Co., Ltd.
POCA STEM Co., Ltd.	March 2018	Liquidation
POSCO E&C VENEZUELA C.A.	March 2018	Liquidation
PT PEN INDONESIA	March 2018	Merged into PT. POSCO E&C INDONESIA
Kyobo Securities Bond Plus 6M Professional Private Equity Trust W-2	April 2018	Disposal
Mirae Asset Smart Q Sigma 2.0 Professional Private Equity Trust	May 2018	Disposal
Kyobo Securities Bond Plus 6M Professional Private Equity Trust W-5	May 2018	Disposal
POSCO RUS LLC	May 2018	Liquidation
POSPower Co., Ltd.	July 2018	Reclassification to an associate upon loss of control due to a decline in ownership
POSCO MESDC S.A. DE C.V.	August 2018	Merged into POSCO MEXICO S.A. DE C.V.
POSCO Engineering and Construction — UZ	November 2018	Liquidation

2. Statement of Compliance

The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRSs”), as issued by the International Accounting Standards Board.

The consolidated financial statements were authorized for issue by the authorized directors on March 7, 2019.

In 2018, the Company adopted IFRS No. 15 “Revenue from Contracts with Customers” and IFRS No. 9 “Financial Instruments” for the first time. Changes to significant accounting policies are described in Note 2 “Changes in Accounting Policies”.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

Basis of measurement

The consolidated financial statements have been prepared on the historical cost basis, except for the following material items in the statement of financial position, as described in the accounting policy below.

- (a) Derivatives instruments measured at fair value
- (b) Financial instruments measured at fair value through profit or loss
- (c) Financial instruments measured at fair value through other comprehensive income
- (d) Financial instruments at fair value through profit or loss
- (e) Available-for-sale financial assets measured at fair value
- (f) Defined benefit liabilities measured at the present value of the defined benefit obligation less the fair value of the plan assets

Functional and presentation currency

The financial statements of POSCO and subsidiaries are prepared in functional currency of the respective operation. These consolidated financial statements are presented in Korean Won, which is POSCO's functional currency which is the currency of the primary economic environment in which POSCO operates.

Use of estimates and judgments

The preparation of the consolidated financial statements in conformity with IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period prospectively.

(a) Judgments

Information about critical judgments in applying accounting policies that have the most significant effect on the amounts recognized in the consolidated financial statements is included in the following notes:

- Note 1 — Subsidiaries, associates and joint ventures
- Note 11 — Investments in associates and joint ventures
- Note 12 — Joint operations
- Note 25 — Hybrid bonds

(b) Assumptions and estimation uncertainties

Information about assumptions and estimation uncertainties that have a significant risk of resulting in a material adjustment within the next fiscal year is included in the following notes:

- Note 11 — Investments in associates and joint ventures
- Note 14 — Property, plant and equipment, net

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

- Note 15 — Goodwill and other intangible assets, net
- Note 20 — Provisions
- Note 21 — Employee benefits
- Note 23 — Financial instruments
- Note 29 — Revenue — contract balances
- Note 35 — Income taxes
- Note 38 — Commitments and contingencies

(c) Measurement of fair value

The Company's accounting policies and disclosures require the measurement of fair values, for both financial and non-financial assets and liabilities. The Company has an established control framework with respect to the measurement of fair values. This includes a valuation team that has overall responsibility for overseeing all significant fair value measurements, including Level 3 fair values, and reports directly to the financial officer.

The valuation team regularly reviews significant unobservable inputs and valuation adjustments. If third party information, such as broker quotes or pricing services, is used to measure fair values, then the valuation team assesses the evidence obtained from the third parties to support the conclusion that such valuations meet the requirements of IFRS including the level in the fair value hierarchy in which such valuation techniques should be classified.

Significant valuation issues are reported to the Company's Audit Committee.

When measuring the fair value of an asset or a liability, the Company uses market observable data as far as possible. Fair values are categorized into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows.

- Level 1 — unadjusted quoted prices in active markets for identical assets or liabilities.
- Level 2 — inputs other than quoted prices included in Level 1 that are observable for the assets or liability, either directly or indirectly.
- Level 3 — inputs for the assets or liability that are not based on observable market data.

If the inputs used to measure the fair value of an asset or a liability might be categorized in different levels of the fair value hierarchy, then the fair value measurement is categorized in its entirety in the same level of the fair value hierarchy as the lowest level input that is significant to the entire measurement. The Company recognizes transfers between levels of the fair value hierarchy at the end of the reporting period during which the change has occurred.

Information about the assumptions made in measuring fair values is included in the following note:

- Note 23 — Financial instruments

Changes in Accounting Policies

The Company has initially adopted IFRS No. 15 "Revenue from Contracts with Customers" and IFRS No. 9 "Financial Instruments" from January 1, 2018. The other accounting standards adopted from January 1, 2018 had no significant effect on the Company's consolidated financial statements.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

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The effect of initially applying IFRS No. 15 and IFRS No. 9 is mainly attributable to the following:

- identify the shipping services included in certain sales contracts as a separate performance obligation
- determine separate construction contracts such as design, purchase and construction services which are highly dependent or correlated as a single performance obligation
- estimate variable consideration such as sales discount and price adjustments based on performance
- change in the method of revenue recognition from service contracts without enforceable right to payment for performance completed
- change in percentage of completion due to excessive use of materials
- recognize as an expense immediately of prepaid contract cost unless those costs are explicitly chargeable to the customers regardless of whether the contract is obtained
- change in classification and subsequent measurement of financial assets
- change in timing of recognition of impairment loss on financial assets

(a) IFRS No. 15 “Revenue from Contracts with Customers”

IFRS No. 15 “Revenue from Contracts with Customers” provides a unified five-step model for determining the timing, measurement and recognition of revenue. It replaced previous revenue recognition guidance, including IAS No. 18 “Revenue”, IAS No. 11 “Construction Contracts”, SIC No. 31 “Revenue- Barter Transactions Involving Advertising Services”, IFRIC No. 13 “Customer Loyalty Programs”, IFRIC No. 15 “Agreements for the Construction of Real Estate”, and IFRIC No. 18 “Transfers of Assets from Customers”.

The Company applied the modified retrospective approach by recognizing the cumulative impact of initially applying the revenue standard as of January 1, 2018, the date of initial application, and the Company also decided to apply the practical expedients as allowed by IFRS No. 15 by applying the new standard only to those contracts that are not considered as completed contracts at the date of initial application. Accordingly, the Company did not restate the financial statements for comparative periods.

POSCO and Subsidiaries

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The following table summarizes the impact, net of tax, of transition to IFRS No. 15 on retained earnings and non-controlling interests as of January 1, 2018.

	Retained earnings	Non-controlling interests
	(in millions of Won)	
Shipping services included in the sales contract	₩ (949)	(156)
Separate construction contract determined to be a single performance obligation	452	628
Variable consideration for sales discounts and price adjustments based on performance	(2,613)	172
Change in revenue recognition method for contracts without enforceable right to payment	(1,189)	(1,115)
Change in percentage of completion due to excessive use of materials	(2,855)	(1,512)
Recognize prepaid contract cost as an expense	(63,753)	(56,993)
	<u>₩(70,907)</u>	<u>(58,976)</u>

The details of new significant accounting policies and impacts of the adoption of IFRS No. 15 are as follows:

1) Identification of performance obligations

The Company holds certain contracts for sales of manufactured product and merchandise which include transport service. When applying IFRS No. 15, sales of manufactured products or merchandise and delivery of products (i.e. shipping service) are identified as separate performance obligations in the contracts with customers. For transactions for which the shipping terms are on shipment basis and the customer pays shipping costs, the two performance obligations are separately accounted for because delivery of products is performed after the control over the products is transferred to the customer. The transaction price allocated to the performance obligation of delivery service is recognized when the obligation of delivery of the product is completed.

The Company identified shipping service included in the sales contract as a separate performance obligation that will be satisfied over the promised service period. This change in relevant accounting policy resulted in decreases in revenue and cost of sales, increases in other current assets and contract liabilities and decrease in other payables as of and for the year ended December 31, 2018.

In addition, the Company presented costs incurred in the shipping services in cost of sales from January 1, 2018, which were previously presented in selling and administrative expenses.

Certain construction contracts of the Company include design, purchase and construction services through separate service contracts. According to IFRS No. 15, if service or goods provided by the Company are highly dependent or correlated, the Company should identify them as a single performance obligation regardless of the number of contracts made.

The Company considered these service contracts as a combined single obligation and identified as a single performance obligation. This change in accounting policy resulted

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in decreases in revenue and contract assets as of and for the year ended December 31, 2018.

2) Variable consideration

Under IFRS No. 15, the Company estimates the amount of variable consideration by using the expected value which the Company expects to better predict the amount of consideration. The Company recognizes revenue with transaction price including variable consideration only to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the refund period has lapsed.

In certain sales arrangements, unit price is subject to adjustment due to quality issues of products. A certain percentage of sales discount is also provided in case customers make payment before the settlement due date. In addition, certain service contracts are subject to compensation payment if the Company fails to achieve a promised level of obligation.

The Company changed its accounting treatment regarding variable consideration in accordance with IFRS No. 15. This change in relevant accounting policy resulted in decrease in revenue and increase in contract liabilities as of and for the year ended December 31, 2018.

3) Performance obligation satisfied over time

In accordance with IFRS No. 15, revenue is recognized over time by measuring progress only if the Company's performance does not create an asset with an alternative use to the Company and the Company has an enforceable right to payment for performance completed to date.

The Company has determined that it has no enforceable right to payment for performance completed to date for certain service contracts. This change in relevant accounting policy resulted in increases in revenue and cost of sales and increases in inventories, contract assets and contract liabilities as of and for the year ended December 31, 2018.

According to IFRS No. 15, the effects of any inputs that do not depict the transfer of control of goods or services to the customer such as the costs of wasted materials, labor or other resources to fulfill the contract that were not reflected in the price of the contract should be excluded from calculating percentage of completion. This change in relevant accounting policy resulted in increase in revenue and decreases in contract assets and liabilities as of and for the year ended December 31, 2018.

4) Incremental costs of obtaining a contract

In accordance with IFRS No. 15, the Company recognizes as an asset the incremental costs of obtaining a contract with a customer if the Company expects to recover those costs, and costs that are recognized as assets are amortized over the period that the related goods or services are transferred to the customer.

Certain costs incurred in construction segment such as costs to obtain a contract that would have been incurred regardless of whether the contract was obtained is

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recognized as an expense immediately, unless those costs are explicitly chargeable to the customer regardless of whether the contract is obtained. Such costs have been previously capitalized if it is probable the related contracts will be entered into. This change in relevant accounting policy resulted in decrease in cost of sales, increases in revenue, selling and administrative expenses and finance costs, decreases in contract assets, other current assets and contract liabilities and increase in provisions as of and for the year ended December 31, 2018.

5) Impact of changes in accounting policies

The effects of adoption of IFRS No. 15 to the Company's consolidated statements of financial position and consolidated statements of comprehensive income as of and for the year ended December 31, 2018 are as follows. There is no material impact on the Company's consolidated statement of cash flows for the year ended December 31, 2018.

	As reported	Adjustments of IFRS No. 15	Amounts without IFRS No. 15
		(in millions of Won)	
Consolidated financial statements of financial position			
Current assets	₩ 34,151,972	193,400	34,345,372
Trade accounts and notes receivable	9,130,204	86,293	9,216,497
Inventories	12,153,303	6,584	12,159,887
Other current assets	684,464	100,523	784,987
Non-current assets	44,625,019	(41,589)	44,583,430
Deferred tax assets	1,408,787	(41,589)	1,367,198
Current liabilities	19,430,577	21,605	19,452,182
Others payables	1,720,097	17,809	1,737,906
Current income tax liabilities	948,166	(640)	947,526
Provisions	298,453	(28,748)	269,705
Other current liabilities	2,090,307	33,184	2,123,491
Retained earnings	44,160,659	68,182	44,228,841
Non-controlling interests	3,347,257	62,024	3,409,281
Consolidated statements of comprehensive income			
Revenue	₩ 65,154,636	135	65,154,771
Cost of sales	(57,129,060)	1,206,973	(55,922,087)
Selling and administrative expenses	(2,429,781)	(1,204,764)	(3,634,545)
Finance costs	(2,244,416)	178	(2,244,238)
Profit before income taxes	3,616,016	2,522	3,618,538
Income tax expense	(1,683,630)	(2,198)	(1,685,828)
Profit	1,932,386	324	1,932,710

(b) IFRS No. 9 "Financial Instruments"

IFRS No. 9 "Financial Instruments" regulates requirements for measurement and recognition of certain contracts in relation to trading financial assets and liabilities or nonfinancial items. It replaced existing guidance in IAS No. 39 "Financial Instruments: Recognition and Measurement".

The Company applied retrospectively the standard with exemptions where an entity is not required to restate the comparative information for prior periods in relation to classification and measurement (including impairment) changes. The Company recognized the cumulative effect resulting from initial application of IFRS No. 9 as reserves, retained earnings and non-controlling interests of the Company at the date of initial application.

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The following table summarizes the impact, net of tax, of transition to IFRS No. 9 on reserves, retained earnings and non-controlling interests as of January 1, 2018.

	Reserves	Retained earnings	Non-controlling interests
	(in millions of Won)		
Classification to fair value through profit or loss in securities and select to fair value through other comprehensive income in equity securities ^(*)	₩(498,517)	498,517	—
Recognition of expected credit losses	—	(51,450)	(34,754)
	<u>₩(498,517)</u>	<u>447,067</u>	<u>(34,754)</u>

(*) Includes a decrease in reserve (capital adjustment arising from investments in equity-accounted investees) of ₩76,992 million and an increase in retained earnings of ₩76,992 million related to selection to fair value through other comprehensive income in equity securities of associates and joint ventures.

The details of new significant accounting policies and the nature and effect of the changes to previous accounting policies are set out below.

1) Classification and measurement of financial assets and financial liabilities

IFRS No. 9 contains three principal classification categories for financial assets: measured at amortized cost, at fair value through other comprehensive income and at fair value through profit or loss. The classification of financial assets under IFRS No. 9 is generally based on the business model in which a financial asset is managed and its contractual cash flow characteristics. Under IFRS No. 9, derivatives embedded in contracts where the host is a financial asset in the scope of the standard are never separated. Instead, the hybrid financial instrument as a whole is assessed for classification.

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As of January 1, 2018, the date of initial application, measurement categories and carrying amounts of financial assets in accordance with IAS No. 39 “Financial Instruments: Recognition and Measurement” and IFRS No. 9 “Financial Instruments” are as follows:

	Original classification under IAS No. 39	Original carrying amounts under IAS No. 39	New classification under IFRS No. 9	New carrying amounts under IFRS No. 9
		(in millions of Won)		
Derivative assets	Financial assets at fair value through profit or loss	₩ 65,051	Fair value through profit or loss	₩ 65,051
	Hedging instrument	3,239	Hedging instrument	3,239
Cash and cash equivalents	Loans and receivables	2,612,530	Amortized cost	2,612,530
Trade accounts and notes receivable ^(*) . . .	Loans and receivables	8,901,867	Amortized cost	8,799,161
Other receivables ^(*) . . .	Loans and receivables	2,195,466	Fair value through profit or loss	1,898
			Amortized cost	2,188,820
Equity securities ^(*)	Available-for-sale financial assets	1,421,295	Fair value through profit or loss	17,812
			Fair value through other comprehensive income	1,403,483
Debt securities ^(*)	Available-for-sale financial assets	190,579	Fair value through profit or loss	188,276
			Fair value through other comprehensive income	2,303
	Held-to-maturity financial assets	5,211	Amortized cost	5,211
Other Securities ^(*)	Available-for-sale financial assets	366,241	Fair value through profit or loss	366,241
Deposit instruments	Loans and receivables	1,358,311	Amortized cost	1,358,311
Short-term financial instruments	Financial assets at fair value through profit or loss	1,970	Fair value through profit or loss	5,547,637
	Loans and receivables	5,545,667		

(*) As a result of the adoption of IFRS No. 9, as of January 1, 2018, the date of initial application, loss allowance was increased by ₩107,454 million, retained earnings and non-controlling interests were decreased by ₩51,450 million and ₩34,754 million, respectively.

(*) As a result of the adoption of IFRS No. 9, as of January 1, 2018, the date of initial application, with respect to securities classified as fair value through profit or loss and equity securities determined fair value through other comprehensive income, reserves were decreased by ₩421,525 million and retained earnings were increased by ₩421,525 million.

IFRS No. 9 “Financial Instruments” retains most of the requirements of IAS No. 39 “Financial Instruments: Recognition and Measurement” for the classification and measurement of financial liabilities. Accordingly, the application of IFRS No. 9

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“Financial Instruments” has no significant effect on the Company’s accounting policies related to financial liabilities.

2) Impairment of financial assets

IFRS No. 9 replaces the incurred loss model in IAS No. 39 with a forward-looking expected credit loss model for debt instruments, lease receivables, contractual assets, loan commitments, and financial guarantee contracts.

Under IFRS No. 9, impairment losses are likely to be recognized earlier than using the incurred loss model under the existing guidance in IAS No. 39 as loss allowances is measured either 12-month or lifetime expected credit loss based on the extent of increase in credit risk.

As of January 1, 2018, the date of initial application, the Company recognized an increase in loss allowances of ₩107,454 million and decreases in retained earnings and non-controlling interests of ₩51,450 million and ₩34,754 million, respectively.

In addition to the application of IFRS No. 9, the Company applied the amendments to IAS No. 1 “Presentation of Financial Statements”, which requires the recognition of impairment of financial assets to be separated in the consolidated statements of comprehensive income. Impairment loss on trade accounts and notes receivable and impairment loss on other receivables are presented as separate items.

3) Hedge Accounting

Regarding the initial application of IFRS No. 9, the Company determined to consistently apply hedge accounting requirements of IAS No. 39.

3. Summary of Significant Accounting Policies

The significant accounting policies applied by the Company in preparation of its consolidated financial statements are included below. The accounting policies set out below have been applied consistently to all periods presented in these consolidated financial statements, except for those as disclosed in note 2.

Basis of consolidation

(a) Business combinations

The Company accounts for business combinations using the acquisition method when control is transferred to the Company.

The consideration transferred in the acquisition is generally measured at fair value, as are the identifiable net assets acquired. Any goodwill that arises is tested annually for impairment. Any gain on bargain purchase is recognized in profit or loss immediately. Transaction costs are expensed as incurred, except if related to the issue of debt or equity securities. The consideration transferred does not include amounts related to the settlement of pre-existing relationships. Such amounts are generally recognized in profit or loss.

Any contingent consideration payable is measured at fair value at the acquisition date. If the contingent consideration is classified as equity, then it is not remeasured and settlement is accounted for within equity. Otherwise, subsequent changes in the fair value of the contingent consideration are recognized in profit or loss.

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If share-based payment awards (replacement awards) are required to be exchanged for awards held by the acquiree's employees (acquiree's awards), then all or a portion of the amount of the acquirer's replacement awards is included in measuring the consideration transferred in the business combination. This determination is based on the market-based measure of the replacement awards compared with the market-based measure of the acquiree's awards and the extent to which the replacement awards relate to pre-combination service.

(b) Non-controlling interests

Non-controlling interests are measured at their proportionate share of the acquiree's identifiable net assets at the acquisition date. Changes in the Company's interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions.

(c) Subsidiaries

Subsidiaries are entities controlled by the Company. The Company controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

(d) Loss of control

When the Company loses control over a subsidiary, it derecognizes the assets and liabilities of the subsidiary, and any related non-controlling interests and other components of equity. Any resulting gain or loss is recognized in profit or loss. Any interest retained in the former subsidiary is measured at fair value when control is lost.

(e) Interests in equity-accounted investees

The Company's interests in equity-control investees comprise interests in associates and joint ventures. Associates are those entities in which the Company has significant influence, but not control or joint control, over the financial and operating policies. A joint venture is an arrangement in which the Company has joint control, whereby the Company has rights to the net assets of the arrangement, rather than rights to its assets and obligations for its liabilities.

Interests in associates and joint ventures are accounted for using the equity method. They are recognized initially at cost, which includes transaction costs. Subsequent to initial recognition, the consolidated financial statements include the Company's share of the profit or loss and other comprehensive income of equity-accounted investees, until the date on which significant influence or joint control ceases.

(f) Transactions eliminated on consolidation

Intra-group balances and transactions, and any unrealized income and expenses arising from intra-group transactions, are eliminated. Unrealized gains arising from transactions with equity-accounted investees are eliminated against the investment to the extent of the Company's interest in the investee. Unrealized losses are eliminated in the same way as unrealized gains, but only to the extent that there is no evidence of impairment.

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Foreign currency transactions and translation

(a) Foreign currency transactions

Foreign currency transactions are initially recorded using the spot exchange rate between the functional currency and the foreign currency at the date of the transaction. At the end of each reporting period, foreign currency monetary items are translated using the closing rate. Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the original transaction. Non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rate at the date fair value was initially determined.

Exchange differences arising on the settlement of monetary items or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous financial statements are recognized in profit or loss in the period in which they arise. When gains or losses on non-monetary items are recognized in other comprehensive income, exchange components of those gains or losses are recognized in other comprehensive income. Conversely, when gains or losses on non-monetary items are recognized in profit or loss, exchange components of those gains or losses are recognized in profit or loss.

(b) Foreign operations

If the presentation currency of the Company is different from a foreign operation's functional currency, the financial statements of the foreign operation are translated into the presentation currency using the following methods:

The assets and liabilities of foreign operations, whose functional currency is not the currency of a hyperinflationary economy, are translated to presentation currency at exchange rates at the reporting date. The income and expenses of foreign operations are translated to functional currency at exchange rates at the dates of the transactions. Foreign currency differences are recognized in other comprehensive income.

Any goodwill arising on the acquisition of a foreign operation and any fair value adjustments to the carrying amounts of assets and liabilities arising on the acquisition of that foreign operation are treated as assets and liabilities of the foreign operation. Thus, they are expressed in the functional currency of the foreign operation and translated at the closing rate.

When a foreign operation is disposed of, the relevant amount in the translation is transferred to profit or loss as part of the profit or loss on disposal. On the partial disposal of a subsidiary that includes a foreign operation, the relevant proportion of such cumulative amount is reattributed to non-controlling interest. In any other partial disposal of a foreign operation, the relevant proportion is reclassified to profit or loss.

Foreign exchange gains or losses arising from a monetary item receivable from or payable to a foreign operation, the settlement of which is neither planned nor likely to occur in the foreseeable future and which in substance is considered to form part of the net investment in the foreign operation, are recognized in other comprehensive income in the translation reserve.

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Cash and cash equivalents

Cash and cash equivalents comprise cash on hand, demand deposits, and short-term investments in highly liquid securities that are readily convertible to known amounts of cash with maturities of three months or less from the acquisition date and which are subject to an insignificant risk of changes in value. Equity investments are excluded from cash and cash equivalents.

Non-derivative financial assets

Trade receivables and debt securities issued are initially recognized when they are originated. All other financial assets are initially recognized when the Company becomes a party to the contractual provisions of the instrument.

A financial asset(unless it is a trade receivable without a significant financing component) is initially measured at fair value plus, for an item not at financial assets measured at fair value through profit or loss, transaction costs that are directly attributable to its acquisition or issue. A trade receivable without a significant financing component is initially measured at the transaction price.

(a) Classification and subsequent measurement — Policies applicable from January 1, 2018

On initial recognition, a financial asset is classified as measured at amortized cost, debt instruments measured at fair value through other comprehensive income, equity instruments measured at fair value through other comprehensive income or financial assets measured at fair value through profit or loss.

Financial assets are not reclassified subsequent to their initial recognition unless the Company changes its business model for managing financial assets, in which case all affected financial assets are reclassified on the first day of the first reporting period following the change in the business model.

Financial assets measured at amortized cost

A financial asset is measured at amortized cost if it meets both of the following conditions and is not designated as at fair value through profit or loss.

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

Financial assets measured at amortized cost are subsequently measured at amortized cost using the effective interest method. The amortized cost is reduced by impairment losses. Interest income, gains and losses on foreign currency translation and impairment losses are recognized in profit or loss. Any gain or loss on derecognition is recognized in profit or loss.

Debt instruments measured at fair value through other comprehensive income

A debt instrument is measured at fair value through other comprehensive income if it meets both of the following conditions and is not designated as at fair value through profit or loss.

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

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Debt instruments measured at fair value through other comprehensive income are subsequently measured at fair value. Interest income which is calculated using the effective interest method, gains and losses from foreign currency translation and impairment losses are recognized in profit or loss and other net profit or loss is recognized in other comprehensive income. At the time of elimination, other accumulated comprehensive income is reclassified to profit or loss.

Equity instruments measured at fair value through other comprehensive income

On initial recognition of an equity investment that is not held for trading, the Company may irrevocably elect to present subsequent changes in the investment's fair value in other comprehensive income. This election is made on an investment-by-investment basis.

Equity instruments measured at fair value through other comprehensive income are subsequently measured at fair value. Dividends are recognized as income in profit or loss unless the dividend clearly represents a recovery of part of the cost of the investment. Other net gains and losses are recognized in other comprehensive income and never reclassified to profit or loss.

Financial assets measured at fair value through profit or loss

All financial assets not classified as measured at amortized cost or fair value through other comprehensive income as described above are measured at fair value through profit or loss. This includes all derivative financial assets. On initial recognition, the Company may irrevocably designate a financial asset that otherwise meets the requirements to be measured at amortized cost or at fair value through other comprehensive income as at fair value through profit or loss if doing so eliminates or significantly reduces an accounting mismatch that would otherwise arise.

Financial assets measured at fair value through profit or loss are subsequently measured at fair value. Net gains and losses, including any interest or dividend income, are recognized in profit or loss.

(b) Classification and subsequent measurement — Policies applied before January 1, 2018

The Company recognizes and measures non-derivative financial assets by the following four categories: financial assets at fair value through profit or loss, held-to-maturity financial assets, loans and receivables and available-for-sale financial assets.

Financial assets at fair value through profit or loss

Financial assets are classified at fair value through profit or loss if they are held for trading or designated as such upon initial recognition. Upon initial recognition, transaction costs are recognized in profit or loss when incurred. Financial assets at fair value through profit or loss are measured at fair value, and changes therein are recognized in profit or loss.

Held-to-maturity financial assets

A non-derivative financial asset with a fixed or determinable payment and fixed maturity, for which the Company has the positive intention and ability to hold to maturity, is classified as held-to-maturity. Subsequent to initial recognition, held-to-maturity financial assets are measured at amortized cost using the effective interest rate method.

Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Subsequent to initial recognition, loans and receivables are measured at amortized cost using the effective interest method unless the effect of discounting is immaterial.

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Available-for-sale financial assets

Available-for-sale financial assets are those non-derivative financial assets that are designated as available-for-sale or are not classified as financial assets at fair value through profit or loss, held-to-maturity financial assets or loans and receivables. Subsequent to initial recognition, they are measured at fair value, with changes in fair value, net of any tax effect, recorded in other comprehensive income in equity. Investments in equity instruments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured and derivatives that are linked to and must be settled by delivery of such unquoted equity instruments are measured at cost. When a financial asset is derecognized or impairment losses are recognized, the cumulative gain or loss previously recognized in other comprehensive income is reclassified from equity to profit or loss. Dividends on an available-for-sale equity instrument are recognized in profit or loss when the Company's right to receive payment is established.

(c) Derecognition of non-derivative financial assets

The Company derecognizes non-derivative financial assets when the contractual rights to the cash flows from the financial asset expire, or the Company transfers the rights to receive the contractual cash flows from the financial asset as well as substantially all the risks and rewards of ownership of the financial asset. Any interest in a transferred financial asset that is created or retained by the Company is recognized as a separate asset or liability.

If the Company retains substantially all the risks and rewards of ownership of the transferred financial assets, the Company continues to recognize the transferred financial assets and recognizes financial liabilities for the consideration received.

(d) Offsetting a financial asset and a financial liability

Financial assets and financial liabilities are offset and the net amount is presented in the consolidated statement of financial position only when the Company currently has a legally enforceable right to offset the recognized amounts, and there is the intention to settle on a net basis or to realize the asset and settle the liability simultaneously.

Inventories

Inventory costs, except materials-in-transit in which costs are determined by using specific identification method, are determined by using the moving-weighted average method. The cost of inventories comprise all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition. The allocation of fixed production overheads to the costs of finished goods or work in progress are based on the normal capacity of the production facilities.

Inventories are measured at the lower of cost or net realizable value. The amount of any write-down of inventories to net realizable value and all losses of inventories are 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 a cost of goods sold in the period in which the reversal occurs.

The carrying amount of those inventories is recognized as cost of goods sold in the period in which the related revenue is recognized.

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Non-current assets held for sale

Non-current assets or disposal groups comprising assets and liabilities that are expected to be recovered primarily through sale rather than through continuing use are classified as held for sale. In order to be classified as held for sale, the assets or disposal groups must be available for immediate sale in their present condition and their sale must be highly probable. The assets or disposal groups that are classified as non-current assets held for sale are measured at the lower of their carrying amount and fair value less cost to sell.

The Company recognizes an impairment loss for any initial or subsequent write-down of an asset or disposal group to fair value less costs to sell, and a gain for any subsequent increase in fair value less costs to sell, up to the cumulative impairment loss previously recognized in accordance with IAS No. 36 "Impairment of Assets".

A non-current asset that is classified as held for sale or part of a disposal group classified as held for sale is not depreciated (or amortized).

Investment property

Property held to earn rentals or for capital appreciation or both is classified as investment property. Investment property is measured initially at its cost. Transaction costs are included in the initial measurement. Subsequently, investment property is carried at depreciated cost less any accumulated impairment losses.

Subsequent costs are recognized in the carrying amount of investment property at cost or, if appropriate, as separate items if it is probable that future economic benefits associated with the item will flow to the Company and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognized. The costs of the day-to-day servicing are recognized in profit or loss as incurred.

Depreciation methods, useful lives and residual values are reviewed at the end of each reporting date and adjusted, if appropriate. The change is accounted for as a change in an accounting estimate.

Property, plant and equipment

Property, plant and equipment are initially measured at cost and after initial recognition, are carried at cost less accumulated depreciation and any accumulated impairment losses. The cost of property, plant and equipment includes expenditures arising directly from the construction or acquisition of the asset, 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 and, when the Company has an obligation to remove the asset or restore the site, an estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

The cost of replacing a part of an item is recognized in the carrying amount of the item of property, plant and equipment, if the following recognition criteria are met:

- (a) it is probable that future economic benefits associated with the item will flow to the Company, and
- (b) the cost can be measured reliably.

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The carrying amount of the replaced part is derecognized at the time the replacement part is recognized. The costs of the day-to-day servicing of the item are recognized in profit or loss as incurred.

Items of property, plant and equipment are depreciated from the date they are available for use or, in respect of self-constructed assets, from the date that the asset is completed and ready for use. Other than land, the costs of an asset less its estimated residual value are depreciated. Depreciation of property, plant and equipment is recognized in profit or loss on a straight-line basis, which most closely reflects the expected pattern of consumption of the future economic benefits embodied in the asset, over the estimated useful lives of each component of an item of property, plant and equipment. Land is not depreciated.

Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item is depreciated separately.

The gain or loss arising from the derecognition of an item of property, plant and equipment is included in profit or loss when the item is derecognized.

The estimated useful lives for the current and comparative periods are as follows:

Buildings	5-50 years
Structures	4-50 years
Machinery and equipment	4-25 years
Vehicles	3-20 years
Tools	3-10 years
Furniture and fixtures	3-20 years
Lease assets	3-30 years
Bearer plants	20 years

The estimated residual value, useful lives and the depreciation method are reviewed at least at the end of each reporting period and, if expectations differ from previous estimates, the changes are accounted for as changes in accounting estimates.

Borrowing costs

The Company capitalizes borrowing costs directly attributable to the acquisition, construction or production of a qualifying asset as part of the cost of that asset. Other borrowing costs are recognized in expense as incurred. A qualifying asset is an asset that requires a substantial period of time to get ready for its intended use or sale. Financial assets and inventories that are manufactured or otherwise produced over a short period of time are not qualifying assets. Assets that are ready for their intended use or sale when acquired are not qualifying assets.

To the extent that the Company borrows funds specifically for the purpose of obtaining a qualifying asset, the Company determines the amount of borrowing costs eligible for capitalization as the actual borrowing costs incurred on that borrowing during the period less any investment income on the temporary investment of those borrowings. The Company immediately recognizes other borrowing costs as an expense. To the extent that the Company borrows funds generally and uses them for the purpose of obtaining a qualifying asset, the Company shall determine the amount of borrowing costs eligible for capitalization by applying a capitalization rate to the expenditures on that asset. The capitalization rate shall be the weighted average of the borrowing costs applicable to the borrowings of the Company that are outstanding during the period, other than borrowings made specifically for the purpose of obtaining a qualifying asset. The amount of borrowing costs that the Company capitalizes during a period shall not exceed the amount of borrowing costs incurred during that period.

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Intangible assets

Intangible assets are measured initially at cost and, subsequently, are carried at cost less accumulated amortization and accumulated impairment losses.

Amortization of intangible assets except for goodwill is calculated on a straight-line basis over the estimated useful lives of intangible assets from the date that they are available for use. The residual value of intangible assets is zero. However, as there are no foreseeable limits to the periods over which club memberships are expected to be available for use, this intangible asset is determined as having an indefinite useful life and not amortized.

Intellectual property rights	4-25 years
Development expense	3-5 years
Port facilities usage rights	4-75 years
Other intangible assets	2-15 years

Amortization periods and the amortization methods for intangible assets with finite useful lives are reviewed at the end of each reporting period. The useful lives of intangible assets that are not being amortized are reviewed at the end of each reporting period to determine whether events and circumstances continue to support indefinite useful life assessments for those assets. Changes are accounted for as changes in accounting estimates.

Expenditures on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding, are recognized in profit or loss as incurred. Development expenditures are capitalized only if development costs can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable, and the Company intends to and has sufficient resources to complete development and to use or sell the asset. Other development expenditures are recognized in profit or loss as incurred.

Subsequent expenditures are capitalized only when they increase the future economic benefits embodied in the specific asset to which they relate. All other expenditures, including expenditures on internally generated goodwill and brands, are recognized in profit or loss as incurred.

Exploration for and evaluation of mineral resources

POSCO is engaged in exploration projects for mineral resources through subsidiaries, associates and joint ventures or other contractual arrangements. Expenditures related to the development of mineral resources are recognized as exploration or development intangible assets. The nature of these intangible assets are as follows:

(a) Exploration and evaluation assets

Exploration and evaluation assets consist of expenditures for topographical studies, geophysical studies and trenching. These assets are reclassified as development assets when it is proved that the exploration has identified commercially viable mineral deposit.

(b) Development assets

When proved reserves are determined and development is sanctioned, development expenditures incurred are capitalized. These expenditures include evaluation of oil fields, construction of oil/gas wells, drilling for viability and others. On completion of development and inception of extraction for commercial production of developed proved reserves, the development assets are reclassified as either property, plant and equipment or as intellectual property rights (mining rights) under intangible assets based on the nature of the capitalized expenditure.

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The respective property, plant and equipment and intellectual property (mining rights) are each depreciated and amortized based on proved reserves on a unit of production basis.

Government grants

Government grants are not recognized unless there is reasonable assurance that the Company will comply with the grant's conditions and that the grant will be received.

(a) Grants related to assets

Government grants whose primary condition is that the Company purchase, construct or otherwise acquire long-term assets are deducted from the carrying amount of the assets and recognized in profit or loss on a systematic and rational basis over the life of the depreciable assets.

(b) Grants related to income

Government grants which are intended to compensate the Company for expenses incurred are deducted from the related expenses.

Leases

The Company classifies and accounts for leases as either a finance or operating lease, depending on the terms. Leases where the Company assumes substantially all of the risks and rewards of ownership are classified as finance leases. All other leases are classified as operating leases.

(a) Finance leases

At the commencement of the lease term, the Company recognizes as finance assets and finance liabilities the lower amount of the fair value of the leased property and the present value of the minimum lease payments, each determined at the inception of the lease. Any initial direct costs are added to the amount recognized as an asset.

Minimum lease payments are apportioned between the finance charge and the reduction of the outstanding liability. The finance charge is allocated to each period during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability. Contingent rents are charged as expenses in the periods in which they are incurred.

The depreciable amount of a leased asset is allocated to each accounting period during the period of expected use on a systematic basis consistent with the depreciation policy the Company adopts for similar depreciable assets that are owned. If there is no reasonable certainty that the Company will obtain ownership by the end of the lease term, the asset is fully depreciated over the shorter of the lease term and its useful life.

(b) Operating leases

Lease obligations under operating leases are recognized as an expense on a straight-line basis over the lease term. Contingent rents are charged as expenses in the periods in which they are incurred.

(c) Determining whether an arrangement contains a lease

Determining whether an arrangement is, or contains, a lease is based on the substance of the arrangement and requires an assessment of whether fulfillment of the arrangement is

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dependent on the use of a specific asset or assets (the asset) and the arrangement conveys a right to use the asset.

At inception or reassessment of the arrangement, management of the Company separates payments and other consideration required by such an arrangement into those for the lease and those for other elements on the basis of their relative fair values. If management of the Company concludes for a financial lease that it is impracticable to separate the payments reliably, the Company recognizes an asset and a liability at an amount equal to the fair value of the underlying asset that was identified as the subject of the lease. Subsequently, the liability shall be reduced as payments are made and an imputed finance charge on the liability recognized using the purchaser's incremental borrowing rate of interest.

Impairment for financial assets — Policies applicable from January 1, 2018

The Company recognizes loss allowances for expected credit losses on:

- financial assets measured at amortized cost
- debt instruments measured at fair value through other comprehensive income
- lease receivables, contractual assets, loan commitments, and financial guarantee contracts

If credit risk has increased significantly since the initial recognition, a loss allowance for lifetime expected credit loss is required to be measured at the end of every reporting period. If credit risk has not increased significantly since the initial recognition, a loss allowance is measured based on 12-month expected credit loss.

If the financial instrument has low credit risk at the end of the reporting period, the Company may assume that the credit risk has not increased significantly since initial recognition. However, a loss allowance for lifetime expected credit losses is required for contract assets or trade receivables that do not contain a significant financing component.

(a) Judgments on credit risk

When determining whether the credit risk of a financial asset has increased significantly since initial recognition and when estimating expected credit losses, the Company considers reasonable and supportable information that is relevant and available without undue cost or effort. This includes both quantitative and qualitative information and analysis, based on the Company's historical experience and informed credit assessment and including forward-looking information.

The Company assumes that the credit risk on a financial asset has increased significantly if it is more than 30 days past due. The Company considers a financial asset to be in default when the borrower is unlikely to pay its credit obligations to the Company in full, without recourse by the Company to actions such as realizing security (if any is held). The Company considers a debt security to have low credit risk when its credit risk rating is equivalent to the globally understood definition of investment grade.

(b) Measurement of expected credit losses

Lifetime expected credit losses are the expected credit losses that result from all possible default events over the expected life of a financial instrument. 12-month expected credit losses are the portion of lifetime expected credit losses that result from default that are

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possible within the 12 months after the reporting date. The maximum period considered when estimating expected credit losses is the maximum contractual period over which the Company is exposed to credit risk.

Expected credit losses are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls such as the difference between the cash flows due to the entity in accordance with the contract and the cash flows that the Company expects to receive.

Expected credit losses for financial assets measured at amortized cost are recognized in profit or loss. Loss allowances for financial assets measured at amortized cost are deducted from carrying amount of the assets. For debt instruments measured at fair value through other comprehensive income, the loss allowance is charged to profit or loss and is recognized in other comprehensive income.

(c) Credit-impaired financial assets

At each reporting date, the Company assesses whether financial assets measured at amortized cost and debt instrument measured at fair value through other comprehensive income are credit-impaired. A financial asset is 'credit-impaired' when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred.

Objective evidence that a financial asset or group of financial assets are impaired includes:

- significant financial difficulty of the issuer or borrower
- a breach of contract, such as a default or delinquency in interest or principal payments
- the lender, for economic or legal reasons relating to the borrower's financial difficulty, granting to the borrower a concession that the lender would not otherwise consider
- it becoming probable that the borrower will enter bankruptcy or other financial reorganization
- the disappearance of an active market for that financial asset because of financial difficulties

(d) Write-off

The gross carrying amount of a financial asset is written off when the Company has no reasonable expectations of recovering a financial asset in entirety or a portion. The Company individually makes an assessment with respect to the timing and amount of write-off based on whether there is a reasonable expectation of recovery based on continuous payments and extinct prescriptions. The Company expects no significant recovery from the amount written off. However, financial assets that are written off could still be subject to enforcement activities in order to comply with the Company's procedures for recovery of amounts due.

Impairment for financial assets — Policies applied before January 1, 2018

A financial asset not carried at fair value through profit or loss is assessed at each reporting date to determine whether there is objective evidence that it is impaired. A financial asset is impaired if objective evidence indicates that a loss event has occurred after the initial recognition of the asset, and that the loss event had a negative effect on the estimated future cash flows of that asset that can be estimated reliably. However, losses expected as a result of future events, regardless of likelihood, are not recognized.

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Objective evidence that a financial asset or group of financial assets are impaired includes:

- (a) significant financial difficulty of the issuer or obligor;
- (b) a breach of contract, such as a default or delinquency in interest or principal payments;
- (c) the lender, for economic or legal reasons relating to the borrower's financial difficulty, granting to the borrower a concession that the lender would not otherwise consider;
- (d) it becoming probable that the borrower will enter bankruptcy or other financial reorganization;
- (e) the disappearance of an active market for that financial asset because of financial difficulties; or
- (f) observable data indicating that there is a measurable decrease in the estimated future cash flows from a group of financial assets since the initial recognition of those assets, although the decrease cannot yet be identified with the individual financial assets in the group.

In addition, for an investment in an equity security, a significant or prolonged decline in its fair value below its cost is objective evidence of impairment.

If there is objective evidence that financial assets are impaired, impairment losses are measured and recognized.

- (a) Financial assets measured at amortized cost

An impairment loss in respect of a financial asset measured at amortized cost is calculated as the difference between its carrying amount and the present value of its estimated future cash flows discounted at the asset's original effective interest rate. If it is not practicable to obtain the instrument's estimated future cash flows, impairment losses would be measured by using prices from any observable current market transactions. The Company can recognize impairment losses directly or establish a provision to cover impairment losses. If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, the previously recognized impairment loss shall be reversed either directly or by adjusting an allowance account.

- (b) Financial assets carried at cost

If there is objective evidence that an impairment loss has occurred on an unquoted equity instrument that is not carried at fair value because its fair value cannot be reliably measured, or on a derivative asset that is linked to and must be settled by delivery of such an unquoted equity instrument, the amount of the impairment loss is measured as the difference between the carrying amount of the financial asset and the present value of estimated future cash flows discounted at the current market rate of return for a similar financial asset. Such impairment losses are not reversed.

- (c) Available-for-sale financial assets

When a decline in the fair value of an available-for-sale financial asset has been recognized in other comprehensive income and there is objective evidence that the asset is impaired, the cumulative loss that had been recognized in other comprehensive income shall be reclassified from equity to profit or loss as a reclassification adjustment even though the financial asset has not been derecognized. Impairment losses recognized in profit or loss

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for an investment in an equity instrument classified as available-for-sale are not reversed through profit or loss. If, in a subsequent period, the fair value of a debt instrument classified as available-for-sale increases and the increase can be objectively related to an event occurring after the impairment loss was recognized in profit or loss, the impairment loss shall be reversed, with the amount of the reversal recognized in profit or loss.

Impairment for non-financial assets

The carrying amounts of the Company's non-financial assets, other than assets arising from contract assets, contract assets recognized in accordance with revenue from contracts with customers, employee benefits, inventories, deferred tax assets and non-current assets held for sale, are reviewed at the end of the reporting period to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. Goodwill and intangible assets that have indefinite useful lives or that are not yet available for use, irrespective of whether there is any indication of impairment, are tested for impairment annually by comparing their recoverable amount to their carrying amount.

Management estimates the recoverable amount of an individual asset. If it is impossible to measure the individual recoverable amount of an asset, then management estimates the recoverable amount of cash-generating unit ("CGU"). A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The Company determined that individual operating entities are CGUs.

The recoverable amount of an asset or CGU is the greater of its value-in-use and its fair value less costs to sell. The value-in-use is estimated by applying a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or CGU for which estimated future cash flows have not been adjusted, to the estimated future cash flows expected to be generated by the asset or CGU.

An impairment loss is recognized if the carrying amount of an asset or a CGU exceeds its recoverable amount. Impairment losses are recognized in profit or loss.

Goodwill acquired in a business combination is allocated to each CGU that is expected to benefit from the synergies arising from the goodwill acquired. Any impairment identified at the CGU level will first reduce the carrying amount of goodwill and then be used to reduce the carrying amount of the other assets in the CGU on a pro rata basis. Except for impairment losses in respect of goodwill which are never reversed, an impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

Derivative financial instruments, including hedge accounting

Derivatives are initially recognized at fair value. Subsequent to initial recognition, derivatives are measured at fair value, and changes therein are recognized as describe below.

(a) Hedge accounting

The Company holds forward exchange contracts, currency swaps and commodity future contracts to manage foreign exchange risk and commodity fair value risk. The Company designated derivatives as hedging instruments to hedge the risk of changes in the fair value

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of assets, liabilities or firm commitments (a fair value hedge) and foreign currency risk of highly probable forecasted transactions or firm commitments (a cash flow hedge).

On initial designation of the hedge, the Company formally documents the relationship between the hedging instruments and hedged items, including the risk management objectives and strategy in undertaking the hedge transaction, together with the methods that will be used to assess the effectiveness of the hedging relationship.

① Fair value hedge

Changes in the fair value of a derivative hedging instrument designated as a fair value hedge are recognized in profit or loss. The gain or loss from remeasuring the hedging instrument at fair value for a derivative hedging instrument and the gain or loss on the hedged item attributable to the hedged risk are recognized in profit or loss in the same line item of the consolidated statement of comprehensive income.

The Company discontinues fair value hedge accounting if the hedging instrument expires or is sold, terminated or exercised, or if the hedge no longer meets the criteria for hedge accounting. Any adjustment arising from gain or loss on the hedged item attributable to the hedged risk is amortized to profit or loss from the date the hedge accounting is discontinued.

② Cash flow hedge

When a derivative is designated to hedge the variability in cash flows attributable to a particular risk associated with a recognized asset or liability or a highly probable forecasted transaction that could affect profit or loss, the effective portion of changes in the fair value of the derivative is recognized in other comprehensive income, net of tax, and presented in the hedging reserve in equity. Any ineffective portion of changes in the fair value of the derivative is recognized immediately in profit or loss.

If the hedging instrument no longer meets the criteria for hedge accounting, expires or is sold, terminated, exercised, or the designation is revoked, then hedge accounting is discontinued prospectively. The cumulative gain or loss on the hedging instrument that has been recognized in other comprehensive income is reclassified to profit or loss in the periods during which the forecasted transaction occurs. If the forecasted transaction is no longer expected to occur, then the balance in other comprehensive income is recognized immediately in profit or loss.

(b) Other derivatives

Changes in the fair value of a derivative that is not designated as a hedging instrument are recognized immediately in profit or loss.

Non-derivative financial liabilities

The Company classifies non-derivative financial liabilities into financial liabilities measured at fair value through profit or loss or financial liabilities measured at amortized cost in accordance with the substance of the contractual arrangement and the definitions of financial liabilities. The Company recognizes financial liabilities in the consolidated statement of financial position when the Company becomes a party to the contractual provisions of the financial liability.

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(a) Financial liabilities measured at fair value through profit or loss

A financial liability is classified as at fair value through profit or loss if it is classified as held-for-trading, it is a derivative or it is designated as such on initial recognition. Subsequent to initial recognition, financial liabilities at fair value through profit or loss are measured at fair value, and charges therein are recognized in profit or loss. Upon initial recognition, transaction costs that are directly attributable to the acquisition are recognized in profit or loss incurred.

(b) Financial liabilities measured at amortized cost

Non-derivative financial liabilities other than financial liabilities measured at fair value through profit or loss are classified as financial liabilities measured at amortized cost. At the date of initial recognition, financial liabilities measured at amortized cost are measured at fair value after deducting transaction costs that are directly attributable to the acquisition. Financial liabilities measured at amortized cost are measured at amortized cost using the effective interest method subsequently to initial recognition.

(c) Derecognition of financial liabilities

The Company derecognizes a financial liability when its contractual obligations are discharged or canceled, or expire. The Company also derecognizes a financial liability when its terms are modified and the cash flows of the modified liability are substantially different, in which case a new financial liability based on the modified terms is recognized at fair value. On derecognition of a financial liability, the difference between the carrying amount extinguished and the consideration paid (including any non-cash assets transferred or liabilities assumed) is recognized in profit or loss.

Construction work in progress

The gross amount due from customers for contract work is presented for all contracts in which profits multiply cumulative percentage-of-completion exceed progress billings. If progress billings exceed profits multiply cumulative percentage-of-completion, then the gross amount due to customers for contract work is presented. Cost includes all expenditures related directly to specific projects and an allocation of fixed and variable overheads incurred in the Company's contract activities based on normal operating capacity.

The Company accounts for the remaining rights and performance obligation on the contract with the customers on a net basis. Due from customers for contract work and due to customers for contract work for same contract are offset and presented on a net basis.

Employee benefits

(a) Short-term employee benefits

Short-term employee benefits are employee benefits that are due to be settled within twelve months after the end of the period in which the employees render the related service. When an employee has rendered service to the Company during an accounting period, the Company recognizes the undiscounted amount of short-term employee benefits expected to be paid in exchange for that service as profit or loss. If the Company has a legal or constructive obligation which can be reliably measured, the Company recognizes the amount of expected payment for profit-sharing and bonuses payable as liabilities.

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(b) Other long-term employee benefits

Other long-term employee benefits include employee benefits that are settled beyond twelve months after the end of the period in which the employees render the related service, and are calculated at the present value of the amount of future benefit that employees have earned in return for their service in the current and prior periods, less the fair value of any related assets. Any actuarial gains and losses are recognized in profit or loss in the period in which they arise.

(c) Retirement benefits: Defined contribution plans

For defined contribution plans, when an employee has rendered service to the Company during a period, the Company recognizes the contribution payable to a defined contribution plan in exchange for that service as an accrued expense, after deducting any contributions already paid. If the contributions already paid exceed the contribution due for service before the end of the reporting period, the Company recognizes that excess as an asset (prepaid expense) to the extent that the prepayment will lead to a reduction in future payments or a cash refund.

(d) Retirement benefits: Defined benefit plans

A defined benefit plan is a post-employment benefit plan other than a defined contribution plan. The Company's net obligation in respect of defined benefit plans is calculated by estimating the amount of future benefit that employees have earned in return for their service in the current and prior periods; that benefit is discounted to determine its present value. The fair value of plan assets is deducted. The calculation is performed annually by an independent actuary using the projected unit credit method.

The discount rate is the yield at the reporting date on corporate bonds that have maturity dates approximating the terms of the Company's obligations and that are denominated in the same currency in which the benefits are expected to be paid. The Company recognizes all actuarial gains and losses arising from actuarial assumption changes and experiential adjustments in other comprehensive income when incurred.

When the fair value of plan assets exceeds the present value of the defined benefit obligation, the Company recognizes an asset, to the extent of the present value of the total of cumulative any economic benefits available in the form of refunds from the plan or reduction in the future contributions to the plan.

Remeasurements of net defined benefit liabilities, which comprise actuarial gains and losses, the return on plan assets (excluding interest) and the effect of the asset ceiling (if any, excluding interest), are recognized immediately in other comprehensive income. The Company determines the net interest expense (income) on the net defined benefit liability (asset) for the period by applying the discount rate used to measure the defined benefit obligation at the beginning of the annual period to the then-net defined benefit liability (asset), taking into account any changes in the net defined benefit liability (asset) during the period as a result of contributions and benefit payments, net interest expense and other expenses related to defined benefit plans are recognized in profit or loss.

When the benefits of a plan are changed or when a plan is curtailed, the resulting change in benefit that relates to past service or the gain or loss in curtailment is recognized immediately in profit or loss. The Company recognizes gains and losses on the settlement of a defined benefit plan when the settlement occurs.

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Provisions

Provisions are recognized when the Company has a present legal or constructive obligation as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

The risks and uncertainties that inevitably surround many events and circumstances are taken into account in reaching the best estimate of a provision. Where the effect of the time value of money is material, provisions are determined at the present value of the expected future cash flows.

Where some or all of the expenditures required to settle a provision are expected to be reimbursed by another party, the reimbursement shall be recognized when, and only when, it is virtually certain that reimbursement will be received if the entity settles the obligation. The reimbursement shall be treated as a separate asset.

Provisions are reviewed at the end of each reporting period and adjusted to reflect the current best estimates. If it is no longer probable that an outflow of resources embodying economic benefits will be required to settle the obligation, the provision is reversed.

A provision for warranties is recognized when the underlying products are sold. The provision is based on historical warranty.

Regarding provision for construction warranties, warranty period starts from the completion of construction in accordance with construction contracts. If the Company has an obligation for warranties, provision for warranties which are estimated based on historical warranty data are recorded as cost of construction and provision for warranties during the construction period.

If the estimated total contract cost of the construction contract exceeds the total contract revenue, the estimated contract cost exceeding the contract revenue is recognized as a provision for construction losses in the remaining contract for which construction has not proceeded.

A provision for restoration regarding contamination of land is recognized in accordance with the Company's announced Environment Policy and legal requirement as needed.

A provision is used only for expenditures for which the provision was originally recognized.

Emission Rights

The Company accounts for greenhouse gases emission right and the relevant liability as follows pursuant to *the Act on Allocation and Trading of Greenhouse Gas Emission* which became effective in Korea in 2015.

(a) Greenhouse gasses Emission Right

Greenhouse gasses Emission Right consists of emission allowances which are allocated from the government free of charge and those purchased from the market. The cost includes any directly attributable costs incurred during the normal course of business.

Emission rights held for the purpose of performing the obligation are classified as intangible asset and initially measured at cost and subsequently carried at cost less accumulated impairment losses. Emission rights held for short-swing profits are classified as current asset and are measured at fair value with any changes in fair value recognized as profit or loss in the respective reporting period.

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The Company derecognizes an emission right asset when the emission allowance is unusable, disposed or submitted to government when the future economic benefits are no longer expected to be probable.

(b) Emission liability

Emission liability is a present obligation of submitting emission rights to the government with regard to emission of greenhouse gas. Emission liability is recognized when there is a high possibility of outflows of resources in performing the obligation and the costs required to perform the obligation are reliably estimable. Emission liability is an amount of estimated obligations for emission rights to be submitted to the government for the performing period. The emission liability is measured based on the expected quantity of emission for the performing period in excess of emission allowance in possession and the unit price for such emission rights in the market at the end of the reporting period.

Equity instruments

(a) Share capital

Common stock is classified as equity and the incremental costs arising directly attributable to the issuance of common stock less their tax effects are deducted from equity.

If the Company reacquires its own equity instruments, the amount of those instruments ("treasury shares") are presented as a contra equity account. No gain or loss is recognized in profit or loss on the purchase, sale, issuance or cancelation of its own equity instruments. When treasury shares are sold or reissued subsequently, the amount received is recognized as an increase to equity, and the resulting surplus or deficit on the transaction is recorded in capital surplus.

(b) Hybrid Bonds

Debt and equity instruments issued by the Company are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangements and the definitions of financial liability and an equity instrument. When the Company has an unconditional right to avoid delivering cash or another financial asset to settle a contractual obligation, the instruments are classified as equity instruments.

Revenue from contracts with customers

The Company has initially applied IFRS No. 15 "Revenue from Contracts with Customers" from January 1, 2018. Revenue is measured based on the consideration promised in the contract with the customer. The Company recognizes revenue when the control over a good or service is transferred to the customer. The following are the revenue recognition policies for performance obligations in the contracts with customers.

(a) Sale of good

The goods sold by the Company consist mainly of steel products from the steel segment and products such as steel, chemicals, auto parts and machinery in the trade segment.

For domestic sales, the control of the product is usually transferred to the customer when the product is delivered to the customer, at which point in time revenue is recognized. Invoices are generally payable within 10 to 90 days. When a customer makes payment

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prior to the due date, they are offered a discount at certain percentage of the invoice amount.

For export sales, revenue is recognized at the time when control of the product is transferred to the customer based on the “International Incoterms for Interpretation of Trade Terms” prescribed in the respective contracts, which is generally when the products are loaded to the transportation vessels. Invoices are usually issued at the date of bill of lading and payments are settled by the terms of Letter of Credit (L / C), Document against Acceptance (D / A), Document against Payment (D / P), Telegraphic Transfer (T / T) and others.

The Company provides certain discount when the customer prepays according to the payment terms. The Company recognized revenue only to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognized will not occur when discount period expire.

(b) Transportation service

For the performance obligation for transportation services included in the Company's product sales contracts, revenue is recognized over the period when in which the services are provided and the revenue is measured by reference to examining the degree to which the service has been completed so far. The billing date and payment terms for the service charge are the same as the billing date and payment terms for sale of goods.

(c) Construction contracts

In the case of construction contracts where the Company renders construction services for plants, etc., the customer controls the assets as they are being constructed. This is because under those contracts, the Company is able to perform construction or design services to meet the customer's specifications, and if a contract is terminated by the customer, the Company is entitled to reimbursement of all costs incurred to date, including a reasonable margin. When the contract can be reliably estimated, the company recognizes the contract revenue and contract cost as revenue and costs based on the progress of the contract activity as of the end of the reporting period. The percentage of completion is determined based on the proportion that contract costs incurred for work performed excluding contract cost incurred that do not reflect the stage of completion to date bear to the estimated total contract costs.

If the outcome of the contract cannot be reliably estimated, the revenue is recognized only to the extent of the contract costs that are probable to be recovered. If the total contract cost is likely to exceed the total contract revenue, expected losses are immediately recognized as a cost.

The Company issues an invoice when the customer has completed a progress confirmation and generally the payment is made within 45 days from the invoice date.

(d) Certain construction contracts for apartments

For certain construction service contracts for apartments where the criterion of an enforceable right to payment for performance is met under IFRS No. 15, even if the legal ownership or physical occupancy of the incomplete construction is not transferred to the customer during the construction period, revenue is recognized based on percentage of completion by considering the terms and conditions described in the relevant law and

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contracts such as the guarantee for sale policy, government approval on business plan, payment and termination terms. For certain construction contracts for apartments and shopping centers where the criterion of an enforceable right to payment for performance is not met during the construction period, the Company recognizes revenue upon completion of construction when the control of the apartments and shopping centers are transferred to customers.

The timing of the billing and the payment terms of the sales contracts are different according to the terms of the contracts.

Finance income and finance costs

The Company's finance income and finance costs include:

- interest income;
- interest expense;
- dividend income;
- the foreign currency gain or loss on financial assets and financial liabilities;
- the net gain or loss on financial assets measured at fair value through profit or loss;
- hedge ineffectiveness recognized in profit or loss; and
- the net gain or loss on the disposal of investments in debt securities measured at fair value through other comprehensive income.

Interest income or expense is recognized using the effective interest method. Dividend income is recognized in profit or loss on the date on which the Company's right to receive payment is established. The 'effective interest rate' is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instrument to:

- the gross carrying amount of the financial asset; or
- the amortized cost of the financial liability.

In calculating interest income and expense, the effective interest rate is applied to the gross carrying amount of the asset (when the asset is not credit-impaired) or to the amortized cost of the liability. However, for financial assets that have become credit-impaired subsequent to initial recognition, interest income is calculated by applying the effective interest rate to the amortized cost of the financial asset. If the asset is no longer credit-impaired, then the calculation of interest income reverts to the gross basis.

Income taxes

Income tax expense comprises current and deferred tax. Current tax and deferred tax are recognized in profit or loss except to the extent that it relates to a business combination, or items recognized directly in equity or in other comprehensive income.

The Company recognizes interest and penalties related to corporate tax as if it is applicable to the income taxes, the Company applies IAS No. 12 "Income Taxes", if it is not applicable to the income taxes, the Company applies IAS No. 37 "Provisions Contingent Liabilities and Contingent Assets".

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(a) Current income tax

Current income tax is the expected income tax payable or receivable on the taxable profit or loss for the year, using tax rates enacted or substantively enacted at the end of the reporting period and any adjustment to tax payable in respect of previous years. The taxable profit is different from the accounting profit for the period since the taxable profit is calculated excluding the temporary differences, which will be taxable or deductible in determining taxable profit of future periods, and non-taxable or non-deductible items from the accounting profit.

The Company offsets current tax assets and current tax liabilities if, and only if, the Company:

- has a legally enforceable right to set off the recognized amounts, and
- intends either to settle on a net basis, or to realize the asset and settle the liability simultaneously.

(b) Deferred income tax

The measurement of deferred income tax liabilities and deferred tax assets reflects the tax consequences that would follow from the manner in which the Company expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities. The Company recognizes a deferred income tax liability for all taxable temporary differences associated with investments in subsidiaries, associates, and joint ventures, except to the extent that the Company is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. The Company recognizes a deferred income tax asset for deductible temporary differences arising from investments in subsidiaries, associates and joint ventures, to the extent that it is probable that the temporary difference will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilized. However, deferred tax is not recognized for the following temporary differences: taxable temporary differences arising on the initial recognition of goodwill, or the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting profit or loss nor taxable income.

A deferred income tax asset is recognized for the carryforward of unused tax losses, tax credits and deductible temporary differences to the extent that it is probable that future taxable profit will be available against which the unused tax losses, tax credits and deductible temporary differences can be utilized. The future taxable profit depends on reversing taxable temporary differences. When there are insufficient taxable temporary differences, the probability of future taxable profit (including the reversal of temporary differences) should be considered.

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

Deferred income tax assets and liabilities are measured at the tax rates that are expected to apply to the period when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting

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period. Deferred income tax assets and liabilities are offset only if there is a legally enforceable right to offset the related current income tax liabilities and assets, and they relate to income taxes levied by the same tax authority and they intend to settle current income tax liabilities and assets on a net basis.

Earnings per share

Management calculates basic earnings per share ("EPS") data for POSCO's ordinary shares, which is presented at the end of the statement of comprehensive income. Basic EPS is calculated by dividing profit attributable to ordinary shareholders of POSCO by the weighted average number of ordinary shares outstanding during the period, adjusted for own shares held.

Operating segments

An operating segment is a component of the Company that : a) engages in business activities from which it may earn revenues and incur expenditures, including revenues and expenses that relate to transactions with any of the Company's other components, b) whose operating results are regularly reviewed by the Company's chief operating decision maker ("CODM") to make decisions about resources to be allocated to the segment and assess its performance and for which discrete financial information is available. Management has determined that the CODM of the Company is the CEO.

With regard to construction segment, segment profit and loss is determined in the same way that consolidated profit after tax for the period is generally determined under IFRS except that revenues and expenses from the development and sale of certain residential real estate are determined by reference to the stage of completion of the contract activity at the end of the reporting period, while in the consolidated financial statements, they are recognized when an individual unit of residential real estate is delivered to the buyer. No adjustments are made for corporate allocations to segment profit and loss. In addition, segment assets and liabilities are generally measured based on total assets and liabilities in accordance with IFRS without any adjustment for corporate allocations, except that assets and liabilities in connection with the construction and sale of residential real estate are determined by reference to the stage of completion of the contract activity at the end of each period.

For the other segments, segment profit and loss is determined the same way that consolidated net after tax profit for the period is generally determined under IFRS without any adjustment for corporate allocations. The accounting policies used by each segment are consistent with the accounting policies used in the preparation of the consolidated financial statements. Segment assets and liabilities are generally measured based on total assets and liabilities in accordance with IFRS without any adjustment for corporate allocations. Also, segment assets and liabilities are based on the separate financial statements of the entities instead of on consolidated basis.

In addition, there are varying levels of transactions amongst the reportable segments. These transactions include sales of property, plant and assets, and rendering of construction service and so on.

Segment results that are reported to the CEO include items directly attributable to a segment and items allocated on a reasonable basis. Segment capital expenditure is the total cost incurred during the period to acquire property, plant and equipment, and intangible assets other than goodwill.

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New standards and interpretations not yet adopted

The following new standard has been published but is not mandatory for the Company for annual period beginning on January 1, 2018, and the Company has not early adopted them.

(a) IFRS No. 16 “Leases”

The Company will apply IFRS No. 16 “Leases” for the year beginning on January 1, 2019. The Company is evaluating analysis of financial impact resulting from adoption of new standards and the estimated effect on the consolidated financial statements at the date of initial application based on current situation as of December 31, 2018. However, a reasonable estimation of financial impact is not determined since the analysis of financial impact is not completed.

IFRS No. 16 “Leases” replaces existing leases guidance, including IAS No. 17 “Leases”, IFRIC No. 4 “Determining whether an Arrangement contains a Lease”, SIC No. 15 “Operating Leases-Incentives” and SIC No. 27 “Evaluating the Substance of Transactions Involving the Legal Form of a Lease”.

IFRS No. 16 introduces a single accounting model that requires a lessee to recognize lease related asset and liability in the financial statements. A lessee is required to recognize a right-of-use asset representing its right to use the underlying leased asset and a lease liability representing its obligation to make lease payments. The lessee may elect not to apply the requirements to short-term lease with a term of 12 months or less at the commencement date or low value assets. Accounting treatment for lessor is similar to the existing standard which classifies lease into finance and operating lease.

1) Leases in which the Company is a lessee

Upon adoption of IFRS No. 16, the Company will recognize new assets and liabilities for its operating leases. The nature of expenses related to those leases will change because the Company will recognize a depreciation charge for right-of-use assets and interest expense on lease liabilities. Previously, the Company recognized operating lease expense on a straight-line basis over the term of the lease term. It is expected that there will be no significant impact on finance leases.

As of the authorization date for issuance of these consolidated financial statements, the Company is still evaluating whether certain arrangements related to the use of vessels, land, warehouses and factory facilities contain leases that shall be accounted for in accordance with IFRS No. 16. The outcome of such evaluations may have significant impact on the Company’s consolidated financial statements upon adoption of IFRS No. 16.

As a lessee, the Company shall apply IFRS No. 16 using one of the following two transition methods; (a) retrospectively to each prior reporting period presented in accordance with IAS No. 8 “Accounting Policies, Changes in Accounting Estimates and Errors”; or (b) retrospectively with the cumulative effect of initially applying this standard recognized at the date of initial application.

The Company intends to apply the modified retrospective approach when initially applying IFRS No. 16 as of January 1, 2019, the date of initial application. Accordingly, the Company will recognize the accumulated effect resulting from initial application of IFRS No. 16 as retained earnings of the Company at the date of initial application and not restate the financial statements for comparative periods.

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The Company plans to apply the practical expedient to grandfather the definition of a lease on transition. This means that it will apply IFRS No. 16 to all contracts entered into before January 1, 2019 and identified as leases in accordance with IAS No. 17 and IFRIC No. 4.

2) Leases in which the Company is a lessor

As a lessor, the Company expects to have no significant impact on its financial statements since the present lease accounting treatment is not significantly different from applying IFRS No. 16.

(b) IFRIC No. 23 “Uncertainty over Tax Treatments”

If there is an uncertainty on tax treatment such as dispute of a particular tax treatment by the taxation authority, the Company determines whether it is probable that the taxation authority will accept an uncertain tax treatment in determining taxable profit, tax bases, unused tax losses, unused tax credits or tax rates.

If the Company concludes it is probable that the taxation authority will accept an uncertain tax treatment, the Company determines the taxable profit (tax loss), tax bases, unused tax losses, unused tax credits or tax rates consistently with the tax treatment used or planned to be used in its income tax filings. If the Company concludes it is not probable that the taxation authority will accept an uncertain tax treatment, the Company reflects the effect of uncertainty for each uncertain tax treatment by using either of the most likely amount or the expected value depending on which method the entity expects to better predict the resolution of the uncertainty.

The application of IFRIC No. 23 “Uncertainty over Tax Treatments” is mandatory for the year beginning on January 1, 2019. The Company expects the adoption of the standard will not have significant impact on consolidated financial statements.

4. Financial risk management

The Company has exposure to the following risks from its use of financial instruments:

- credit risk
- liquidity risk
- market risk
- capital risk

This note presents information about the Company’s exposure to each of the above risks, the Company’s objectives, policies and processes for measuring and managing risk, and the Company’s management of capital. Further quantitative disclosures are included throughout these consolidated financial statements.

(a) Financial risk management

1) Risk management framework

The Board of Directors has overall responsibility for the establishment and oversight of the Company’s risk management framework. The Company’s risk management

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policies are established to identify and analyze the risks faced by the Company, to set appropriate risk limits and controls, and to monitor risks and adherence to limits. Risk management policies and systems are reviewed regularly to reflect changes in market conditions and the Company's activities.

The Company, through its training and management standards and procedures, aims to develop a disciplined and constructive control environment in which all employees understand their roles and obligations.

2) Credit risk

Credit risk is the risk of financial loss to the Company if a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises principally from the Company's receivables from customers and investment securities. In addition, credit risk arises from finance guarantees.

The Company implements a credit risk management policy under which the Company only transacts business with counterparties that have a certain level of credit rate evaluated based on financial condition, historical experience, and other factors. The Company's exposure to credit risk is influenced mainly by the individual characteristics of each customer. The default risk of a nation or an industry in which a customer operates its business does not have a significant influence on credit risk. The Company has established a credit policy under which each new customer is analyzed individually for creditworthiness.

The Company establishes an allowance for impairment that represents its estimate of expected losses in respect of trade and other receivables. The main components of this allowance are a specific loss component that relates to individually significant exposures, and a collective loss component established for companies of similar assets in respect of losses that have been incurred.

Credit risk also arises from transactions with financial institutions, and such transactions include transactions of cash and cash equivalents, various deposits, and financial instruments such as derivative contracts. The Company manages its exposure to this credit risk by only entering into transactions with banks that have high international credit ratings. The Company's treasury department authorizes, manages, and oversees new transactions with financial institutions with whom the Company has no previous relationship.

Furthermore, the Company limits its exposure to credit risk of financial guarantee contracts by strictly evaluating their necessity based on internal decision making processes, such as the approval of the board of directors.

3) Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting the obligations associated with its financial liabilities that are settled by delivering cash or another financial asset. The Company's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Company's reputation.

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The Company's cash flow from business, borrowing or financing is sufficient to meet the cash requirements for the Company's strategic investments. Management believes that the Company is capable of raising funds by borrowing or financing if the Company is not able to generate cash flow requirements from its operations. The Company has committed borrowing facilities with various banks.

4) Market risk

Market risk means that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. The goal of market risk management is optimization of profit and controlling the exposure to market risk within acceptable limits.

① Currency risk

The Company's policy in respect of foreign currency risks is a natural hedge whereby foreign currency income is offset with foreign currency expenditures. The remaining net exposures after the natural hedge have been hedged using derivative contracts such as forward exchange contracts. In addition, the Company's derivative transactions are limited to hedging actual foreign currency transactions and speculative hedging is not permitted. Based on this policy, the Company has performed currency risk management specific to various characteristics of different segments. The entities in the steel segment reduces the foreign currency exposure by repayment of foreign currency borrowings subjected to investment in overseas when its maturities come. The entities in the engineering and construction segment have hedged foreign currency risks by using forward exchange contracts. Entities in the trading segment have hedged foreign currency risks by using forward exchange contracts when the foreign currencies received and paid are different.

② Interest rate risk

The Company manages the exposure to interest rate risk by adjusting of borrowing structure ratio between borrowings at fixed interest rate and variable interest rate. The Company monitors interest rate risks regularly in order to avoid exposure to interest rate risk on borrowings at variable interest rate.

③ Other market price risk

Equity price risk arises from fluctuation of market price of listed equity securities. Management of the Company measures regularly the fair value of listed equity securities and the risk of variance in future cash flow caused by market price fluctuations. Significant investments are managed separately and all buy and sell decisions are approved by management of the Company.

(b) Management of capital

The fundamental goal of capital management is the maximization of shareholders' value by means of the stable dividend policy and the retirement of treasury shares. The capital structure of the Company consists of equity and net borrowings (after deducting cash and cash equivalents) and current financial instruments from borrowings. The Company applied the same capital risk management strategy that was applied in the previous period.

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Notes to the Consolidated Financial Statements, Continued

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Net borrowing-to-equity ratio as of December 31, 2017 and 2018 is as follows:

	2017	2018
	(in millions of Won)	
Total borrowings	₩ 21,063,657	20,209,270
Less: Cash and cash equivalents	2,612,530	2,643,865
Net borrowings	18,451,127	17,565,405
Total equity	47,326,725	46,672,614
Net borrowings-to-equity ratio	38.99%	37.64%

5. Cash and Cash Equivalents

Cash and cash equivalents as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Cash	₩ 1,896	1,668
Demand deposits and checking accounts	1,259,813	1,471,891
Time deposits	360,985	538,130
Other cash equivalents	989,836	632,176
	₩ 2,612,530	2,643,865

As of December 31, 2018, cash equivalents amounting to ₩42,147 million of POSCO ENGINEERING & CONSTRUCTION CO., LTD., a subsidiary of the Company, are restricted for use related to the joint account of joint operations and others.

6. Trade Accounts and Notes Receivable

(a) Trade accounts and notes receivable as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Current		
Trade accounts and notes receivable	₩ 8,579,620	8,648,250
Finance lease receivables	10,469	57,487
Unbilled due from customers for contract work	728,007	810,655
Less: Allowance for doubtful accounts	(493,533)	(386,188)
	₩ 8,824,563	9,130,204
Non-current		
Trade accounts and notes receivable	₩ 871,432	583,797
Finance lease receivables	734	45,873
Less: Allowance for doubtful accounts	(140,596)	(202,545)
	₩ 731,570	427,125

Trade accounts and notes receivable sold to financial institutions, for which the derecognition conditions were not met, amounted to ₩309,964 million and ₩468,706 million as of December 31, 2017 and 2018, respectively. The fair value of trade accounts and notes receivable approximates the carrying amounts and trade accounts and notes receivable are included in short-term borrowings from financial institutions (Note 17).

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

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(b) Finance lease receivables are as follows:

<u>Customer</u>	<u>Contents</u>	<u>2017</u>	<u>2018</u>
	(in millions of Won)		
Rental contractor (executives and employees)	Songdo rental apartment contract	₩ —	103,360
Korea Electric Power Corporation	Combined thermal power plant #3~4	10,469	—
Hystech.Co. Ltd.	Machinery and equipment	734	—
		₩ 11,203	103,360

(c) The gross amount and present value of minimum lease payments as of December 31, 2017 and 2018 are as follows:

	<u>2017</u>	<u>2018</u>
	(in millions of Won)	
Less than 1 year	₩11,771	57,820
1 year – 5 years	828	49,678
Unrealized interest income	(1,396)	(4,138)
Present value of minimum lease payment	₩11,203	103,360

7. Other Receivables

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

	<u>2017</u>	<u>2018</u>
	(in millions of Won)	
Current		
Loans	₩ 617,696	236,782
Other accounts receivable	960,543	954,030
Accrued income	179,971	220,066
Deposits	107,137	108,640
Others	18,925	16,201
Less: Allowance for doubtful accounts	(248,266)	(150,090)
	₩1,636,006	1,385,629
Non-current		
Loans	₩ 874,158	731,344
Other accounts receivable	92,939	155,936
Accrued income	1,663	1,855
Deposits	122,485	152,072
Less: Allowance for doubtful accounts	(212,069)	(177,967)
	₩ 879,176	863,240

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Notes to the Consolidated Financial Statements, Continued

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8. Other Financial Assets

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

	2017	2018
	(in millions of Won)	
Current		
Derivatives assets held for trading	₩ 63,912	47,288
Debt securities	—	2,987
Financial assets held for trading	1,970	—
Available-for-sale securities (bonds)	136,141	—
Current portion of held-to-maturity securities	421	—
Deposit instruments ^(1,2)	1,297,769	1,931,518
Short-term financial instruments ⁽²⁾	5,545,667	6,099,303
	<u>₩7,045,880</u>	<u>8,081,096</u>
Non-current		
Derivatives assets held for trading	₩ 4,378	1,795
Equity securities ⁽³⁾	—	1,238,630
Debt securities	—	34,327
Other securities ⁽³⁾	—	338,106
Available-for-sale securities (equity instruments) ⁽³⁾	1,730,753	—
Available-for-sale securities (bonds)	54,439	—
Available-for-sale securities (others)	56,782	—
Held-to-maturity securities	4,790	—
Deposit instruments ⁽²⁾	60,542	35,040
	<u>₩1,911,684</u>	<u>1,647,898</u>

(*1) As of December 31, 2017 and 2018, ₩10,080 million and ₩5,715 million, respectively, are restricted for the use in a government project.

(*2) As of December 31, 2017 and 2018, financial instruments amounting to ₩78,477 million and ₩73,935 million, respectively, are restricted for use in financial arrangements, pledge and others.

(*3) As of December 31, 2017 and 2018, ₩136,099 million and ₩115,431 million of equity and other securities, respectively, have been provided as collateral for borrowings, construction projects and others.

9. Inventories

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

	2017	2018
	(in millions of Won)	
Finished goods	₩ 1,526,628	1,886,040
Merchandise	930,558	1,131,416
Semi-finished goods	1,721,130	1,945,567
Raw materials	2,329,268	2,821,972
Fuel and materials	808,016	888,941
Construction inventories	1,692,092	1,372,259
Materials-in-transit	1,818,576	2,245,740
Others	103,144	68,150
	<u>10,929,412</u>	<u>12,360,085</u>
Less: Allowance for inventories valuation	<u>(135,631)</u>	<u>(206,782)</u>
	<u>₩10,793,781</u>	<u>12,153,303</u>

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Notes to the Consolidated Financial Statements, Continued

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(b) The changes of allowance for inventories valuation for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Beginning	₩ 231,378	203,164	135,631
Loss on valuation of inventories	152,249	78,560	141,799
Realization on disposal of inventories	(161,458)	(138,967)	(69,426)
Others	(19,005)	(7,126)	(1,222)
Ending	<u>₩ 203,164</u>	<u>135,631</u>	<u>206,782</u>

10. Assets Held for Sale

Details of assets held for sale as of December 31, 2017 and 2018 are as follows:

	2017			2018
	Controlling company	Subsidiaries ^(*)	Total	Subsidiaries ^(*)
	(in millions of Won)			
Assets				
Other financial assets	₩ —	—	—	778
Property, plant and equipment	392	71,340	71,732	21,076
Others	—	36	36	—
	<u>₩392</u>	<u>71,376</u>	<u>71,768</u>	<u>21,854</u>

(*) During the year ended December 2017, POSCO ENGINEERING & CONSTRUCTION CO., LTD., a subsidiary of the Company, determined to dispose of the office building, Seomyeon Fiesta, in Busan and classified the related property, plant and equipment amounting to ₩71,340 million as assets held for sale. During the year ended December 31, 2018, disposal of the accompanying assets held for sale was completed.

(*) During the year ended December 31, 2018, DAESAN (CAMBODIA) Co., Ltd., a subsidiary of the Company, determined to dispose of the land and classified the related property, plant and equipment amounting to ₩21,076 million as assets held for sale.

11. Investments in Associates and Joint ventures

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

	2017	2018
	(in millions of Won)	
Investments in associates	₩1,520,441	1,738,692
Investments in joint ventures	2,037,491	1,911,311
	<u>₩3,557,932</u>	<u>3,650,003</u>

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Notes to the Consolidated Financial Statements, Continued

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(b) Details of investments in associates as of December 31, 2017 and 2018 are as follows:

Company	Number of shares	Ownership (%)	Acquisition cost	Book value	
				2017	2018
(in millions of Won)					
[Domestic]					
EQP POSCO Global NO1 Natural Resources					
Private Equity Fund	178,713,975,892	31.27	₩178,787	₩ 175,553	174,123
POSPower Co., Ltd (*1,2)	4,507,138	34.00	164,757	—	161,477
SNNC	18,130,000	49.00	90,650	110,424	116,922
QSONE Co., Ltd.	200,000	50.00	84,395	85,049	85,550
Chun-cheon Energy Co., Ltd (*2)	16,098,143	45.67	80,491	74,378	62,478
CHUNGJU ENTERPRISE CITY DEVELOPMENT					
Co., Ltd	2,008,000	29.53	10,040	17,252	17,382
Daesung Steel (*4)	108,038	17.54	14,000	15,500	15,644
Incheon-Gimpo Expressway Co., Ltd. (*2,4)	9,032,539	18.26	45,163	31,660	13,329
Keystone NO. 1. Private Equity Fund	13,800,000	40.45	13,800	12,379	11,183
KoFC POSCO HANWHA KB Shared Growth					
NO. 2. Private Equity Fund (*4)	6,485	12.50	6,485	6,828	5,739
KONES, Corp.	3,250,000	41.67	6,893	2,827	2,849
BLUE OCEAN Private Equity Fund	333	27.52	33,300	19,620	—
UITrans LRT Co., Ltd. (*2)	7,714,380	38.19	38,572	15,841	—
Others (46 companies) (*2)				67,325	123,734
				634,636	790,410
[Foreign]					
AES-VCM Mong Duong Power Company					
Limited (*3)	—	30.00	164,303	142,348	209,936
South-East Asia Gas Pipeline Company Ltd.	135,219,000	25.04	135,899	197,069	179,459
7623704 Canada Inc. (*4)	114,452,000	10.40	124,341	121,702	126,885
Eureka Moly LLC	—	20.00	240,123	79,398	82,447
AMCI (WA) PTY LTD	49	49.00	209,664	63,378	71,086
KOREA LNG LTD.	2,400	20.00	135,205	33,422	43,554
Nickel Mining Company SAS	3,234,698	49.00	157,585	45,905	41,712
NCR LLC	—	29.41	40,139	33,738	37,602
PT. Batutua Tembaga Raya	128,285	22.00	21,824	21,823	20,479
Zhongyue POSCO (Qinhuangdao) Tinplate					
Industrial Co., Ltd	10,200,000	34.00	9,517	15,617	14,796
PT. Wampu Electric Power (*2)	8,708,400	20.00	10,054	13,391	14,120
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	50	25.00	4,723	6,517	6,478
Others (29 companies) (*2)				111,497	99,728
				885,805	948,282
				₩1,520,441	1,738,692

(1) During the year ended December 31, 2018, the Company disposed of 63.53% of shares in POSPower Co., Ltd, which resulted in the Company's loss of control, and the Company classified the remaining investment as investment in an associate.

(2) As of December 31, 2017 and 2018, investments in associates amounting to ₩158,370 million and ₩285,066 million, respectively, are provided as collateral in relation to the associates' borrowings.

(3) As of December 31, 2017 and 2018, shares of PSC Energy Global Co., Ltd., a subsidiary of the Company, are provided as collateral in relation to the associates' borrowings.

(4) As of December 31, 2018, it was classified as an associate even though the Company's ownership percentage is less than 20% of ownership percentage since the Company has significant influence over the investee when considering its structure of the Board of Directors and others.

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Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(c) Details of investments in joint ventures as of December 31, 2017 and 2018 are as follows:

Company	Number of shares	Ownership (%)	Acquisition cost	Book value	
				2017	2018
(in millions of Won)					
[Domestic]					
POSCO MITSUBISHI CARBON TECHNOLOGY	11,568,000	60.00	₩ 115,680	₩ 110,760	180,192
Others (6 companies)				6,094	9,124
				116,854	189,316
[Foreign]					
Roy Hill Holdings Pty Ltd ^(*)	13,117,972	12.50	1,528,672	1,125,133	1,041,600
POSCO-NPS Niobium LLC	325,050,000	50.00	364,609	348,836	363,506
KOBRASCO	2,010,719,185	50.00	32,950	108,485	133,449
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	—	25.00	61,961	88,305	88,391
DMSA/AMSA ^(*)	—	4.00	322,596	56,735	26,709
CSP — Companhia Siderurgica do Pecem	1,108,696,532	20.00	558,821	146,427	24,832
Others (13 companies)				46,716	43,508
				1,920,637	1,721,995
				₩2,037,491	1,911,311

(*) As of December 31, 2017 and 2018, the investments in joint ventures are provided as collateral in relation to the joint ventures' borrowings.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(d) The movements of investments in associates and joint ventures for the years ended December 31, 2017 and 2018 were as follows:

1) For the year ended December 31, 2017

Company	December 31, 2016 Book value	Acquisition	Dividends	Share of profits (losses)	Other increase (decrease) ^(*)	December 31, 2017 Book value
				(in millions of Won)		
[Domestic]						
EQP POSCO Global NO1 Natural Resources						
Private Equity Fund	₩ 175,690	—	—	418	(555)	175,553
SNNC	107,859	—	—	2,370	195	110,424
QSONE Co., Ltd.	84,799	—	(368)	618	—	85,049
Chun-cheon Energy Co., Ltd	45,077	27,791	—	1,510	—	74,378
CHUNGJU ENTERPRISE CITY DEVELOPMENT						
Co., Ltd	12,551	—	—	4,701	—	17,252
BLUE OCEAN Private Equity Fund	35,752	—	—	(8,154)	(7,978)	19,620
Daesung Steel	12,302	—	—	3,198	—	15,500
Incheon-Gimpo Expressway Co., Ltd.	37,372	—	—	(6,463)	751	31,660
Keystone NO. 1. Private Equity Fund	13,314	—	—	(886)	(49)	12,379
UITrans LRT Co., Ltd.	17,851	—	—	(2,010)	—	15,841
KoFC POSCO HANWHA KB Shared Growth						
NO. 2. Private Equity Fund	11,890	—	—	(197)	(4,865)	6,828
KONES, Corp.	5,641	—	—	(2,774)	(40)	2,827
POSCO MITSUBISHI CARBON						
TECHNOLOGY	83,113	—	—	27,582	65	110,760
Others (40 companies)	55,061	28,348	(137)	(7,995)	(1,858)	73,419
	698,272	56,139	(505)	11,918	(14,334)	751,490
[Foreign]						
AES-VCM Mong Duong Power Company						
Limited	167,141	—	(30,798)	19,644	(13,639)	142,348
South-East Asia Gas Pipeline Company Ltd.	215,996	—	(37,016)	42,896	(24,807)	197,069
7623704 Canada Inc.	137,512	—	(7,563)	7,468	(15,715)	121,702
Eureka Moly LLC	89,601	—	—	(35)	(10,168)	79,398
AMCI (WA) PTY LTD	70,501	—	—	(4,299)	(2,824)	63,378
Nickel Mining Company SAS	45,138	—	—	424	343	45,905
KOREA LNG LTD.	63,058	—	(6,466)	(70,180)	47,010	33,422
NCR LLC	36,738	276	—	(60)	(3,216)	33,738
PT. Batutua Tembaga Raya	22,723	—	—	260	(1,160)	21,823
PT. Wampu Electric Power	8,706	—	—	5,927	(1,242)	13,391
Zhongyue POSCO (Qinhuangdao) Tinplate						
Industrial Co., Ltd	18,008	—	—	(1,268)	(1,123)	15,617
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	6,840	—	—	303	(626)	6,517
Roy Hill Holdings Pty Ltd	1,186,859	—	—	46,020	(107,746)	1,125,133
POSCO-NPS Niobium LLC	393,570	—	(17,277)	17,173	(44,630)	348,836
KOBRASCO	88,308	—	(22,135)	56,445	(14,133)	108,485
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	97,369	—	(5,542)	1,555	(5,077)	88,305
DMSA/AMSA	74,935	13,712	—	(22,339)	(9,573)	56,735
CSP - Companhia Siderurgica do Pecem	330,463	—	—	(147,847)	(36,189)	146,427
Others (40 companies)	130,651	22,209	(4,408)	46,535	(36,774)	158,213
	3,184,117	36,197	(131,205)	(1,378)	(281,289)	2,806,442
₩	3,882,389	92,336	(131,710)	10,540	(295,623)	3,557,932

(*)1 Other increase or decrease represents the changes in investments in associates and joint ventures due to disposals, change in capital adjustments effect from translations of financial statements of foreign investees and others.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

2) For the year ended December 31, 2018

Company	December 31, 2017 Book value	Acquisition	Dividends	Share of profits (losses)	Other increase (decrease) ^(*)	December 31, 2018 Book value
(in millions of Won)						
[Domestic]						
EQP POSCO Global NO1 Natural Resources						
Private Equity Fund	₩ 175,553	—	—	(1,430)	—	174,123
POSPower Co., Ltd.	—	176,731	—	(3,198)	(12,056)	161,477
SNNC	110,424	—	—	6,624	(126)	116,922
QSONE Co., Ltd.	85,049	—	(550)	1,051	—	85,550
Chun-cheon Energy Co., Ltd	74,378	—	—	(11,900)	—	62,478
CHUNGJU ENTERPRISE CITY						
DEVELOPMENT Co., Ltd	17,252	—	—	130	—	17,382
BLUE OCEAN Private Equity Fund	19,620	—	—	(17,930)	(1,690)	—
Daesung Steel	15,500	—	—	144	—	15,644
Incheon-Gimpo Expressway Co., Ltd.	31,660	—	—	(18,331)	—	13,329
Keystone NO. 1. Private Equity Fund	12,379	—	—	(1,295)	99	11,183
UITrans LRT Co., Ltd.	15,841	—	—	(15,841)	—	—
KoFC POSCO HANWHA KB Shared Growth						
NO. 2. Private Equity Fund	6,828	—	—	(1,089)	—	5,739
KONES, Corp.	2,827	—	—	29	(7)	2,849
POSCO MITSUBISHI CARBON						
TECHNOLOGY	110,760	—	—	69,594	(162)	180,192
Others (52 companies)	73,419	44,629	(784)	18,942	(3,348)	132,858
	751,490	221,360	(1,334)	25,500	(17,290)	979,726
[Foreign]						
AES-VCM Mong Duong Power Company						
Limited	142,348	—	(26,108)	30,096	63,600	209,936
South-East Asia Gas Pipeline Company Ltd.	197,069	—	(29,301)	17,709	(6,018)	179,459
7623704 Canada Inc.	121,702	—	(4,509)	4,373	5,319	126,885
Eureka Moly LLC	79,398	—	—	(406)	3,455	82,447
AMCI (WA) PTY LTD.	63,378	—	—	(3,412)	11,120	71,086
KOREA LNG LTD.	33,422	—	(10,544)	10,542	10,134	43,554
Nickel Mining Company SAS	45,905	—	—	(4,268)	75	41,712
NCR LLC	33,738	2,505	—	(5,909)	7,268	37,602
PT. Batutua Tembaga Raya	21,823	—	—	(1,817)	473	20,479
Zhongyue POSCO (Qinhuangdao) Tinplate						
Industrial Co., Ltd	15,617	—	—	(735)	(86)	14,796
PT. Wampu Electric Power	13,391	—	—	177	552	14,120
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	6,517	—	—	23	(62)	6,478
Roy Hill Holdings Pty Ltd	1,125,133	—	—	59,095	(142,628)	1,041,600
POSCO-NPS Niobium LLC	348,836	—	(22,254)	21,536	15,388	363,506
KOBRASCO	108,485	—	(37,710)	75,170	(12,496)	133,449
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	88,305	—	—	540	(454)	88,391
DMSA/AMSA	56,735	17,973	—	(48,802)	803	26,709
CSP - Companhia Siderurgica do Pecem	146,427	—	—	(109,714)	(11,881)	24,832
Others (42 companies)	158,213	2,771	(22,588)	42,937	(38,097)	143,236
	2,806,442	23,249	(153,014)	87,135	(93,535)	2,670,277
₩	3,557,932	244,609	(154,348)	112,635	(110,825)	3,650,003

(*)1 Other increase or decrease represents the changes in investments in associates and joint ventures due to disposals, change in capital adjustments effect from translations of financial statements of foreign investees and others.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(e) Summarized financial information of associates and joint ventures as of and for the years ended December 31, 2017 and 2018 are as follows:

1) December 31, 2017

Company		Assets	Liabilities	Equity	Sales	Net income (loss)
(in millions of Won)						
[Domestic]						
EQP POSCO Global NO1 Natural Resources Private Equity Fund	₩	562,698	866	561,832	—	1,261
SNNC		705,975	459,519	246,456	576,023	2,417
QSONE Co., Ltd.		248,779	78,680	170,099	15,297	1,236
Chun-cheon Energy Co., Ltd		700,079	539,137	160,942	164,294	(8,250)
Daesung Steel		169,774	112,795	56,979	70,434	18,230
Incheon-Gimpo Expressway Co., Ltd.		1,132,233	922,338	209,895	—	(23,221)
CHUNGJU ENTERPRISE CITY						
DEVELOPMENT Co., Ltd		76,184	48,072	28,112	77,093	15,921
BLUE OCEAN Private Equity Fund		311,129	188,512	122,617	445,238	(3,345)
Keystone NO. 1. Private Equity Fund		170,155	133,033	37,122	5,391	(2,070)
UITrans LRT Co., Ltd.		464,074	384,202	79,872	3,689	(13,263)
KoFC POSCO HANWHA KB Shared Growth						
NO. 2. Private Equity Fund		55,936	1,315	54,621	10,212	(1,578)
KONES, Corp.		2,766	1,616	1,150	5,379	139
POSCO MITSUBISHI CARBON TECHNOLOGY		478,847	295,052	183,795	154,312	46,138
[Foreign]						
South-East Asia Gas Pipeline Company Ltd.		1,911,942	1,121,783	790,159	445,682	171,303
7623704 Canada Inc.		1,182,376	9	1,182,367	—	82,344
KOREA LNG LTD.		179,269	86	179,183	34,640	32,446
Nickel Mining Company SAS		465,700	324,687	141,013	179,683	(4,450)
PT. Batutua Tembaga Raya		336,085	272,542	63,543	195,520	49,091
Zhongyue POSCO (Qinhuangdao) Tinplate						
Industrial Co., Ltd		70,437	18,722	51,715	85,850	(3,736)
PT. Wampu Electric Power		212,095	148,177	63,918	779	29,634
POSCO SeAH Steel Wire (Nantong) Co., Ltd.		70,701	43,588	27,113	84,973	1,210
Roy Hill Holdings Pty Ltd		10,148,416	6,600,900	3,547,516	2,988,372	797,008
POSCO-NPS Niobium LLC		697,470	—	697,470	—	32,481
KOBRASCO		252,813	35,843	216,970	179,453	112,890
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.		717,472	391,871	325,601	1,245,178	5,978
DMSA/AMSA		5,586,171	4,167,906	1,418,265	630,229	(475,958)
CSP - Companhia Siderurgica do Pecem		4,805,353	4,223,392	581,961	1,290,767	(740,591)

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

2) December 31, 2018

Company	Assets	Liabilities	Equity (deficit)	Sales	Net income (loss)
	(in millions of Won)				
[Domestic]					
EQP POSCO Global NO1 Natural Resources					
Private Equity Fund	₩ 552,760	783	551,977	—	10,249
POSPower Co., Ltd	425,632	35,761	389,871	—	(4,536)
SNNC	645,013	384,586	260,427	656,320	14,229
QSONE Co., Ltd.	249,384	78,285	171,099	16,597	2,101
Chun-cheon Energy Co., Ltd	667,454	525,308	142,146	320,950	(18,796)
CHUNGJU ENTERPRISE CITY					
DEVELOPMENT Co., Ltd	63,554	35,003	28,551	16,237	439
BLUE OCEAN Private Equity Fund	305,876	174,640	131,236	459,491	(5,294)
Daesung Steel	169,305	111,502	57,803	75,474	824
Incheon-Gimpo Expressway Co., Ltd.	1,049,629	931,937	117,692	—	(92,202)
Keystone NO. 1. Private Equity Fund	177,024	144,186	32,838	15,507	(3,962)
UITrans LRT Co., Ltd.	430,227	435,699	(5,472)	12,929	(85,344)
KoFC POSCO HANWHA KB Shared Growth					
NO. 2. Private Equity Fund	59,464	1,061	58,403	2,401	(12,313)
KONES, Corp.	2,618	1,414	1,204	5,167	70
POSCO MITSUBISHI CARBON TECHNOLOGY	537,138	237,563	299,575	300,986	116,049
[Foreign]					
South-East Asia Gas Pipeline Company Ltd.	1,726,410	1,009,731	716,679	343,471	70,717
7623704 Canada Inc.	1,232,208	1	1,232,207	—	44,320
KOREA LNG LTD.	217,883	110	217,773	54,357	52,720
Nickel Mining Company SAS	465,463	329,084	136,379	207,956	(4,569)
PT. Batutua Tembaga Raya	332,305	274,580	57,725	128,609	(8,451)
Zhongyue POSCO (Qinhuangdao) Tinplate					
Industrial Co., Ltd	73,515	24,264	49,251	121,104	(2,231)
PT. Wampu Electric Power	223,009	155,407	67,602	13,461	887
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	61,782	34,740	27,042	85,619	78
Roy Hill Holdings Pty Ltd	9,666,619	6,043,492	3,623,127	3,259,256	497,469
POSCO-NPS Niobium LLC	726,810	—	726,810	—	41,812
KOBRASCO	317,842	50,945	266,897	229,340	150,550
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	710,518	384,572	325,946	1,341,849	2,159
DMSA/AMSA	5,562,877	4,171,896	1,390,981	731,127	(529,844)
CSP - Companhia Siderurgica do Pecem	4,194,242	4,192,867	1,375	1,860,198	(542,865)

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

12. Joint Operations

Details of significant joint operations that the Company is participating in as a party to a joint arrangement as of December 31, 2018 are as follows:

Joint operations	Operation	Ownership (%)	Location
Myanmar A-1/A-3 mine	Mineral development and gas production	51.00	Myanmar
Offshore midstream	Gas transportation facility	51.00	Myanmar
Greenhills mine	Mine development	20.00	Canada
Arctos Anthracite coal project	Mine development	50.00	Canada
Mt. Thorley J/V	Mine development	20.00	Australia
POSMAC J/V	Mine development	20.00	Australia
RUM J/V	Mine development	10.00	Australia
Hanam-Gamil package public housing project	Construction	7.70	Korea
Hanam-Gamil district B6, C2, C3 block Public housing lot development project	Construction	27.00	Korea
Sejong 2-1 P3 Block public housing project	Construction	37.00	Korea
Yongin-Giheung Station area city development project ...	Construction	61.00	Korea
Korean wave world complex land multi-purpose building development project	Construction	33.30	Korea
Sejong 4-1 P3 Block public housing project	Construction	60.00	Korea

13. Investment Property, Net

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

	2017			2018		
	Acquisition cost	Accumulated depreciation and impairment loss	Book value	Acquisition cost	Accumulated depreciation and impairment loss	Book value
	(in millions of Won)					
Land	₩ 360,402	—	360,402	295,328	(16,743)	278,585
Buildings	727,022	(92,982)	634,040	681,518	(110,183)	571,335
Structures	7,717	(1,436)	6,281	3,327	(1,919)	1,408
Construction-in-progress	64,191	—	64,191	101,665	(24,378)	77,287
	₩ 1,159,332	(94,418)	1,064,914	1,081,838	(153,223)	928,615

As of December 31, 2018, the fair value of investment property is ₩1,498,136 million.

(b) Changes in the carrying amount of investment property for the years ended December 31, 2017 and 2018 were as follows:

1) For the year ended December 31, 2017

	Beginning	Acquisitions	Disposals	Depreciation	Others ^(*)	Ending
	(in millions of Won)					
Land	₩ 392,723	20,941	(37,725)	—	(15,537)	360,402
Buildings	671,539	38,831	(9,506)	(23,450)	(43,374)	634,040
Structures	2,147	—	—	(591)	4,725	6,281
Construction-in-progress	51,311	17,648	—	—	(4,768)	64,191
	₩ 1,117,720	77,420	(47,231)	(24,041)	(58,954)	1,064,914

(*) Includes reclassification resulting from changing purpose of use, adjustment of foreign currency translation difference and others.

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

2) For the year ended December 31, 2018

	Beginning	Acquisitions	Disposals	Depreciation ^(*1)	Others ^(*2)	Ending
	(in millions of Won)					
Land	₩ 360,402	1,327	(26,826)	(16,743)	(39,575)	278,585
Buildings	634,040	727	(32,807)	(28,358)	(2,267)	571,335
Structures	6,281	—	—	(603)	(4,270)	1,408
Construction-in-progress	64,191	42,052	—	(24,948)	(4,008)	77,287
	<u>₩ 1,064,914</u>	<u>44,106</u>	<u>(59,633)</u>	<u>(70,652)</u>	<u>(50,120)</u>	<u>928,615</u>

(*1) Includes impairment loss on investment property recognized by each of the consolidated subsidiaries, including the office for rent of POSCO(Dalian) IT Center Development Co., Ltd. amounting to ₩51,461 million.

(*2) Includes reclassification resulting from changing purpose of use, adjustment of foreign currency translation difference and others.

14. Property, Plant and Equipment, Net

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

	2017				2018			
	Acquisition cost	Accumulated depreciation and impairment loss	Government grants	Book value	Acquisition cost	Accumulated depreciation and impairment loss	Government grants	Book value
	(in millions of Won)							
Land	₩ 2,534,102	(6,452)	—	2,527,650	2,553,957	(5,955)	—	2,548,002
Buildings	9,311,426	(4,433,996)	(412)	4,877,018	9,146,294	(4,743,449)	(393)	4,402,452
Structures	5,452,713	(2,686,802)	(59)	2,765,852	5,884,277	(2,966,304)	(49)	2,917,924
Machinery and equipment	46,669,612	(27,301,410)	(245)	19,367,957	47,610,225	(29,091,754)	(342)	18,518,129
Vehicles	296,815	(263,884)	(70)	32,861	302,767	(271,381)	(45)	31,341
Tools	380,144	(315,446)	(1,058)	63,640	399,638	(333,387)	(87)	66,164
Furniture and fixtures ...	643,779	(498,192)	(148)	145,439	638,553	(502,215)	(51)	136,287
Finance lease assets ...	243,160	(97,903)	—	145,257	213,873	(76,309)	—	137,564
Bearer plants	70,031	(4,516)	—	65,515	88,773	(8,002)	—	80,771
Construction-in-progress	1,897,885	—	(5,539)	1,892,346	1,964,267	(778,373)	(6,255)	1,179,639
	<u>₩ 67,499,667</u>	<u>(35,608,601)</u>	<u>(7,531)</u>	<u>31,883,535</u>	<u>68,802,624</u>	<u>(38,777,129)</u>	<u>(7,222)</u>	<u>30,018,273</u>

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(b) Changes in the carrying amount of property, plant and equipment for the years ended December 31, 2017 and 2018 were as follows:

1) For the year ended December 31, 2017

	Beginning	Acquisitions	Disposals	Depreciation	Impairment loss ^(*)	Others ^(*)	Ending
	(in millions of Won)						
Land	₩ 2,601,208	3,477	(18,226)	—	—	(58,809)	2,527,650
Buildings	4,995,631	53,961	(5,782)	(347,419)	(14,112)	194,739	4,877,018
Structures	2,908,480	18,943	(2,558)	(212,643)	(33,586)	87,216	2,765,852
Machinery and equipment	20,318,390	194,653	(93,210)	(2,189,624)	(27,811)	1,165,559	19,367,957
Vehicles	46,699	9,982	(1,623)	(17,363)	(4,977)	143	32,861
Tools	71,380	16,424	(976)	(28,516)	(23)	5,351	63,640
Furniture and fixtures	132,406	61,597	(1,296)	(48,400)	(16)	1,148	145,439
Finance lease assets	159,013	4,760	(453)	(14,810)	—	(3,253)	145,257
Bearer plants	—	—	—	(4,830)	—	70,345	65,515
Construction-in-progress	2,537,132	1,894,067	(817)	—	(36,706)	(2,501,330)	1,892,346
	<u>₩ 33,770,339</u>	<u>2,257,864</u>	<u>(124,941)</u>	<u>(2,863,605)</u>	<u>(117,231)</u>	<u>(1,038,891)</u>	<u>31,883,535</u>

(*1) As of December 31, 2017, due to the existence of indicators for impairment such as continuous operating loss on Suncheon Bay Personal Rapid Transit business of the Suncheon Eco Trans Co., Ltd, a subsidiary of the Company, the Company performed impairment test and recognized impairment loss of ₩48,070 million since the recoverable amount is less than its carrying amount. The impairment recorded in 2017 also included ₩17,651 million related to POSCO for individual assets due to a decline in economic result and others.

(*2) Represents assets transferred from construction-in-progress to intangible assets and other property, plant and equipment, reclassifications resulting from changing purpose of use, adjustments of foreign currency translation differences and others.

2) For the year ended December 31, 2018

	Beginning	Acquisitions	Disposals	Depreciation	Impairment loss ^(*)	Others ^(*)	Ending
	(in millions of Won)						
Land	₩ 2,527,650	28,998	(26,157)	—	6,399	11,112	2,548,002
Buildings	4,877,018	46,129	(21,501)	(331,688)	(73,523)	(93,983)	4,402,452
Structures	2,765,852	18,749	(2,834)	(220,218)	(6,652)	363,027	2,917,924
Machinery and equipment	19,367,957	145,220	(62,135)	(2,224,000)	(143,293)	1,434,380	18,518,129
Vehicles	32,861	8,538	(1,149)	(14,835)	(56)	5,982	31,341
Tools	63,640	21,337	(1,867)	(26,421)	(206)	9,681	66,164
Furniture and fixtures	145,439	32,258	(577)	(51,835)	(1,494)	12,496	136,287
Finance lease assets	145,257	28,466	(420)	(19,224)	—	(16,515)	137,564
Bearer plants	65,515	—	—	(3,636)	—	18,892	80,771
Construction-in-progress	1,892,346	1,884,125	(23,814)	—	(778,373)	(1,794,645)	1,179,639
	<u>₩31,883,535</u>	<u>2,213,820</u>	<u>(140,454)</u>	<u>(2,891,857)</u>	<u>(997,198)</u>	<u>(49,573)</u>	<u>30,018,273</u>

(*1) During 2018, the Controlling Company evaluated future economic performance of its Synthetic Natural Gas (SNG) facility that was still in trial run stage. Considering the continuous decline in LNG price, increase in coal prices and the need for additional capital investment in the SNG facility, the Controlling Company concluded that the profitability for the SNG facility is unlikely to be sustainable and decided to terminate the operation of SNG facility as of December 31, 2018. The property, plant and equipment in the SNG facility are primarily comprised of machinery and equipment, among which assets with a carrying value of ₩167,054 million are expected to be re-used in other facilities of the Controlling Company therefore no impairment test was conducted. For the remaining assets impairment test was performed by estimating the recoverable

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amount of each individual assets. For the assets which are determined to be technically obsolete and therefore sale is unlikely, recoverable amount represents expected scrap value less cost of disposal.

For the assets for which sale is probable, the recoverable amount is determined based on fair value less cost of disposal. Fair value was measured using cost approach, which is based on an estimated of the current cost to purchase or replace the asset less applicable depreciation and obsolescence. Specifically, the Controlling Company used indirect cost approach to estimate the replacement cost for a new asset by applying asset specific inflation factors to the asset's historical cost. Then the Controlling Company estimates and deducts depreciation for physical deterioration. Depreciation factors are applied primarily based on estimated useful life of the asset and declining balance depreciation method. The fair value measurement of assets in SNG facility is considered to be level 3 because significant inputs used in the estimate, such as asset specific inflation factors and estimated useful lives, are unobservable.

As a result of the impairment test, the Company recognized an impairment loss of ₩809,737 million in connection with the property, plant and equipment in the SNG facility.

The Controlling Company also has recognized an impairment loss amounting to ₩61,787 million since recoverable amounts on Strip Casting facilities and others is less than their carrying amount for the period ended December 31, 2018.

- (*2) As of December 31, 2018, POSCO ENERGY CO., LTD., as a subsidiary, performed an impairment test due to the consecutive operating loss of the fuel cell business, and recognized impairment losses amounting to ₩54,250 million.
- (*3) Represents assets transferred from construction-in-progress to intangible assets and other property, plant and equipment, reclassifications resulting from changing purpose of use, adjustments of foreign currency translation differences and others.

(c) Borrowing costs capitalized and the capitalized interest rate for the years ended December 31, 2017 and 2018 were as follows:

	2017	2018
	(in millions of Won)	
Weighted average expenditure	₩ 1,180,563	628,595
Borrowing costs capitalized	37,261	22,619
Capitalization rate (%)	1.74 ~ 3.45	2.51 ~ 3.90

(d) Property, plant and equipment and investment property pledged as collateral as of December 31, 2017 and 2018 are as follows:

		Book value	
		2017	2018 (*2)
		(in millions of Won)	
	Collateral right holder		
Land (*1)	Korean Development Bank and others	₩ 822,057	769,843
Buildings and structures (*1)	Korean Development Bank and others	1,678,403	1,522,129
Machinery and equipment	Korean Development Bank and others	3,527,420	3,419,528
Construction-in-progress	Korean Development Bank and others	15,389	—
		₩6,043,269	5,711,500

(*1) Investment property and other assets (land-use right) are included.

(*2) As of December 31, 2018, the pledged amount is ₩5,323,071 million.

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15. Goodwill and Other Intangible Assets, Net

(a) Goodwill and other intangible assets as of December 31, 2017 and 2018 are as follows:

	2017				2018			
	Acquisition cost	Accumulated amortization and impairment loss	Government grants	Book value	Acquisition cost	Accumulated amortization and impairment loss	Government grants	Book value
	(in millions of Won)							
Goodwill	₩ 1,604,288	(254,450)	—	1,349,838	1,603,308	(478,159)	—	1,125,149
Intellectual property rights	3,140,159	(690,966)	—	2,449,193	3,300,638	(901,113)	—	2,399,525
Premium in rental	139,873	(21,563)	—	118,310	158,338	(23,545)	—	134,793
Development expense	397,129	(316,892)	(19)	80,218	445,752	(346,589)	—	99,163
Port facilities usage rights	705,692	(396,319)	—	309,373	724,375	(419,294)	—	305,081
Exploration and evaluation assets	296,320	(90,376)	—	205,944	285,845	(93,715)	—	192,130
Customer relationships	857,624	(390,679)	—	466,945	860,951	(439,178)	—	421,773
Power generation permit	539,405	—	—	539,405	—	—	—	—
Other intangible assets	1,006,219	(573,152)	(24)	433,043	1,115,742	(622,417)	(114)	493,211
	<u>₩ 8,686,709</u>	<u>(2,734,397)</u>	<u>(43)</u>	<u>5,952,269</u>	<u>8,494,949</u>	<u>(3,324,010)</u>	<u>(114)</u>	<u>5,170,825</u>

(b) The changes in carrying amount of goodwill and other intangible assets for the years ended December 31, 2017 and 2018 were as follows:

1) For the year ended December 31, 2017

	Beginning	Acquisitions	Business combination	Disposals	Amortization	Impairment loss	Others ^(*)	Ending
	(in millions of Won)							
Goodwill	₩ 1,375,131	—	—	—	—	(21,750)	(3,543)	1,349,838
Intellectual property rights	2,521,171	167,580	47,625	(450)	(217,932)	(74,524)	5,723	2,449,193
Premium in rental ^(*)	119,039	6,006	—	(3,666)	(611)	(1,661)	(797)	118,310
Development expense	117,012	3,479	—	(1,179)	(66,847)	(694)	28,447	80,218
Port facilities usage rights	256,617	—	—	—	(19,912)	—	72,668	309,373
Exploration and evaluation assets	162,268	91,548	—	—	—	(56,519)	8,647	205,944
Customer relationships	514,245	—	—	—	(46,508)	—	(792)	466,945
Power generation permit	539,405	—	—	—	—	—	—	539,405
Other intangible assets	483,841	84,502	—	(1,641)	(57,964)	(11,829)	(63,866)	433,043
	<u>₩ 6,088,729</u>	<u>353,115</u>	<u>47,625</u>	<u>(6,936)</u>	<u>(409,774)</u>	<u>(166,977)</u>	<u>46,487</u>	<u>5,952,269</u>

(*)1) Premium in rental includes memberships with indefinite useful lives.

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(*2) Represents assets transferred from construction-in-progress to intangible assets and assets transferred from property, plant and equipment, adjustments of foreign currency translation difference and others.

2) For the year ended December 31, 2018

	Beginning	Acquisitions	Disposals	Amortization	Impairment loss	Others (*3)	Ending
	(in millions of Won)						
Goodwill	₩ 1,349,838	—	—	—	(223,709)	(980)	1,125,149
Intellectual property rights	2,449,193	334,667	(18,619)	(198,282)	(96,475)	(70,959)	2,399,525
Premium in rental (*1)	118,310	36,196	(15,675)	(330)	(4,218)	510	134,793
Development expense	80,218	4,248	(32)	(37,305)	(411)	52,445	99,163
Port facilities usage rights	309,373	—	—	(22,975)	—	18,683	305,081
Exploration and evaluation assets	205,944	2,654	—	—	(3,339)	(13,129)	192,130
Customer relationships	466,945	—	—	(48,499)	—	3,327	421,773
Power generation permit	539,405	—	—	—	—	(539,405)	—
Other intangible assets	433,043	164,594	(1,644)	(49,190)	(8,844)	(44,748)	493,211
	₩ 5,952,269	542,359	(35,970)	(356,581)	(336,996)	(594,256)	5,170,825

(*1) Premium in rental includes memberships with indefinite useful lives.

(*2) During the year ended December 31, 2018, the Company disposed of a portion of shares of its subsidiary, POSPower Co., Ltd, which resulted in the Company's loss of control, and derecognition of corresponding intangible assets.

(*3) Represents assets transferred from construction-in-progress to intangible assets and assets transferred from property, plant and equipment, adjustments of foreign currency translation difference and others.

(c) For the purpose of impairment testing, goodwill is allocated to individually operating entities which are determined to be CGUs. The goodwill amounts as of December 31, 2017 and 2018 are as follows:

Reportable segments	Total number of CGUs		CGUs	(in millions of Won)	
	2017	2018		2017	2018
Steel	7	7	POSCO VST CO., LTD.	₩ 36,955	36,955
			Others	12,494	12,484
Trading	2	2	POSCO DAEWOO Corporation ^{(*)1}	1,165,030	1,006,879
			PT. Bio Inti Agrindo	7,099	6,902
			Others	—	16
E&C	2	2	POSCO ENGINEERING & CONSTRUCTION CO., LTD. ^{(*)2}	90,426	24,868
			POSCO Center Beijing	157	155
			POSCO ENERGY CO., LTD.	26,471	26,471
Others	5	5	Others	11,206	10,419
	16	16		₩ 1,349,838	1,125,149

(*1) Recoverable amounts of POSCO DAEWOO Corporation are determined based on its value in use. As of December 31, 2018, value in use is estimated by applying a 7.84% discount rate and a 2.0% terminal growth rate after 5 years, based on management's business plan. The terminal growth rate does not exceed long-term average growth rate of its industry. Impairment loss on goodwill of ₩158,151 million was recognized as of December 31, 2018 as the recoverable amount is less than the carrying amount of the CGU.

Value in use of the CGU was affected by the assumptions such as discount rate and terminal growth used in discount cash flow model. When the discount rate increases by 0.25%, value in use will be decreased by ₩126,343 million or 3.71% and when the terminal growth rate decreases by ₩50,928 million or 0.25%, value in use will be decreased by 1.49%.

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(*2) Recoverable amounts of POSCO ENGINEERING & CONSTRUCTION CO., LTD are determined based on its value in use. As of December 31, 2018, value in use is estimated by applying a 9.1% discount rate within 5 years, the period for the estimated future cash flows, based on management's business plan and by no applying a terminal growth rate. Impairment loss on goodwill of ₩65,558 million was recognized as of December 31, 2018 as the recoverable amount is less than the carrying amount of the CGU.

Value in use of the CGU was affected by the assumptions such as discount rate and terminal growth used in discount cash flow model. When the discount rate increases by 0.25%, value in use will be decreased by 2.72% and when the terminal growth rate decreases by 0.25%, value in use will be decreased by 1.76%.

16. Other Assets

Other current assets and other non-current assets as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Current		
Advance payment	₩661,779	539,894
Prepaid expenses	143,032	123,770
Firm commitment asset	15,115	11,246
Others	1,316	9,554
	<u>821,242</u>	<u>684,464</u>
Non-current		
Long-term advance payment	24,201	24,280
Long-term prepaid expenses	333,153	334,918
Others (*1)	131,657	149,566
	<u>₩489,011</u>	<u>508,764</u>

(*1) As of December 31, 2017 and 2018, the Company recognized tax assets amounting to ₩88,633 million and ₩116,693 million, respectively, based on the Company's best estimate of the tax amounts to be refunded when the result of the Company's appeal in connection with the additional income tax payment in prior years' tax audits and claim for rectification are finalized.

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17. Borrowings

(a) Short-term borrowings and current portion of long-term borrowings as of December 31, 2017 and 2018 are as follows:

	Bank	Issuance date	Maturity date	Interest rate (%)	2017	2018
(in millions of Won)						
Short-term borrowings						
Bank overdrafts	JP Morgan and others	January, 2017~ December, 2018	January, 2019~ December, 2019	2.7~8.9 W	217,879	294,364
Short-term borrowings	HSBC and others	January, 2018~ December, 2018	January, 2019~ December, 2019	0.3~10.1	7,956,939	7,193,416
					<u>8,174,818</u>	<u>7,487,780</u>
Current portion of long-term liabilities						
Current portion of long-term borrowings	Export-Import bank of Korea and others	September, 2011~ December, 2018	February, 2019~ December, 2019	0.5~8.8	1,407,123	1,234,915
Current portion of debentures	Korea Development Bank and others	August, 2009~ March, 2018	February, 2019~ December, 2019	1.8~6.3	1,693,974	1,568,108
Less: Current portion of discount on debentures issued					(1,399)	(1,184)
					<u>3,099,698</u>	<u>2,801,839</u>
					<u>W11,274,516</u>	<u>10,289,619</u>

(b) Long-term borrowings, excluding current portion as of December 31, 2017 and 2018 are as follows:

	Bank	Issuance date	Maturity date	Interest rate (%)	2017	2018
(in millions of Won)						
Long-term borrowings	Export-Import bank of Korea and others	September, 2001~ December, 2018	March, 2020~ March, 2037	0.2~8.8	W4,839,199	4,499,199
Less: Present value discount					(36,459)	(30,526)
Bonds	KB Securities and others	October, 2010~ November, 2018	April, 2020~ July, 2025	1.9~5.3	4,999,575	5,469,580
Less: Discount on debentures issued					(13,174)	(18,602)
					<u>W9,789,141</u>	<u>9,919,651</u>

(c) Assets pledged as collateral in regards to the borrowings as of December 31, 2018 are as follows:

	Bank	Book value	Pledged amount
(in millions of Won)			
Cash and cash equivalents	Shinhan Bank	W 8,296	8,296
Property, plant and equipment and Investment property ^(*)	Korea Development Bank and others	5,592,627	5,304,861
Trade accounts and notes receivable	Korea Development Bank and others	157,617	157,617
Inventories	Export-Import Bank of Korea and others	205,433	163,233
Financial instruments	Kookmin Bank and others	40,664	40,664
		<u>W6,004,637</u>	<u>5,674,671</u>

(*) Includes other assets such as right to use land.

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18. Other Payables

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

	2017	2018
	(in millions of Won)	
Current		
Accounts payable	₩ 800,374	783,562
Accrued expenses	653,923	720,773
Dividend payable	7,213	8,673
Finance lease liabilities	17,763	10,152
Withholdings	274,188	196,937
	<u>₩1,753,461</u>	<u>1,720,097</u>
Non-current		
Accounts payable	₩ 4,632	1,624
Accrued expenses	14,234	19,021
Finance lease liabilities	75,255	84,602
Long-term withholdings	53,629	43,621
	<u>₩ 147,750</u>	<u>148,868</u>

19. Other Financial Liabilities

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

	2017	2018
	(in millions of Won)	
Current		
Derivatives liabilities	₩ 69,872	27,328
Financial guarantee liabilities	59,940	50,472
	<u>₩ 129,812</u>	<u>77,800</u>
Non-current		
Derivatives liabilities	₩ 85,638	46,429
Financial guarantee liabilities	28,467	17,733
	<u>₩ 114,105</u>	<u>64,162</u>

20. Provisions

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

	2017		2018	
	Current	Non-current	Current	Non-current
	(in millions of Won)			
Provision for bonus payments	₩ 49,171	—	46,514	26,964
Provision for construction warranties	11,804	106,232	11,842	130,391
Provision for legal contingencies and claims ^(*)	495	36,269	16,981	55,716
Provision for the restoration ^(*)	12,273	121,917	9,379	79,789
Others ^(*)	37,203	212,754	213,737	138,176
	<u>₩ 110,946</u>	<u>477,172</u>	<u>298,453</u>	<u>431,036</u>

(*) The Company recognized probable outflow of resources amounting to ₩27,963 million and ₩50,888 million as provisions for legal contingencies and asserted claim in relation to lawsuits against the Company as of December 31, 2017 and 2018, respectively.

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- (*2) Due to contamination of lands near the Company's magnesium smelting plant located in Gangneung province and others, the Company recognized present values of estimated costs for recovery, ₩29,703 million as provisions for restoration as of December 31, 2018. In order to determine the estimated costs, the Company has assumed that it would use all of technologies and materials available for now to recover the land. In addition, the Company has applied a discount rate of 2.28%~2.37% to measure present value of these costs.
- (*3) As of December 31, 2017 and 2018, POSCO ENERGY CO., LTD., a subsidiary of the Company, recognized ₩157,461 million and ₩200,407 million of provisions for warranties, respectively, for the service contract on fuel cell based on its estimate of probable outflow of resources.
- (*4) As of December 31, 2017 and 2018, the amount includes a provision of ₩23,600 million and ₩17,595 million, respectively, for expected outflow of resources in connection with the performance guarantee for the Hwaseong-Dongtan complexes development project of POSCO ENGINEERING & CONSTRUCTION CO., LTD.

(b) The following are the key assumptions concerning the future and other key sources of estimation uncertainties at the end of the reporting period.

	Key assumptions for the estimation
Provision for bonus payments	Estimations based on financial performance and service provided
Provision for construction warranties	Estimations based on historical warranty data
Provision for legal contingencies and claims	Estimations based on the degree of probability of an unfavorable outcome and the ability to make a sufficient reliable estimate of the amount of loss

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

1) For the year ended December 31, 2017

	Beginning	Increase	Utilization	Reversal	Others (*1)	Ending
	(in millions of Won)					
Provision for bonus payments	₩ 42,986	74,728	(64,319)	(3,035)	(1,189)	49,171
Provision for construction warranties	96,709	40,916	(18,006)	(2,502)	919	118,036
Provision for legal contingencies and claims	84,846	27,459	(70,156)	(1,749)	(3,636)	36,764
Provision for the restoration	62,594	63,438	(8,530)	—	16,688	134,190
Others	165,469	161,054	(64,850)	(20,199)	8,483	249,957
	₩ 452,604	367,595	(225,861)	(27,485)	21,265	588,118

(*1) Includes adjustments of foreign currency translation differences and others.

2) For the year ended December 31, 2018

	Beginning	Increase	Utilization	Reversal	Others (*1)	Ending
	(in millions of Won)					
Provision for bonus payments	₩ 49,171	88,879	(60,723)	(3,856)	7	73,478
Provision for construction warranties	118,036	56,560	(24,608)	(7,660)	(95)	142,233
Provision for legal contingencies and claims	36,764	45,789	(6,066)	(3,399)	(391)	72,697
Provision for the restoration	134,190	14,912	(9,212)	(47,682)	(3,040)	89,168
Others	249,957	367,332	(118,388)	(216,668)	69,680	351,913
	₩ 588,118	573,472	(218,997)	(279,265)	66,161	729,489

(*1) Includes adjustments of foreign currency translation differences and others.

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21. Employee Benefits

(a) Defined contribution plans

The expenses related to post-employment benefit plans under defined contribution plans for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Expense related to post-employment benefit plans under defined contribution plans	₩ 30,344	35,538	42,825

(b) Defined benefit plans

1) The amounts recognized in relation to net defined benefit liabilities in the statements of financial position as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Present value of funded obligations	₩ 1,826,907	2,117,829
Fair value of plan assets ^(*)	(1,714,166)	(1,997,717)
Present value of non-funded obligations	16,228	19,332
Net defined benefit liabilities	₩ 128,969	139,444

(*) As of December 31, 2017 and 2018, the Company recognized net defined benefit assets amounting to ₩8,224 million and ₩1,489 million, respectively, since there are consolidated entities whose fair value of plan assets exceeded the present value of defined benefit obligations.

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

	2017	2018
	(in millions of Won)	
Defined benefit obligations at the beginning of period	₩ 1,733,020	1,843,135
Current service costs	209,612	212,323
Interest costs	35,830	54,950
Remeasurements :	51,994	212,678
— Gain from change in financial assumptions	(50,218)	173,084
— Loss (gain) from change in demographic assumptions	15,952	526
— Others	86,260	39,068
Benefits paid	(185,220)	(189,165)
Others	(2,101)	3,240
Defined benefit obligations at the end of period	₩ 1,843,135	2,137,161

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

	2017	2018
	(in millions of Won)	
Fair value of plan assets at the beginning of period	₩ 1,693,118	1,714,166
Interest on plan assets	45,516	50,784
Remeasurement of plan assets	(17,190)	(19,761)
Contributions to plan assets	164,828	408,326
Benefits paid	(168,643)	(163,112)
Others	(3,463)	7,314
Fair value of plan assets at the end of period	₩ 1,714,166	1,997,717

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The Company expects to make an estimated contribution of ₩408,887 million to the defined benefit plan assets in 2019.

4) The fair value of plan assets as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Equity instruments	₩ 41,218	3,151
Debt instruments	367,027	692,825
Deposits	1,254,571	1,244,802
Others	51,350	56,939
	<u>₩ 1,714,166</u>	<u>1,997,717</u>

5) The amounts recognized in consolidated statements of comprehensive income for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Current service costs	₩ 285,706	209,612	212,323
Net interest costs ^(*)	1,901	(9,686)	4,166
	<u>₩ 287,607</u>	<u>199,926</u>	<u>216,489</u>

(*) The actual return on plan assets amounted to ₩30,422 million, ₩28,326 million and ₩31,023 million for the years ended December 31, 2016, 2017 and 2018, respectively.

The above expenses by function were as follows:

	2016	2017	2018
	(in millions of Won)		
Cost of sales	₩ 161,810	131,724	150,822
Selling and administrative expenses	124,994	67,424	64,505
Others	803	778	1,162
	<u>₩ 287,607</u>	<u>199,926</u>	<u>216,489</u>

6) Accumulated actuarial gains (losses), net of tax recognized in other comprehensive income for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Beginning	₩ (272,152)	(251,612)	(299,155)
Current actuarial gains (losses)	20,540	(47,543)	(173,489)
Ending	<u>₩ (251,612)</u>	<u>(299,155)</u>	<u>(472,644)</u>

7) The principal actuarial assumptions as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(%)	
Discount rate	2.70~7.75	2.24~10.03
Expected future increase in salaries ^(*)	1.04~10.00	2.54~10.00

(*) The expected future increase in salaries is based on the average salary increase rate for the past 3~5 years.

All assumptions are reviewed at the end of the reporting period. Additionally, the total estimated defined benefit obligation includes actuarial assumptions associated with the long-term characteristics of the defined benefit plan.

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8) Reasonably possible changes at the reporting date to one of the relevant actuarial assumptions, holding the other assumptions constant, would have affected the defined benefit obligation by the amounts shown below:

	1% Increase		1% Decrease	
	Amount	Percentage (%)	Amount	Percentage (%)
	(in millions of Won)			
Discount rate	₩ (143,793)	(6.7)	166,225	7.8
Expected future increase in salaries	167,278	7.8	(147,232)	(6.9)

9) As of December 31, 2018 the maturity of the expected benefit payments are as follows:

	Within 1 year	1 year - 5 years	5 years - 10 years	10 years - 20 years	After 20 years	Total
	(in millions of Won)					
Benefits paid	₩ 110,168	735,172	836,318	795,347	491,384	2,968,389

The maturity analysis of the defined benefit obligation was nominal amounts of defined benefit obligations using expected remaining period of service of employees.

22. Other Liabilities

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

	2017	2018
	(in millions of Won)	
Current		
Due to customers for contract work	₩ 782,968	641,064
Advances received	1,183,108	1,130,910
Unearned revenue	7,121	49,805
Withholdings	221,940	233,981
Firm commitment liability	12,192	24,373
Others	33,590	10,174
	<u>₩ 2,240,919</u>	<u>2,090,307</u>
Non-current		
Advances received	357,981	148,081
Unearned revenue	18,440	42,992
Others	10,010	59,359
	<u>₩ 386,431</u>	<u>250,432</u>

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

23. Financial Instruments

(a) Classification and fair value of financial instruments

1) The carrying amount and the fair values of financial assets and financial liabilities by fair value hierarchy as of December 31, 2017 and 2018 are as follows:

① December 31, 2017

		Fair value				
	Book value	Level 1	Level 2	Level 3	Total	
		(in millions of Won)				
Financial assets						
Financial assets at fair value through profit or loss						
Financial assets held for trading	₩ 1,970	—	1,970	—	1,970	
Derivatives assets held for trading	65,051	—	65,051	—	65,051	
Derivative hedging instruments	3,239	—	3,239	—	3,239	
Available-for-sale financial assets	1,978,115	1,080,291	17,812	880,012	1,978,115	
Held-to-maturity investments	5,211	—	—	—	—	
Loans and receivables ^(*)						
Cash and cash equivalents	2,612,530	—	—	—	—	
Trade accounts and notes receivable	8,898,176	—	—	—	—	
Loans and other receivables	9,099,444	—	—	—	—	
	₩ 22,663,736	1,080,291	88,072	880,012	2,048,375	
Financial liabilities						
Financial liabilities at fair value through profit or loss						
Derivative liabilities held for trading	₩ 142,280	—	142,280	—	142,280	
Derivative hedging instruments	13,230	—	13,230	—	13,230	
Financial liabilities measured at amortized cost ^(*)						
Trade accounts and notes payable	3,477,678	—	—	—	—	
Borrowings	21,063,657	—	21,217,415	—	21,217,415	
Financial guarantee liabilities	88,407	—	—	—	—	
Others	1,865,683	—	—	—	—	
	₩ 26,650,935	—	21,372,925	—	21,372,925	

(*) Fair value of financial assets and liabilities measured at amortized cost except borrowings approximates carrying amounts.

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As of December 31, 2016, 2017 and 2018

② December 31, 2018

		Fair value				
	Book value	Level 1	Level 2	Level 3	Total	
		(in millions of Won)				
Financial assets						
Fair value through profit or loss						
Derivative assets	₩ 16,662	—	16,662	—	16,662	
Short-term financial instruments	6,099,303	—	6,099,303	—	6,099,303	
Debt securities	27,229	—	—	27,229	27,229	
Other securities	338,106	1,224	5,205	331,677	338,106	
Other receivables	2,000	—	—	2,000	2,000	
Derivative hedging instruments ^{(*)2}	32,421	—	32,421	—	32,421	
Fair value through other comprehensive income						
Equity securities	1,238,630	891,514	—	347,116	1,238,630	
Debt securities	1,638	—	—	1,638	1,638	
Financial assets measured at amortized cost ^{(*)1}						
Cash and cash equivalents	2,643,865	—	—	—	—	
Trade accounts and notes receivable	8,819,617	—	—	—	—	
Other receivables	1,843,381	—	—	—	—	
Debt securities	8,447	—	—	—	—	
Deposit instruments	1,966,558	—	—	—	—	
	₩ 23,037,857	892,738	6,153,591	709,660	7,755,989	
Financial liabilities						
Fair value through profit or loss						
Derivative liabilities	₩ 60,047	—	60,047	—	60,047	
Derivative hedging instruments ^{(*)2}	13,710	—	13,710	—	13,710	
Financial liabilities measured at amortized cost ^{(*)1}						
Trade accounts and notes payable	4,035,960	—	—	—	—	
Borrowings	20,209,270	—	20,377,105	—	20,377,105	
Financial guarantee liabilities	68,205	—	—	—	—	
Others	1,803,353	—	—	—	—	
	₩ 26,190,545	—	20,450,862	—	20,450,862	

(*)1) Fair value of financial assets and liabilities measured at amortized cost except borrowings approximates carrying amounts.

(*)2) The Company applies hedge accounting which uses forward contracts as hedging instrument in order to hedge the risk of changes in fair value of product prices regarding firm commitments or purchase commitments. Also, the Company applies cash flow accounting which uses currency swap as hedging instrument in order to hedge the risk of changes in foreign currency which influences cash flow from borrowings.

2) Financial assets and financial liabilities classified as fair value hierarchy Level 2

Fair values of derivatives are measured using the derivatives instrument valuation model such as discounted cash flow method and others. Inputs of the financial instrument valuation model include forward rate, interest rate and others. It may change depending on the type of derivatives and the nature of the underlying assets.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

3) Financial assets and financial liabilities classified as fair value hierarchy Level 3

- ① Value measurement method and significant but not observable inputs for the financial assets classified as fair value hierarchy Level 3 as of December 31, 2018 are as follows:

	Fair value	Valuation technique	Inputs (in millions of Won)	Range of inputs	Effect on fair value assessment with unobservable input
Financial assets at fair value	₩ 303,377	Discounted cash flows	Growth rate	0% ~ 0.5%	As growth rate increases, fair value increases
			Discount rate	6.4% ~ 13.8%	As discount rate increases, fair value decreases
	23,747	Proxy firm valuation method	Price multiples	1.085 ~ 5.245	As price multiples increases, fair value increases
	382,536	Asset value approach	—	—	—

- ② Sensitivity analysis of financial assets and financial liabilities classified as Level 3 of fair value hierarchy

If other inputs remain constant as of December 31, 2018 and one of the significant but not observable input is changed, the effect on fair value measurement is as follows:

	Input variable	Favorable changes	Unfavorable changes
	(in millions of Won)		
Financial assets at fair value	Fluctuation 0.5% of growth rate	₩ 1,563	958
	Fluctuation 0.5% of discount rate	17,332	15,715

- ③ Changes in fair value of financial assets and financial liabilities classified as Level 3 for the years ended December 31, 2017 and 2018 were as follows:

	2017	2018
	(in millions of Won)	
Beginning	₩ 349,090	880,012
Acquisition and others	658,359	134,325
Gain (loss) on valuations of derivatives	(10,346)	(34,555)
Other comprehensive income (loss)	35,126	26,771
Impairment	(107,934)	—
Disposal and others	(44,283)	(296,893)
Ending	₩ 880,012	709,660

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

4) Finance income and costs by category of financial instrument for the years ended December 31, 2016, 2017 and 2018 were as follows:

① For the year ended December 31, 2016

Finance income and costs								
	Interest income (expense)	Gain and loss on valuation	Gain and loss on foreign currency	Gain and loss on disposal	Impairment loss	Others	Total	Other comprehensive income
	(in millions of Won)							
Derivatives assets	₩ —	57,411	—	310,625	—	—	368,036	—
Available-for-sale financial assets	431	—	—	127,524	(248,404)	41,000	(79,449)	310,608
Held-to-maturity financial assets	266	—	—	—	—	38	304	—
Loans and receivables	181,778	—	140,751	(17,854)	—	(172)	304,503	—
Derivatives liabilities	—	(72,976)	—	(332,415)	—	—	(405,391)	—
Financial liabilities measured at amortized cost	(658,726)	—	(283,059)	(61)	—	(28,367)	(970,213)	—
	₩ (476,251)	(15,565)	(142,308)	87,819	(248,404)	12,499	(782,210)	310,608

② For the year ended December 31, 2017

Finance income and costs								
	Interest income (expense)	Gain and loss on valuation	Gain and loss on foreign currency	Gain and loss on disposal	Impairment loss	Others	Total	Other comprehensive loss
	(in millions of Won)							
Financial assets held for trading	₩ —	16	—	—	—	—	16	—
Derivatives assets	—	(99,942)	—	206,362	—	—	106,420	(143)
Available-for-sale financial assets	60	—	—	418,789	(123,214)	92,961	388,596	(31,389)
Held-to-maturity financial assets	236	—	—	—	—	7	243	—
Loans and receivables	212,155	—	(607,837)	(32,456)	—	(304)	(428,442)	—
Derivatives liabilities	—	(61,809)	—	(231,908)	—	—	(293,717)	—
Financial liabilities measured at amortized cost	(653,115)	—	777,935	—	—	(9,546)	115,274	—
	₩ (440,664)	(161,735)	170,098	360,787	(123,214)	83,118	(111,610)	(31,532)

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Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

③ For the year ended December 31, 2018

	Finance income and costs						Other comprehensive income (loss)
	Interest income (expense)	Gain and loss on valuation	Gain and loss on foreign currency	Gain and loss on disposal	Others	Total	
	(in millions of Won)						
Financial assets at fair value through profit or loss	₩ 140,116	(43,293)	—	11,919	3,644	112,386	—
Derivative assets	—	47,720	—	233,187	—	280,907	—
Financial assets at fair value through other comprehensive income	—	—	—	—	59,701	59,701	(149,188)
Financial assets measured at amortized cost	197,142	—	234,606	(39,970)	(370)	391,408	—
Derivative liabilities	—	8,592	—	(194,446)	—	(185,854)	(212)
Financial liabilities measured at amortized cost	(741,296)	—	(438,708)	—	(16,990)	(1,196,994)	—
	₩ (404,038)	13,019	(204,102)	10,690	45,985	(538,446)	(149,400)

(b) Credit risk

1) Credit risk exposure

The carrying amount of financial assets represents the Company's maximum exposure to credit risk. The maximum exposure to credit risk as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Cash and cash equivalents	₩ 2,612,530	2,643,865
Derivative assets	68,290	49,083
Short-term financial instrument	5,545,667	6,099,303
Debt securities	—	37,314
Other securities	—	338,106
Financial assets held for trading	1,970	—
Available-for-sale financial assets	192,866	—
Held-to-maturity investments	5,211	—
Other receivables	2,195,466	1,845,381
Trade accounts and notes receivable	8,898,176	8,819,617
Deposit instruments	1,358,311	1,966,558
	₩ 20,878,487	21,799,227

The Company provided financial guarantee for the repayment of loans of associates, joint ventures and third parties. As of December 31, 2017 and 2018, the maximum exposure to credit risk related to the financial guarantee amounted to ₩3,135,084 million and ₩3,147,280 million, respectively.

2) Impairment losses on financial assets

The Company assesses expected credit losses by estimating the default rate based on the credit loss experience of prior periods and overdue conditions and considers the credit default swap (CDS) premium to reflect changes in credit risk by sector. For credit-impaired assets and significant receivables where the credit risk is significantly increased, credit losses are individually assessed.

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Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

① Allowance for doubtful accounts as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Trade accounts and notes receivable	₩ 634,129	588,733
Other accounts receivable	187,706	160,729
Loans	258,957	147,980
Other assets	13,672	19,348
	₩ 1,094,464	916,790

② Impairment losses on financial assets for the years ended December 31, 2017 and 2018 were as follows:

	2017	2018
	(in millions of Won)	
Bad debt expenses	₩ 173,694	74,781
Other bad debt expenses (*1)	100,920	81,353
Impairment loss on available-for-sale financial assets	123,214	—
Less: Recovery of allowance for other bad debt accounts	(2,743)	(18,261)
Less: Recovery of impairment loss on held-to-maturity financial assets	(20)	—
	₩ 395,065	137,873

(*1) Other bad debt expenses are mainly related to loans and other accounts receivable.

③ The aging and allowance for doubtful accounts of trade accounts and notes receivable as of December 31, 2017 and 2018 are as follows:

	2017		2018	
	Trade accounts and notes receivable	Allowance for doubtful accounts	Trade accounts and notes receivable	Allowance for doubtful accounts
	(in millions of Won)			
Not due	₩ 7,736,092	65,314	8,021,110	70,418
Overdue less than 1 month	445,390	12,546	632,082	14,434
1 month – 3 months	170,682	742	226,082	4,116
3 months – 12 months	384,313	21,030	118,094	11,774
Over 12 months	1,453,785	534,497	1,148,694	487,991
	₩ 10,190,262	634,129	10,146,062	588,733

④ The aging and allowance for doubtful accounts of other receivables as of December 31, 2017 and 2018 are as follows:

	2017		2018	
	Loans and other account receivable	Allowance for doubtful accounts	Loans and other account receivable	Allowance for doubtful accounts
	(in millions of Won)			
Not due	₩ 1,888,726	9,672	1,754,293	140,072
Overdue less than 1 month	235,559	35,539	100,102	4,307
1 month – 3 months	69,372	54,335	28,351	851
3 months – 12 months	96,942	64,467	59,946	12,411
Over 12 months	365,202	296,322	230,746	170,416
	₩ 2,655,801	460,335	2,173,438	328,057

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Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

⑤ Changes in the allowance for doubtful accounts for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Beginning	₩ 999,678	977,771	1,094,464
Initial application of IFRS No. 9	—	—	107,454
Bad debt expenses	165,150	173,694	74,781
Other bad debt expenses	37,567	98,177	63,092
Others ^(*)	(224,624)	(155,178)	(423,001)
Ending	₩ 977,771	1,094,464	916,790

(*) Others for the year ended December 31, 2016, 2017 and 2018, included decreases mainly due to write-off amounting to ₩216,657 million, ₩119,964 million and ₩383,714 million, respectively.

(c) Liquidity risk

1) Contractual maturities for non-derivative financial liabilities are as follows:

	Book value	Contractual cash flow	Within 1 year	1 year - 5 years	After 5 years
	(in millions of Won)				
Trade accounts and notes payable	₩ 4,035,960	4,037,863	4,006,942	30,921	—
Borrowings	20,209,270	24,319,619	12,912,399	10,452,389	954,831
Financial guarantee liabilities ^(*)	68,205	3,147,280	3,147,280	—	—
Other financial liabilities	1,803,353	1,817,014	1,668,937	148,077	—
	₩ 26,116,788	33,321,776	21,735,558	10,631,387	954,831

(*) For issued financial guarantee contracts, the maximum amount of the guarantee is allocated to the earliest period in which the guarantee could be called.

2) Contractual maturities for derivative financial liabilities are as follows:

	Within 1 year	1 year - 5 years	After 5 years	Total
	(in millions of Won)			
Currency forward	₩ 11,364	34,743	—	46,107
Currency swap	1,707	5,849	4,369	11,925
Interest swap	—	1,467	—	1,467
Others	14,258	—	—	14,258
	₩ 27,329	42,059	4,369	73,757

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

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(d) Currency risk

1) The Company has exposure to the risk that the fair value or future cash flows of a financial instrument will fluctuate because of the changes in foreign exchange rates. The exposure to currency risk as of December 31, 2017 and 2018 are as follows:

	2017		2018	
	Assets	Liabilities	Assets	Liabilities
	(in millions of Won)			
USD	₩ 4,215,151	5,940,380	4,346,481	6,389,276
EUR	552,630	454,072	657,690	509,437
JPY	165,356	709,318	97,722	389,625
Others	220,723	117,632	259,949	142,868

2) As of December 31, 2017 and 2018, provided that functional currency against foreign currencies other than functional currency hypothetically strengthens or weakens by 10%, the changes in gain or loss for the years ended December 31, 2017 and 2018 were as follows:

	2017		2018	
	10% increase	10% decrease	10% increase	10% decrease
	(in millions of Won)			
USD	₩(172,523)	172,523	(204,280)	204,280
EUR	9,856	(9,856)	14,825	(14,825)
JPY	(54,396)	54,396	(29,190)	29,190

(e) Interest rate risk

1) The carrying amount of interest-bearing financial instruments as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Fixed rate		
Financial assets	₩ 10,943,300	11,565,519
Financial liabilities	(11,179,635)	(11,781,701)
	<u>(236,335)</u>	<u>(216,182)</u>
Variable rate		
Financial liabilities	₩ (9,977,040)	(8,522,323)

2) Sensitivity analysis on the cash flows of financial instruments with variable interest rate

The Company's interest rate risk mainly arises from borrowings with variable interest rate. As of December 31, 2017 and 2018, provided that other factors remain the same and the interest rate of borrowings with floating rates increases or decreases by 1%, the changes in interest expense for the years ended December 31, 2017 and 2018 were as follows:

	2017		2018	
	1% increase	1% decrease	1% increase	1% decrease
	(in millions of Won)			
Variable rate financial instruments	₩ (99,770)	99,770	(85,223)	85,223

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

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24. Share Capital and Capital Surplus

(a) Share capital as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(Share, in Won)	
Authorized shares	200,000,000	200,000,000
Par value	₩ 5,000	5,000
Issued shares ^(*)	87,186,835	87,186,835
Shared capital ^(*)	₩ 482,403,125,000	482,403,125,000

(*) As of December 31, 2018, total shares of ADRs of 36,860,288 outstanding in overseas stock market are equivalent to 9,215,072 of common stock.

(*) As of December 31, 2018, the difference between the ending balance of common stock and the par value of issued common stock is ₩46,469 million due to retirement of 9,293,790 treasury stocks.

(b) The changes in issued common stock for the years ended December 31, 2017 and 2018 were as follows:

	2017			2018		
	Issued shares	Treasury shares	Number of outstanding shares	Issued shares	Treasury shares	Number of outstanding shares
	(share)					
Beginning	87,186,835	(7,189,170)	79,997,665	87,186,835	(7,187,231)	79,999,604
Disposal of treasury shares	—	1,939	1,939	—	1,528	1,528
Ending	87,186,835	(7,187,231)	79,999,604	87,186,835	(7,185,703)	80,001,132

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

	2017	2018
	(in millions of Won)	
Share premium	₩ 463,825	463,825
Gain on disposal of treasury shares	783,914	784,047
Other capital deficit	174,282	172,135
	₩ 1,422,021	1,420,007

(d) POSCO Energy Co., Ltd., a subsidiary of the Company, issued redeemable convertible preferred shares which are classified as non-controlling interests in the consolidated financial statements. The details of redeemable convertible preferred shares as of December 31, 2018 are as follows:

Redeemable Convertible Preferred Shares	
	(Share, in Won)
Issue date	February 25, 2017
Number of shares issued	8,643,193 shares
Price per share	₩28,346
Voting rights	No voting rights for 3 years from issue date
Dividend rights	Comparative, Non-participating
	· Minimum dividend rate for 1~3 years : 3.98%
	· Minimum dividend rate after 4 years : Comparative rate + Issuance spread + 2%

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	Redeemable Convertible Preferred Shares (Share, in Won)
Details about Redemption	Issuer can demand redemption of all or part of redeemable convertible preferred shares every year after the issue date, for a period of 10 years from the issue date.
Details about Conversion	Stockholders of redeemable convertible preferred shares can convert them to common shares from 3 years after the issue date to the end of the redemption period (10 years). Conversion price is equal to issue price per share, which could be adjusted according to anti-dilution clause.

Redeemable convertible preferred stocks are classified as non-controlling interests in the consolidated financial statements since the issuer has a redemption right and can control the circumstances in which the entity can settle with a variable quantity of equity instruments.

25. Hybrid Bonds

(a) Hybrid bonds classified as equity as of December 31, 2017 and 2018 are as follows:

	Date of issue	Date of maturity	Interest rate (%) (in millions of Won)	2017	2018
Hybrid bond 1-1 ^(*)	—	—	—	₩ 800,000	—
Hybrid bond 1-2 ^(*)	2013-06-13	2043-06-13	4.60	200,000	200,000
Issuance cost				(3,081)	(616)
				<u>₩ 996,919</u>	<u>199,384</u>

(*) During the year ended December 31, 2018, the Company exercised the call option of the Hybrid bond.

(*) Details of issuance of hybrid bonds as of December 31, 2018 are as follows:

	Hybrid bond 1-2
Maturity date	30 years (POSCO has a right to extend the maturity date)
Interest rate	Issue date ~ 2023-06-12 : 4.60% Reset every 10 years as follows; · After 10 years : return on government bond (10 years) + 1.40% · After 10 years : additionally +0.25% according to Step-up clauses · After 30 years : additionally +0.75%
Interest payments condition	Quarterly (Optional deferral of interest payment is available to POSCO)
Others	POSCO can call the hybrid bond at year 10 and interest payment date afterwards

The hybrid bond holder's preference in the event of liquidation is higher than the common stock holders, but lower than other creditors. The interest accumulated but not paid on the hybrid bonds as of December 31, 2018 amounts to ₩479 million.

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Notes to the Consolidated Financial Statements, Continued

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(b) POSCO ENERGY CO., LTD., a subsidiary of the Company, issued hybrid bonds, which are classified as non-controlling interests in the consolidated financial statements. Hybrid bonds as of December 31, 2017 and 2018 are as follows:

	<u>Date of issue</u>	<u>Date of maturity</u>	<u>Interest rate (%)</u>	<u>2017</u>	<u>2018</u>
			(in millions of Won)		
Hybrid bond 1-1 (*1)	—	—	—	₩ 165,000	—
Hybrid bond 1-2 (*1)	—	—	—	165,000	—
Hybrid bond 1-3 (*1)	—	—	—	30,000	—
Hybrid bond 1-4 (*2)	2013-08-29	2043-08-29	5.21	140,000	140,000
Issuance cost				(1,532)	(429)
				<u>₩ 498,468</u>	<u>139,571</u>

(*1) During the year ended December 31, 2018, the Company exercised the call option for the Hybrid bond.

(*2) Details of issuance of hybrid bonds of POSCO ENERGY Co., Ltd. as of December 31, 2018 are as follows:

	<u>Hybrid bond 1-4</u>
Maturity date	30 years (The Company has a right to extend the maturity date)
Interest rate	Issue date ~ 2023-08-29 : 5.21% Reset every 10 years as follows; · After 10 years : return on government bond (10 years) + 1.55% · After 10 years : additionally +0.25% according to Step-up clauses · After 30 years : additionally +0.75%
Interest payments condition	Quarterly (Optional deferral of interest payment is available to the issuer)
Others	The issuer can call the hybrid bond at year 10 and interest payment date afterwards

The hybrid bond holders' preference in the event of liquidation is higher than the common stock holders, but lower than other creditors. The interest accumulated but not paid on the hybrid bonds as of December 31, 2018 amounts to ₩639 million.

26. Reserves

(a) Reserves as of December 31, 2017 and 2018 are as follows:

	<u>2017</u>	<u>2018</u>
	(in millions of Won)	
Accumulated comprehensive loss of investments in associates and joint ventures	₩(516,528)	(670,435)
Changes in fair value of equity investments at fair value through other comprehensive income	—	(295,300)
Changes in the unrealized fair value of available-for-sale investments	230,190	—
Foreign currency translation differences	(372,166)	(417,817)
Gain or losses on valuation of derivatives	(136)	(352)
Others	(23,916)	(20,464)
	<u>₩(682,556)</u>	<u>(1,404,368)</u>

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(b) Changes in unrealized fair value of available-for-sale investments and changes in fair value of equity investments at fair value through other comprehensive income for the years ended December 31, 2017 and 2018 were as follows:

	2017	2018
	(in millions of Won)	
Beginning balance	₩ 276,143	230,190
Initial application of IFRS No. 9	—	(421,525)
Changes in unrealized fair value of equity investments	183,761	(139,226)
Reclassification upon disposal	(299,862)	45,737
Impairment of available-for-sale investments	96,083	—
Others	(25,935)	(10,476)
Ending balance	₩ 230,190	(295,300)

27. Treasury Shares

Based on the Board of Directors' resolution, POSCO holds treasury shares for business purposes including price stabilization. The changes in treasury shares for the years ended December 31, 2017 and 2018 were as follows:

	2017		2018	
	Number of shares	Amount	Number of shares	Amount
	(shares, in millions of Won)			
Beginning	7,189,170	₩1,533,468	7,187,231	₩1,533,054
Disposal of treasury shares	(1,939)	(414)	(1,528)	(326)
Ending	7,187,231	₩1,533,054	7,185,703	₩1,532,728

28. Revenue

(a) Disaggregation of revenue

- Details of revenue disaggregated by types of revenue and timing of revenue recognition for the years ended December 31, 2016, 2017 and 2018 were as follows:

① For the year ended December 31, 2016

	Steel	Trading	Construction	Others	Total
	(in millions of Won)				
Types of revenue					
Revenue from sales of goods	₩ 26,687,899	16,602,482	11,496	243,149	43,545,026
Revenue from services	102,657	24,703	50,189	2,237,129	2,414,678
Revenue from construction contract	—	—	6,474,192	23,087	6,497,279
Others	53,599	146,893	88,728	193,568	482,788
	₩ 26,844,155	16,774,078	6,624,605	2,696,933	52,939,771
Timing of revenue recognition					
Revenue recognized at a point in time	₩ 26,741,498	16,749,375	100,224	446,667	44,037,764
Revenue recognized over time	102,657	24,703	6,524,381	2,250,266	8,902,007
	₩ 26,844,155	16,774,078	6,624,605	2,696,933	52,939,771

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② For the year ended December 31, 2017

	Steel	Trading	Construction	Others	Total
	(in millions of Won)				
Types of revenue					
Revenue from sales of goods	₩ 30,064,680	20,655,267	20,368	617,394	51,357,709
Revenue from services	111,494	28,793	48,408	1,876,179	2,064,874
Revenue from construction contract	—	—	6,262,038	37,154	6,299,192
Others	54,194	118,147	87,559	205,192	465,092
	₩ 30,230,368	20,802,207	6,418,373	2,735,919	60,186,867
Timing of revenue recognition					
Revenue recognized at a point in time	₩ 30,118,874	20,773,414	107,927	832,369	51,832,584
Revenue recognized over time	111,494	28,793	6,310,446	1,903,550	8,354,283
	₩ 30,230,368	20,802,207	6,418,373	2,735,919	60,186,867

③ For the year ended December 31, 2018

	Steel	Trading	Construction	Others	Total
	(in millions of Won)				
Types of revenue					
Revenue from sales of goods	₩ 31,733,609	21,632,183	3,568	605,206	53,974,566
Revenue from services	583,359	611,752	63,922	2,274,606	3,533,639
Revenue from construction contract	—	—	6,860,995	272,778	7,133,773
Others	41,041	163,782	17,784	290,051	512,658
	₩ 32,358,009	22,407,717	6,946,269	3,442,641	65,154,636
Timing of revenue recognition					
Revenue recognized at a point in time	₩ 31,774,650	21,795,965	127,182	906,120	54,603,917
Revenue recognized over time	583,359	611,752	6,819,087	2,536,521	10,550,719
	₩ 32,358,009	22,407,717	6,946,269	3,442,641	65,154,636

(b) Details of contract assets and liabilities from contracts with customers as of December 31, 2018 and January 1, 2018, the initial application date of IFRS No. 15 “Revenue from Contracts with Customers” and IFRS No. 9 “Financial Instruments”, are as follows;

	The date of initial application (January 1, 2018)	
	(in millions of Won)	
Receivables		
Account receivables	₩ 8,795,470	8,819,617
Contract assets		
Due from customers for contract work	647,385	737,712
Contract liabilities		
Advance received	1,547,247	1,278,731
Due to customers for contract work	751,933	641,064
Unearned revenue	77,657	91,872

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29. Revenue – Contract Balances

(a) Details of in-progress contracts as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Accumulated cost	₩21,404,321	26,153,452
Accumulated contract profit	1,524,208	1,848,718
Accumulated contract loss	(718,593)	(804,538)
Accumulated contract revenue	22,209,936	27,197,632

(b) Details of due from customers for contract work and due to customers for contract work as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Unbilled due from customers for contract work	₩ 728,007	810,655
Due to customers for contract work	(782,968)	(641,064)
	₩ (54,961)	169,591

(c) Due to the factors causing the variation of costs for the years ended December 31, 2017 and 2018, the estimated total contract costs have changed. Details of changes in estimated total contract costs and the impact on profit before income taxes for the years ended December 31, 2017, 2018 and future periods are as follows:

	2017	2018
	(in millions of Won)	
Changes in estimated total contract costs	₩164,812	427,812
Changes in profit before income taxes of construction contract :		
- Current period	(69,656)	(38,720)
- Future periods	(6,041)	69,428

The effect on the current and future profit is estimated based on the circumstances that have occurred from the commencement date of the contract to the end of period. The estimation is evaluated for the total contract costs and expected total contract revenue as of the end of the period. Also, it may change during future periods.

(d) Uncertainty of estimates

1) Total contract revenues

Total contract revenues are measured based on contractual amount initially agreed. However, the contract revenues can increase due to additional contract work, claims and incentive payments, or decrease due to penalty when the completion of contract is delayed due to the Company's fault. Therefore, this measurement of contract revenues is affected by the uncertainty of the occurrence of future events.

2) Total contract costs

Contract revenues are recognized based on the percentage of completion, which is measured on the basis of the gross cost amount incurred to date. Total contract costs are estimated based on estimates of future material costs, labor costs, outsourcing cost and others. There is uncertainty in estimates on future contract costs due to various internal and external factors such as fluctuation of market, the risk of business

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partner and the experience of project performance and others. The significant assumptions including uncertainty of the estimate of total contract costs are as follows:

Method of significant assumption

Material cost	Assumption based on recent purchasing price and quoted market price
Labor cost	Assumption based on standard monthly and daily labor cost
Outsourcing cost	Assumption based on the past experience rate of similar project and market price

Management reviews the assumptions used in estimated contract costs at each reporting period end and adjusts them, if necessary.

30. Selling and Administrative Expenses

(a) Other administrative expenses

Other administrative expenses for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Wages and salaries	₩ 769,589	774,900	813,467
Expenses related to post-employment benefits	200,956	78,654	73,290
Other employee benefits	176,794	159,920	176,240
Travel	40,828	39,790	40,929
Depreciation	103,442	97,261	101,274
Amortization	139,569	146,314	112,418
Communication	11,186	11,740	10,616
Electricity expenses	7,527	7,050	8,309
Taxes and public dues	78,895	72,826	71,973
Rental	82,005	69,976	69,516
Repairs	11,316	9,859	15,291
Entertainment	13,157	11,582	11,816
Advertising	86,141	119,724	106,875
Research & development	120,608	125,795	108,352
Service fees	201,129	193,387	165,938
Vehicles maintenance	10,090	8,211	8,942
Industry association fee	13,468	10,140	9,571
Conference	13,108	14,494	14,510
Increase to provisions	6,532	10,990	14,433
Others	40,050	40,493	51,995
	<u>₩ 2,126,390</u>	<u>2,003,106</u>	<u>1,985,755</u>

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(b) Selling expenses

Selling expenses for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Freight and custody expenses ^(*)	₩ 1,342,009	1,336,969	184,675
Operating expenses for distribution center	10,315	10,503	10,614
Sales commissions	94,377	115,925	79,080
Sales advertising	5,117	3,800	4,821
Sales promotion	10,670	12,414	13,792
Sample	2,335	1,989	2,716
Sales insurance premium	31,379	36,546	37,251
Contract cost	49,480	23,061	16,992
Others	8,004	16,070	19,304
	<u>₩ 1,553,686</u>	<u>1,557,277</u>	<u>369,245</u>

(*) During the year ended December 31, 2018, the Company recognized the freight expenses included in selling expenses incurred for the delivery of transportation services identified as a separate performance obligations in cost of sales.

31. Research and Development Expenditures Recognized as Expenses

Research and development expenditures recognized as expenses for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Administrative expenses	₩ 120,608	125,795	108,352
Cost of sales	324,190	361,093	418,250
	<u>₩ 444,798</u>	<u>486,888</u>	<u>526,602</u>

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32. Other Operating Income and Expenses

Details of other operating income and expenses for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Other operating income			
Gain on disposals of assets held for sale	₩ 23,112	1,180	27,171
Gain on disposals of investment in subsidiaries, associates and joint ventures	23,305	81,794	45,241
Gain on disposals of property, plant and equipment	23,826	32,145	53,139
Gain on disposals of intangible assets	671	23,391	117,139
Gain on valuation of firm commitment	—	56,301	39,028
Gain on insurance proceeds	22,400	5,878	14,034
Others ^(1,2)	109,164	247,792	227,834
	<u>₩ 202,478</u>	<u>448,481</u>	<u>523,586</u>
Other operating expenses			
Impairment loss on assets held for sale	₩ (24,890)	—	(50,829)
Loss on disposals of investments in subsidiaries, associates and joint ventures	(22,499)	(19,985)	(5,226)
Loss on disposals of property, plant and equipment	(86,622)	(151,343)	(117,614)
Impairment loss on property, plant and equipment	(196,882)	(117,231)	(1,004,704)
Impairment loss on investment property	(318)	—	(51,461)
Loss on disposals of investment property	(21)	(1,966)	(9,154)
Impairment loss on intangible assets	(127,875)	(167,995)	(337,519)
Increase to provisions	(53,058)	(33,964)	(134,632)
Loss on valuation of firm commitment	—	(43,164)	(66,281)
Donations	(43,810)	(51,424)	(52,074)
Idle tangible asset expenses	(6,437)	(10,490)	(9,257)
Others ⁽³⁾	(143,083)	(93,814)	(175,711)
	<u>₩ (705,495)</u>	<u>(691,376)</u>	<u>(2,014,462)</u>

(*1) During the year ended December 31, 2018, the Controlling Company recognized ₩55,306 million of tax refund upon successful appeal to tax tribunal against tax investigation as other operating income.

(*2) The Company has recognized the refund of VAT and others amounting to ₩160,501 million as other operating income in 2017, based on the result of the tax amounts to be refunded when the result of the Company's appeal in connection with the additional income tax payment in prior years tax audits for rectification was finalized.

(*3) During the year ended December 31, 2018, the Controlling Company recognized ₩52,997 million of additional taxes imposed for value added tax related to imported LNG as other operating expense.

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33. Finance Income and Costs

Details of finance income and costs for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Finance income			
Interest income ^(*)	₩ 182,475	212,451	337,258
Dividend income	41,000	92,962	63,345
Gain on foreign currency transactions	1,032,552	785,616	716,060
Gain on foreign currency translations	377,723	564,016	212,443
Gain on derivatives transactions	316,524	210,727	247,513
Gain on valuations of derivatives	147,111	64,735	96,986
Gain on disposals of available-for-sale financial assets	130,830	425,684	—
Gain on valuations of financial assets at fair value through profit or loss	—	—	16,149
Others	3,765	16,476	16,216
	<u>₩ 2,231,980</u>	<u>2,372,667</u>	<u>1,705,970</u>
Finance costs			
Interest expenses	₩ (658,726)	(653,115)	(741,296)
Loss on foreign currency transactions	(1,147,192)	(756,654)	(810,857)
Loss on foreign currency translations	(405,391)	(422,880)	(321,748)
Loss on derivatives transactions	(338,314)	(236,273)	(208,772)
Loss on valuation of derivatives	(162,676)	(226,487)	(40,674)
Impairment loss on available-for-sale financial assets	(248,404)	(123,214)	—
Loss on valuations of financial assets at fair value through profit or loss	—	—	(59,442)
Others	(53,487)	(65,654)	(61,627)
	<u>₩ (3,014,190)</u>	<u>(2,484,277)</u>	<u>(2,244,416)</u>

(*) Interest income calculated using the effective interest method for the years ended December 31, 2016, 2017, and 2018 were ₩106,828 million, ₩130,710 million, and ₩197,142 million, respectively.

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34. Expenses by Nature

Expenses that are recorded by nature as cost of sales, selling and administrative expenses, impairment loss on other receivables and other operating expenses in the statements of comprehensive income for the years ended December 31, 2016, 2017 and 2018 were as follows (excluding finance costs and income tax expense):

	2016	2017	2018
	(in millions of Won)		
Raw material used, changes in inventories and others	₩ 30,177,732	35,584,184	38,884,690
Employee benefits expenses ^{(*)2}	3,444,276	3,357,861	3,639,192
Outsourced processing cost	7,678,055	7,074,948	7,462,656
Electricity expenses	1,018,429	933,045	949,435
Depreciation ^{(*)1}	2,835,843	2,887,646	2,911,048
Amortization	378,004	409,774	356,581
Freight and custody expenses	1,342,009	1,336,969	1,414,940
Sales commissions	94,377	115,925	79,080
Loss on disposal of property, plant and equipment	86,622	151,343	117,614
Impairment loss on property, plant and equipment	196,882	117,231	1,004,704
Impairment loss on goodwill and intangible assets	127,875	167,995	337,519
Donations	43,810	51,424	52,074
Other expenses	3,448,497	4,253,625	4,445,124
	<u>₩ 50,872,411</u>	<u>56,441,970</u>	<u>61,654,657</u>

(*)1 Includes depreciation expense of investment property.

(*)2 The details of employee benefits expenses for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Wages and salaries	₩ 3,016,488	3,105,364	3,372,831
Expenses related to post-employment benefits	427,788	252,497	266,361
	<u>₩ 3,444,276</u>	<u>3,357,861</u>	<u>3,639,192</u>

35. Income Taxes

(a) Income tax expense for the years ended December 31, 2016, 2017 and 2018 was as follows:

	2016	2017	2018
	(in millions of Won)		
Current income taxes ^{(*)1}	₩ 699,269	864,143	1,577,581
Deferred income tax due to temporary differences	(209,706)	300,037	(38,851)
Items recorded directly in equity	(110,019)	21,560	144,900
Income tax expense	<u>₩ 379,544</u>	<u>1,185,740</u>	<u>1,683,630</u>

(*)1 Refund (additional payment) of income taxes when filing a final corporation tax return credited (charged) directly to current income taxes.

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(b) The income taxes credited (charged) directly to equity for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in millions of Won)		
Net changes in fair value of equity investments at fair value through other comprehensive income	₩ (100,550)	1,271	47,423
Remeasurements of defined benefit plans	(11,722)	22,208	56,289
Gain on sale of treasury shares	(10)	(40)	(50)
Others	2,263	(1,879)	41,238
	₩ (110,019)	21,560	144,900

(c) The following table reconciles the calculated income tax expense based on POSCO's statutory rate (27.5%) to the actual amount of taxes recorded by the Company for the years ended December 31, 2016, 2017 and 2018.

	2016	2017	2018
	(in millions of Won)		
Profit before income tax expense	₩ 1,411,609	4,095,051	3,616,016
Income tax expense computed at statutory rate	341,148	990,540	982,287
Adjustments:			
Tax credits	(30,124)	(40,757)	(32,103)
Additional Income tax expense for prior years			
(Over provisions from prior years)	(11,829)	(20,912)	44,336
Tax effect from tax audit	—	—	130,196
Investment in subsidiaries, associates and joint ventures	76,751	55,113	114,856
Tax effects due to permanent differences	(9,962)	4,798	64,708
Effect of tax rate change ^(*)	—	175,647	—
Others ^(*)	13,560	21,311	379,350
	38,396	195,200	701,343
Income tax expense	₩ 379,544	1,185,740	1,683,630
Effective tax rate (%)	26.89%	28.96%	46.56%

(*1) During the year ended December 31, 2017, the statutory rate changed from 24.2% to 27.5% for taxable income in excess of ₩300,000 million was enacted as a result of a revision to Korean tax law, which will be effective from 2018.

(*2) Includes the effect of undeductible impairment loss related to Synthetic Natural Gas (SNG) facility for the year ended December 31, 2018.

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(d) The movements in deferred tax assets (liabilities) for the years ended December 31, 2017 and 2018 were as follows:

	2017			2018		
	Beginning	Inc. (Dec.)	Ending	Beginning	Inc. (Dec.)	Ending
	(in millions of Won)					
Deferred income tax due to temporary differences						
Allowance for doubtful accounts ^(*)	₩ 213,119	60,875	273,994	273,994	(92,851)	181,143
Reserve for technology developments	(91,960)	53,973	(37,987)	(37,987)	37,987	—
PP&E — Depreciation	(11,639)	26,280	14,641	14,641	(4,804)	9,837
Share of profit or loss of equity-accounted investees	70,259	125,783	196,042	196,042	31,552	227,594
Allowance for inventories valuation	15,651	(4,871)	10,780	10,780	(104)	10,676
PP&E — Revaluation	(1,524,149)	(304,015)	(1,828,164)	(1,828,164)	(33,548)	(1,861,712)
Prepaid expenses	19,665	335	20,000	20,000	(2,741)	17,259
PP&E — Impairment loss	5,295	245	5,540	5,540	(927)	4,613
Gain or loss on foreign currency translation	(5,957)	(42,515)	(48,472)	(48,472)	10,462	(38,010)
Defined benefit obligations	361,838	68,279	430,117	430,117	70,334	500,451
Plan assets	(355,661)	(41,960)	(397,621)	(397,621)	(66,940)	(464,561)
Provision for construction losses	997	(556)	441	441	6,964	7,405
Provision for construction warranty	24,322	4,395	28,717	28,717	41,601	70,318
Accrued income	(9,441)	(3,474)	(12,915)	(12,915)	(179)	(13,094)
Others ^(*)	750,151	(55,834)	694,317	694,317	(233,026)	461,291
	(537,510)	(113,060)	(650,570)	(650,570)	(236,220)	(886,790)
Deferred income taxes recognized directly to equity						
Net changes in fair value of equity investments at fair value through other comprehensive income ^(*)	(50,507)	1,271	(49,236)	(49,236)	206,121	156,885
Others	51,832	20,329	72,161	72,161	58,111	130,272
	1,325	21,600	22,925	22,925	264,232	287,157
Deferred tax from tax credit						
Tax credit carry-forward and others	307,335	(189,303)	118,032	118,032	(2,443)	115,589
Investments in subsidiaries, associates and joint ventures						
Investments in subsidiaries, associates and joint ventures	86,130	(17,704)	68,426	68,426	135,512	203,938
	₩ (142,720)	(298,467)	(441,187)	(441,187)	161,081	(280,106)

(*) These changes includes the cumulative impact of initial application of IFRS No. 15 and IFRS No. 9.

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(e) Deferred tax assets and liabilities for the years ended December 31, 2017 and 2018 are as follows:

	2017			2018		
	Assets	Liabilities	Net	Assets	Liabilities	Net
	(in millions of Won)					
Deferred income tax due to temporary differences						
Allowance for doubtful accounts	₩ 273,994	—	273,994	181,143	—	181,143
Reserve for technology developments	—	(37,987)	(37,987)	—	—	—
PP&E — Depreciation	59,912	(45,271)	14,641	55,354	(45,517)	9,837
Share of profit or loss of equity-accounted investees	236,637	(40,595)	196,042	278,466	(50,872)	227,594
Allowance for inventories valuation	10,780	—	10,780	10,676	—	10,676
PP&E — Revaluation	—	(1,828,164)	(1,828,164)	—	(1,861,712)	(1,861,712)
Prepaid expenses	20,000	—	20,000	17,259	—	17,259
PP&E — Impairment loss	5,639	(99)	5,540	5,240	(627)	4,613
Gain or loss on foreign currency translation	113,760	(162,232)	(48,472)	121,797	(159,807)	(38,010)
Defined benefit obligations	430,117	—	430,117	500,451	—	500,451
Plan assets	—	(397,621)	(397,621)	—	(464,561)	(464,561)
Provision for construction losses	441	—	441	7,405	—	7,405
Provision for construction warranty	28,717	—	28,717	70,318	—	70,318
Accrued income	—	(12,915)	(12,915)	—	(13,094)	(13,094)
Others	746,367	(52,050)	694,317	857,583	(396,292)	461,291
	<u>1,926,364</u>	<u>(2,576,934)</u>	<u>(650,570)</u>	<u>2,105,692</u>	<u>(2,992,482)</u>	<u>(886,790)</u>
Deferred income taxes recognized directly to equity						
Net changes in fair value of equity investments at fair value through other comprehensive income	110,865	(160,101)	(49,236)	247,921	(91,036)	156,885
Others	92,981	(20,820)	72,161	153,609	(23,337)	130,272
	<u>203,846</u>	<u>(180,921)</u>	<u>22,925</u>	<u>401,530</u>	<u>(114,373)</u>	<u>287,157</u>
Deferred tax from tax credit						
Tax credit carry-forward and others	118,032	—	118,032	115,589	—	115,589
Investments in subsidiaries, associates and joint ventures						
Investments in subsidiaries, associates and joint ventures	563,406	(494,980)	68,426	547,662	(343,724)	203,938
	<u>₩ 2,811,648</u>	<u>(3,252,835)</u>	<u>(441,187)</u>	<u>3,170,473</u>	<u>(3,450,579)</u>	<u>(280,106)</u>

(f) As of December 31, 2018, the Company did not recognize income tax effects associated with deductible temporary differences of ₩5,590,698 million mainly relating to loss of subsidiaries and affiliates because realization is not considered probable. As of December 31, 2018, the Company did not recognize income tax effects associated with taxable temporary differences of ₩4,873,232 million mainly relating to increase in retained earnings of subsidiaries since it is probable that the temporary difference will not reverse in the foreseeable future.

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

36. Earnings per Share

Basic and diluted earnings per share for the years ended December 31, 2016, 2017 and 2018 were as follows:

	2016	2017	2018
	(in Won, except per share information)		
Profit attribute to controlling interest	₩1,354,806,734,940	2,756,230,487,872	1,711,901,875,666
Interests of hybrid bonds	(33,225,163,081)	(33,048,799,997)	(17,720,986,299)
Weighted-average number of common shares outstanding (*1)	79,996,389	79,998,600	80,000,606
Basic and diluted earnings per share	₩ 16,521	34,040	21,177

(*1) The weighted-average number of common shares used to calculate basic and diluted earnings per share are as follows:

	2016	2017	2018
		(shares)	
Total number of common shares issued	87,186,835	87,186,835	87,186,835
Weighted-average number of treasury shares	(7,190,446)	(7,188,235)	(7,186,229)
Weighted-average number of common shares outstanding	79,996,389	79,998,600	80,000,606

Since there were no potential shares of common stock which had dilutive effects as of December 31, 2016, 2017 and 2018, diluted earnings per share is equal to basic earnings per share.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

37. Related Party Transactions

(a) Significant transactions between the controlling company and related companies for the years ended December 31, 2016, 2017 and 2018 were as follows:

1) For the year ended December 31, 2016

	Sales and others ^{(*)1}		Purchase and others ^{(*)2}			
	Sales	Others	Purchase of material	Purchase of fixed assets	Outsourced processing cost	Others
(in millions of Won)						
Subsidiaries						
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	₩ 29,511	16,661	8	183,768	—	24,511
POSCO Processing & Service	1,212,220	5,778	549,803	2,896	22,704	2,445
POSCO COATED & COLOR STEEL Co., Ltd.	326,078	2,560	—	—	12,232	126
POSCO ICT ^{(*)3}	1,224	727	—	219,301	32,456	171,107
eNtoB Corporation	—	5	278,016	9,836	212	19,436
POSCO CHEMTECH	319,164	33,784	502,448	14,847	290,427	5,139
POSCO ENERGY CO., LTD.	187,311	1,382	—	—	—	7
POSCO TMC Co., Ltd. ^{(*)4}	219,489	—	2	—	863	1,177
POSCO AST ^{(*)4}	152,098	1	—	—	19,695	922
POSCO DAEWOO Corporation	3,227,716	34,341	92,203	—	343	—
POSCO Thainox Public Company Limited	237,471	2,915	9,593	—	19	548
POSCO America Corporation	469,543	—	284	—	—	1,103
POSCO Canada Ltd.	275	—	148,528	—	—	—
POSCO Asia Co., Ltd.	1,758,080	1,373	403,174	247	939	3,602
Qingdao Pohang Stainless Steel Co., Ltd.	135,405	—	—	—	—	525
POSCO JAPAN Co., Ltd.	1,112,489	128	23,217	3,744	345	3,841
POSCO-VIETNAM Co., Ltd.	226,063	445	—	—	—	—
POSCO MEXICO S.A. DE C.V.	274,210	462	—	—	—	—
POSCO Maharashtra Steel Private Limited	355,829	2,613	—	—	—	93
POSCO(Suzhou) Automotive Processing Center Co., Ltd.	149,911	—	—	—	—	—
Others	766,263	22,717	207,601	62,202	212,344	145,562
	<u>11,160,350</u>	<u>125,892</u>	<u>2,214,877</u>	<u>496,841</u>	<u>592,579</u>	<u>380,144</u>
Associates and joint ventures						
SeAH Changwon Integrated Special Steel	28	—	1,095	—	627	—
POSCO PLANTEC Co., Ltd.	2,245	48	3,533	244,898	16,812	8,146
SNNC	6,004	1,042	487,395	—	—	2
POSCO-SAMSUNG-Slovakia Processing center	44,686	—	—	—	—	—
KOBRASCO	—	29,297	—	—	—	—
Others	26,625	13,122	175,246	—	—	—
	<u>79,588</u>	<u>43,509</u>	<u>667,269</u>	<u>244,898</u>	<u>17,439</u>	<u>8,148</u>
₩	<u>11,239,938</u>	<u>169,401</u>	<u>2,882,146</u>	<u>741,739</u>	<u>610,018</u>	<u>388,292</u>

(*)1 Sales and others mainly consist of sales of steel products to subsidiaries, associates and joint ventures.

(*)2 Purchases and others mainly consist of subsidiaries' purchases of construction services and purchases of raw materials to manufacture steel products.

(*)3 Others (purchase) mainly consist of service fees related to maintenance and repair of ERP System.

(*)4 During the year ended December 31, 2016, it was merged into POSCO Processing & Service.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

2) For the year ended December 31, 2017

	Sales and others ^{(*)1}		Purchase and others ^{(*)2}			
	Sales	Others	Purchase of material (in millions of Won)	Purchase of fixed assets	Outsourced processing cost	Others
Subsidiaries						
POSCO ENGINEERING & CONSTRUCTION CO., LTD. W	3,328	71	—	151,639	32	18,352
POSCO Processing & Service	298,781	1	113,628	4,595	8,309	404
POSCO COATED & COLOR STEEL Co., Ltd.	417,369	3,533	—	—	8,483	106
POSCO ICT ^{(*)3}	1,697	5,097	—	315,748	29,773	183,226
eNtoB Corporation	1	30	330,921	8,215	139	26,023
POSCO CHEMTECH	359,862	33,076	479,896	23,043	296,296	6,860
POSCO ENERGY CO., LTD.	179,966	1,456	—	—	—	2
POSCO DAEWOO Corporation	5,214,127	35,182	550,258	221	44,108	1,948
POSCO Thainox Public Company Limited	218,005	9,780	10,168	—	—	—
POSCO America Corporation	345,225	—	90	—	—	1,776
POSCO Canada Ltd.	439	690	278,915	—	—	—
POSCO Asia Co., Ltd.	1,949,354	1,454	365,025	337	1,625	4,982
Qingdao Pohang Stainless Steel Co., Ltd.	161,803	—	—	—	—	176
POSCO JAPAN Co., Ltd.	1,436,159	20	26,256	621	—	44,829
POSCO-VIETNAM Co., Ltd.	212,883	—	—	—	—	7
POSCO MEXICO S.A. DE C.V.	276,387	—	—	—	—	1,749
POSCO Maharashtra Steel Private Limited	467,206	—	—	—	—	65
POSCO (Suzhou) Automotive Processing Center Co., Ltd.	192,467	—	—	—	—	—
Others	932,048	10,073	262,828	25,270	240,687	118,665
	<u>12,667,107</u>	<u>100,463</u>	<u>2,417,985</u>	<u>529,689</u>	<u>629,452</u>	<u>409,170</u>
Associates and joint ventures						
POSCO PLANTEC Co., Ltd.	2,947	112	5,487	300,041	20,718	19,763
SNNC	6,734	712	554,151	—	—	4
POSCO-SAMSUNG-Slovakia Processing Center	52,779	—	—	—	—	—
Roy Hill Holdings Pty Ltd	—	—	697,096	—	—	—
CSP — Compania Siderurgica do Pecem	7,384	—	159,501	—	—	—
Others	14,943	52,583	79,103	—	—	3
	<u>84,787</u>	<u>53,407</u>	<u>1,495,338</u>	<u>300,041</u>	<u>20,718</u>	<u>19,770</u>
W	<u><u>12,751,894</u></u>	<u><u>153,870</u></u>	<u><u>3,913,323</u></u>	<u><u>829,730</u></u>	<u><u>650,170</u></u>	<u><u>428,940</u></u>

(*)1 Sales and others mainly consist of sales of steel products to subsidiaries, associates and joint ventures.

(*)2 Purchases and others mainly consist of subsidiaries' purchases of construction services and purchases of raw materials to manufacture steel products.

(*)3 Others (purchase) mainly consist of service fees related to maintenance and repair of ERP System

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

3) For the year ended December 31, 2018

	Sales and others ^(*)		Purchase and others ⁽²⁾			
	Sales	Others	Purchase of material	Purchase of fixed assets	Outsourced processing cost	Others
	(in millions of Won)					
Subsidiaries ⁽³⁾						
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	₩ 7,827	97	—	322,924	47	36,428
POSCO COATED & COLOR STEEL Co., Ltd.	476,105	2,725	—	—	9,211	1,434
POSCO ICT ⁽⁴⁾	2,624	7,479	—	341,472	34,376	196,252
eNtoB Corporation	12	60	377,198	27,508	390	31,455
POSCO CHEMTECH	417,957	35,762	531,452	21,730	319,868	2,802
POSCO ENERGY CO., LTD.	206,638	1,445	—	—	—	—
POSCO DAEWOO Corporation	5,835,226	42,888	690,345	—	57,624	4,318
POSCO Thainox Public Company Limited	299,450	5,335	10,115	—	—	71
POSCO America Corporation	336,366	—	—	—	—	2,486
POSCO Canada Ltd.	—	2,155	300,982	—	—	—
POSCO Asia Co., Ltd.	1,857,665	253	536,280	650	2,449	6,524
Qingdao Pohang Stainless Steel Co., Ltd.	188,252	7	—	—	—	34
POSCO JAPAN Co., Ltd.	1,353,313	6	25,773	4,204	—	5,411
POSCO-VIETNAM Co., Ltd.	273,573	156	—	—	—	8
POSCO MEXICO S.A. DE C.V.	299,276	17	—	—	—	35
POSCO Maharashtra Steel Private Limited	563,618	584	—	—	—	156
POSCO (Suzhou) Automotive Processing Center Co., Ltd.	196,095	—	2,616	—	—	5
Others ⁽⁵⁾	1,158,122	44,098	456,804	31,787	264,060	140,869
	13,472,119	143,067	2,931,565	750,275	688,025	428,288
Associates and joint ventures ⁽³⁾						
POSCO PLANTEC Co., Ltd.	10,904	240	3,166	215,023	24,192	10,257
SNNC	5,105	4,108	558,425	—	—	80
POSCO-SAMSUNG-Slovakia Processing Center	61,981	—	—	—	—	—
Roy Hill Holdings Pty Ltd	—	—	810,196	—	—	—
Others	14,199	54,747	64,335	—	—	6
	92,189	59,095	1,436,122	215,023	24,192	10,343
₩	13,564,308	202,162	4,367,687	965,298	712,217	438,631

(*) Sales and others are mainly consist of sales of steel products to subsidiaries, associates and joint ventures.

(*) Purchases and others are mainly consist of subsidiaries' purchases of construction services and purchases of raw materials to manufacture steel products.

(*) As of December 31, 2018, the Company provided guarantees to related parties (Note 38).

(*) Others (purchase) mainly consist of service fees related to maintenance and repair of ERP System.

(*) During the year ended December 31, 2018, the Company made loans of ₩2,950 million to Suncheon Eco Trans Co., Ltd., a subsidiary of the Company. As of December 31, 2018, corresponding amounts of those loans were recorded as allowance for doubtful accounts.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(b) The related account balances of significant transactions between the controlling company and related companies as of December 31, 2017 and 2018 are as follows:

1) December 31, 2017

	Receivables			Payables				
	Trade accounts and notes receivable		Others	Total	Trade accounts and notes payable	Accounts payable	Others	Total
(in millions of Won)								
Subsidiaries								
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	₩	2	2,908	2,910	—	21,965	674	22,639
POSCO COATED & COLOR STEEL Co., Ltd.		58,184	324	58,508	—	5	504	509
POSCO ICT		55	217	272	1,458	72,586	27,009	101,053
eNtoB Corporation		—	—	—	12,252	31,899	20	44,171
POSCO CHEMTECH		61,810	3,589	65,399	51,774	20,313	17,568	89,655
POSCO ENERGY CO., LTD.		33,239	1,673	34,912	—	—	1,425	1,425
POSCO DAEWOO Corporation		483,915	12,739	496,654	10,213	2,145	5,794	18,152
POSCO Thainox Public Company Limited		57,826	—	57,826	1,204	—	—	1,204
POSCO America Corporation		5,365	—	5,365	—	—	—	—
POSCO Asia Co., Ltd.		404,857	541	405,398	9,811	24	—	9,835
Qingdao Pohang Stainless Steel Co., Ltd.		31,693	—	31,693	—	—	—	—
POSCO MEXICO S.A. DE C.V.		55,695	530	56,225	—	—	—	—
POSCO Maharashtra Steel Private Limited		392,630	5,733	398,363	—	—	—	—
Others		384,385	49,403	433,788	15,038	59,575	31,118	105,731
		1,969,656	77,657	2,047,313	101,750	208,512	84,112	394,374
Associates and joint ventures								
POSCO PLANTEC Co., Ltd.		1,946	9	1,955	3,842	15,723	—	19,565
SNNC		648	61	709	49,506	3	—	49,509
Others		8,350	904	9,254	824	—	—	824
		10,944	974	11,918	54,172	15,726	—	69,898
₩	1,980,600	78,631	2,059,231	155,922	224,238	84,112	464,272	

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

2) December 31, 2018

	Receivables			Payables			
	Trade accounts and notes receivable	Others	Total	Trade accounts and notes payable	Accounts payable	Others	Total
	(in millions of Won)						
Subsidiaries							
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	₩ 57	5,181	5,238	—	52,775	438	53,213
POSCO COATED & COLOR STEEL Co., Ltd.	55,598	317	55,915	—	25	1,194	1,219
POSCO ICT	—	229	229	1,572	112,960	8,717	123,249
eNtoB Corporation	—	—	—	10,860	22,072	11	32,943
POSCO CHEMTECH	40,258	3,883	44,141	19,911	58,725	19,012	97,648
POSCO ENERGY CO., LTD.	22,163	1,700	23,863	—	—	1,425	1,425
POSCO DAEWOO Corporation	437,554	1,056	438,610	161	1,881	5,304	7,346
POSCO Thainox Public Company Limited	71,189	—	71,189	467	71	—	538
POSCO America Corporation	14,338	—	14,338	—	221	—	221
POSCO Asia Co., Ltd.	480,205	1,047	481,252	7,839	—	—	7,839
Qingdao Pohang Stainless Steel Co., Ltd.	52,037	—	52,037	—	—	—	—
POSCO MEXICO S.A. DE C.V.	101,179	218	101,397	—	—	—	—
POSCO Maharashtra Steel Private Limited	390,413	1,428	391,841	—	—	—	—
Others	379,950	54,407	434,357	33,183	36,591	85,745	155,519
	<u>2,044,941</u>	<u>69,466</u>	<u>2,114,407</u>	<u>73,993</u>	<u>285,321</u>	<u>121,846</u>	<u>481,160</u>
Associates and joint ventures							
POSCO PLANTEC Co., Ltd.	249	10	259	3,275	34,803	—	38,078
SNNC	541	61	602	22,188	—	—	22,188
Roy Hill Holdings Pty Ltd	—	—	—	22,997	—	—	22,997
Others	918	910	1,828	217	76	—	293
	<u>1,708</u>	<u>981</u>	<u>2,689</u>	<u>48,677</u>	<u>34,879</u>	<u>—</u>	<u>83,556</u>
	<u>₩ 2,046,649</u>	<u>70,447</u>	<u>2,117,096</u>	<u>122,670</u>	<u>320,200</u>	<u>121,846</u>	<u>564,716</u>

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(c) Significant transactions between the Company, excluding the controlling company, and related companies for the years ended December 31, 2016, 2017 and 2018 were as follows:

1) December 31, 2016

	Sales and others		Purchase and others	
	Sales	Others	Purchase of material	Others
	(in millions of Won)			
Associates and joint ventures				
SeAH Changwon integrated Special Steel	₩ 16,294	—	22,029	—
POSCO PLANTEC Co., Ltd.	21,659	5	3,335	5,912
New Songdo International City Development, LLC	226,042	—	—	14
SNNC	29,330	—	21,479	9,494
Posco e&c Songdo International Building	4,245	—	—	16,219
Chun-cheon Energy Co., Ltd	288,307	—	—	—
Noeul Green Energy	107,268	—	—	—
Incheon-Gimpo Expressway Co., Ltd.	102,183	—	—	—
VSC POSCO Steel Corporation	43,650	47	479	—
USS-POSCO Industries	287,072	—	1,195	—
CSP — Companhia Siderurgica do Pecem	157,814	—	—	—
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd	61,844	—	57,179	—
LLP POSUK Titanium	—	—	14,575	—
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	—	—	24,365	—
POS-SEAH STEEL WIRE (TIANJIN) CO., Ltd	15,759	—	—	—
PT. Batutua Tembaga Raya	—	—	13,079	—
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	31,711	—	65	—
Zhangjiagang Pohang Refractories Co., Ltd.	250	14	364	2,472
Sebang Steel	—	—	26,276	—
SHANGHAI WAIGAOQIAO FREE TRADE ZONE LANSHENG DAEWOO IN'L TRADING CO., LTD.	157,886	—	3,535	—
DMSA/AMSA	—	—	72,582	—
South-East Asia Gas Pipeline Company Ltd.	—	87,973	—	—
Others	195,139	11,184	16,664	1,801
	<u>₩ 1,746,453</u>	<u>99,223</u>	<u>277,201</u>	<u>35,912</u>

2) December 31, 2017

	Sales and others		Purchase and others	
	Sales	Others	Purchase of material	Others
	(in millions of Won)			
Associates and joint ventures				
POSCO PLANTEC Co., Ltd.	₩ 19,513	—	98	8,113
New Songdo International City Development, LLC	223,567	13,207	—	49
SNNC	26,288	—	3,578	17,985
Chun-cheon Energy Co., Ltd	42,147	—	—	—
Noeul Green Energy	11,863	—	—	2,178
VSC POSCO Steel Corporation	19,404	—	188	—
USS-POSCO Industries	26,899	107	2,222	—
CSP — Companhia Siderurgica do Pecem	241,299	—	101,018	21,154
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd	38,484	—	47,241	—
LLP POSUK Titanium	—	—	3,972	—
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	4	—	20,145	—
POS-SEAH STEEL WIRE (TIANJIN) CO., Ltd	20,004	—	—	—
PT. Batutua Tembaga Raya	—	—	21,024	—
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	34,088	—	192	—
Zhangjiagang Pohang Refractories Co., Ltd.	—	—	87	1,632
Sebang Steel	441	—	23,778	—
SHANGHAI WAIGAOQIAO FREE TRADE ZONE LANSHENG DAEWOO IN'L TRADING CO., LTD.	43,764	—	—	—
DMSA/AMSA	—	99	47,092	—
South-East Asia Gas Pipeline Company Ltd.	—	62,423	—	—
Others	272,107	43,126	19,520	19,483
	<u>₩ 1,019,872</u>	<u>118,962</u>	<u>290,155</u>	<u>70,594</u>

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

3) December 31, 2018

	Sales and others		Purchase and others	
	Sales	Others	Purchase of material	Others
	(in millions of Won)			
Associates and joint ventures				
POSCO PLANTEC Co., Ltd.	₩ 19,394	—	83	24,103
New Songdo International City Development, LLC	30,997	53,316	—	97
SNNC	66,075	128	2,395	71,421
Chun-cheon Energy Co., Ltd	25,693	—	—	—
Noeul Green Energy	6,444	—	—	587
VSC POSCO Steel Corporation	12,504	—	2,314	—
USS-POSCO Industries	—	—	2,595	—
CSP — Companhia Siderurgica do Pecem	239,922	9,678	346,602	26,324
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd	46,538	—	62,851	—
LLP POSUK Titanium	—	—	944	—
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	—	—	10,572	—
POS-SEAH STEEL WIRE (TIANJIN) CO., Ltd	12,244	—	—	—
PT. Batutua Tembaga Raya	—	168	15,663	—
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	30,417	—	249	—
Sebang Steel	—	—	13,571	—
DMSA/AMSA	—	—	46,293	—
South-East Asia Gas Pipeline Company Ltd.	—	50,789	—	—
Others	359,124	62,375	19,192	50,918
	<u>₩ 849,352</u>	<u>176,454</u>	<u>523,324</u>	<u>173,450</u>

(d) The related account balances of significant transactions between the Company, excluding the controlling company, and related companies as of December 31, 2017 and December 31, 2018 are as follows:

1) December 31, 2017

	Receivables ^(*)				Payables		
	Trade accounts and notes receivable	Loan	Others	Total	Trade accounts and notes payable	Others	Total
	(in millions of Won)						
Associates and joint ventures							
POSCO PLANTEC Co., Ltd.	₩ 2,287	—	5	2,292	3,442	5,595	9,037
New Songdo International City Development, LLC	484,038	282,775	1,696	768,509	—	7,146	7,146
Chun-cheon Energy Co., Ltd	—	—	21	21	—	9,617	9,617
Nickel Mining Company SAS	—	59,668	118	59,786	—	—	—
CSP — Companhia Siderurgica do Pecem	380,180	—	13,443	393,623	—	29,700	29,700
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd	2,108	5,357	6	7,471	2,449	—	2,449
PT. Batutua Tembaga Raya	24	29,048	—	29,072	—	—	—
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	8,067	5,357	32	13,456	107	—	107
DMSA/AMSA	—	69,713	4,443	74,156	—	—	—
South-East Asia Gas Pipeline Company Ltd.	—	229,880	—	229,880	—	—	—
Others	135,128	134,506	6,889	276,523	1,873	2,531	4,404
	<u>₩1,011,832</u>	<u>816,304</u>	<u>26,653</u>	<u>1,854,789</u>	<u>7,871</u>	<u>54,589</u>	<u>62,460</u>

(*) As of December 31, 2017, the Company recognizes bad-debt allowance for receivables amounting to ₩4,217 million.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

2) December 31, 2018

	Receivables ^(*)				Payables		
	Trade accounts and notes receivable	Loan	Others	Total	Trade accounts and notes payable	Others	Total
	(in millions of Won)						
Associates and joint ventures							
POSCO PLANTEC Co., Ltd.	₩ 3,593	—	6	3,599	6,160	217	6,377
New Songdo International City Development, LLC	233,157	—	—	233,157	—	—	—
Chun-cheon Energy Co., Ltd.	—	—	—	—	—	1,758	1,758
POSPower Co., Ltd.	13,703	—	—	13,703	—	66,856	66,856
Nickel Mining Company SAS	—	59,664	118	59,782	—	—	—
CSP — Companhia Siderurgica do Pecem	364,190	—	9,669	373,859	62,578	—	62,578
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd.	10,836	—	—	10,836	2,101	—	2,101
PT. Batutua Tembaga Raya	—	35,100	171	35,271	—	—	—
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	6,274	3,354	27	9,655	66	—	66
DMSA/AMSA	—	64,297	—	64,297	—	—	—
South-East Asia Gas Pipeline Company Ltd.	—	191,107	—	191,107	—	—	—
Others	75,382	136,117	13,071	224,570	7,768	5,363	13,131
	<u>₩707,135</u>	<u>489,639</u>	<u>23,062</u>	<u>1,219,836</u>	<u>78,673</u>	<u>74,194</u>	<u>152,867</u>

(*1) As of December 31, 2018, the Company recognizes bad-debt allowance for receivables amounting to ₩102,694 million.

(e) Significant financial transactions between the Company, excluding the controlling company, and related companies for the years ended December 31, 2017 and 2018 were as follows:

1) December 31, 2017

	Beginning	Lend	Collect	Others ^(*)	Ending
	(in millions of Won)				
Associates and joint ventures					
METAPOLIS Co., Ltd. ^(*)	₩ 13,270	—	—	(13,270)	—
New Songdo International City Development, LLC	—	484,644	(201,869)	—	282,775
GALE International Korea, LLC	—	2,000	—	—	2,000
DMSA/AMSA ^(*)	90,638	2,956	—	(23,881)	69,713
South-East Asia Gas Pipeline Company Ltd.	276,605	28,967	(46,252)	(29,440)	229,880
PT. Batutua Tembaga Raya	38,120	—	—	(9,072)	29,048
PT. Tanggamus Electric Power	3,606	—	—	(409)	3,197
PT. Wampu Electric Power	5,761	—	—	(654)	5,107
PT. POSMI Steel Indonesia	4,834	—	—	(548)	4,286
Nickel Mining Company SAS	60,425	—	—	(757)	59,668
AN KHANH NEW CITY DEVELOPMENT J.V CO., LTD. ^(*)	60,425	—	—	(60,425)	—
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd.	6,647	—	(577)	(713)	5,357
KRAKATAU POS-CHEM DONG-SUH CHEMICAL	7,251	—	—	(823)	6,428
Hamparan Mulya	3,626	—	(3,626)	—	—
POS-SEAH STEEL WIRE (TIANJIN) CO., Ltd	5,438	—	(5,438)	—	—
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	8,460	—	(2,262)	(841)	5,357
POS-SeAH Steel Wire (Thailand) Co., Ltd.	7,251	—	(1,142)	319	6,428
AMCI (WA) PTY LTD	91,775	4,327	—	(4,041)	92,061
POS-AUSTEM YANTAI AUTOMOTIVE CO., LTD ^(*)	—	—	—	5,357	5,357
POS-AUSTEM WUHAN AUTOMOTIVE CO., LTD ^(*)	—	—	—	8,571	8,571
SAMHWAN VINA CO., LTD ^(*)	—	—	—	1,071	1,071
	<u>₩ 684,132</u>	<u>522,894</u>	<u>(261,166)</u>	<u>(129,556)</u>	<u>816,304</u>

(*1) During the year ended December 31, 2017, it was excluded from associates.

(*2) During the year ended December 31, 2017, loans amounting to ₩13,712 million have been converted to shares of DMSA/AMSA, and its amount is included in others.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

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(*3) During the year ended December 31, 2017, it was newly classified to associates and joint ventures.

(*4) Includes adjustments of foreign currency translation differences and others.

2) December 31, 2018

	Beginning	Lend	Collect	Others ^(*2)	Ending
	(in millions of Won)				
Associates and joint ventures					
New Songdo International City Development, LLC	₩282,775	150	(252,759)	(30,166)	—
GALE International Korea, LLC	2,000	8,500	(10,500)	—	—
UITrans LRT Co., Ltd.	—	5,695	—	—	5,695
DMSA/AMSA ^(*1)	69,713	9,965	(342)	(15,039)	64,297
South-East Asia Gas Pipeline Company Ltd.	229,880	—	(47,569)	8,796	191,107
PT. Batutua Tembaga Raya	29,048	4,678	—	1,374	35,100
PT. Tanggamus Electric Power	3,197	—	—	1,226	4,423
PT. Wampu Electric Power	5,107	—	—	223	5,330
PT. POSMI Steel Indonesia	4,286	—	(2,200)	150	2,236
Nickel Mining Company SAS	59,668	—	—	(4)	59,664
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd	5,357	—	(5,357)	—	—
KRAKATAU POS-CHEM DONG-SUH CHEMICAL	6,428	—	—	281	6,709
POSCO SeAH Steel Wire (Nantong) Co., Ltd.	5,357	4,451	(6,454)	—	3,354
POS-SeAH Steel Wire (Thailand) Co., Ltd.	6,428	—	—	281	6,709
AMCI (WA) PTY LTD	92,061	3,795	—	(5,376)	90,480
POS-AUSTEM YANTAI AUTOMOTIVE CO., LTD	5,357	5,564	(5,357)	26	5,590
POS-AUSTEM WUHAN AUTOMOTIVE CO., LTD	8,571	8,902	(8,571)	43	8,945
SAMHWAN VINA CO., LTD	1,071	—	(1,071)	—	—
	<u>₩816,304</u>	<u>51,700</u>	<u>(340,180)</u>	<u>(38,185)</u>	<u>489,639</u>

(*1) During the year ended December 31, 2018, loans amounting to ₩17,559 million have been converted to shares of DMSA/AMSA, and its amount is included in others.

(*2) Includes adjustments of foreign currency translation differences and others.

(f) For the years ended December 31, 2016, 2017 and 2018, details of compensation to key management officers were as follows:

	2016	2017	2018
	(in millions of Won)		
Short-term benefits	₩ 90,916	112,688	115,618
Long-term benefits	17,905	8,632	13,400
Retirement benefits	17,870	20,422	21,658
	<u>₩126,691</u>	<u>141,742</u>	<u>150,676</u>

Key management officers include directors (including non-standing directors), executive officials and fellow officials who have significant influences and responsibilities in the Company's business and operations.

38. Commitments and Contingencies

(a) Contingent liabilities

Contingent liabilities may develop in a way not initially expected. Therefore, management continuously assesses contingent liabilities to determine whether an outflow of resources embodying economic benefits has become probable. If it becomes probable that an outflow of future economic benefits will be required for an item previously dealt with as a contingent liability, a provision is recognized in the consolidated financial statements of the period in which the change in probability occurs (except in the extremely rare circumstances where no reliable estimate can be made).

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

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Management makes estimates and assumptions that affect disclosures of commitments and contingencies. All estimates and assumptions are based on the evaluation of current circumstances and appraisals with the supports of internal specialists or external consultants.

Management regularly analyzes current information about these matters and provides for probable contingent losses including the estimate of legal expense to resolve the matters. Internal and external lawyers are used for these assessments. In making the decision regarding the need for a provision, management considers whether the Company has an obligation as a result of a past event, whether it is probable that an outflow of cash or other resources embodying economic benefits will be required to settle the obligation and the ability to make a reliable estimate of the amount of the obligation.

(b) Details of guarantees

Contingent liabilities on outstanding guarantees and others provided by the Company as of December 31, 2018 are as follows.

Guarantor	Guarantee beneficiary	Financial institution	Guarantee limit			Guarantee amount		
			Foreign currency	Won equivalent	Foreign currency	Won equivalent		
			(in millions of Won)					
[The Company]								
POSCO	POSCO Asia Co., Ltd.	BOC and others	USD	100,000,000	111,810	100,000,000	111,810	
	POSCO ASSAN TST STEEL INDUSTRY	SMBC and others	USD	146,527,500	163,832	131,874,750	147,449	
	POSCO COATED STEEL (THAILAND) CO., LTD.	The Great & CO Co., Ltd. (SPC)	THB	5,501,000,000	188,959	5,501,000,000	188,959	
	POSCO Maharashtra Steel Private Limited	Export-Import Bank of Korea and others	USD	506,853,000	566,712	168,397,800	188,285	
	POSCO MEXICO S.A. DE C.V.	BOA and others	USD	160,000,000	178,896	160,000,000	178,896	
	POSCO SS VINA Co., Ltd.	Export-Import Bank of Korea and others	USD	354,351,050	396,200	274,570,077	306,996	
	POSCO-VIETNAM Co., Ltd.	SMBC and others	USD	156,000,000	174,424	156,000,000	174,424	
	PT. KRAKATAU POSCO	Export-Import Bank of Korea and others	USD	1,350,300,000	1,509,770	1,097,236,405	1,226,821	
	POSCO DAEWOO Corporation	Daewoo Global Development. Pte., Ltd	Export-Import Bank of Korea and others	USD	196,017,000	219,167	196,017,000	219,167
		Daewoo Power PNG Ltd.	Export-Import Bank of Korea	USD	47,600,000	53,222	47,600,000	53,222
POSCO ASSAN TST STEEL INDUSTRY		ING and others	USD	14,652,750	16,383	14,652,750	16,383	
POSCO DAEWOO INDIA PVT., LTD.		Shinhan Bank and others	USD	149,400,000	167,044	77,990,903	87,203	
PT. Bio Inti Agrindo		Export-Import Bank of Korea and others	USD	125,125,000	139,902	125,125,000	139,902	
		KEB Hana Bank	IDR	150,000,000,000	11,520	150,000,000,000	11,520	

POSCO and Subsidiaries
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Guarantor	Guarantee beneficiary	Financial institution	Guarantee limit			Guarantee amount	
			Foreign currency	Won equivalent	Foreign currency	Won equivalent	
			(in millions of Won)				
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	Golden Lace DAEWOO Company Limited	Shinhan Bank	USD	9,000,000	10,063	6,000,000	6,708
	POSCO DAEWOO CHINA CO., LTD	Mizuho	USD	8,000,000	8,945	7,290,000	8,151
	Songdo Posco family Housing	SHINYOUNG SECURITIES CO., LTD.	KRW	10,000	10,000	—	—
	POSCO E&C Vietnam Co., Ltd.	Export-Import Bank of Korea and others	USD	47,000,000	52,551	47,000,000	52,551
	HONG KONG POSCO E&C (CHINA) INVESTMENT Co., Ltd.	Woori bank and others	USD	148,000,000	165,479	142,000,000	158,770
	POSCO Engineering and Construction India Private Limited	Woori bank	USD	2,100,000	2,348	2,100,000	2,348
	PT. POSCO E&C INDONESIA	KEB Hana Bank	INR	104,000,000	1,663	9,000,000	144
	Daewoo Global Development. Pte., Ltd	POSCO Asia Co., Ltd. and others	USD	10,900,000	12,187	10,900,000	12,187
	Songdo Posco family Housing	SMBC and others	USD	163,633,000	182,958	163,633,000	182,958
		SHINYOUNG SECURITIES CO., LTD.	KRW	10,000	10,000	—	—
POSCO ICT	PT.POSCO ICT INDONESIA	POSCO Asia Co., Ltd.	USD	1,500,000	1,677	1,500,000	1,677
POSCO CHEMTECH	PT.Krakatau Posco Chemtech Calcination	POSCO Asia Co., Ltd.	USD	15,200,000	16,995	14,400,000	16,101
POSCO COATED & COLOR STEEL Co., Ltd.	Myanmar POSCO C&C Company, Limited.	POSCO Asia Co., Ltd.	USD	13,986,947	15,639	13,986,947	15,639
POSCO ENERGY CO., LTD.	PT. KRAKATAU POSCO ENERGY	Export-Import Bank of Korea and others	USD	193,900,000	216,800	121,231,918	135,549
POSCO Asia Co., Ltd.	POSCO SINGAPORE LNG TRADING PTE. LTD.	SMBC	USD	40,000,000	44,724	40,000,000	44,724
[Associates and joint ventures]							
POSCO	CSP — Compania Siderurgica do Pecem	Export-Import Bank of Korea and others	USD	420,000,000	469,602	392,956,955	439,365
		BNDES	BRL	464,060,000	133,686	462,554,370	133,253

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

Guarantor	Guarantee beneficiary	Financial institution	Guarantee limit			Guarantee amount	
			Foreign currency	Won equivalent	Foreign currency	Won equivalent	
			(in millions of Won)				
POSCO DAEWOO Corporation ENGINEERING & CONSTRUCTION CO., LTD.	LLP POSUK Titanium	SMBC	USD	15,000,000	16,772	15,000,000	16,772
	Nickel Mining Company SAS	SMBC	EUR	46,000,000	58,841	46,000,000	58,841
	GLOBAL KOMSCO Daewoo LLC	ICBC	USD	8,225,000	9,196	8,225,000	9,196
	New Songdo International City Development, LLC	Others	KRW	440,000	440,000	432,000	432,000
	UITrans LRT Co., Ltd.	Kookmin Bank and others	KRW	20,740	20,740	3,766	3,766
	Chun-cheon Energy Co., Ltd	Kookmin Bank and others	KRW	11,600	11,600	941	941
	Pohang E&E Co., Ltd	Heungkuk Life Insurance Co., Ltd.	KRW	6,500	6,500	—	—
	JB CLARK HILLS	Korea Investment & Securities Co., Ltd.	KRW	40,000	40,000	30,000	30,000
	Incheon-Gimpo Expressway Co, Ltd.	KDB Bank	KRW	100,000	100,000	100,000	100,000
	UITrans LRT Co., Ltd.	Kookmin Bank	KRW	76,000	76,000	76,000	76,000
POSCO CHEMTECH	KRAKATAU POS-CHEM DONG-SUH CHEMICAL	KEB Hana Bank	USD	1,140,000	1,274	791,667	885
POSCO(Suzhou) Automotive Processing Center Co., Ltd.	POS-InfraAuto (Suzhou) Co., Ltd	KDB Bank	USD	780,000	872	780,000	872
[Others]							
POSCO DAEWOO Corporation	Ambatovy Project Investments Ltd. and others	Export-Import Bank of Korea	USD	87,272,727	97,580	12,030,434	13,451
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	Ecocity CO., LTD and others	Others	KRW	1,524,314	1,524,314	545,893	545,893
POSCO ICT	SMS Energy and others	KEB Hana Bank and others	KRW	78,791	78,791	60,519	60,519
	Hyochun CO., LTD	KYOBO SECURITIES CO., LTD.	KRW	39,575	39,575	39,575	39,575
POSCO AUSTRALIA PTY LTD	BTL Enterprise and others	Kyobo Life Insurance Co., Ltd and others	KRW	1,165,352	1,165,352	1,165,352	1,165,352
	Department of Trade and Investment (NSW Government) and others	Woori bank and others	AUD	26,147,711	20,599	26,147,711	20,599

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

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Guarantor	Guarantee beneficiary	Financial institution	Guarantee limit		Guarantee amount		
			Foreign currency	Won equivalent	Foreign currency	Won equivalent	
			(in millions of Won)				
			USD	4,492,463,974	5,023,024	3,549,290,606	3,968,462
			KRW	3,522,872	3,522,872	2,454,046	2,454,046
			IDR	150,000,000,000	11,520	150,000,000,000	11,520
			INR	104,000,000	1,663	9,000,000	144
			THB	5,501,000,000	188,959	5,501,000,000	188,959
			EUR	46,000,000	58,841	46,000,000	58,841
			AUD	26,147,711	20,599	26,147,711	20,599
			BRL	464,060,000	133,686	462,554,370	133,253

(c) POSCO ENGINEERING & CONSTRUCTION CO., LTD. has provided the completion guarantees for Samsung C&T Corporation amounting to ₩395,162 million while Samsung C&T Corporation has provided the construction guarantees or payment guarantees on customers' borrowings on behalf of POSCO ENGINEERING & CONSTRUCTION CO., LTD. amounting to ₩179,619 million as of December 31, 2018.

(d) Other commitments

Details of other commitments of the Company as of December 31, 2018 are as follows:

Company	Description
POSCO	<p>POSCO entered into long-term contracts to purchase iron ore, coal, nickel and others. The contracts of iron ore and coal generally have terms of more than three years and the contracts of nickel have terms of more than one year. These contracts provide for periodic price adjustments based on the market price. As of December 31, 2018, 100 million tons of iron ore and 14 million tons of coal remained to be purchased under such long-term contracts.</p> <p>POSCO entered into an agreement with Tangguh Liquefied Natural Gas (LNG) Consortium in Indonesia to purchase 550 thousand tons of LNG annually for 20 years commencing in August 2005. The purchase price is subject to change, based on changes of the monthly standard oil price (JCC) and with a price ceiling.</p> <p>POSCO entered into consecutive voyage charter (CVC) contract for the transportation of raw materials. As of December 31, 2018, there are 38 vessels under contract and the average remaining contract period is about 10 years. During the year ended December 31, 2018, the freight expenses related to the CVC contract is USD 668 million.</p> <p>As of December 31, 2018, POSCO entered into a commitment with KOREA ENERGY AGENCY for long- term foreign currency borrowings, which are limited up to the amount of USD 6.49 million. The borrowing is related to the exploration of gas hydrates in Western Fergana-Chinabad. The repayment of the borrowings depends on the success of the projects. POSCO is not liable for the repayment of full or part of the amount borrowed if the respective projects fail. POSCO has agreed to pay a certain portion of its profits under certain conditions, as defined by the borrowing agreements. As of December 31, 2018, the ending balance of the borrowing amounts to USD 1.02 million.</p> <p>POSCO has provided a supplemental funding agreement, as the largest shareholder, as requested from the creditors, including Norddeutsche Landesbank, for seamless funding to POSCO ENERGY Co., Ltd. under construction of new power plant.</p>

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Company	Description
	POSCO provides a supplementary fund of up to ₩9.8 billion to the Company's subsidiary, Busan E&E Co., Ltd., at the request of creditors such as the Korea Development Bank.
	POSCO provides a supplementary funding for the purpose of promoting the Suncheon Bay PRT business of Suncheon Eco Trans Co., Ltd., a subsidiary of the Company, at the request of creditors. On November 2018, creditors sued the company for subrogation based on a supplemental funding agreement. POSCO recognized the provision based on the estimate of the amount and the possibility of any outflows of resources due to the litigation.
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	As of December 31, 2018, POSCO ENGINEERING & CONSTRUCTION CO., LTD. has foreign currency guarantee of up to USD 2,517 million and uses USD 763 million with Woori Bank and others.
POSCO ICT	As of December 31, 2018, in relation to contract enforcement, POSCO ICT was provided with ₩131,117 million, ₩8,939 million and ₩305 million guaranties from Korea Software Financial Cooperative, Seoul Guarantee Insurance and Engineering Guarantee Insurance, respectively.

(e) Litigation in progress

As of December 31, 2018, litigations in progress that POSCO and certain subsidiaries are defendants in legal actions arising from the normal course of business are as follows:

Company	Legal actions	Claim amount	Won equivalent	Description
		(in millions of Won, in thousands of foreign currencies)		
POSCO	27	KRW 75,218	75,218	Lawsuit on claim for employee right and others ^(*)
POSCO DAEWOO Corporation	1	CAD 79,000	64,808	Lawsuit on claim for damages
	3	INR 4,518,694	72,254	Lawsuit on claim for payment on guarantees and others ^(*)
	10	KRW 20,049	20,049	Litigation for confirmation of deposit bond and others
	5	USD 28,763	32,160	Lawsuit on claim for damages and others
POSCO ENGINEERING & CONSTRUCTION., LTD.	1	PKR 124,775	1,003	Lawsuit on claim for damages
				Lawsuit on claim for damages and others ^(*)
POSCO ICT	120	KRW 442,812	442,812	Lawsuit on revocation of claim for damage
POSCO A&C	1	BRL 10,182	2,933	Lawsuit on claim for damages and others
	11	KRW 6,452	6,452	Lawsuit on claim for damages
	1	USD 1,881	2,103	Lawsuit on claim for payment on construction and others
	8	KRW 2,752	2,752	Lawsuit on claim for damages and others
POSCO ENERGY CO., LTD.	3	KRW 3,039	3,039	Lawsuit over contract dispute and others
POSCO E&C CHINA CO., LTD.	3	CNY 44,446	7,234	Lawsuit on claim for payment
POSCO COATED & COLOR STEEL Co., Ltd.	1	KRW 1,400	1,400	Lawsuit on claim for payment on construction and others
POSCO ENGINEERING (THAILAND) CO., LTD.	2	THB 509,191	17,491	Lawsuit on claim for payment on construction
PT. KRAKATAU POSCO	1	IDR 211,407,872	16,236	Lawsuit on claim for payment on construction
POSCO E&C Vietnam Co., Ltd.	1	USD 3,894	4,354	Lawsuit on claim for payment on construction
POSCO-China Qingdao Processing Center Co., Ltd.	2	CNY 6,774	1,103	Lawsuit over contract dispute and others
POSCO-Malaysia SDN. BHD.	1	MYR —	—	Lawsuit on claim for infringement of right

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

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Company	Legal actions	Claim amount	Won equivalent	Description
		(in millions of Won, in thousands of foreign currencies)		
Pos-Sea Pte Ltd	1	USD 12,051	13,474	Lawsuit over contract dispute
POSCO INDIA HOLDINGS PRIVATE LIMITED	1	INR 220,000	3,518	Lawsuit over contract dispute
POSCO TNPC Otomotiv Celik San. Ve Tic. A.S	8	TRY 102	22	Lawsuit over industrial accidents and others
POSCO India Steel Distribution Center Private Ltd.	1	INR 223,795	3,578	Lawsuit on claim for tax restitution
POSCO(Dalian) IT Center Development Co., Ltd.	1	CNY 4,240	690	Lawsuit over contract dispute
Brazil Sao Paulo Steel Processing Center	3	BRL 4,671	1,346	Lawsuit on claim for labor and others
POSCO ENGINEERING & CONSTRUCTION DO BRAZIL LTDA.	148	BRL 156,011	44,944	Lawsuit on claim for payment on construction and others
POSCO ASSAN TST STEEL INDUSTRY	1	TRY 4,870	1,027	Lawsuit on compensation
HONG KONG POSCO E&C (CHINA) INVESTMENT Co., Ltd.	1	KRW 3,305	3,305	Lawsuit on claim for payment

(*1) The Company made a reliable estimate in 122 lawsuits by considering the possibility and amount of outflow of resources and recognized ₩50,888 million as provision for legal contingencies and claims.

For all the other lawsuits and claims, management does not believe the Company has any present obligations and therefore, the Company has not recognized any provisions as of December 31, 2018 for the matters.

39. Additional Information of Cash Flow Statements

(a) Changes in operating assets and liabilities for the years ended December 31, 2016, 2017 and 2018 were as follows:

	IFRS		
	2016	2017	2018
	(in millions of Won)		
Trade accounts and notes receivable	₩273,419	63,075	17,806
Other receivables	191,591	113,740	(20,786)
Inventories	(889,998)	(1,435,170)	(1,451,009)
Other current assets	(287,377)	110,688	1,118
Other non-current assets	33,584	12,455	5,974
Trade accounts and notes payable	769,337	(607,999)	379,742
Other payables	(179,174)	(26,922)	(111,893)
Other current liabilities	2,490	338,273	(199,981)
Provisions	(124,884)	(145,763)	(116,790)
Payments of severance benefits	(278,278)	(185,220)	(189,165)
Plan assets	(138,854)	3,815	(245,214)
Other non-current liabilities	223,574	(82,605)	(175,528)
	<u>₩(404,570)</u>	<u>(1,841,633)</u>	<u>(2,105,726)</u>

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(b) Changes in liabilities arising from financial activities for the year ended December 31, 2017 and 2018 were as follows:

1) December 31, 2017

	Liabilities				Derivatives that hedge borrowings
	Short-term borrowings	Long-term borrowings	Dividend payable	Finance lease liabilities	
	(in millions of Won)				
Beginning	₩7,979,727	14,725,271	7,770	114,409	(52,373)
Changes from financing cash flows	558,083	(1,410,033)	(931,232)	(10,536)	—
Changes arising from obtaining or losing control of subsidiaries or other business	(12,469)	3,299	—	—	—
The effect of changes in foreign exchange rates	(350,523)	(435,170)	—	(10,855)	—
Changes in fair values	—	—	—	—	171,693
Other changes:					
Decrease in retained earnings	—	—	863,579	—	—
Decrease in non-controlling interest	—	—	67,096	—	—
Amortization of discount on debentures issued	—	5,472	—	—	—
Ending	<u>₩8,174,818</u>	<u>12,888,839</u>	<u>7,213</u>	<u>93,018</u>	<u>119,320</u>

2) December 31, 2018

	Liabilities				Derivatives that hedge borrowings
	Short-term borrowings	Long-term borrowings	Dividend payable	Finance lease liabilities	
	(in millions of Won)				
Beginning	₩8,174,818	12,888,839	7,213	93,018	119,320
Changes from financing cash flows	(854,554)	(373,862)	(770,099)	(14,955)	(17,237)
Changes arising from obtaining or losing control of subsidiaries or other business	(342)	—	—	—	—
The effect of changes in foreign exchange rates	167,858	200,308	(5,573)	(7,766)	—
Changes in fair values	—	—	—	—	(58,666)
Other changes:					
Decrease in retained earnings	—	—	704,444	—	—
Decrease in non-controlling interest	—	—	72,688	—	—
Amortization of discount on debentures issued	—	6,205	—	—	—
Increase in finance lease assets	—	—	—	24,457	—
Ending	<u>₩7,487,780</u>	<u>12,721,490</u>	<u>8,673</u>	<u>94,754</u>	<u>43,417</u>

40. Operating Segments and Geographic Information

(a) The Company's operating businesses are organized based on the nature of markets and customers. The Company has four reportable operating segments—steel, construction, trading and others. The steel segment includes production of steel products and revenue of such products. The construction segment includes planning, designing and construction of industrial plants, civil engineering projects and commercial and residential buildings, both in Korea and overseas. The trading segment consists of exporting and importing a wide range of steel products and raw materials that are both obtained from and supplied to POSCO, as well as between other suppliers and purchasers in Korea and overseas. Other segments include power generation, network and system integration and logistics. The policies of classification and measurement on operating segments were the same for all periods presented.

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

(b) Information about reportable segments as of and for the years ended December 31, 2016, 2017 and 2018 were as follows:

1) As of and for the year ended December 31, 2016

	Steel	Trading	Construction	Others	Total
	(in millions of Won)				
External revenues	₩ 26,844,154	16,774,078	6,768,348	2,696,933	53,083,513
Internal revenues	16,062,016	9,646,026	713,703	2,379,945	28,801,690
Including inter segment revenue	8,992,783	5,296,847	557,526	2,285,128	17,132,284
Total revenues	42,906,170	26,420,104	7,482,051	5,076,878	81,885,203
Interest income	126,210	40,424	65,256	13,564	245,454
Interest expenses	(459,345)	(70,841)	(102,292)	(126,523)	(759,001)
Depreciation and amortization	(2,788,535)	(165,863)	(57,719)	(264,299)	(3,276,416)
Impairment loss on property, plant and equipment and others	(99,165)	(45,995)	(9,426)	(88,696)	(243,282)
Impairment loss on available-for-sale financial assets	(225,225)	(28,988)	(35,331)	(24,902)	(314,446)
Share of profit or loss of investment in associates and joint ventures	(211,084)	(53,586)	(283,833)	(6,369)	(554,872)
Income tax expense	(495,874)	(18,629)	107,520	(56,026)	(463,009)
Segment profit (loss)	1,511,383	53,244	(1,403,712)	(25,889)	135,026
Segment assets	69,914,939	13,580,179	9,501,046	8,529,600	101,525,764
Investment in subsidiaries, associates and joint ventures	16,109,360	1,100,973	795,445	1,200,295	19,206,073
Acquisition of non-current assets	2,334,842	249,597	25,533	191,715	2,801,687
Segment liabilities	20,292,764	10,134,170	6,780,380	4,709,689	41,917,003

2) As of and for the year ended December 31, 2017

	Steel	Trading	Construction	Others	Total
	(in millions of Won)				
External revenues	₩ 30,230,368	20,802,207	6,886,606	2,735,919	60,655,100
Internal revenues	17,381,010	14,075,996	398,924	2,548,674	34,404,604
Including inter segment revenue	12,004,614	8,043,643	329,215	2,446,029	22,823,501
Total revenues	47,611,378	34,878,203	7,285,530	5,284,593	95,059,704
Interest income	128,827	32,799	100,922	17,940	280,488
Interest expenses	(422,357)	(121,967)	(112,983)	(100,656)	(757,963)
Depreciation and amortization	(2,856,133)	(206,490)	(42,123)	(255,620)	(3,360,366)
Impairment loss on property, plant and equipment and others	(149,840)	(140,839)	(37,476)	(8,564)	(336,719)
Impairment loss on available-for-sale financial assets	(95,261)	—	(18,637)	(13,421)	(127,319)
Share of profit or loss of investment in associates and joint ventures	8,352	—	(8,555)	(1,518)	(1,721)
Income tax expense	(977,853)	(109,710)	(109,961)	(77,172)	(1,274,696)
Segment profit	2,790,855	112,661	24,545	232,700	3,160,761
Segment assets	70,017,816	14,139,098	8,609,753	8,776,090	101,542,757
Investment in subsidiaries, associates and joint ventures	16,116,654	1,134,798	668,392	1,193,895	19,113,739
Acquisition of non-current assets	2,033,184	286,185	99,190	251,665	2,670,224
Segment liabilities	19,057,249	10,386,294	5,744,693	4,620,902	39,809,138

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

3) As of and for the year ended December 31, 2018

	Steel	Trading	Construction	Others	Total
	(in millions of Won)				
External revenues	₩32,358,009	22,407,717	6,769,410	3,442,641	64,977,777
Internal revenues	18,063,213	15,911,138	551,324	2,755,176	37,280,851
Including inter segment revenue	12,496,287	8,743,666	465,057	2,639,561	24,344,571
Total revenues	50,421,222	38,318,855	7,320,734	6,197,817	102,258,628
Interest income	199,016	36,437	115,019	23,454	373,926
Interest expenses	(468,681)	(189,165)	(111,101)	(94,613)	(863,560)
Depreciation and amortization	(2,812,666)	(210,493)	(36,840)	(265,416)	(3,325,415)
Impairment loss on property, plant and equipment and others	(1,057,474)	(86,085)	(82,521)	(117,280)	(1,343,360)
Share of profit or loss of investment in associates and joint ventures	(733,879)	(160,085)	(155,371)	—	(1,049,335)
Income tax expense	(1,307,292)	(52,914)	(238,441)	(65,611)	(1,664,258)
Segment profit	1,268,313	49,264	234	13,608	1,331,419
Segment assets	70,976,493	15,550,854	7,333,221	8,017,433	101,878,001
Investment in subsidiaries, associates and joint ventures	16,099,692	1,379,045	511,230	932,107	18,922,074
Acquisition of non-current assets	2,239,467	132,017	49,095	232,281	2,652,860
Segment liabilities	20,289,037	11,454,079	4,386,852	4,134,352	40,264,320

(c) Reconciliations of total segment revenues, profit or loss, assets and liabilities, and other significant items to their respective consolidated financial statement line items are as follows:

1) Revenues

	2016	2017	2018
	(in millions of Won)		
Total revenue for reportable segments	₩ 81,885,203	95,059,704	102,258,628
Elimination of inter-segment revenue	(28,801,690)	(34,404,604)	(37,280,851)
Basis difference ^(*)	(143,742)	(468,233)	176,859
	<u>₩ 52,939,771</u>	<u>60,186,867</u>	<u>65,154,636</u>

2) Profit

	2016	2017	2018
	(in millions of Won)		
Total profit (loss) for reportable segments	₩ 135,026	3,160,761	1,331,419
Goodwill and corporate FV adjustments	(123,110)	(84,370)	(77,756)
Elimination of inter-segment profits	1,036,253	(102,922)	638,401
Income tax expense	384,685	1,206,223	1,670,757
Basis difference ^(*)	(21,245)	(84,641)	53,195
Profit before income tax expense	<u>₩1,411,609</u>	<u>4,095,051</u>	<u>3,616,016</u>

3) Assets

	2017	2018
	(in millions of Won)	
Total assets for reportable segments ^(*)	₩101,542,757	101,878,001
Equity-accounted investees	(15,555,972)	(15,272,243)
Goodwill and corporate FV adjustments	3,368,333	2,722,115
Elimination of inter-segment assets	(10,330,159)	(11,079,608)
Basis difference ^(*)	760,670	528,726
	<u>₩ 79,785,629</u>	<u>78,776,991</u>

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2016, 2017 and 2018

(*1) As segment assets and liabilities are determined based on separate financial statements, for subsidiaries which are in a different segment from that of its immediate parent company, their carrying amount in separate financial statements is eliminated upon consolidation. In addition, adjustments are made to adjust the amount of investment in associates and joint ventures from the amount reflected in segment assets to that determined using equity method in consolidated financial statements.

4) Liabilities

	2017	2018
	(in millions of Won)	
Total liabilities for reportable segments	₩ 39,809,138	40,264,320
Corporate FV adjustments	483,693	321,320
Elimination of inter-segment liabilities	(8,731,880)	(9,096,926)
Basis difference ^(*)	897,953	615,663
	₩ 32,458,904	32,104,377

5) Other significant items

a) December 31, 2016

	Total segment	Corporate FV adjustments	Elimination of inter-segment transactions	Basis difference ^(*)	Consolidated
	(in millions of Won)				
Interest income	₩ 245,454	—	(62,979)	—	182,475
Interest expenses	(759,001)	(807)	101,082	—	(658,726)
Depreciation and amortization	(3,276,416)	(104,949)	167,518	—	(3,213,847)
Share of profit or loss of investment in associates	(554,872)	(38,732)	504,927	—	(88,677)
Income tax expense	(463,009)	21,945	56,379	5,141	(379,544)
Impairment loss on property, plant and equipment and others	(243,282)	—	(125,657)	—	(368,939)
Impairment loss on available-for-sale financial assets	(314,446)	—	66,042	—	(248,404)
	₩(5,365,572)	(122,543)	707,312	5,141	(4,775,662)

b) December 31, 2017

	Total segment	Corporate FV adjustments	Elimination of inter-segment transactions	Basis difference ^(*)	Consolidated
	(in millions of Won)				
Interest income	₩ 280,488	—	(68,037)	—	212,451
Interest expenses	(757,963)	1,304	103,544	—	(653,115)
Depreciation and amortization	(3,360,366)	(106,195)	169,141	—	(3,297,420)
Share of profit or loss of investment in associates	(1,721)	—	12,261	—	10,540
Income tax expense	(1,274,696)	21,270	47,203	20,483	(1,185,740)
Impairment loss on property, plant and equipment and others	(336,719)	(867)	34,619	—	(302,967)
Impairment loss on available-for-sale financial assets	(127,319)	—	4,105	—	(123,214)
	₩(5,578,296)	(84,488)	302,836	20,483	(5,339,465)

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
As of December 31, 2016, 2017 and 2018

c) December 31, 2018

	Total segment	Corporate FV adjustments	Elimination of inter-segment transactions	Basis difference ^{(*)2}	Consolidated
	(in millions of Won)				
Interest income	₩ 373,926	—	(36,668)	—	337,258
Interest expenses	(863,560)	1,035	121,229	—	(741,296)
Depreciation and amortization	(3,325,415)	(103,932)	161,718	—	(3,267,629)
Share of profit or loss of investment in associates	(1,049,335)	—	1,161,970	—	112,635
Income tax expense	(1,664,258)	25,921	(32,420)	(12,873)	(1,683,630)
Impairment loss on property, plant and equipment and others	(1,343,360)	(779)	(107,258)	—	(1,451,397)
	<u>₩(7,872,002)</u>	<u>(77,755)</u>	<u>1,268,571</u>	<u>(12,873)</u>	<u>(6,694,059)</u>

(*)2 Basis difference is related to the difference in recognizing revenue and expenses in connection with development and sale of certain residential real estate between the report reviewed by the CEO and the consolidated financial statements.

(d) Revenue by geographic area for the years ended December 31, 2016, 2017 and 2018 was as follows:

	2016	2017	2018
	(in millions of Won)		
Domestic	₩34,883,941	38,882,220	41,671,930
Japan	1,892,022	2,200,405	2,084,061
China	5,908,046	6,731,214	6,945,266
Indonesia	908,361	1,266,572	1,592,046
Asia-other	4,741,482	6,483,981	7,312,486
North America	1,899,291	1,725,120	1,834,534
Others	2,850,370	3,365,588	3,537,454
	<u>53,083,513</u>	<u>60,655,100</u>	<u>64,977,777</u>
Basis difference	<u>(143,742)</u>	<u>(468,233)</u>	<u>176,859</u>
	<u>₩52,939,771</u>	<u>60,186,867</u>	<u>65,154,636</u>

In presenting information on the basis of geography, segment revenue is based on the geographical location of customers.

(e) Non-current assets by geographic area as of December 31, 2017 and 2018 are as follows:

	2017	2018
	(in millions of Won)	
Domestic	₩30,790,462	28,298,293
Japan	162,328	146,490
China	1,284,561	1,185,828
Indonesia	2,750,084	2,711,032
Asia-other	2,516,715	2,356,904
North America	277,249	173,914
Others	1,119,319	1,245,252
	<u>₩38,900,718</u>	<u>36,117,713</u>

Non-current assets by geographic area include investment property, property, plant and equipment, goodwill and other intangible assets.

(f) There are no customers whose revenue is 10% or more of the consolidated revenue.

Exhibit Index

1.1	—	Articles of incorporation of POSCO (English translation)
2.1	—	Form of Common Stock Certificate (including English translation) (incorporated by reference to Exhibit 4.3 to the Registrant's Registration Statement No. 33-81554)* (P)
2.2	—	Form of Deposit Agreement (including Form of American Depositary Receipts) (incorporated by reference to the Registrant's Registration Statement (File No. 333-189473) on Form F-6)*
8.1	—	List of consolidated subsidiaries
12.1	—	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
12.2	—	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
13.1	—	Certification pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	—	XBRL Instance Document
101.SCH	—	XBRL Taxonomy Extension Schema Document
101.CAL	—	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	—	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	—	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	—	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed previously

(P) Paper filing

SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

POSCO

(Registrant)

/s/ Choi, Jeong-Woo

Name: Choi, Jeong-Woo

Title: Chief Executive Officer and
Representative Director

Date: April 30, 2019

This English language translation of the Articles of Incorporation has been prepared solely for reference purposes. In the event of any conflict between the Korean language version and this English language version, the Korean language version shall prevail.

ARTICLES OF INCORPORATION

Adopted on	March 6, 1968		
Amended on	July 10, 1968	February 20, 1969	March 20, 1969
	June 16, 1969	February 7, 1970	February 6, 1971
	November 23, 1971	February 4, 1972	November 29, 1972
	February 12, 1973	February 5, 1974	February 8, 1975
	February 6, 1976	February 8, 1977	February 25, 1978
	February 24, 1979	February 28, 1981	February 23, 1982
	February 18, 1984	February 5, 1985	February 26, 1986
	March 7, 1987	February 27, 1988	March 15, 1989
	March 6, 1990	March 14, 1991	March 7, 1992
	October 13, 1992	March 8, 1993	April 15, 1994
	March 15, 1995	March 15, 1996	March 14, 1997
	March 17, 1998	August 20, 1998	March 16, 1999
	March 17, 2000	March 16, 2001	March 15, 2002
	March 14, 2003	March 12, 2004	February 24, 2006
	February 23, 2007	February 27, 2009	February 26, 2010
	February 25, 2011	March 16, 2012	March 11, 2016
	March 9, 2018	March 15, 2019	

CHAPTER I. GENERAL PROVISIONS

Article 1. Company Name

The name of the Company in Korean shall be “**Chusik Hoesa POSCO**” and in English, “**POSCO**”

Article 2. Purpose

The purpose of the Company is to engage in the following business activities:

1. To manufacture, market, promote, sell and distribute iron, steel and rolled products;
2. To engage in harbor loading and unloading, transportation and warehousing businesses;
3. To engage in the management of professional athletic organizations;
4. To engage in the supply of gas and power generation as well as in the distribution business thereof and in the resources development business;
5. To engage in leasing of real estate and distribution businesses;
6. To engage in the supply of district heating business;
7. To engage in marine transportation, processing and sales of minerals within or outside of Korea;
8. To engage in educational service and other services related to business;

9. To engage in manufacture, process and sale of non-ferrous metal;
10. To engage in technology license sales and engineering business; and
11. To engage in all other conducts, activities or businesses which are related, directly or indirectly, to the attainment and continuation of the foregoing purposes.

Article 3. Location of the Head Office and Branch Offices

The head office of the Company shall be located at Pohang-si, Kyungsangbuk-do, the Republic of Korea ("Korea"). Branch offices may be established elsewhere by resolution of the Board of Directors of the Company.

Article 4. Notices

Public notices by the Company shall be disclosed on the website of the Company (<http://www.posco.com>). When such online disclosure is made impracticable due to online system error or any other electronic technical failure, public notices by the Company shall be disclosed in the Seoul Shinmun, the Maeil Shinmun and the Kwangju Ilbo, daily newspapers published in Seoul, Daegu Metropolitan City and Kwangju Metropolitan City, respectively.

CHAPTER II. SHARES

Article 5. Total Number of Authorized Shares

The total number of shares which the Company is authorized to issue ("Authorized Shares") is two hundred million (200,000,000) shares.

Article 6. Par Value per Share and Types of Shares

The types of shares to be issued by the Company shall be registered common shares and registered preferred shares, having a par value of KRW 5,000 per share.

Article 7. Number and Contents of Preferred Shares

(1) Preferred shares to be issued by the Company shall be non-voting, and the number thereof shall not exceed the limit prescribed in the mandatory provisions of the applicable laws or regulations.

(2) The dividends on non-voting preferred shares shall be no less than nine percent (9%) per annum of the par value and the rate thereof shall be determined by the Board of Directors at the time of issuance.

(3) Notwithstanding Paragraph (2), a dividend on preferred shares shall not be required to be declared in case the amount available for dividend is less than the aggregate amount of the minimum dividend.

Article 8. Shares to be Issued at the Time of Incorporation

The Company shall issue forty thousand (40,000) shares at the time of incorporation.

Article 9. Electronic Registration of Rights to be Indicated on Share Certificates and Certificates of Preemptive Right

The Company shall electronically register rights to be indicated on its share certificates and certificates of preemptive right on the electronic registrar of the electronic registration agency, in lieu of issuing share certificates and certificates of pre-emptive right.

Article 10. Pre-emptive Rights

(1) Except as otherwise provided by Paragraphs (2) through (4) of this Article 10 and the mandatory provisions of the applicable laws or regulations, in case of the issuance of new shares, the shareholders of the Company shall have the right to subscribe for such newly issued shares in proportion to the number of shares held by each of them; provided, however, that the Company may, by resolution of the Board of Directors, allocate preferred shares to holders of preferred shares in proportion to the number of shares held by each of them.

(2) The Board of Directors may allocate new shares to persons other than the shareholders by a resolution of the Board of Directors in the following cases.

1. If the Company issues new shares by a public offering or has underwriters underwrite new shares by a public offering in accordance with the applicable legislation;
2. If the Company allocates new shares to the members of the Company's Employee Stock Ownership Association in accordance with the applicable legislation;
3. If the Company issues new shares for the issuance of depositary receipts in accordance with the applicable legislation;
4. If the Company issues new shares through offering to the public investors by the resolutions of the Board of Directors in accordance with the applicable legislation;
5. If the Company issues new shares to the existing creditors in order to convert the debt into capital;
6. If the Company issues new shares to the domestic and/or foreign entities in accordance with a joint venture agreement, strategic affiliation or technology license and transfer agreement executed by and between the Company and such entities for the management purposes; and
7. If the Company issues new shares to the domestic and/or foreign financial institutions in order to finance the Company in the emergent cases.

If the Company issues new shares to persons other than the shareholders of the Company pursuant to this Paragraph, the Company shall notify the shareholders or make public two (2) weeks in advance of the date of subscription of the new shares detailing the type, number, issue price, date of subscription and the manner of subscription of the newly issued shares in accordance with the Korean Commercial Code.

(3) Any shares unsubscribed after the exercise of pre-emptive rights by shareholders who are entitled to them or any fractional shares remaining after the allocation of new shares may be disposed of by a resolution of the Board of Directors according to the applicable laws or regulations.

(4) Notwithstanding the provisions of Paragraphs (2) through (3) of this Article 10, new shares may be allocated to persons other than the existing shareholders by a special resolution passed at a General Meeting of Shareholders when it is deemed necessary for attaining the purposes of the Company such as introduction of new technology and financial restructuring.

(5) In case the Company issues new shares by a rights offering, bonus issue or stock dividend, such shares will be deemed to have been issued at the end of the fiscal year immediately preceding the fiscal year during which the shares are issued.

Article 11. Offering to Public Investors, etc.

(1) The Company may issue new shares constituting not more than ten-hundredths (10/100) of the total issued shares of the Company through offering to public investors by the resolution of the Board of Directors in accordance with applicable legislations.

(2) In event that the Company issues new shares in accordance with the resolution of the Board of Directors due to the reasons set forth in Items 5 through 7 of Paragraph (2) of Article 10, the total face amount of new shares shall not exceed one hundred billion (100,000,000,000) Won.

(3) The type, number and the issue price of the shares to be issued by the manner as set forth in Paragraphs (1) and (2) shall be determined by the resolution of the Board of Directors; provided that the issue price of the new shares must be no less than the price as set forth in applicable legislations.

Article 12. (Deleted)

Article 13. Transfer Agent

Electronic registration of shares, management of the shareholder registry and other related businesses shall be entrusted to the transfer agent appointed by resolution of the Board of Directors. Specific procedures therefor shall be in accordance with the applicable laws and regulations and operational regulations determined by the transfer agent.

Article 13-2. Register of Shareholders by Electronic Means

In accordance with the Korean Commercial Code, the Company may make entries in the Register of Shareholders by electronic means.

Article 14. Fees

The Company may, by resolution of the Board of Directors, charge, or have the register agent charge, a fee for services it renders in connection with any of the matters set forth in Article 13 above, or for any services related to shareholder inspection of the Company's financial statements or other documents, and for providing any copies thereof.

Article 15. Record Date and Suspension of Alterations of Entries in the Register of Shareholders

(1) The Company shall suspend entries of alterations, registration or cancellation of pledges over shares and indication of trust assets and cancellation thereof in the Register of Shareholders of a period commencing on January 1 and ending on January 15 of each year.

(2) The record date of the Register of Shareholders shall be December 31 of each year, and such shareholders listed on the Register of Shareholders as of the record date shall be entitled to exercise their rights thereof at the General Meetings of Shareholders.

(3) The Company may, by resolution of the Board of Directors or by resolution of a committee as authorized by the Board of Directors, suspend the entry of a change as to the matters contained in the Register of Shareholders for a specified period of time or set a record date when deemed necessary and for the purpose of convening an Extraordinary General Meeting of Shareholders; provided, however, that the period of suspension shall not exceed three (3) months and two (2) weeks prior notice of suspension or fixing of a record date has been given to the shareholders. The Board of Directors or such authorized committee may, when deemed necessary, both suspend the entry of a change in the Register of Shareholders and set a record date.

CHAPTER III. BONDS

Article 16. Issuance of Bonds

The Company may issue bonds by a resolution of the Board of Directors

Article 17. Issuance of Convertible Bonds

(1) The Company may issue convertible bonds in the aggregate face amount not exceeding two trillion (2,000,000,000,000) Won to persons other than the shareholders in the following cases:

1. If the Company issues convertible bonds by public offering.
2. If the Company enters into a joint venture agreement, strategic alliance or technical license and transfer agreement, when it is deemed necessary, and issues convertible bonds to any domestic or international corporation accordingly.
3. If the Company issues convertible bonds to a domestic or international financial institution to provide urgently needed funds.

(2) Convertible bonds mentioned in Paragraph (1) may, by resolution of the Board of Directors, be issued with their conversion rights limited to a certain portion of their face amount.

(3) Upon conversion from the aggregate face amount of convertible bonds, common shares may be issued up to one trillion three hundred billion (1,300,000,000,000) Won and preferred shares may be issued up to seven hundred billion (700,000,000,000) Won, and the conversion price, which shall not be less than the par value of the shares, shall be determined by resolution of the Board of Directors at the time of issuance of the convertible bonds.

(4) The conversion period shall be the period commencing from the date of issuance of the convertible bonds and ending on the date immediately preceding the date of redemption of the convertible bonds. The conversion period may be adjusted by a resolution of the Board of Directors; provided, that the conversion period shall in any event fall within the period mentioned above.

(5) The provisions of Article 10, Paragraph (5) shall apply *mutatis mutandis* to the payment of dividends on the shares issued upon conversion and the payment of interest on the convertible bonds.

Article 17-2. Issuance of Bonds with Warrants

(1) The Company may issue bonds with warrants to persons other than its shareholders to the extent that the aggregate par value of the bonds with warrants do not exceed two trillion (2,000,000,000,000) Won, in case of the events prescribed in Paragraph (1) of Article 17 above.

(2) The amount with respect to which the pre-emptive rights may be exercised shall be determined by resolution of the Board of Directors; provided, that such amount shall not in any event exceed the aggregate face amount of bonds with warrants.

(3) Upon exercise of the warrants, from the aggregate face amount of bonds with warrants, common shares may be issued up to one trillion three hundred billion (1,300,000,000,000) Won and preferred shares may be issued up to seven hundred billion (700,000,000,000) Won, and the issue price, which shall not be less than the face value of the shares, shall be determined by resolution of the Board of Directors at the time of issuance of bonds with warrants.

(4) The period during which the pre-emptive rights may be exercised shall be the period commencing from the date of issuance of bonds with warrants and ending on the date immediately preceding the date of redemption of bonds with warrants. The period during which the pre-emptive rights may be exercised may be adjusted by resolution of the Board of Directors; provided, that such period shall in any event fall within the period mentioned above.

(5) The provisions of Article 10, Paragraph (5) shall apply, *mutatis mutandis*, to the payment of dividends on the new shares issued upon exercise of the pre-emptive rights.

Article 18. Electronic Registration of Rights to be Indicated on Bond and Securities from Pre-emptive Right

The Company shall electronically register rights to be indicated on bond and securities from pre-emptive right on the electronic registrar of the electronic registration agency, in lieu of issuing bond securities and securities from pre-emptive right.

Article 18-2. Provisions Applicable *mutatis mutandis* to the Issuance of Bonds

Articles 13 and 14 of these Articles of Incorporation shall apply *mutatis mutandis* to the issuance of bonds.

CHAPTER IV. GENERAL MEETING OF SHAREHOLDERS

Article 19. Convening of General Meeting of Shareholders

(1) An Ordinary General Meeting of Shareholders shall be held within three (3) months after the end of each fiscal year, and an Extraordinary General Meetings of Shareholders may be convened at any time in compliance with a resolution of the Board of Directors and applicable laws or regulations.

(2) Shareholders may act only with respect to matters set forth in a written notice at a General Meeting of Shareholders.

(3) General Meeting of Shareholders shall be held in Seoul, Korea or at location of the Company's head office.

(4) A General Meeting of Shareholders shall be convened by the Chairman of the Company or by the President or Vice President of the Company acting under the Chairman's authorization.

Article 20. Notices

(1) Written notice of each General Meeting of Shareholders of the Company shall state the date, time, venue and the agenda for which the meeting has been called. The written notice shall be delivered to all shareholders by postal mail or by e-mail transmission at least two weeks prior to the date set for such General Meeting of Shareholders.

(2) Written notice of a General Meeting of Shareholders to be given to shareholders holding one-hundredth (1/100) or less of the total number of issued shares entitled to vote may be substituted by notices made at least twice in each of the Seoul Shinmun published in Seoul, the Maeil Shinmun published in Daegu Metropolitan City and the Kwangju Ilbo published in Kwangju Metropolitan City two weeks prior to the date set for such Meeting, or by notices to be posted on an electronic disclosure database system maintained by the Financial Supervisory Service or the Korea Exchange two weeks prior to the date set for such General Meeting of Shareholders.

Article 21. Presiding Officer

The Chairman and the Representative Director shall preside at the General Meetings of Shareholders. In the absence of the Chairman, the President and the Vice President among Inside Directors shall act as chairman in accordance with their order of authority.

Article 22. Authority of the Presiding Officer

The presiding officer at a General Meeting of Shareholders may order any person to cease making any statements or to leave the meeting or that statements made by such person be stricken from the record if the presiding officer determines that such person is deliberately preventing deliberations or is disturbing the order of the proceedings at the meeting. A person so ordered shall comply with the presiding officer's instructions.

Article 23. Vote by Proxy

(1) Any shareholder entitled to vote at a General Meeting of Shareholders shall have the right to vote by proxy.

(2) A proxy shall submit a document evidencing the power of representation to the Company before the opening of the General Meeting of Shareholders.

Article 24. Quorum and Requisite for Resolutions

(1) Except as otherwise provided in these Articles of Incorporation or by applicable laws or regulations, all resolutions passed at a General Meeting of Shareholders shall be adopted by the affirmative vote of a majority of the voting shares of the shareholders present, which shall represent at least one-fourth (1/4) of the voting shares of the Company then issued and outstanding.

(2) In the following cases, the resolutions of a General Meeting of Shareholders shall be adopted by the affirmative vote of at least two-thirds (2/3) of the voting shares of the shareholders present and by the affirmative vote of at least one-third (1/3) of the voting shares of the total issued and outstanding shares:

1. Amendment of the Articles of Incorporation;
2. Transfer of all or any important part of the business;
3. Execution, amendment or rescission of a contract for leasing the whole of the business, for entrustment of management, or for sharing with another person all profits and losses in relation to the business or of a similar contract;
4. Acquisition of all or part of business of any other company, which may have a great influence upon the business of the Company;
5. Merger or consolidation of the Company (excluding a small scale merger or consolidation);
6. Matters required to be approved by the General Meeting of Shareholders, which have material effects on the company's assets, as determined by the Board of Directors; and
7. Any other matter for which such vote is required by Korean laws and regulations.

Article 25. Exercise of Voting Right in Writing

(1) Any shareholder is entitled to exercise its voting rights at a General Meeting of Shareholders in writing without being present at such General Meeting of Shareholders.

(2) In connection with Paragraph (1) above, the Company shall attach the document necessary for the shareholder's exercise of its voting rights in writing and any reference documents to the written notice for convening a General Meeting of Shareholders.

(3) A shareholder, who intends to exercise its voting rights in writing, shall fill in the document referred to in Paragraph (2) above and submit such document to the Company one (1) day prior to the date of the relevant General Meeting of Shareholders.

Article 26. Minutes of General Meeting of Shareholders

The substance of the course of the proceedings of a General Meeting of Shareholders and the results thereof shall be recorded in the minutes which shall bear the names and seals or signatures thereon of the presiding officer and of the Directors present at the meeting, and shall be preserved in the archives of the Company.

CHAPTER V. BOARD OF DIRECTORS

Article 27. Number of the Directors

The total number of Directors of the Company shall be at least three (3) but no more than thirteen (13) Directors, among which the Outside Directors shall be eight (8) persons or less and Inside Directors shall be five (5) persons or less. The Outside Directors shall constitute the majority of the total number of the Directors.

Article 28. Election of the Directors and Representative Directors

(1) The Directors shall be elected at the General Meeting of Shareholders.

(2) By resolution of the Board of Directors, a number of Representative Directors may be appointed from among Inside Directors. On recommendation of the Chairman, the Board of Directors may grant an Inside Director the position of President, Executive Vice President, Senior Managing Director and Managing Director.

(3) If Directors are appointed by a cumulative voting, the Inside Directors and the Independent Outside Directors are separately considered, and then, the cumulative voting shall apply to each group.

Article 29. Appointment of the Chairman and the Representative Director

(1) By resolution of the Board of Directors, the Chairman and the Representative Director shall be elected from among the Inside Directors after his qualification is approved by the CEO Candidate Recommendation Committee.

(2) In the event a candidate for the position of Inside Director is nominated as the Chairman and the Representative Director candidate and approved by the CEO Candidate Recommendation Committee, the Board of Directors shall recommend the name of one (1) The Chairman and the Representative Director candidate at the General Meetings of Shareholders. Where the Chairman and the Representative Director candidate is appointed as an Inside Director at General Meetings of Shareholders, the Board of Directors shall appoint the Chairman and the Representative Director candidate as the Chairman and the Representative Director.

(3) Details concerning the composition and operation of the CEO Candidate Recommendation Committee shall be determined by the Board of Directors.

Article 29-2. Recommendation of Inside Director Candidate other than the Chairman and the Representative Director

A candidate for Inside Director other than the Chairman and the Representative Director shall be recommended by the Board of Directors after his qualification is approved by the Director Candidate Recommendation and Management Committee as prescribed in Paragraph (1) of Article 45.

Article 29-3. Qualification for Inside Director Candidate

(1) An Inside Director shall be a person capable of managing the Company, who has working experience as an officer or employee of the Company or sufficient experience in the related business area.

(2) A person (i) who retired prior to the completion of the full term of office due to gross negligence or unsound management, (ii) who was sentenced to imprisonment or a heavier penalty and for whom five years have not passed since the termination thereof or exemption therefrom or (iii) who is serving a suspended sentence or who was sentenced to a stay of execution and for whom two years have not passed since the expiration of the period of stay of execution cannot be an Inside Director of the Company.

Article 30. Recommendation of Candidate for Outside Directors

(1) A candidate for Outside Director shall be recommended by the Director Candidate Recommendation and Management Committee as prescribed in Paragraph (1) of Article 45. Such candidates shall be among those qualified persons as prescribed in Article 31.

(2) A shareholder holding voting shares of the Company may recommend a candidate for Outside Director to the Director Candidate Recommendation and Management Committee by the exercise of the shareholder proposal right under the applicable legislation.

(3) The Director Candidate Recommendation and Management Committee shall determine the details regarding recommendation for, and evaluation on qualification of, candidates for Outside Director.

Article 31. Qualification for Candidate for Outside Directors

An Outside Director must have sufficient and professional knowledge or experience in the areas of industry, finance, education, law, accounting and public administration and also must be qualified under the relevant laws.

Article 32. Duties of Representative Director

(1) Each Representative Director shall represent the Company, execute matters determined by the Board of Directors, control all affairs of the Company and provide all Directors with the updated information regarding the recent status of management and the Company.

(2) The Representative Directors and Directors shall carry on the administration of the affairs of the Company in accordance with the duties assigned to them by the Chairman.

Article 33. Duties of Directors

(1) The Directors, as the prudent manager, shall faithfully perform their duties for the Company such as attending the meeting of the Board of Directors, etc. in accordance with the laws and the Articles of Incorporation.

(2) If a Director finds any matter that may inflict any material loss to the Company, he shall immediately report it to the Audit Committee.

Article 34. Term of Directors

The term of office of the Directors shall be within three (3) years; provided, however, that the term of office for Directors shall be extended until the close of an Ordinary General Meeting of Shareholders which is to be held with respect to the fiscal year which is the last to end during their terms in office.

Article 35. By-Election

(1) In the event of any of the absence or inability to perform the duties as a Director, an Extraordinary General Meeting of Shareholders shall be convened to fill the vacancy. However, in the case the number of remaining Directors satisfies the legal requirement and such vacancy does not cause any difficulties in the operation of the business, the appointment through by-election may be suspended, or postponed until the holding of the next Ordinary General Meeting of Shareholders.

(2) In the event that the number of Outside Directors is less than a majority of total number of Directors due to death or resignation of Outside Directors or for any other reason, Outside Directors shall be elected to fill the vacancy at the General Meeting of Shareholders to be held first after such cause so as for the number of Outside Directors to constitute a majority of total number of Directors.

Article 36. Remuneration of Directors

(1) The limit of the salaries and performance incentives of the Directors shall be determined by resolution of the General Meeting of Shareholders. The Board of Directors shall determine the detailed operation standards thereof.

(2) Any severance allowance paid to the Inside Directors shall be in accordance with Severance Allowance Regulations for Directors as approved by shareholders at the General Meeting of Shareholders.

(3) The Company may pay to Outside Directors for expenses incurred during performance of services as required of Outside Directors.

Article 37. Indemnification of Directors

The Company shall indemnify, to the extent permitted by the Korean Commercial Code, the Directors from and against all expenses, losses or liabilities incurred in connection with defending any action, claim or proceeding to protect the interest of the Company, except for in case of the Directors' willful misconduct or negligence with respect to their duties.

Article 38. Authority of the Board of Directors

(1) The Board of Directors shall have the power to take actions in respect of all such acts and things put on the agenda by any of the Directors relating to important matters regarding the administration of the Company or as are required by laws or regulations or by these Articles of Incorporation.

(2) The Board of Directors may delegate its powers to the Special Committees as prescribed in Paragraph (1) of Article 45 in accordance with the Korean laws and regulations and these Articles of Incorporation.

Article 39. Constitution and Convocation of Meeting of the Board of Directors

(1) The Board of Directors shall consist of all the Directors.

(2) The Presiding Director of the Board of Directors may convene all Meetings of the Board of Directors. Any other Director who wishes to convene a Meeting of the Board of Directors shall make his request to the Presiding Director of the Board of Directors and the Presiding Director shall convene the Meeting. If the Presiding Director of the Board of Directors fails to convene the Meeting without justifiable reasons, other Directors may convene such Meeting.

(3) Written or oral notice of each Meeting of the Board of Directors shall be given at least one day prior to the scheduled meeting date to each of the Directors. No notice shall, however, be required for a regular Meeting of the Board of Directors or if all of the Directors consent thereto.

(4) The Board of Directors may allow the Directors to attend, and vote at, the meeting of the Board of Directors by tele-conferencing, instead of attending and voting in person at such meeting. In such case, a Director participating in the Board Meeting by such arrangement shall be considered to be present at the Meeting of the Board of Directors.

Article 40. Presiding Director of the Board of Directors

(1) The Presiding Director of the Board of Directors shall be appointed by the resolution of the Board of Directors among Outside Directors.

(2) The term of office of the Presiding Director shall be one (1) year, and the Presiding Director shall not be reappointed to the office.

(3) In the event that the Presiding Director cannot preside at a Meeting of the Board of Directors, Outside Director in order of seniority (if the seniority is the same, the oldest has the priority) shall take his place as presiding Director.

Article 41. Adoption of Resolutions of the Board of Directors

(1) The Majority of Directors shall constitute a quorum for a Meeting of the Board of Directors. All actions and resolutions taken at a Meeting of the Board of Directors shall be adopted by the affirmative vote of a majority of the Directors present. Notwithstanding the foregoing, the adoption of a resolution by the Board of Directors with respect to the election of the Chairman and the Representative Director candidate may be separately decided by the Board of Directors whose quorum shall not exceed the affirmative vote of two-thirds (2/3) of all of the Directors.

(2) A Director having a special interest with respect to the resolution shall not exercise his voting right.

Article 42. Formalities of the Board of Directors

Directors shall set the agenda for each Meeting and make proposals for resolution thereat. If any Director plans to make proposals at the Meeting of the Board of Directors, he shall submit a written summary thereof to the Presiding Director of the Board of Directors and the Chairman and Representative Director in advance.

Article 43. Matters of Urgency

The Chairman and Representative Director may act upon matters of urgency without resolution of the Board of Directors by obtaining prior consent of more than two-thirds (2/3) of other Directors. A Meeting of the Board of Directors for the next term shall be convened to deliberate on and ratify the actions so taken.

Article 44. Minutes of the Meeting of the Board of Directors

With respect to the proceedings of the Meetings of the Board of Directors, the minutes should be made. The agenda, the substances of course, and the results of the proceedings of the Meetings of the Board of Directors, the name of objecting director and the reasons of objection shall be recorded in the minutes which shall bear the names and seals or the signatures thereon of the Directors present at the Meeting.

Article 45. Special Committees

(1) The Company shall have special committees under the control of the Board of Directors as follows:

1. Director Candidate Recommendation and Management Committee;
2. Evaluation and Compensation Committee;
3. Finance and Related Party Transactions Committee;
4. Executive Management Committee; and
5. Audit Committee

(2) Except as otherwise provided by any relevant laws, authority, constitution and operation of the special committee shall be determined by a resolution of the Board of Directors.

(3) Matters regarding composition and duties of the Audit Committee shall be determined in accordance with Chapter VI.

Article 46. Unregistered Officers

(1) The Company shall have Unregistered Officers to execute the matters resolved by the Board of Directors and the matters important to the management of the Company.

(2) The Unregistered Officers shall be appointed by the Representative Director and C.E.O.; provided, however, that the appointment of the Unregistered Officers to the important positions that the Board of Directors decides shall require the approval of the Board of Directors.

(3) The Unregistered Officers are President, Senior Executive Vice Presidents, Senior Managing Directors and Managing Directors, and the salaries and performance incentives payable to such Unregistered Officers shall be determined by the Board of Directors or by the Representative Director and C.E.O., to the extent the Representative Director and C.E.O. has been delegated such authority by the Board of Directors. Any severance allowance shall be distributed in accordance with the standards for the President, Senior Executive Vice Presidents, Senior Managing Directors and Managing Directors pursuant to the Directors Severance Allowance Regulations as approved by the General Meeting of Shareholders.

(4) The allocation of work among the Unregistered Officers shall be decided by the Representative Director and C.E.O..

(5) The term of office of the Unregistered Officers shall not be more than two (2) years; provided, however, that the proviso of Article 34 may apply *mutatis mutandis* to the Unregistered Officers.

Article 47. Consultant and Part-time Officer

The Company may have consultants and part-time officers who will be treated as Officers of the Company if it is required for the business.

CHAPTER VI. Audit Committee

Article 48. Constitution and Appointment of Members of Audit Committee

(1) The Audit Committee of the Company shall consist of three (3) or more Directors. All of the members shall be elected from among the Outside Directors.

(2) A member of the Audit Committee shall be appointed or dismissed at the General Meeting of Shareholders. When appointing a member of the Audit Committee, a shareholder holding more than three percent (3%) of the Company's issued and outstanding shares shall not be entitled to exercise his voting rights for that excess portion.

(3) In the event that the number of the Audit Committee does not satisfy the requirement referred to in Paragraph (1) due to the death or resignation of members or any other reasons, the members shall be elected to fill the vacancy at the General Meeting of Shareholders to be held first after such cause so as for the number of members to satisfy the requirement referred to in Paragraph (1).

(4) The chairman of the Audit Committee shall be elected by a resolution of the Audit Committee.

Article 49. Duties of Audit Committee

(1) The Audit Committee shall examine the accounting and financial records of the Company.

(2) The Audit Committee may request to convene an Extraordinary General Meeting of Shareholders by submitting a written request specifying the agenda of the meeting and the reason for the meeting.

(3) If deemed necessary, the Audit Committee may request to convene a Board Meeting by submitting a written request specifying the agenda of a meeting and the reason for a meeting to the Presiding Director.

(4) The Audit Committee may directly convene a Board Meeting if a meeting has not been convened immediately on the request of the Audit Committee in accordance with Paragraph (3) of this Article.

(5) If it is required for management purpose, the Audit Committee may demand a subsidiary to make a report on the business. In such case, if the subsidiary fails to make an immediate report, or it is required to confirm the contents of such report, the Audit Committee may investigate the business and assets of the subsidiary.

(6) The Audit Committee shall prepare an audit report on the Company's financial statements and shall report thereof to the General Meeting of Shareholders.

(7) The Audit Committee shall record the course of the proceedings of their meetings and the results thereof in the minutes and shall record the procedure of the inspection and the results thereof in the inspection book, on which the name and seal of the members shall be affixed or which shall be signed by such members.

(8) The Audit Committee may receive advice from outside professionals when necessary, for which the Company shall cover any expenses therefrom.

Article 50. Quorum and Adoption of Resolutions

Article 41 shall apply, *mutatis mutandis*, to the quorum and adoption of resolution of the Audit Committee.

Article 51. Appointment of External Auditor

The Company shall appoint an external auditor selected by the Audit Committee pursuant to the Act on External Audit of Stock Companies. The details of the aforesaid appointment shall be reported to the shareholders at the Ordinary General Meeting of Shareholders for the fiscal year during which such appointment was or shall be made known to the shareholders in accordance with relevant laws and regulations.

CHAPTER VII. ACCOUNTING

Article 52. Fiscal Year

The fiscal year of the Company shall commence on each January 1 and shall end on December 31 of the same year.

Article 53. Submission, Approval and Publication of Financial Statements

(1) After the end of each fiscal year, the Representative Directors shall prepare and submit, with the Board of Directors' approval therefor, to the Audit Committee at least six (6) weeks before the date set for an Ordinary General Meeting of Shareholders, the following documents with its supplementary schedules:

1. A balance sheet;
2. A profit and loss statement;
3. Documents designated by the Presidential Decree and decided by the Board of Directors;
4. A consolidated financial statement; and
5. A business report for the pertinent fiscal year:

(2) Upon receiving the documents specified under Paragraph (1) above, the Audit Committee shall prepare and submit an auditor's report to the Representative Director one (1) week before the date of each Ordinary General Meeting of Shareholders.

(3) The Representative Directors shall make available for inspection for five (5) years at the head office and copies thereof for three (3) years at branch offices, the documents prescribed under Items 1 through 4 of Paragraph (1) of this Article and the auditor's report of the Company beginning from one (1) week before the date of each Ordinary General Meeting of Shareholders.

(4) The Representative Director shall submit and seek approval of the documents prescribed under Items 1 through 4 of Paragraph (1) of this Article at an Ordinary General Meeting of Shareholders. The Representative Directors shall report a business report to an Ordinary General Meeting of Shareholders.

(5) The Representative Director shall make public the balance sheet, without delay, after an Ordinary General Meeting of Shareholders has approved the documents described in Paragraph (4).

Article 54. (Deleted)

Article 55. Disposition of Retained Earnings

Retained earnings for any fiscal year shall be disposed in the following order, but it may be appropriated for purposes other than those listed below if approved by a General Meeting of Shareholders:

1. Legal reserves (required to be more than one-tenth of cash dividends paid for the pertinent fiscal year);
2. Other statutory reserves;
3. Dividends to shareholders;
4. Merits bonuses for retiring Directors;
5. Discretionary reserves;
6. Average dividend reserves and other dispositions; and
7. Retained earnings carried forward to next fiscal year.

Article 56. Dividends

(1) Dividends may be paid in cash, shares, or any other form of property

(2) In the case of stock dividends, the Company may issue different types of shares to the shareholders by resolution of the General Meeting of Shareholders.

(3) The Company may pay quarterly dividends in cash by a resolution of the Board of Directors each fiscal year. In such case, the record date for the distribution of quarterly dividends shall be the last day of March, June and September. The dividends should be paid within 20 days from the resolution above.

(4) Dividends referred to in Paragraphs (1) and (3) shall be paid to the shareholders and registered pledgees whose names appear in the shareholders' register of the Company as of the last day of each fiscal year or the record date for the distribution of quarterly dividends.

Article 57. Cancellation of Treasury Stocks

The Company, by a resolution of the Board of Directors, may repurchase and cancel its outstanding shares following the methods set forth in the applicable laws or regulations.

ADDENDA (March 15, 2019)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 51th fiscal year; provided, however, that the amendments to Articles 6, 9, 9-2, 13 and 18 shall take effect starting from the effective date of the Enforcement Decree of the Act on Electronic Registration of Stocks, Bonds, Etc.

ADDENDA (March 9, 2018)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 50th fiscal year.

ADDENDA (March 11, 2016)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 48th fiscal year.

ADDENDA (March 16, 2012)

Article 27 of the Articles of Incorporation shall be effective from the date the Ordinary General Meeting of Shareholders for the 44th fiscal year approves such Article while the other amended Articles shall be effective from April 15, 2012.

ADDENDA (February 25, 2011)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 43rd fiscal year.

ADDENDA (February 26, 2010)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 42nd fiscal year.

ADDENDA (February 27, 2009)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 41st fiscal year.

ADDENDA (February 23, 2007)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 39th fiscal year.

ADDENDA (February 24, 2006)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 38th fiscal year.

ADDENDA (March 12, 2004)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 36th fiscal year.

ADDENDA (March 14, 2003)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 35th fiscal year.

ADDENDA (March 15, 2002)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 34th fiscal year.

ADDENDA (March 16, 2001)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 33rd fiscal year.

ADDENDA (March 17, 2000)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 32nd fiscal year.

ADDENDA (March 16, 1999)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 31st fiscal year.

ADDENDA (August 20, 1998)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Extraordinary General Meeting of Shareholders for the 31st fiscal year.

ADDENDA (March 17, 1998)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 30th fiscal year.

ADDENDA (March 14, 1997)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 29th fiscal year.

ADDENDA (March 15, 1996)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 28th fiscal year.

ADDENDA (March 15, 1995)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 27th fiscal year.

ADDENDA (April 15, 1994)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Extraordinary General Meeting of Shareholders for the 27th fiscal year.

ADDENDA (March 8, 1993)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 25th fiscal year.

ADDENDA (October 13, 1992)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Extraordinary General Meeting of Shareholders for the 25th fiscal year.

ADDENDA (March 7, 1992)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 24th fiscal year.

ADDENDA (March 14, 1991)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 23rd fiscal year.

ADDENDA (March 6, 1990)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 22nd fiscal year.

ADDENDA (March 15, 1989)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 21st fiscal year.

ADDENDA (February 27, 1988)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 20th fiscal year.

ADDENDA (March 7, 1987)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 19th fiscal year.

ADDENDA (February 26, 1986)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 18th fiscal year.

ADDENDA (February 5, 1985)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 17th fiscal year.

ADDENDA (February 18, 1984)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 16th fiscal year.

ADDENDA (February 23, 1982)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 14th fiscal year.

ADDENDA (February 28, 1981)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 13th fiscal year.

ADDENDA (February 24, 1979)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 11th fiscal year.

ADDENDA (February 25, 1978)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 10th fiscal year.

ADDENDA (February 8, 1977)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 9th fiscal year.

ADDENDA (February 6, 1976)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 8th fiscal year.

ADDENDA (February 8, 1975)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 7th fiscal year.

ADDENDA (February 5, 1974)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 6th fiscal year.

ADDENDA (February 12, 1973)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 5th fiscal year.

ADDENDA (November 29, 1972)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Extraordinary General Meeting of Shareholders for the 5th fiscal year.

ADDENDA (February 4, 1972)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 4th fiscal year.

ADDENDA (November 23, 1971)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Extraordinary General Meeting of Shareholders for the 4th fiscal year.

ADDENDA (February 6, 1971)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 3rd fiscal year.

ADDENDA (February 7, 1970)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 2nd fiscal year.

ADDENDA (June 16, 1969)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Extraordinary General Meeting of Shareholders for the 2nd fiscal year.

ADDENDA (March 20, 1969)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Extraordinary General Meeting of Shareholders for the 2nd fiscal year.

ADDENDA (February 20, 1969)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Ordinary General Meeting of Shareholders for the 1st fiscal year.

ADDENDA (July 10, 1968)

The amended Articles of Incorporation shall be effective from the date on which they are approved by the resolution at the Extraordinary General Meeting of Shareholders for the 1st fiscal year.

ADDENDA (March 6, 1968)

The Articles of Incorporation shall be effective from March 6, 1968.

LIST OF CONSOLIDATED SUBSIDIARIES

For a list of POSCO's consolidated subsidiaries as of December 31, 2018 and their jurisdiction of incorporation, please see Note 1(b) of Notes to Consolidated Financial Statements contained in POSCO's annual report on Form 20-F for fiscal year 2018.

CERTIFICATION

I, Choi, Jeong-Woo, certify that:

1. I have reviewed this annual report on Form 20-F of POSCO;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;
4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: April 30, 2019

/s/ Choi, Jeong-Woo

Choi, Jeong-Woo
Chief Executive Officer and
Representative Director

CERTIFICATION

I, Chon, Jung-Son, certify that:

1. I have reviewed this annual report on Form 20-F of POSCO;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;
4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: April 30, 2019

/s/ Chon, Jung-Son

Chon, Jung-Son
Senior Executive Vice President and Head of
Corporate Strategy & Planning Division

CERTIFICATION

**Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
(Subsection (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code)**

Pursuant to section 906 of the Sarbanes-Oxley Act of 2002 (subsection (a) and (b) of section 1350, chapter 63 of title 18, United States Code), the undersigned officer of POSCO, a corporation organized under the laws of the Republic of Korea (the "Company"), does hereby certify, to such officer's knowledge, that:

The annual report on Form 20-F for the year ended December 31, 2018 (the "Form 20-F") fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in the Form 20-F fairly presents, in all material respects, the financial condition and results of operation of the Company.

/s/ Choi, Jeong-Woo

Choi, Jeong-Woo
Chief Executive Officer and
Representative Director

Date: April 30, 2019

/s/ Chon, Jung-Son

Chon, Jung-Son
Senior Executive Vice President and Head of
Corporate Strategy & Planning Division

Date: April 30, 2019

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to POSCO and will be retained by POSCO and furnished to the Securities and Exchange Commission or its staff upon request.