

POSCO
and Subsidiaries
Consolidated Financial Statements
December 31, 2018 and 2017

(With Independent Auditors' Report Thereon)

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Independent Auditors' Report

Based on a report originally issued in Korean

The Board of Directors and Shareholders
POSCO:

Opinion

We have audited the consolidated financial statements of POSCO and its subsidiaries ("the Company"), which comprise the consolidated statements of financial position as of December 31, 2018 and 2017, the consolidated statements of comprehensive income, changes in equity and cash flows for the years then ended, and notes, comprising significant accounting policies and other explanatory information.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Company as of December 31, 2018 and 2017, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards ("K-IFRS").

Basis for Opinion

We conducted our audits in accordance with Korean Standards on Auditing (KSAs). Our responsibilities under those standards are further described in the *Auditors' Responsibilities for the Audit of the Consolidated Financial Statements* section of our report. We are independent of the Company in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements as of and for the year ended December 31, 2018. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

(a) Assessment of impairment on goodwill

As described in note 15 to the consolidated financial statements, goodwill amounted to ₩1,125,149 million as of December 31, 2018, which are primarily allocated to the cash generating unit ("CGU") of POSCO Daewoo. The Company recognized impairment loss on goodwill related to the CGU of POSCO Daewoo of ₩158,151 million during the year ended December 31, 2018.

As described in note 15(c) to the consolidated financial statements, the Company performed goodwill impairment test for POSCO Daewoo by estimating the value-in-use of the CGU. In estimating the value-in-use, management's judgment is involved in determining the key assumptions such as sales growth rate, discount rate and terminal growth rate that have a significant impact on the estimated value-in-use. Considering significant degree of judgment in estimating value-in-use and the likelihood of management bias, we identified assessment goodwill impairment related to POSCO Daewoo CGU as a key audit matter.

The primary procedures we performed to address this key audit matter included the following:

- Assess the qualification and objectivity of the external institution engaged by the Company to assess the value in use of the POSCO Daewoo CGU;
- Testing certain internal controls over the Company's goodwill impairment assessment process;
- Evaluating the key assumptions used to determine the value in use which included the estimated sales growth rate and terminal growth rate by comparison with the latest financial budgets approved by the board of directors, historical performance and industry reports.
- Engaging our internal valuation specialists to assist us in assessing the discount rate applied and comparing with recalculated discount rate using observable information.
- Performing sensitivity analysis on the discount rate and terminal growth rate applied to assess the impact of changes in these key assumptions on the conclusion reached in management's impairment assessment.
- Compared the future cash flows forecasts prepared in prior year with the current year's performance to assess the Company's ability to accurately forecast.

(b) Assessment of impairment of long-lived assets

As described in note 14 to the consolidated financial statements, the Company has decided to suspend additional investments in Synthetic Natural Gas (SNG) business, for which the related equipment had been in trial-run stage for an extended period of time. The Company performed impairment test over the long-term assets of SNG business, which are primarily comprised of equipment. Based on the impairment test, the Company recognized impairment loss of ₩809,737 million for the year ended December 31, 2018.

For the equipment of SNG business that could not be used for other businesses of the Company, there are impairment indicators for each individual asset. Determination of whether an individual asset could be sold or is technologically obsolete involves management judgment. In addition, estimating the recoverable amount of the individual assets that could be sold also involves management judgment on key assumptions such as estimated useful life and replacement costs. Considering the significant degree of judgment involved and potential management bias, we identified the assessment of impairment of long-term assets in SNG business as a key audit matter.

The primary procedures we performed to address this key audit matter included the following:

- Assessing the qualification and objectivity of the external valuation institution engaged by the Company to assess the recoverable amount of long-term assets of SNG business.
- Engaging an external valuation institution to assist us in assessing the methodology and significant assumptions used by the external valuation institution engaged by the Company.
- For selected samples, performing physical observation to assess management's determination on whether the equipment is obsolete, and testing the assumptions used in estimating recoverable amount, such as estimated useful life and replacement costs.

(c) Revenue recognition related to production-to-order transactions

Certain subsidiaries of POSCO, including POSCO ENGINEERING & CONSTRUCTION CO., LTD. and POSCO ICT, are engaged in production-to-order transactions. Sales in relation to production-to-order transactions are approximately 11% of consolidated sales for the year ended December 31, 2018. As described in note 3 and 29 to the consolidated financial statements, when the outcome of a construction contract can be estimated reliably, the Company recognizes contract revenues and contract costs over time based on the percentage-of-completion method. The percentage-of-completion is calculated based on the ratio of contract costs incurred for work performed to date to estimated total contract costs. The gross amount due from customers for contract work is presented for all contracts in which profits multiply cumulative percentage-of-completion exceeded progress billings. The gross amount due to customers for contract work is presented for all contracts in which progress billings exceed profits multiply cumulative percentage-of-completion. The following summarizes the considerations we had in identifying revenue recognition related to production-to-order transactions as a key audit matter, and the primary audit procedures we performed to address the key audit matter.

1) Revenues recognized by the input method

We identified key audit matters associated with revenues recognized by the input method because the variation of estimated amounts has significant impact on profit for the year ended December 31, 2018 and future periods because of the high degree of uncertainty of estimated total contract revenues and costs is for large-scale development constructions at initial stage, and constructions with delays and possibility of being discontinued.

The primary procedures we performed to address this included the following:

- Testing certain internal controls and computerized systems over the process of determination of accounting treatments in relation to revenue recognition by the input method.
- Inquiring as to rationale and reliability of estimated result of construction contract, the type of the contracts and classification of the contracts and obtaining confirmation letters on selected transactions.
- For major projects, inspecting of document such as construction contracts to assess whether the terms of the contract are consistent with those used in the Company's determination of the use of input method.

2) Uncertainty of estimated total contract costs

Construction contracts are generally performed for long term duration, and the total contract costs are estimated based on estimated future amounts such as material costs, labor costs, outsourcing costs and others which are expected to be incurred during construction period. The actual total contract costs can vary from the Company's original estimates because of changes in condition. Total estimated contract costs changed by ~~₩~~423,502 million for the year ended December 31, 2018 (see note 29(d) to the consolidated financial statements). Considering possible impact from the uncertainty, we identified key audit matter regarding uncertainty of estimated total contract costs.

The primary procedures we performed to address this included the following:

- Testing certain internal controls over the process of estimation of total contract costs
- Obtaining confirmation letters from person in charge of construction field regarding rationale and reliability of the estimated result of total construction contract for major projects
- Inquiries and inspection of documents as to the cause of the changes for major projects in which significant changes in estimated total contract costs were made
- Inquiries and inspection of documents as to the cause of significant differences between estimated total cost ratio and the actual total cost ratio for completed projects

3) Assessment of the percentage-of-completion

Changes in the percentage-of-completion have significant impact on current and future profit of construction contract and may result in misstatement of profit or loss of construction contract. We identified key audit matter regarding assessment of the percentage-of-completion as uncertainty of the percentage-of-completion has significant impact on profit or loss of construction contract in case the Company fails to estimate the percentage-of-completion reliably.

The primary procedures we performed to address this included the following:

- Testing certain internal controls over the estimation of percentage of completion
- For selected samples from contract costs incurred during the year ended December 31, 2018, inspection of documentation on existence and timing of occurrence, and performance of cut-off test
- Recalculation of percentage-of-completion for major construction projects
- Analytical review of major projects to see if there was a significant difference between the progress and the percentage of completion according to the input method as of December 31, 2018 and evaluation of the reasonableness of such difference by document inspection
- Inquiries and inspection of documents as to the cause of slow progress in the percentage of completion compared to the timeline of project

4) Recoverability of due from customers for contract work

As of December 31, 2018, the amounts of due from customers for contract work are ~~₩~~963,060 million or 10% of consolidated trade accounts and note receivable (see note 29(b) to the consolidated financial statements). We identified key audit matter regarding the recoverability of due from customers for contract work as the amounts of due from customers for contract work are significant.

The primary procedures we performed to address this included the following:

- Testing certain internal controls over the process to assess recoverability of due from customers and measure impairment of related receivables
- Inquiries and inspection of documents to identify a project which has a significantly abnormal balance of due from customers compared to payment condition and condition of billing terms
- Inquiries and obtaining other related information on a sample basis to evaluate the credit risk of customer
- Assessing the reasonableness of recoverability of due from customer of which balance has not changed for an extended period of time

5) Accounting for the variation of construction contract

Variation of construction contracts occurred during the year ended December 31, 2018 and had significant impact on profits or loss of the construction contract (see note 29(d) to the consolidated financial statements). We identified key audit matter regarding the accounting for the variation of construction contract, including disclosures.

The primary procedures we performed to address this included the following:

- Testing certain internal controls over risks associated with measurement and change the total contract revenue for each project
- For selected samples on contracts with changes, inspection of document and evaluation of appropriateness of the basis used for the calculating total contract revenue
- Inquiries and inspection of documents related to the causes of change when the contracted revenue significantly changed through the construction work change other than the initially agreed upon contracted amount
- Assessing whether additional contract costs according to changes in construction work were reflected in the estimated total contract costs and percentage of completion
- Assessing the contract information of major projects such as initially agreed upon contracted amount and others by obtaining confirmation letter from the person in charge of construction field

Other Matter

The procedures and practices utilized in the Republic of Korea to audit such consolidated financial statements may differ from those generally accepted and applied in other countries.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

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

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

Those charged with governance are responsible for overseeing the Company's financial reporting process.

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

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

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

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used in the preparation of the consolidated financial statements and the reasonableness of accounting estimates and related disclosures made by management.

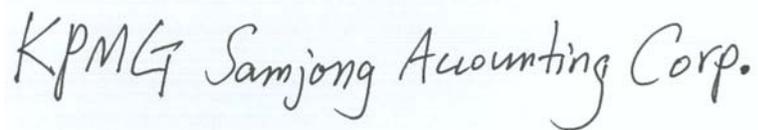
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Company to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

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

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditors' report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The engagement partner on the audit resulting in this independent auditors' report is Jo, Ja Young.

The image shows a handwritten signature in black ink on a light blue background. The signature reads "KPMG Samjong Accounting Corp." in a cursive, handwritten style.

Seoul, Korea
March 7, 2019

This report is effective as of March 7, 2019, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

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

(in millions of Won)

	Notes	December 31, 2018	December 31, 2017
Assets			
Cash and cash equivalents	4,5,23	₩ 2,643,865	2,612,530
Trade accounts and notes receivable, net	6,17,23,29,37	9,282,609	8,950,548
Other receivables, net	7,23,37	1,385,629	1,636,006
Other short-term financial assets	8,23	8,081,096	7,045,880
Inventories	9	11,499,928	9,950,955
Current income tax assets	35	51,557	38,489
Assets held for sale	10	21,854	71,768
Other current assets	16	684,464	821,242
Total current assets		33,651,002	31,127,418
Long-term trade accounts and notes receivable, net	6,23	427,125	731,570
Other receivables, net	7,23,37	863,240	879,176
Other long-term financial assets	8,23	1,647,898	1,911,684
Investments in associates and joint ventures	11	3,650,003	3,557,932
Investment property, net	13	928,615	1,064,914
Property, plant and equipment, net	14,33	30,018,273	31,883,535
Intangible assets, net	15,33	5,170,825	5,952,269
Defined benefit assets, net	21	1,489	8,224
Deferred tax assets	35	1,381,031	1,419,226
Other non-current assets	16	508,764	489,011
Total non-current assets		44,597,263	47,897,541
Total assets		₩ 78,248,265	79,024,959

See accompanying notes to the consolidated financial statements.

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

(in millions of Won)

	<u>Notes</u>	<u>December 31, 2018</u>	<u>December 31, 2017</u>
Liabilities			
Trade accounts and notes payable	23,37	₩ 4,006,135	3,465,146
Short-term borrowings and current installments of long-term borrowings	4,17,23	10,289,619	11,274,516
Other payables	18,23	1,720,097	1,753,461
Other short-term financial liabilities	19,23,37	77,800	129,812
Current income tax liabilities	35	948,166	515,538
Provisions	20	301,280	110,946
Other current liabilities	22,29	1,594,888	1,696,597
Total current liabilities		<u>18,937,985</u>	<u>18,946,016</u>
Long-term trade accounts and notes payable	23,37	29,825	12,532
Long-term borrowings, excluding current installments	4,17,23	9,919,651	9,789,141
Other payables	18,23	148,868	147,750
Other long-term financial liabilities	19,23	64,162	114,105
Defined benefit liabilities, net	21	140,933	137,193
Deferred tax liabilities	35	1,688,893	1,904,242
Long-term provisions	20	431,036	477,172
Other non-current liabilities	22	127,361	32,800
Total non-current liabilities		<u>12,550,729</u>	<u>12,614,935</u>
Total liabilities		<u>31,488,714</u>	<u>31,560,951</u>
Equity			
Share capital	24	482,403	482,403
Capital surplus	24	1,410,551	1,412,565
Hybrid bonds	25	199,384	996,919
Reserves	26	(1,404,368)	(682,556)
Treasury shares	27	(1,532,728)	(1,533,054)
Retained earnings		44,216,018	43,056,600
Equity attributable to owners of the controlling company		<u>43,371,260</u>	<u>43,732,877</u>
Non-controlling interests	25	3,388,291	3,731,131
Total equity		<u>46,759,551</u>	<u>47,464,008</u>
Total liabilities and equity		<u>₩ 78,248,265</u>	<u>79,024,959</u>

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries

Consolidated Statements of Comprehensive Income

For the years ended December 31, 2018 and 2017

(in millions of Won, except per share information)	<u>Notes</u>	<u>2018</u>	<u>2017</u>
Revenue	28,29,37	₩ 64,977,777	60,655,100
Cost of sales	29,31,34,37	<u>(57,005,396)</u>	<u>(52,299,189)</u>
Gross profit		7,972,381	8,355,911
Selling and administrative expenses	30,34		
Impairment loss on trade accounts and notes receivable	23	(74,781)	(173,694)
Other administrative expenses	31	(1,985,755)	(2,003,106)
Selling expenses		<u>(369,245)</u>	<u>(1,557,277)</u>
Operating profit		5,542,600	4,621,834
Share of profit of equity-accounted investees, net	11	112,635	10,540
Finance income and costs	23,32		
Finance income		1,705,970	2,372,667
Finance costs		<u>(2,244,416)</u>	<u>(2,484,277)</u>
Other non-operating income and expenses	33		
Impairment loss on other receivables	23	(63,092)	(98,177)
Other non-operating income		523,586	448,481
Other non-operating expenses	34	<u>(2,014,462)</u>	<u>(691,376)</u>
Profit before income tax		3,562,821	4,179,692
Income tax expense	35	<u>(1,670,757)</u>	<u>(1,206,223)</u>
Profit		1,892,064	2,973,469
Other comprehensive income (loss)			
Items that will not be reclassified subsequently to profit or loss:			
Remeasurements of defined benefit plans	21	(173,489)	(47,543)
Net changes in fair value of equity investments at fair value through other comprehensive income	23	(149,188)	-
Items that are or may be reclassified subsequently to profit or loss:			
Capital adjustment arising from investments in equity-accounted investees		(62,732)	(217,388)
Net changes in unrealized fair value of available-for-sale investments	23	-	(31,389)
Foreign currency translation differences		(42,908)	(264,695)
Gains or losses on valuation of derivatives	23	<u>(212)</u>	<u>(143)</u>
Other comprehensive loss, net of tax		<u>(428,529)</u>	<u>(561,158)</u>
Total comprehensive income		₩ <u>1,463,535</u>	<u>2,412,311</u>
Profit attributable to:			
Owners of the controlling company		₩ 1,690,612	2,790,106
Non-controlling interests		<u>201,452</u>	<u>183,363</u>
Profit		₩ <u>1,892,064</u>	<u>2,973,469</u>
Total comprehensive income attributable to:			
Owners of the controlling company		₩ 1,271,495	2,218,278
Non-controlling interests		<u>192,040</u>	<u>194,033</u>
Total comprehensive income		₩ <u>1,463,535</u>	<u>2,412,311</u>
Basic and diluted earnings per share (in Won)	36	20,911	34,464

See accompanying notes to the consolidated financial statements.

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

(in millions of Won)

	Attributable to owners of the controlling company						Non-controlling interests	Total	
	Share capital	Capital surplus	Hybrid bonds	Reserves	Treasury shares	Retained earnings			Subtotal
Balance as of January 1, 2017	₩ 482,403	1,397,791	996,919	(143,985)	(1,533,468)	41,173,778	42,373,438	3,464,956	45,838,394
Comprehensive income:									
Profit	-	-	-	-	-	2,790,106	2,790,106	183,363	2,973,469
Other comprehensive income (loss)									
Remeasurements of defined benefit plans, net of tax	-	-	-	-	-	(38,043)	(38,043)	(9,500)	(47,543)
Capital adjustment arising from investments in equity-accounted investees, net of tax	-	-	-	(214,794)	-	-	(214,794)	(2,594)	(217,388)
Net changes in unrealized fair value of available-for-sale investments, net of tax	-	-	-	(45,953)	-	-	(45,953)	14,564	(31,389)
Foreign currency translation differences, net of tax	-	-	-	(272,902)	-	-	(272,902)	8,207	(264,695)
Gains or losses on valuation of derivatives, net of tax	-	-	-	(136)	-	-	(136)	(7)	(143)
Total comprehensive income	-	-	-	(533,785)	-	2,752,063	2,218,278	194,033	2,412,311
Transactions with owners of the controlling company, recognized directly in equity:									
Year-end dividends	-	-	-	-	-	(459,987)	(459,987)	(42,909)	(502,896)
Interim dividends	-	-	-	-	-	(359,993)	(359,993)	-	(359,993)
Changes in subsidiaries	-	-	-	-	-	-	-	(7,151)	(7,151)
Changes in ownership interest in subsidiaries	-	16,287	-	-	-	-	16,287	147,420	163,707
Interest of hybrid bonds	-	-	-	-	-	(43,600)	(43,600)	(24,187)	(67,787)
Disposal of treasury shares	-	126	-	-	414	-	540	-	540
Others	-	(1,639)	-	(4,786)	-	(5,661)	(12,086)	(1,031)	(13,117)
Total transactions with owners of the controlling company	-	14,774	-	(4,786)	414	(869,241)	(858,839)	72,142	(786,697)
Balance as of December 31, 2017	₩ 482,403	1,412,565	996,919	(682,556)	(1,533,054)	43,056,600	43,732,877	3,731,131	47,464,008

See accompanying notes to the consolidated financial statements.

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

(in millions of Won)

	Attributable to owners of the controlling company						Non-controlling interests	Total	
	Share capital	Capital surplus	Hybrid bonds	Reserves	Treasury shares	Retained earnings			Subtotal
Balance as of January 1, 2018	₩ 482,403	1,412,565	996,919	(682,556)	(1,533,054)	43,056,600	43,732,877	3,731,131	47,464,008
Adjustment on initial application of K-IFRS No. 1115, net of tax	-	-	-	-	-	(76,199)	(76,199)	(63,708)	(139,907)
Adjustment on initial application of K-IFRS No. 1109, net of tax	-	-	-	(498,517)	-	447,067	(51,450)	(34,754)	(86,204)
Adjusted balance as of January 1, 2018	482,403	1,412,565	996,919	(1,181,073)	(1,533,054)	43,427,468	43,605,228	3,632,669	47,237,897
Comprehensive income:									
Profit	-	-	-	-	-	1,690,612	1,690,612	201,452	1,892,064
Other comprehensive income (loss)									
Remeasurements of defined benefit plans, net of tax	-	-	-	-	-	(145,488)	(145,488)	(28,001)	(173,489)
Capital adjustment arising from investments in equity-accounted investees, net of tax	-	-	-	(76,587)	-	-	(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)	(151,176)	1,988	(149,188)
Foreign currency translation differences, net of tax	-	-	-	(45,650)	-	-	(45,650)	2,742	(42,908)
Gains or losses on valuation of derivatives, net of tax	-	-	-	(216)	-	-	(216)	4	(212)
Total comprehensive income	-	-	-	(226,746)	-	1,498,241	1,271,495	192,040	1,463,535
Transactions with owners of the controlling company, recognized directly in equity:									
Year-end dividends	-	-	-	-	-	(279,999)	(279,999)	(54,240)	(334,239)
Interim dividends	-	-	-	-	-	(400,003)	(400,003)	-	(400,003)
Changes in subsidiaries	-	-	-	-	-	-	-	(2,092)	(2,092)
Changes in ownership interest in subsidiaries	-	(1,497)	-	-	-	-	(1,497)	(654)	(2,151)
Repayment of hybrid bonds	-	(2,769)	(797,535)	-	-	-	(800,304)	(359,018)	(1,159,322)
Interest of hybrid bonds	-	-	-	-	-	(24,443)	(24,443)	(18,448)	(42,891)
Disposal of treasury shares	-	133	-	-	326	-	459	-	459
Others	-	2,119	-	3,451	-	(5,246)	324	(1,966)	(1,642)
Total transactions with owners of the controlling company	-	(2,014)	(797,535)	3,451	326	(709,691)	(1,505,463)	(436,418)	(1,941,881)
Balance as of December 31, 2018	₩ 482,403	1,410,551	199,384	(1,404,368)	(1,532,728)	44,216,018	43,371,260	3,388,291	46,759,551

See accompanying notes to the consolidated financial statements.

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

<i>(in millions of Won)</i>	Notes	2018	2017
Cash flows from operating activities			
Profit	₩	1,892,064	2,973,469
Adjustments for:			
Depreciation		2,911,048	2,887,646
Amortization		356,581	409,774
Finance income		(737,745)	(1,376,324)
Finance costs		1,168,225	1,440,282
Income tax expense		1,670,757	1,206,223
Impairment loss on property, plant and equipment		1,004,704	117,231
Gain on disposal of property, plant and equipment		(53,139)	(32,145)
Loss on disposal of property, plant and equipment		117,614	151,343
Impairment loss on goodwill and other intangible assets		337,519	167,995
Gain on disposal of intangible assets		(117,139)	(23,391)
Gain on disposal of investments			
in subsidiaries, associates and joint ventures		(45,241)	(81,794)
Loss on disposal of investments			
in subsidiaries, associates and joint ventures		5,226	19,985
Share of profit of equity-accounted investees		(112,635)	(10,540)
Impairment loss on assets held for sale		50,829	-
Gain on disposal of assets held for sale		(27,171)	(1,180)
Expenses related to post-employment benefit		216,489	199,926
Impairment loss on trade and other receivables		137,873	271,871
Loss on valuation of inventories		141,799	78,560
Increase to provisions		240,146	215,383
Others, net		77,945	(9,093)
		<u>7,343,685</u>	<u>5,631,752</u>
Changes in operating assets and liabilities	39	(2,052,531)	(1,926,274)
Interest received		352,337	244,980
Interest paid		(750,410)	(735,735)
Dividends received		224,410	225,514
Income taxes paid		(1,139,830)	(806,396)
Net cash provided by operating activities	₩	<u>5,869,725</u>	<u>5,607,310</u>

See accompanying notes to the consolidated financial statements.

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

<i>(in millions of Won)</i>	Notes	2018	2017
Cash flows from investing activities			
Acquisitions of short-term financial instruments	₩	(32,173,134)	(20,843,530)
Proceeds from disposal of short-term financial instruments		31,105,544	19,146,634
Increase in loans		(627,783)	(1,055,895)
Collection of loans		941,962	667,045
Acquisitions of securities		(321,916)	-
Acquisitions of available-for-sale investments		-	(66,278)
Proceeds from disposal of securities		221,646	-
Proceeds from disposal of available-for-sale investments		-	1,006,856
Acquisitions of investment in associates and joint ventures		(47,355)	(60,277)
Proceeds from disposal of investment in associates and joint ventures		88,852	74,881
Acquisitions of investment property		(44,106)	(69,169)
Proceeds from disposal of investment property		70,817	5,771
Acquisitions of property, plant and equipment		(2,135,550)	(2,287,580)
Proceeds from disposal of property, plant and equipment		90,412	39,183
Acquisitions of intangible assets		(447,616)	(343,423)
Proceeds from disposal of intangible assets		77,654	28,502
Proceeds from disposal of assets held for sale		93,338	203,958
Payment for acquisition of business, net of cash acquired		-	(174,165)
Cash received (decrease in cash) from disposal of business, net of cash transferred		447,917	(53,008)
Others, net		11,348	(37,379)
Net cash used in investing activities		<u>(2,647,970)</u>	<u>(3,817,874)</u>
Cash flows from financing activities			
Proceeds from borrowings	39	2,762,446	1,725,983
Repayment of borrowings		(3,136,308)	(3,136,016)
Proceeds from (repayment of) short-term borrowings, net		(854,554)	558,083
Capital contribution from non-controlling interests		5,808	266,219
Payment of cash dividends		(723,934)	(863,450)
Payment of interest of hybrid bonds		(46,166)	(67,783)
Repayment of hybrid bonds		(1,160,000)	-
Others, net		(42,340)	(48,564)
Net cash used in financing activities		<u>(3,195,048)</u>	<u>(1,565,528)</u>
Effect of exchange rate fluctuation on cash held		<u>4,628</u>	<u>(58,997)</u>
Net increase in cash and cash equivalents		31,335	164,911
Cash and cash equivalents at beginning of the period	5	<u>2,612,530</u>	<u>2,447,619</u>
Cash and cash equivalents at end of the period	5	<u>₩ 2,643,865</u>	<u>2,612,530</u>

See accompanying notes to the consolidated financial statements.

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements
As of December 31, 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 in accordance with the status report of large-scale share and others 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, 2018

(b) Consolidated subsidiaries

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

Principal operations	Ownership (%)						Region	
	December 31, 2018			December 31, 2017				
	POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total		
[Domestic]								
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	59.80	40.20	100.00	83.83	16.17	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 LAONIZENA	Hotel business	-	100.00	100.00	-	100.00	100.00	Daeju
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	90.00	-	90.00	75.32	-	75.32	Gumi
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.(*)1	Generation of electricity	-	-	-	-	100.00	100.00	Sarmcheok
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
Misae 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

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

Principal operations	Ownership (%)						Region	
	December 31, 2018			December 31, 2017				
	POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total		
[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	61.91	38.09	100.00	56.60	43.40	100.00	China
POSCO E&C Vietnam Co., Ltd.	Steel structure manufacturing and sales	-	100.00	100.00	-	100.00	100.00	Vietnam
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	83.28	14.88	98.16	84.84	15.16	100.00	Mexico
POSCO-Poland Wroclaw Processing Center Sp. z o. o.	Steel manufacturing and sales	60.00	-	60.00	60.00	-	60.00	Poland
POS-NIP 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 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	84.66	-	84.66	84.88	-	84.88	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 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

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

Principal operations	Ownership (%)						Region
	December 31, 2018			December 31, 2017			
	POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Foreign]							
Daewoo Amara Company Limited	-	85.00	85.00	-	85.00	85.00	Myanmar
Daewoo Power and Infra (PTY) Limited	-	100.00	100.00	-	100.00	100.00	South Africa
POSMATE-CHINA CO., LTD	-	100.00	100.00	-	100.00	100.00	China
Daewoo Precious Resources Co., Ltd.	-	70.00	70.00	-	70.00	70.00	Myanmar
POSCO-Mexico Villagran	-	-	-	-	-	-	-
Wire-rod Processing Center	56.75	10.00	66.75	56.75	10.00	66.75	Mexico
POSCO ChengDu Processing Center	33.00	10.00	43.00	33.00	10.00	43.00	China
POSCO SUZHOU PROCESSING CENTER CO., LTD.	30.00	70.00	100.00	30.00	70.00	100.00	China
POSCO E&C SMART S DE RL DE CV	-	100.00	100.00	-	100.00	100.00	Mexico
POSCO Philippine Manila Processing Center, Inc.	-	100.00	100.00	-	100.00	100.00	Philippines
POSCO E&C HOLDINGS CO.,Ltd.	-	100.00	100.00	-	100.00	100.00	Thailand
POSCO E&C (THAILAND) CO.,Ltd.	-	100.00	100.00	-	100.00	100.00	Thailand
Daewoo Power PNG Ltd.	-	100.00	100.00	-	100.00	100.00	Papua New Guinea
PT.Krakatau Posco Social Enterprise	-	100.00	100.00	-	100.00	100.00	Indonesia
Ventanas Philippines Construction Inc	-	100.00	100.00	-	100.00	100.00	Philippines
POSCO E&C Mongolia	-	100.00	100.00	-	100.00	100.00	Mongolia
POSCO Gulf SFC LLC	-	65.72	65.72	-	97.76	97.76	United Arab Emirates
SANPU TRADING Co., Ltd.	-	70.04	70.04	-	70.04	70.04	China
Zhangjiagang BLZ Pohang	-	-	-	-	-	-	-
International Trading	-	100.00	100.00	-	100.00	100.00	China
POSCO RU Limited Liability Company	100.00	-	100.00	100.00	-	100.00	Russia
Golden Lace DAEWOO Company Limited	-	60.00	60.00	-	60.00	60.00	Myanmar
POSCO ICT-China	-	100.00	100.00	-	100.00	100.00	China
Pos-Sea Pte Ltd	-	100.00	100.00	-	100.00	100.00	Singapore
POSCO Europe Steel Distribution Center	50.00	20.00	70.00	50.00	20.00	70.00	Slovenia
POSCO ENGINEERING (THAILAND) CO., LTD.	-	100.00	100.00	-	100.00	100.00	Thailand
POSCO VST CO., LTD.	-	-	-	-	-	-	-
POSCO DAEWOO UKRAINE LLC	95.65	-	95.65	95.65	-	95.65	Vietnam
Zhangjiagang Pohang Refractories Co., Ltd.	-	100.00	100.00	-	100.00	100.00	Ukraine
POSCO Maharashtra Steel Private Limited	-	51.00	51.00	-	51.00	51.00	China
POSCO INDIA HOLDINGS PRIVATE LIMITED	100.00	-	100.00	100.00	-	100.00	India
POSCO TNPC Otomotiv Celik San. Ve Tic. AS	93.34	1.98	95.32	93.34	1.98	95.32	India
POSCO VIETNAM HOLDINGS CO., LTD	100.00	-	100.00	100.00	-	100.00	Turkey
POSCO (Liaoning) Automotive Processing Center Co., Ltd.	83.54	5.29	88.83	83.54	5.29	88.83	Vietnam
POSCO (Liaoning) Automotive Processing Center Co., Ltd.	90.00	10.00	100.00	90.00	10.00	100.00	China
POSCO-Indonesia Jakarta Processing Center	65.00	20.00	85.00	65.00	20.00	85.00	Indonesia
PT.MRI	65.00	-	65.00	65.00	-	65.00	Indonesia
POSCO TMC INDIA PRIVATE LIMITED	-	100.00	100.00	-	100.00	100.00	India
POSCO-AAPC	-	97.80	97.80	-	97.80	97.80	USA
POSCO(Yantai) Automotive Processing Center Co., Ltd.	90.00	10.00	100.00	90.00	10.00	100.00	China
POSCO Inda Steel Distribution Center Private Ltd.	-	100.00	100.00	-	100.00	100.00	India
POSCO China Dalian Plate Processing Center Co., Ltd.	79.52	11.70	91.22	80.00	10.00	90.00	China
POSCO-South Asia Company Limited	100.00	-	100.00	100.00	-	100.00	Thailand
POSCO SS VINA Co., Ltd	100.00	-	100.00	100.00	-	100.00	Vietnam
PT.POSCO ICT INDONESIA	-	66.99	66.99	-	66.99	66.99	Indonesia
POSCO NCR Coal Ltd.	-	100.00	100.00	-	100.00	100.00	Canada
POSCO WA PTY LTD	100.00	-	100.00	100.00	-	100.00	Australia
POSCO AUSTRALIA GP PTY LIMITED	-	100.00	100.00	-	100.00	100.00	Australia
POSCO DAEWOO POWER (PNGPOM) LTD.	-	100.00	100.00	-	100.00	100.00	Papua New Guinea
PT. KRAKATAU POSCO ENERGY	-	90.00	90.00	-	90.00	90.00	Indonesia
POSCO DAEWOO AMERICA CORP.	-	100.00	100.00	-	100.00	100.00	USA
POSCO DAEWOO DEUTSCHLAND GMBH	-	100.00	100.00	-	100.00	100.00	Germany
POSCO DAEWOO JAPAN Corp	-	100.00	100.00	-	100.00	100.00	Japan
POSCO DAEWOO SINGAPORE PTE LTD.	-	100.00	100.00	-	100.00	100.00	Singapore
POSCO DAEWOO ITALIA S.R.L.	-	100.00	100.00	-	100.00	100.00	Italy
POSCO DAEWOO CHINA CO., LTD	-	100.00	100.00	-	100.00	100.00	China
Daewoo Textile LLC	-	100.00	100.00	-	100.00	100.00	Uzbekistan
POSCO DAEWOO AUSTRALIA HOLDINGS PTY. LTD.	-	100.00	100.00	-	100.00	100.00	Australia
POSCO MAURITIUS LIMITED	-	100.00	100.00	-	100.00	100.00	Mauritius
PT. KRAKATAU POSCO	70.00	-	70.00	70.00	-	70.00	Indonesia
POSCO DAEWOO MEXICO S.A. de C.V.	-	100.00	100.00	-	100.00	100.00	Mexico
Daewoo International Guangzhou Corp.	-	100.00	100.00	-	100.00	100.00	China
POSCO DAEWOO MALAYSIA SDN BHD	-	100.00	100.00	-	100.00	100.00	Malaysia

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

Principal operations	Ownership (%)						Region
	December 31, 2018			December 31, 2017			
	POSCO	Subsidiaries	Total	POSCO	Subsidiaries	Total	
[Foreign]							
PT.POSCO INDONESIA INTI	99.99	-	99.99	99.99	-	99.99	Indonesia
POSCO DAEWOO SHANGHAI CO., LTD.	-	100.00	100.00	-	100.00	100.00	China
PGSF, L.P.	-	100.00	100.00	-	100.00	100.00	USA
POSCO DAEWOO INDIA PVT., LTD.	-	100.00	100.00	-	100.00	100.00	India
POSCO(Dalian) IT Center Development Co., Ltd.	-	100.00	100.00	-	100.00	100.00	China
PT. POSCO E&C INDONESIA	-	100.00	100.00	-	100.00	100.00	Indonesia
HUMIC COAL PTY LTD	-	100.00	100.00	-	100.00	100.00	Australia
Brazil Sao Paulo Steel Processing Center	-	76.00	76.00	-	76.00	76.00	Brazil
DAESAN (CAMBODIA) Co., Ltd.	-	100.00	100.00	-	100.00	100.00	Cambodia
POSCO ENGINEERING & CONSTRUCTION DO BRAZIL LTDA.	-	100.00	100.00	-	100.00	100.00	Brazil
POSCO ASSAN TST STEEL INDUSTRY	60.00	10.00	70.00	60.00	10.00	70.00	Turkey
HONG KONG POSCO E&C (CHINA) INVESTMENT Co., Ltd.	-	100.00	100.00	-	100.00	100.00	Hongkong
POSLT Pty Ltd.	-	100.00	100.00	-	-	-	Australia
POSCO SINGAPORE LNG TRADING PTE. LTD.	50.00	50.00	100.00	-	-	-	Singapore
ZHEJIANG POSCO-HUAYOU ESM CO., LTD	100.00	-	100.00	-	-	-	China
POSCO Argentina S.A.U.	100.00	-	100.00	-	-	-	Argentina
POSCO RUS LLC	-	-	-	90.00	10.00	100.00	Russia
POSCO-CDRFC	-	-	-	50.20	49.80	100.00	China
POSCO MESDC S.A. DE C.V.	-	-	-	-	56.80	56.80	Mexico
KIS Devonian Canada Corporation	-	-	-	-	100.00	100.00	Canada
POSCO E&C VENEZUELA C.A.	-	-	-	-	100.00	100.00	Venezuela
PT PEN INDONESIA	-	-	-	-	100.00	100.00	Indonesia
POSCO Engineering and Construction - UZ	-	-	-	-	100.00	100.00	Uzbekistan

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

The equity of controlling company decreased by ₩1,497 million (POSCO Gulf SFC LLC and others) and increased by ₩16,288 million (POSCO DAEWOO Corporation, POSMATE and others) in 2018 and 2017, 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 2018 and 2017 amounted to ₩100,862 million and ₩70,087 million, respectively.

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.

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

(c) Summarized financial information of principal subsidiaries as of and for the years ended December 31, 2018 and 2017 are as follows:

1) December 31, 2018

(in millions of Won)

Company		Assets	Liabilities	Equity	Sales	Net income (loss)
[Domestic]						
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	₩	5,629,254	3,062,252	2,567,002	6,625,473	150,394
POSCO COATED & COLOR STEEL Co., Ltd.		433,863	211,625	222,238	918,003	10,317
POSCO ICT		596,991	259,099	337,892	894,978	(33,230)
POSCO A&C		85,144	67,541	17,603	179,460	(10,705)
eNtoB Corporation		136,842	92,552	44,290	766,986	4,307
POSCO CHEMTECH		837,865	144,056	693,809	1,340,984	78,552
POSCO M-TECH		122,733	34,481	88,252	300,969	14,101
POSCO ENERGY CO., LTD.		3,867,671	2,646,633	1,221,038	1,841,187	(89,402)
POSCO DAEWOO Corporation		8,773,244	5,974,098	2,799,146	23,308,796	97,772
[Foreign]						
POSCO America Corporation	₩	374,035	300,000	74,035	636,242	(1,515)
POSCO AUSTRALIA PTY LTD (*1)		484,839	30,932	453,907	149,824	11,569
POSCO Asia Co., Ltd.		2,329,676	2,133,777	195,899	4,168,989	13,186
POSCO-CTPC Co., Ltd.		130,364	87,060	43,304	306,890	1,703
Zhangjiagang Pohang Stainless Steel Co., Ltd.		993,812	467,160	526,652	3,083,660	14,763
POSCO (Thailand) Company Limited		124,225	51,985	72,240	350,818	5,499
Qingdao Pohang Stainless Steel Co., Ltd.		212,626	108,994	103,632	315,825	12,211
POSCO(Suzhou) Automotive Processing Center Co., Ltd.		380,537	241,405	139,132	764,096	4,617
POSCO-China Holding Corp.		763,894	254,379	509,515	426,301	2,482
POSCO JAPAN Co., Ltd.		565,131	411,934	153,197	1,493,052	20,943
POSCO-India Pune Processing Center. Pvt. Ltd.		197,608	171,296	26,312	465,124	4,098
POSCO Japan PC CO.,LTD		290,163	235,427	54,736	545,618	3,421
POSCO-CFPC Co., Ltd.		225,577	176,354	49,223	736,947	1,883
POSCO MPPC S.A. de C.V.		396,817	314,862	81,955	669,739	6,075
POSCO-VIETNAM Co., Ltd.		462,071	434,372	27,699	735,662	(4,942)
POSCO MEXICO S.A. DE C.V.		659,633	438,935	220,698	554,000	1,112
POSCO Thainox Public Company Limited		439,573	116,476	323,097	583,055	17,578
POSCO Center Beijing		439,606	303,891	135,715	40,857	704
POSCO COATED STEEL (THAILAND) CO., LTD.		359,377	268,299	91,078	283,518	(4,485)
Daewoo Amara Company Limited		309,705	297,012	12,693	27,509	(57,280)
POSCO VST CO., LTD.		297,221	259,306	37,915	522,184	8,911
POSCO Maharashtra Steel Private Limited		1,470,627	1,020,940	449,687	1,611,424	44,331
POSCO INDIA HOLDINGS PRIVATE LIMITED		335,268	279,686	55,582	659,656	203
POSCO VIETNAM HOLDINGS CO., LTD		189,504	139,051	50,453	402,266	3,884
POSCO(Liaoning) Automotive Processing Center Co., Ltd.		96,463	60,849	35,614	209,758	2,940
POSCO SS VINA Co., Ltd.		814,950	848,885	(33,935)	618,192	(52,507)
PT. KRAKATAU POSCO ENERGY		292,801	152,185	140,616	35,738	13,935
POSCO DAEWOO AMERICA CORP.		415,837	352,603	63,234	1,551,078	7,712
POSCO DAEWOO DEUTSCHLAND GMBH		280,436	266,527	13,909	567,908	373
POSCO DAEWOO JAPAN Corp		232,760	224,313	8,447	699,328	456
POSCO DAEWOO SINGAPORE PTE LTD.		280,603	276,709	3,894	1,745,061	81
POSCO DAEWOO ITALIA S.R.L.		188,163	177,519	10,644	700,544	4,446
POSCO DAEWOO CHINA CO., LTD		86,971	78,220	8,751	277,774	(2,283)
PT. KRAKATAU POSCO		3,367,737	3,261,180	106,557	1,870,489	30,480
POSCO DAEWOO MALAYSIA SDN BHD		32,533	29,111	3,422	472,550	321
POSCO DAEWOO INDIA PVT., LTD.		108,237	100,188	8,049	848,181	1,540
POSCO ASSAN TST STEEL INDUSTRY		617,648	667,940	(50,292)	518,951	3,724

(*1) Summarized financial information of POSCO AUSTRALIA PTY LTD, a subsidiary of POSCO, is based on consolidated amounts. The financial information for the other entities is based on separate financial statements.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

2) December 31, 2017

(in millions of Won)

Company		Assets	Liabilities	Equity	Sales	Net income (loss)
[Domestic]						
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	₩	6,644,139	3,992,685	2,651,454	6,262,765	61,765
POSCO Processing&Service		519,855	193	519,662	546,443	(9,169)
POSCO COATED & COLOR STEEL Co., Ltd.		407,628	187,010	220,618	885,160	19,078
POSCO ICT		634,469	235,824	398,645	918,345	42,376
POSCO A&C		150,473	120,010	30,463	224,396	806
POSCO Venture Capital Co., Ltd.		391,301	274,056	117,245	26,335	5,239
eNtoB Corporation		123,216	82,552	40,664	678,444	3,422
POSCO CHEMTECH		791,425	148,219	643,206	1,163,918	72,870
POSCO M-TECH		142,854	60,179	82,675	257,832	9,665
POSCO ENERGY CO., LTD.		4,697,407	3,001,544	1,695,863	1,578,026	70,404
POSCO DAEWOO Corporation		8,181,642	5,406,016	2,775,626	20,891,526	150,381
[Foreign]						
POSCO America Corporation	₩	313,481	239,960	73,521	667,047	(3,514)
POSCO AUSTRALIA PTY LTD (*1)		551,908	45,670	506,238	160,918	45,958
POSCO Asia Co., Ltd.		2,191,817	2,016,697	175,120	4,299,047	9,182
POSCO-CTPC Co., Ltd.		108,742	69,963	38,779	256,742	2,151
POSCO E&C Vietnam Co., Ltd.		134,067	101,378	32,689	65,720	(20,160)
Zhangjiagang Pohang Stainless Steel Co., Ltd.		1,115,157	557,949	557,208	2,922,920	106,866
POSCO (Thailand) Company Limited		129,639	64,897	64,742	340,290	9,236
Qingdao Pohang Stainless Steel Co., Ltd.		174,951	82,443	92,508	375,775	4,402
POSCO(Suzhou) Automotive Processing Center Co., Ltd.		395,835	259,574	136,261	709,405	13,762
POSCO JAPAN Co., Ltd.		585,611	461,618	123,993	1,537,288	9,759
POSCO-India Pune Processing Center. Pvt. Ltd.		187,129	163,557	23,572	444,172	13,909
POSCO Japan PC CO.,LTD		296,887	248,872	48,015	582,499	6,066
POSCO-CFPC Co., Ltd.		175,978	128,242	47,736	696,950	3,451
POSCO E&C CHINA Co., Ltd.		87,168	50,851	36,317	70,150	(5,130)
POSCO MPPC S.A. de C.V.		390,013	316,406	73,607	650,373	10,389
POSCO-VIETNAM Co., Ltd.		429,485	397,418	32,067	654,780	665
POSCO MEXICO S.A. DE C.V.		640,618	431,734	208,884	597,170	4,786
PT. Bio Inti Agrindo		198,794	170,420	28,374	15,227	(3,119)
POSCO Thainox Public Company Limited		427,736	129,600	298,136	542,704	10,405
POSCO Center Beijing		454,289	318,519	135,770	37,283	151
POSCO(Guangdong) Automotive Steel Co., Ltd.		321,895	224,321	97,574	320,178	4,037
POSCO COATED STEEL (THAILAND) CO., LTD.		340,120	248,913	91,207	219,132	(13,297)
Daewoo Amara Company Limited		355,096	287,153	67,943	5,936	(16,632)
POSCO VST CO., LTD.		292,495	264,783	27,712	483,890	6,122
POSCO Maharashtra Steel Private Limited		1,560,655	1,136,456	424,199	1,381,792	98,528
POSCO INDIA HOLDINGS PRIVATE LIMITED		276,211	218,294	57,917	284,164	12,409
POSCO VIETNAM HOLDINGS CO., LTD		162,961	118,398	44,563	241,862	641
POSCO(Liaoning) Automotive Processing Center Co., Ltd.		85,791	52,984	32,807	191,279	2,782
POSCO SS VINA Co., Ltd.		753,725	734,407	19,318	499,523	(55,098)
PT. KRAKATAU POSCO ENERGY		295,080	166,467	128,613	39,419	12,564
POSCO DAEWOO AMERICA CORP.		397,865	344,705	53,160	1,354,784	2,593
POSCO DAEWOO DEUTSCHLAND GMBH		226,873	213,296	13,577	527,376	1,123
POSCO DAEWOO JAPAN Corp		187,541	180,053	7,488	734,141	357
POSCO DAEWOO SINGAPORE PTE LTD.		173,283	169,202	4,081	1,435,960	63
POSCO DAEWOO ITALIA S.R.L.		153,270	146,566	6,704	461,988	1,710
POSCO DAEWOO CHINA CO., LTD		34,659	22,563	12,096	332,246	(3,728)
PT. KRAKATAU POSCO		3,345,645	3,275,109	70,536	1,549,443	(134,330)
POSCO DAEWOO MEXICO S.A. de C.V.		80,802	71,240	9,562	250,216	858
POSCO DAEWOO INDIA PVT., LTD.		108,234	101,415	6,819	703,233	3,413
POSCO ENGINEERING & CONSTRUCTION DO BRAZIL LTDA.		93,219	379,855	(286,636)	88,940	(13,205)
POSCO ASSAN TST STEEL INDUSTRY		555,745	607,526	(51,781)	526,406	6,532

(*1) Summarized financial information of POSCO AUSTRALIA PTY LTD, a subsidiary of POSCO, is based on consolidated amounts. The financial information for the other entities is based on separate financial statements.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

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

1) December 31, 2018

(in millions of Won)

	POSCO DAEWOO Corporation	PT. KRAKATAU POSCO	POSCO CHEMTECH	POSCO ENGINEERING & CONSTRUCTION CO., LTD.	POSCO ENERGY CO., LTD.	Others	Total
Current assets	₩ 5,311,596	615,491	416,284	3,599,997	825,241	9,137,798	19,906,407
Non-current assets	4,363,490	2,730,865	460,905	1,884,088	2,767,203	5,493,324	17,699,875
Current liabilities	(4,724,056)	(1,368,498)	(140,268)	(2,514,437)	(1,197,845)	(8,026,474)	(17,971,578)
Non-current liabilities	(1,563,107)	(1,754,797)	(10,767)	(485,018)	(1,445,288)	(1,925,084)	(7,184,061)
Equity	3,387,923	223,061	726,154	2,484,630	949,311	4,679,564	12,450,643
Non-controlling interests	1,255,728	66,918	290,461	1,172,768	335,203	929,506	4,050,584
Sales	23,314,595	1,871,634	1,340,984	6,622,433	1,841,187	24,721,939	59,712,772
Profit (loss) for the period	113,196	54,257	142,918	249,809	(73,948)	(56,151)	430,081
Profit (loss) attributable							
to non-controlling interests	41,956	16,277	57,167	117,912	(8,116)	(101,156)	124,040
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)
Dividends 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

2) December 31, 2017

(in millions of Won)

	POSCO DAEWOO Corporation	PT. KRAKATAU POSCO	POSCO CHEMTECH	POSCO ENGINEERING & CONSTRUCTION CO., LTD.	POSCO ENERGY CO., LTD.	Others	Total
Current assets	₩ 4,483,544	557,041	441,325	4,161,410	1,054,538	8,579,813	19,277,671
Non-current assets	4,590,394	2,771,504	316,724	2,400,787	2,859,824	6,676,559	19,615,792
Current liabilities	(4,221,443)	(1,237,255)	(145,649)	(3,352,358)	(785,462)	(8,313,902)	(18,056,069)
Non-current liabilities	(1,549,013)	(1,933,247)	(970)	(479,772)	(2,200,065)	(2,048,454)	(8,211,521)
Equity	3,303,482	158,043	611,430	2,730,067	928,835	4,894,016	12,625,873
Non-controlling interests	1,224,303	47,413	244,572	1,288,615	762,390	974,941	4,542,234
Sales	20,891,526	1,635,837	1,163,918	6,262,765	1,578,026	23,547,072	55,079,144
Profit (loss) for the period	115,321	(117,729)	101,019	233,169	70,795	258,053	660,628
Profit (loss) attributable							
to non-controlling interests	42,739	(35,318)	40,408	110,058	7,770	39,605	205,262
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
Dividends 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, 2018

(e) Details of associates and joint ventures

1) Associates

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

Investee	Category of business	Ownership (%)		Region
		2018	2017	
[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 manufacturing and sales	50.00	50.00	Pohang
KoFC POSCO HANWHA KB Shared Growth NO. 2. 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	31.27	31.14	Seoul
KC Chemicals CORP.(*1)	Machinery manufacturing	19.00	19.00	Hwaseong
Garolim Tidal Power Plant Co.,Ltd	Tidal power plant construction and management	32.13	32.13	Seosan
POSTECH Social Enterprise Fund(*1)	Investment in new technologies	9.17	9.17	Seoul
QSONE Co.,Ltd.	Real estate rental and facility management	50.00	50.00	Seoul
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	8.80	9.71	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	19.05	20.00	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	Gwangyang
Clean Iksan Co., Ltd.	Construction	23.50	23.50	Iksan
Innovalloy Co., Ltd.	Real estate development	28.77	28.77	Yongin
Applied Science Corp.	Machinery manufacturing	22.89	23.87	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 III(*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

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
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Investee	Category of business	Ownership (%)		Region
		2018	2017	
[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 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-SEAHSTEELWIRE(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	6.93	17.06	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
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, 2018

2) Joint ventures

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

Investee	Category of business	Ownership (%)		Region
		2018	2017	
[Domestic]				
POSCO MITSUBISHI CARBON TECHNOLOGY	Steel processing and sales	60.00	60.00	Gwangyang
POSCO-SGI Falcon Pharmaceutical 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 sale	50.00	40.00	Vietnam
YULCHON MEXICO S.A. DE C.V.	Tube for automobile manufacturing	19.00	19.00	Mexico
Hyunson Engineering & Construction HYENCO	Construction	4.89	4.90	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
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(f) 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

(g) 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

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

2. Statement of Compliance

The consolidated financial statements have been prepared in accordance with Korean International Financial Reporting Standards ("K-IFRS"), as prescribed in *the Act on External Audit of Stock Companies, Etc* in the Republic of Korea.

The consolidated financial statements were authorized for issue by the Board of Directors on January 30, 2019, and will be submitted for approval at the shareholders' meeting to be held on March 15, 2019.

In 2018, the Company adopted K-IFRS No. 1115 "Revenue from Contracts with Customers" and K-IFRS No. 1109 "Financial Instruments" for the first time. Changes to significant accounting policies are described in Note 2 "Changes in Accounting Policies".

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 K-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.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

(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
- 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 K-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.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

- 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 K-IFRS No. 1115 "Revenue from Contracts with Customers" and K-IFRS No. 1109 "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.

The effect of initially applying these standards is mainly attributed 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 certain construction contracts and 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
- increase in impairment loss on financial assets

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
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(a) K-IFRS No. 1115 “Revenue from Contracts with Customers”

K-IFRS No. 1115 “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 K-IFRS No. 1018 “Revenue”, K-IFRS No. 1011 “Construction Contracts”, K-IFRS No. 2031 “Revenue- Barter Transactions Involving Advertising Services”, K-IFRS No. 2113 “Customer Loyalty Programs”, K-IFRS No. 2115 “Agreements for the Construction of Real Estate”, and K-IFRS No. 2118 “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 K-IFRS No. 1115 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.

The following table summarizes the impact, net of tax, of transition to K-IFRS No. 1115 on retained earnings and non-controlling interests as of January 1, 2018.

(in millions of Won)

	<u>Retained earnings</u>	<u>Non-controlling interests</u>
Shipping services included in the sales contract	₩ (949)	(156)
Separate construction contract determined to be a single performance	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	(6,481)	(5,847)
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>₩ (76,199)</u>	<u>(63,708)</u>

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
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The details of new significant accounting policies and impacts of the adoption of K-IFRS No. 1115 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 K-IFRS No. 1115, 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 has decided to reclassify the costs incurred in the shipping services from selling and administrative expenses to cost of sales during the year ended December 31, 2018.

Certain construction contracts of the Company include design, purchase and construction services through separate service contracts. According to K-IFRS No. 1115, 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 in decreases in revenue and contract assets as of and for the year ended December 31, 2018.

2) Variable consideration

Under K-IFRS No. 1115, 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.

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
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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 K-IFRS No. 1115. 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 K-IFRS No. 1115, 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 including construction service of which the Company provides. 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 K-IFRS No. 1115, 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 fulfil 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 K-IFRS No. 1115, 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.

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

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 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 K-IFRS No. 1115 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 statements of cash flows for the year ended December 31, 2018.

(in millions of Won)

	<u>As reported</u>	<u>Adjustments of K-IFRS No. 1115</u>	<u>Amounts without adoption of K-IFRS No. 1115</u>
Consolidated financial statements of financial position			
Current assets	₩ 33,651,002	179,021	33,830,023
Trade accounts and notes receivable	9,282,609	80,000	9,362,609
Inventories	11,499,928	(1,502)	11,498,426
Other current assets	684,463	100,523	784,986
Non-current assets	44,597,263	(41,883)	44,555,380
Deferred tax assets	1,381,031	(41,883)	1,339,148
Current liabilities	18,937,985	6,010	18,943,995
Others payables	1,720,097	17,809	1,737,906
Current income tax liabilities	948,166	(640)	947,526
Provisions	301,280	(28,748)	272,532
Other current liabilities	1,594,889	17,589	1,612,478
Retained earnings	44,216,018	68,669	44,284,687
Non-controlling interests	3,388,291	62,459	3,450,750
Consolidated statements of comprehensive income			
Revenue	₩ 64,977,777	(73,480)	64,904,297
Cost of sales	(57,005,396)	38,315	(56,967,081)
Selling and administrative expenses	(2,429,781)	25,501	(2,404,280)
Finance costs	(2,244,416)	178	(2,244,238)
Profit before income tax	3,562,821	(9,486)	3,553,335
Income tax expense	(1,670,757)	708	(1,670,049)
Profit	1,892,064	(8,778)	1,883,286

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

(b) K-IFRS No. 1109 “Financial Instruments”

K-IFRS No. 1109 “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 K-IFRS No. 1039 “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 K-IFRS No. 1109 as reserves, retained earnings and non-controlling interests of the Company at the date of initial application.

The following table summarizes the impact, net of tax, of transition to K-IFRS No. 1109 on reserves, retained earnings and non-controlling interests as of January 1, 2018.

(in millions of Won)

	<u>Reserves</u>	<u>Retained earnings</u>	<u>Non-controlling interests</u>
Classification to fair value through profit or loss in securities and select to fair value through other comprehensive income in equity securities(*1)	₩ (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>

(*1) 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

K-IFRS No. 1109 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 K-IFRS No. 1109 is generally based on the business model in which a financial asset is managed and its contractual cash flow characteristics. Under K-IFRS No. 1109, 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.

POSCO and Subsidiaries
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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 K-IFRS No. 1039 "Financial Instruments: Recognition and Measurement" and K-IFRS No. 1109 "Financial Instruments" are as follows:

<i>(in millions of Won)</i>	Original classification under K-IFRS No. 1039	Original carrying amounts under K-IFRS No. 1039	New classification under K-IFRS No. 1109	New carrying amounts under K-IFRS No. 1109
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(*1)	Loans and receivables	8,901,867	Amortized cost	8,799,161
Other receivables(*1)	Loans and receivables	2,195,466	Fair value through profit or loss	1,898
			Amortized cost	2,188,820
Equity securities(*2)	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(*2)	Available-for-sale financial assets	190,579	Fair value through profit or loss	188,276
			Fair value through other comprehensive income	2,303
Other Securities(*2)	Held-to-maturity financial assets	5,211	Amortized cost	5,211
	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	1,970
	Loans and receivables	5,545,667	Fair value through profit or loss	5,547,637

(*1) As a result of the adoption of K-IFRS No. 1109, 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.

(*2) As a result of the adoption of K-IFRS No. 1109, 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.

K-IFRS No. 1109 "Financial Instruments" retains most of the requirements of K-IFRS 1039 "Financial Instruments: Recognition and Measurement" for the classification and measurement of financial liabilities. Accordingly, the application of K-IFRS No. 1109 "Financial Instruments" has no significant effect on the Company's accounting policies related to financial liabilities.

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2) Impairment of financial assets

K-IFRS No. 1109 replaces the incurred loss model in K-IFRS No. 1039 with a forward-looking expected credit loss model for debt instruments, lease receivables, contractual assets, loan commitments, and financial guarantee contracts.

Under K-IFRS No. 1109, impairment losses are likely to be recognized earlier than using the incurred loss model under the existing guidance in K-IFRS No. 1039 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 K-IFRS No. 1109, the Company applied the amendments to K-IFRS No. 1001 "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 K-IFRS No. 1109, the Company determined to consistently apply hedge accounting requirements of K-IFRS No. 1039.

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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.

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.

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(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.

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.

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(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.

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.

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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.

(a) 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.

(b) 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.

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.

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(c) 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.

(d) 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.

(e) 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.

(f) 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.

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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.

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 K-IFRS No. 1036 "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.

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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.

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.

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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.

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.

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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.

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.

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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.

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(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 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

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.

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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 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

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(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 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.

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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 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.

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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.

(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 changes 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 as 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.

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(c) Derecognition of financial liabilities

The Company derecognizes a financial liability when its contractual obligations are discharged or cancelled, 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.

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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.

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.

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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 Gases Emission Right

Greenhouse Gases 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.

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.

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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 cancellation 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.

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Revenue from contracts with customers

The Company has initially applied K-IFRS No.1115 "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 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. Invoices are usually issued at the date of bill of lading and revenues are recognized based on the terms of Letter of Credit (L / C), Acceptance Condition (D / A), Payment Condition (D / P), Telegraphic Transfer (T / T) and others.

The Company provides certain discount ratio 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 the steel products.

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(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 the initial 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 K-IFRS No. 1115, 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 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.

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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 K-IFRS 1012 "Income Taxes", if it is not applicable to the income taxes, the Company applies K-IFRS 1037 "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.

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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 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 the Company'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 the Company by the weighted average number of ordinary shares outstanding during the period, adjusted for own shares held.

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) K-IFRS No. 1116 "Leases"

The Company will apply K-IFRS No. 1116 "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.

K-IFRS No. 1116 "Leases" replaces existing leases guidance, including K-IFRS No. 1017 "Leases", K-IFRS No. 2104 "Determining whether an Arrangement contains a Lease", K-IFRS No. 2015 "Operating Leases-Incentives" and K-IFRS No. 2027 "Evaluating the Substance of Transactions Involving the Legal Form of a Lease".

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K-IFRS No. 1116 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 K-IFRS No. 1116, 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 K-IFRS No. 1116. The outcome of such evaluations may have significant impact on the Company's consolidated financial statements upon adoption of K-IFRS No. 1116.

As a lessee, the Company shall apply K-IFRS No. 1116 using one of the following two transition methods; (a) retrospectively to each prior reporting period presented in accordance with K-IFRS No. 1008 "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 K-IFRS No. 1116 as of January 1, 2019, the date of initial application. Accordingly, the Company will recognize the accumulated effect resulting from initial application of K-IFRS No. 1116 as retained earnings of the Company at the date of initial application and not restate the financial statements for comparative periods.

The Company plans to apply the practical expedient to grandfather the definition of a lease on transition. This means that it will apply K-IFRS No. 1116 to all contracts entered into before January 1, 2019 and identified as leases in accordance with K-IFRS No. 1017 and K-IFRS No. 2104.

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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 K-IFRS No. 1116.

(b) K-IFRS No. 2123 “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 K-IFRS No. 2123 “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.

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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 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.

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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.

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.

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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.

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(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.

Net borrowing-to-equity ratio as of December 31, 2018 and 2017 is as follows:

<i>(in millions of Won)</i>		2018	2017
Total borrowings	₩	20,209,270	21,063,657
Less: Cash and cash equivalents		2,643,865	2,612,530
Net borrowings		17,565,405	18,451,127
Total equity		46,759,551	47,464,008
Net borrowings-to-equity ratio		37.57%	38.87%

5. Cash and Cash Equivalents

Cash and cash equivalents as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018	2017
Cash	₩	1,668	1,896
Demand deposits and checking accounts		1,471,891	1,259,813
Time deposits		538,130	360,985
Other cash equivalents		632,176	989,836
	₩	2,643,865	2,612,530

In connection with the jointly held accounts of joint operations and others, as of December 31, 2018, cash and cash equivalents amounting to ₩42,147 million of POSCO ENGINEERING & CONSTRUCTION CO., LTD., a subsidiary of the Company, is restricted.

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

6. Trade Accounts and Notes Receivable

(a) Trade accounts and notes receivable as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018	2017
Current			
Trade accounts and notes receivable	₩	8,648,250	8,583,311
Finance lease receivables		57,487	10,469
Due from customers for contract work		963,060	850,301
Less: Allowance for doubtful accounts		(386,188)	(493,533)
	₩	<u>9,282,609</u>	<u>8,950,548</u>
Non-current			
Trade accounts and notes receivable	₩	583,797	871,432
Finance lease receivables		45,873	734
Less: Allowance for doubtful accounts		(202,545)	(140,596)
	₩	<u>427,125</u>	<u>731,570</u>

Trade accounts and notes receivable sold to financial institutions, for which the derecognition conditions were not met, amounted to ₩468,706 million and ₩309,964 million as of December 31, 2018 and 2017, 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).

(b) Finance lease receivables are as follows:

<i>(in millions of Won)</i>		2018	2017
Customer	Contents		
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
		₩ <u>103,360</u>	<u>11,203</u>

(c) The gross amount and present value of minimum lease payments as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018	2017
Less than 1 year	₩	57,820	11,771
1 year - 5 years		49,678	828
Unrealized interest income		(4,138)	(1,396)
Present value of minimum lease payment	₩	<u>103,360</u>	<u>11,203</u>

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

7. Other Receivables

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

(in millions of Won)

		2018	2017
Current			
Loans	₩	236,782	617,696
Other accounts receivable		954,030	960,543
Accrued income		220,066	179,971
Deposits		108,640	107,137
Others		16,201	18,925
Less: Allowance for doubtful accounts		(150,090)	(248,266)
	₩	<u>1,385,629</u>	<u>1,636,006</u>
Non-current			
Loans	₩	731,344	874,158
Other accounts receivable		155,936	92,939
Accrued income		1,855	1,663
Deposits		152,072	122,485
Less: Allowance for doubtful accounts		(177,967)	(212,069)
	₩	<u>863,240</u>	<u>879,176</u>

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

8. Other Financial Assets

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

(in millions of Won)

	2018	2017
Current		
Derivatives assets	₩ 47,288	63,912
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)	1,931,518	1,297,769
Short-term financial instruments(*2)	6,099,303	5,545,667
	<u>₩ 8,081,096</u>	<u>7,045,880</u>
Non-current		
Derivatives assets	₩ 1,795	4,378
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)	35,040	60,542
	<u>₩ 1,647,898</u>	<u>1,911,684</u>

(*1) As of December 31, 2018 and 2017, ₩5,715 million and ₩10,080 million, respectively, are restricted for the use in a government project.

(*2) As of December 31, 2018 and 2017, financial instruments amounting to ₩73,935 million and ₩78,477 million, respectively, are restricted for use in financial arrangements, pledge and others.

(*3) As of December 31, 2018 and 2017, ₩115,431 million and ₩136,099 million of equity and other securities, respectively, have been provided as collateral for borrowings, construction projects and others.

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

9. Inventories

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

<i>(in millions of Won)</i>		2018	2017
Finished goods	₩	1,886,040	1,526,628
Merchandise		1,131,416	930,558
Semi-finished goods		1,945,567	1,721,130
Raw materials		2,821,972	2,329,268
Fuel and materials		888,941	808,016
Construction inventories		718,884	849,266
Materials-in-transit		2,245,740	1,818,576
Others		68,150	103,144
		<u>11,706,710</u>	<u>10,086,586</u>
Less: Allowance for inventories valuation		(206,782)	(135,631)
	₩	<u>11,499,928</u>	<u>9,950,955</u>

(b) The changes of allowance for inventories valuation for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>		2018	2017
Beginning	₩	135,631	203,164
Loss on valuation of inventories		141,799	78,560
Utilization on sale of inventories		(69,426)	(138,967)
Others		(1,222)	(7,126)
Ending	₩	<u>206,782</u>	<u>135,631</u>

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

10. Assets Held for Sale

Details of assets held for sale as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

	2018		2017	
	Subsidiaries (*1)	Controlling company	Subsidiaries (*2)	Total
Assets				
Other financial assets	₩ 778	-	-	-
Property, plant and equipment	21,076	392	71,340	71,732
Others	-	-	36	36
	₩ 21,854	392	71,376	71,768

(*1) 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.

(*2) 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.

11. Investments in Associates and Joint ventures

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

(in millions of Won)

	2018	2017
Investments in associates	₩ 1,738,692	1,520,441
Investments in joint ventures	1,911,311	2,037,491
	₩ 3,650,003	3,557,932

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

(b) Details of investments in associates as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

Company	2018			2017	
	Number of shares	Ownership (%)	Acquisition cost	Book value	Book value
[Domestic]					
EQP POSCO Global NO1 Natural Resources Private Equity Fund	178,713,975,892	31.27	₩ 178,787	₩ 174,123	175,553
POSPower Co., Ltd>(*1,2)	4,507,138	34.00	164,757	161,477	-
SNNC	18,130,000	49.00	90,650	116,922	110,424
QSONE Co.,Ltd.	200,000	50.00	84,395	85,550	85,049
Chun-cheon Energy Co., Ltd(*2)	16,098,143	45.67	80,491	62,478	74,378
CHUNGJU ENTERPRISE CITY DEVELOPMENT Co.,Ltd	2,008,000	29.53	10,040	17,382	17,252
Daesung Steel(*4)	108,038	17.54	14,000	15,644	15,500
Incheon-Gimpo Expressway Co., Ltd.(*2,4)	9,032,539	18.26	45,163	13,329	31,660
Keystone NO. 1. Private Equity Fund	13,800,000	40.45	13,800	11,183	12,379
KoFC POSCO HANWHA KB Shared Growth NO. 2. Private Equity Fund(*4)	6,485	12.50	6,485	5,739	6,828
KONES, Corp.	3,250,000	41.67	6,893	2,849	2,827
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)				123,734	67,325
				<u>790,410</u>	<u>634,636</u>
[Foreign]					
AES-VCM Mong Duong Power Company Limited(*3)	-	30.00	164,303	209,936	142,348
South-East Asia Gas Pipeline Company Ltd.	135,219,000	25.04	135,899	179,459	197,069
7623704 Canada Inc.(*4)	114,452,000	10.40	124,341	126,885	121,702
Eureka Moly LLC	-	20.00	240,123	82,447	79,398
AMCI (WA) PTY LTD	49	49.00	209,664	71,086	63,378
KOREA LNG LTD.	2,400	20.00	135,205	43,554	33,422
Nickel Mining Company SAS	3,234,698	49.00	157,585	41,712	45,905
NCR LLC	-	29.41	40,139	37,602	33,738
PT. Batutua Tembaga Raya	128,285	22.00	21,824	20,479	21,823
Zhongyue POSCO (Qinhuangdao) Tinplate Industrial Co., Ltd	10,200,000	34.00	9,517	14,796	15,617
PT. Wampu Electric Power(*2)	8,708,400	20.00	10,054	14,120	13,391
POSCO SeAH Steel Wire(Nantong) Co., Ltd.	50	25.00	4,723	6,478	6,517
Others (29 companies)(*2)				99,728	111,497
				<u>948,282</u>	<u>885,805</u>
			₩	<u>1,738,692</u>	<u>1,520,441</u>

(*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, 2018 and 2017, investments in associates amounting to ₩285,066 million and ₩158,370 million, respectively, are provided as collateral in relation to the associates' borrowings.

(*3) As of December 31, 2018 and 2017, 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.

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

(c) Details of investments in joint ventures as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

Company	2018			2017	
	Number of shares	Ownership (%)	Acquisition cost	Book value	Book value
[Domestic]					
POSCO MITSUBISHI CARBON TECHNOLOGY	11,568,000	60.00	₩ 115,680	₩ 180,192	110,760
Others (6 companies)				9,124	6,094
				<u>189,316</u>	<u>116,854</u>
[Foreign]					
Roy Hill Holdings Pty Ltd(*1)	13,117,972	12.50	1,528,672	1,041,600	1,125,133
POSCO-NPS Niobium LLC	325,050,000	50.00	364,609	363,506	348,836
KOBRASCO	2,010,719,185	50.00	32,950	133,449	108,485
BX STEEL POSCO Cold Rolled Sheet Co., Ltd.	-	25.00	61,961	88,391	88,305
DMSA/AMSA(*1)	-	4.00	322,596	26,709	56,735
CSP - Compania Siderurgica do Pecem	1,108,696,532	20.00	558,821	24,832	146,427
Others (13 companies)				43,508	46,716
				<u>1,721,995</u>	<u>1,920,637</u>
				<u>₩ 1,911,311</u>	<u>2,037,491</u>

(*1) As of December 31, 2018 and 2017, the investments in joint ventures were provided as collateral in relation to the joint ventures' borrowings.

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

(d) The movements of investments in associates and joint ventures for the years ended December 31, 2018 and 2017 were as follows:

1) For the year ended December 31, 2018

(in millions of Won)

Company	December 31, 2017		Dividends	Share of profits (losses)	Other increase (decrease)(*1)	December 31, 2018
	Book value	Acquisition				Book value
[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
OSONE 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
	<u>751,490</u>	<u>221,360</u>	<u>(1,334)</u>	<u>25,500</u>	<u>(17,290)</u>	<u>979,726</u>
[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 - Compania 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
	<u>2,806,442</u>	<u>23,249</u>	<u>(153,014)</u>	<u>87,135</u>	<u>(93,535)</u>	<u>2,670,277</u>
	<u>₩ 3,557,932</u>	<u>244,609</u>	<u>(154,348)</u>	<u>112,635</u>	<u>(110,825)</u>	<u>3,650,003</u>

(*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.

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2) For the year ended December 31, 2017

(in millions of Won)

Company	December 31, 2016		Dividends	Share of profits (losses)	Other increase (decrease)(*1)	December 31,
	Book value	Acquisition				2017 Book value
[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
	<u>698,272</u>	<u>56,139</u>	<u>(505)</u>	<u>11,918</u>	<u>(14,334)</u>	<u>751,490</u>
[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
	<u>3,184,117</u>	<u>36,197</u>	<u>(131,205)</u>	<u>(1,378)</u>	<u>(281,289)</u>	<u>2,806,442</u>
	<u>₩ 3,882,389</u>	<u>92,336</u>	<u>(131,710)</u>	<u>10,540</u>	<u>(295,623)</u>	<u>3,557,932</u>

(*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, 2018

(e) Summarized financial information of associates and joint ventures as of and for the years ended December 31, 2018 and 2017 are as follows:

1) December 31, 2018

(in millions of Won)

Company	Assets	Liabilities	Equity (deficit)	Sales	Net income (loss)
[Domestic]					
EQP POSCO Global NO1 Natual 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
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2) December 31, 2017

(in millions of Won)

Company	Assets	Liabilities	Equity	Sales	Net income (loss)
[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)

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

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13. Investment Property, Net

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

		2018			2017		
		Acquisition cost	Accumulated depreciation and impairment loss	Book value	Acquisition cost	Accumulated depreciation and impairment loss	Book value
Land	₩	295,328	(16,743)	278,585	360,402	-	360,402
Buildings		681,518	(110,183)	571,335	727,022	(92,982)	634,040
Structures		3,327	(1,919)	1,408	7,717	(1,436)	6,281
Construction-in-progress		101,665	(24,378)	77,287	64,191	-	64,191
	₩	<u>1,081,838</u>	<u>(153,223)</u>	<u>928,615</u>	<u>1,159,332</u>	<u>(94,418)</u>	<u>1,064,914</u>

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, 2018 and 2017 were as follows:

1) For the year ended December 31, 2018

		Beginning	Acquisitions	Disposals	Depreciation(*1)	Others(*2)	Ending
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.

2) For the year ended December 31, 2017

		Beginning	Acquisitions	Disposals	Depreciation	Others(*1)	Ending
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
	₩	<u>1,117,720</u>	<u>77,420</u>	<u>(47,231)</u>	<u>(24,041)</u>	<u>(58,954)</u>	<u>1,064,914</u>

(*1) Includes reclassification resulting from changing purpose of use, adjustment of foreign currency translation difference and others.

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14. Property, Plant and Equipment, Net

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

	2018				2017			
	Acquisition cost	Accumulated depreciation and impairment loss	Government grants	Book value	Acquisition cost	Accumulated depreciation and impairment loss	Government grants	Book value
Land	₩ 2,553,957	(5,955)	-	2,548,002	2,534,102	(6,452)	-	2,527,650
Buildings	9,146,294	(4,743,449)	(393)	4,402,452	9,311,426	(4,433,996)	(412)	4,877,018
Structures	5,884,277	(2,966,304)	(49)	2,917,924	5,452,713	(2,686,802)	(59)	2,765,852
Machinery and equipment	47,610,225	(29,091,754)	(342)	18,518,129	46,669,612	(27,301,410)	(245)	19,367,957
Vehicles	302,767	(271,381)	(45)	31,341	296,815	(263,884)	(70)	32,861
Tools	399,638	(333,387)	(87)	66,164	380,144	(315,446)	(1,058)	63,640
Furniture and fixtures	638,553	(502,215)	(51)	136,287	643,779	(498,192)	(148)	145,439
Finance lease assets	213,873	(76,309)	-	137,564	243,160	(97,903)	-	145,257
Bearer plants	88,773	(8,002)	-	80,771	70,031	(4,516)	-	65,515
Construction-in-progress	1,964,267	(778,373)	(6,255)	1,179,639	1,897,885	-	(5,539)	1,892,346
	₩ 68,802,624	(38,777,129)	(7,222)	30,018,273	67,499,667	(35,608,601)	(7,531)	31,883,535

(b) Changes in the carrying amount of property, plant and equipment for the years ended December 31, 2018 and 2017 were as follows:

1) For the year ended December 31, 2018

	(in millions of Won)						
	Beginning	Acquisitions	Disposals	Depreciation	Impairment loss (*1,2)	Others(*3)	Ending
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
	₩ 31,883,535	2,213,820	(140,454)	(2,891,857)	(997,196)	(49,573)	30,018,273

(*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 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.

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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 estimated 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 has recognized an impairment loss amounting to ₩61,787 million since recoverable amount on Strip Casting facilities and others is less than its carrying amount for the period ended December 31, 2018.

(*2) As of December 31, 2018, POSCO ENERGY CO., LTD., as a subsidiary, performed the 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.

2) For the year ended December 31, 2017

(in millions of Wwon)

	Beginning	Acquisitions	Disposals	Depreciation	Impairment loss(*1)	Others(*2)	Ending
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 PRT 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.

(*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.

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(c) Borrowing costs capitalized and the capitalized interest rate for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>		2018	2017
Weighted average expenditure	₩	628,595	1,180,563
Borrowing costs capitalized		22,619	37,261
Capitalization rate (%)		2.51 ~ 3.90	1.74 ~ 3.45

(d) Property, plant and equipment and investment property pledged as collateral as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>	Collateral right holder		2018	2017
Land	Korea Development Bank and others	₩	769,843	822,057
Buildings and structures	Korea Development Bank and others		1,522,129	1,678,403
Machinery and equipment	Korea Development Bank and others		3,419,528	3,527,420
Construction-in-progress	Korea Development Bank and others		-	15,389
		₩	<u>5,711,500</u>	<u>6,043,269</u>

As of December 31, 2018, assets pledged as collateral related to the Company's borrowings and others amounting to ₩5,323,071 million include investment properties and other assets such as right to use land.

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15. Goodwill and Other Intangible Assets, Net

(a) Goodwill and other intangible assets as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

	2018				2017			
	Acquisition cost	Accumulated amortization and impairment	Government grants	Book value	Acquisition cost	Accumulated amortization and impairment	Government grants	Book value
Goodwill	₩ 1,603,308	(478,159)	-	1,125,149	1,604,288	(254,450)	-	1,349,838
Intellectual property rights	3,300,638	(901,113)	-	2,399,525	3,140,159	(690,966)	-	2,449,193
Premium in rental	158,338	(23,545)	-	134,793	139,873	(21,563)	-	118,310
Development expense	445,752	(346,589)	-	99,163	397,129	(316,892)	(19)	80,218
Port facilities usage rights	724,375	(419,294)	-	305,081	705,692	(396,319)	-	309,373
Exploration and evaluation assets	285,845	(93,715)	-	192,130	296,320	(90,376)	-	205,944
Customer relationships	860,951	(439,178)	-	421,773	857,624	(390,679)	-	466,945
Power generation permit	-	-	-	-	539,405	-	-	539,405
Other intangible assets	1,115,742	(622,417)	(114)	493,211	1,006,219	(573,152)	(24)	433,043
	₩ 8,494,949	(3,324,010)	(114)	5,170,825	6,686,709	(2,734,397)	(43)	5,952,269

(b) The changes in carrying amount of goodwill and other intangible assets for the years ended December 31, 2018 and 2017 were as follows:

1) For the year ended December 31, 2018

(in millions of Won)

	Beginning	Acquisitions	Disposals	Amortization	Impairment loss	Others(*3)	Ending
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(*2)	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.

2) For the year ended December 31, 2017

(in millions of Won)

	Beginning	Acquisitions	Business combination	Disposals	Amortization	Impairment loss	Others(*2)	Ending
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(*1)	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
	₩ 6,088,729	353,115	47,625	(6,936)	(409,774)	(166,977)	46,487	5,952,269

(*1) Premium in rental includes memberships with indefinite useful lives.

(*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.

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(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, 2018 and 2017 are as follows:

(in millions of Won)

Reporting segments	Total number of CGUs		CGUs	2018	2017
	2018	2017			
Steel	7	7	POSCO VST CO., LTD.	₩ 36,955	36,955
			Others	12,484	12,494
Trading	2	2	POSCO DAEWOO Corporation(*1)	1,006,879	1,165,030
			PT. Bio Inti Agrindo	6,902	7,099
			Others	16	-
E&C	2	2	POSCO ENGINEERING & CONSTRUCTION CO., LTD.(*2)	24,868	90,426
			POSCO Center Beijing	155	157
Others	5	5	POSCO ENERGY CO., LTD.	26,471	26,471
			Others	10,419	11,206
	<u>16</u>	<u>16</u>		₩ <u>1,125,149</u>	<u>1,349,838</u>

(*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%.

(*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%.

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16. Other Assets

Other current assets and other non-current assets as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

	2018	2017
Current		
Advance payment	₩ 539,894	661,779
Prepaid expenses	123,770	143,032
Firm commitment asset	11,246	15,115
Others	9,554	1,316
	<u>₩ 684,464</u>	<u>821,242</u>
Non-current		
Long-term advance payment	₩ 24,280	24,201
Long-term prepaid expenses	334,918	333,153
Others(*1)	149,566	131,657
	<u>₩ 508,764</u>	<u>489,011</u>

(*1) As of December 31, 2018 and 2017, the Company recognized tax assets amounting to ₩116,693 million and ₩88,633 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, 2018 and 2017 are as follows:

(in millions of Won)

	<u>Bank</u>	<u>Issuance date</u>	<u>Maturity date</u>	<u>Interest rate (%)</u>	<u>2018</u>	<u>2017</u>
Short-term borrowings						
Bank overdrafts	JP Morgan and others	January, 2017~ December, 2018	January, 2019~ December, 2019	2.7~8.9	₩ 294,364	217,879
Short-term borrowings	HSBC and others	January, 2018~ December, 2018	January, 2019~ December, 2019	0.3~10.1	7,193,416	7,956,939
					<u>7,487,780</u>	<u>8,174,818</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	1,234,915	1,407,123
Current portion of debentures	Korea Development Bank and others	August, 2009~ March, 2018	February, 2019~ December, 2019	1.8~6.3	1,568,108	1,693,974
Less: Current portion of discount on debentures issued					(1,184)	(1,399)
					<u>2,801,839</u>	<u>3,099,698</u>
					<u>₩ 10,289,619</u>	<u>11,274,516</u>

(b) Long-term borrowings, excluding current portion as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

	<u>Bank</u>	<u>Issuance date</u>	<u>Maturity date</u>	<u>Interest rate (%)</u>	<u>2018</u>	<u>2017</u>
Long-term borrowings	Export-Import bank of Korea and others	September, 2001~ December, 2018	March, 2020~ March, 2037	0.2~8.8	₩ 4,499,199	4,839,199
Less: Present value discount					(30,526)	(36,459)
Bonds	KB Securities and others	October, 2010~ November, 2018	April, 2020~ July, 2025	1.9~5.3	5,469,580	4,999,575
Less: Discount on debentures issued					(18,602)	(13,174)
					<u>₩ 9,919,651</u>	<u>9,789,141</u>

(c) Assets pledged as collateral in regards to the borrowings as of December 31, 2018 are as follows:

(in millions of Won)

	<u>Bank</u>	<u>Book value</u>	<u>Pledged amount</u>
Cash and cash equivalents	Shinhan Bank	₩ 8,296	8,296
Property, plant and equipment and Investment property(*1)	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>₩ 6,004,637</u>	<u>5,674,671</u>

(*1) Includes other assets such as right to use land.

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18. Other Payables

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

<i>(in millions of Won)</i>	2018	2017
Current		
Accounts payable	₩ 783,562	800,374
Accrued expenses	720,773	653,923
Dividend payable	8,673	7,213
Finance lease liabilities	10,152	17,763
Withholdings	196,937	274,188
	₩ <u>1,720,097</u>	<u>1,753,461</u>
Non-current		
Accounts payable	₩ 1,624	4,632
Accrued expenses	19,021	14,234
Finance lease liabilities	84,602	75,255
Long-term withholdings	43,621	53,629
	₩ <u>148,868</u>	<u>147,750</u>

19. Other Financial Liabilities

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

<i>(in millions of Won)</i>	2018	2017
Current		
Derivatives liabilities	₩ 27,328	69,872
Financial guarantee liabilities	50,472	59,940
	₩ <u>77,800</u>	<u>129,812</u>
Non-current		
Derivatives liabilities	₩ 46,429	85,638
Financial guarantee liabilities	17,733	28,467
	₩ <u>64,162</u>	<u>114,105</u>

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20. Provisions

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

(in millions of Won)

	2018		2017	
	Current	Non-current	Current	Non-current
Provision for bonus payments	₩ 46,514	26,964	49,171	-
Provision for construction warranties	11,842	130,391	11,804	106,232
Provision for legal contingencies and claims(*1)	16,981	55,716	495	36,269
Provision for restoration(*2)	9,379	79,789	12,273	121,917
Others(*3,4)	216,564	138,176	37,203	212,754
	₩ 301,280	431,036	110,946	477,172

(*1) The Company recognized probable outflow of resources amounting to ₩50,888 million and ₩27,963 million as provisions for legal contingencies and asserted claim in relation to lawsuits against the Company as of December 31, 2018 and 2017, respectively.

(*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, 2018 and 2017, POSCO ENERGY CO., LTD., a subsidiary of the Company, recognized ₩200,407 million and ₩157,461 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, 2018 and 2017, the amount includes a provision of ₩17,595 million and ₩23,600 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

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

1) For the year ended December 31, 2018

<i>(in millions of Won)</i>	Beginning	Increase	Utilization	Reversal	Others(*1)	Ending
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 restoration	134,190	14,912	(9,212)	(47,682)	(3,040)	89,168
Others	249,957	367,332	(118,388)	(216,668)	72,507	354,740
	₩ <u>588,118</u>	<u>573,472</u>	<u>(218,997)</u>	<u>(279,265)</u>	<u>68,988</u>	<u>732,316</u>

(* 1) Includes adjustments of foreign currency translation differences and others.

2) For the year ended December 31, 2017

<i>(in millions of Won)</i>	Beginning	Increase	Utilization	Reversal	Others(*1)	Ending
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 restoration	62,594	63,438	(8,530)	-	16,688	134,190
Others	165,469	161,054	(64,850)	(20,199)	8,483	249,957
	₩ <u>452,604</u>	<u>367,595</u>	<u>(225,861)</u>	<u>(27,485)</u>	<u>21,265</u>	<u>588,118</u>

(* 1) Includes adjustments of foreign currency translation differences and others.

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, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>	2018	2017
Expense related to post-employment benefit plans under defined contribution plans	₩ 42,825	35,538

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(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, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>	2018	2017
Present value of funded obligations	₩ 2,117,829	1,826,907
Fair value of plan assets(*1)	(1,997,717)	(1,714,166)
Present value of non-funded obligations	19,332	16,228
Net defined benefit liabilities	₩ <u>139,444</u>	<u>128,969</u>

- (*1) As of December 31, 2018 and 2017, the Company recognized net defined benefit assets amounting to ₩1,489 million and ₩8,224 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, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>	2018	2017
Defined benefit obligation at the beginning of period	₩ 1,843,135	1,733,020
Current service costs	212,323	209,612
Interest costs	54,950	35,830
Remeasurements :	212,678	51,994
- Loss (gain) from change in financial assumptions	173,084	(50,218)
- Loss from change in demographic assumptions	526	15,952
- Others	39,068	86,260
Benefits paid	(189,165)	(185,220)
Others	3,240	(2,101)
Defined benefit obligation at the end of period	₩ <u>2,137,161</u>	<u>1,843,135</u>

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

<i>(in millions of Won)</i>	2018	2017
Fair value of plan assets at the beginning of period	₩ 1,714,166	1,693,118
Interest on plan assets	50,784	45,516
Remeasurement of plan assets	(19,761)	(17,190)
Contributions to plan assets	408,326	164,828
Benefits paid	(163,112)	(168,643)
Others	7,314	(3,463)
Fair value of plan assets at the end of period	₩ <u>1,997,717</u>	<u>1,714,166</u>

The Company expects to make an estimated contribution of ₩408,887 million to the defined benefit plan assets in 2019.

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4) The fair value of plan assets as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018	2017
Equity instruments	₩	3,151	41,218
Debt instruments		692,825	367,027
Deposits		1,244,802	1,254,571
Others		56,939	51,350
	₩	<u>1,997,717</u>	<u>1,714,166</u>

5) The amounts recognized in consolidated statements of comprehensive income for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>		2018	2017
Current service costs	₩	212,323	209,612
Net interest costs(*1)		4,166	(9,686)
	₩	<u>216,489</u>	<u>199,926</u>

(*1) The actual return on plan assets amounted to ₩31,023 million and ₩28,326 million for the years ended December 31, 2018 and 2017, respectively.

The above expenses by function were as follows:

<i>(in millions of Won)</i>		2018	2017
Cost of sales	₩	150,822	131,724
Selling and administrative expenses		64,505	67,424
Others		1,162	778
	₩	<u>216,489</u>	<u>199,926</u>

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- 6) Accumulated actuarial gains (losses), net of tax recognized in other comprehensive income for the years ended December 31, 2018 and 2017 were as follows:

(in millions of Won)

		<u>2018</u>	<u>2017</u>
Beginning	₩	(299,155)	(251,612)
Current actuarial gains		<u>(173,489)</u>	<u>(47,543)</u>
Ending	₩	<u><u>(472,644)</u></u>	<u><u>(299,155)</u></u>

- 7) The principal actuarial assumptions as of December 31, 2018 and 2017 are as follows:

(%)

	<u>2018</u>	<u>2017</u>
Discount rate	2.24~10.03	2.70~7.75
Expected future increase in salaries(*1)	2.54~10.00	1.04~10.00

(*1) 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.

- 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:

(in millions of Won)

		<u>1% Increase</u>		<u>1% Decrease</u>	
		<u>Amount</u>	<u>Percentage(%)</u>	<u>Amount</u>	<u>Percentage(%)</u>
Discount rate	₩	(143,793)	(6.7)	166,225	7.8
Expected future increases 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:

(in millions of Won)

		<u>Within 1 year</u>	<u>1 year - 5 years</u>	<u>5 years - 10 years</u>	<u>10 years - 20 years</u>	<u>After 20 years</u>	<u>Total</u>
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.

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22. Other Liabilities

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

(in millions of Won)

		2018	2017
Current			
Due to customers for contract work	₩	709,180	821,875
Advances received		567,375	599,879
Unearned revenue		49,805	7,121
Withholdings		233,981	221,940
Firm commitment liability		24,373	12,192
Others		10,174	33,590
	₩	<u>1,594,888</u>	<u>1,696,597</u>
Non-current			
Unearned revenue	₩	42,992	18,440
Others		84,369	14,360
	₩	<u>127,361</u>	<u>32,800</u>

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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, 2018 and 2017 are as follows:

① December 31, 2018

(in millions of Won)

	Book value	Fair value			Total
		Level 1	Level 2	Level 3	
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.

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② December 31, 2017

(in millions of Won)

	Book value	Fair value			Total
		Level 1	Level 2	Level 3	
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(*1)					
Cash and cash Equivalents	2,612,530	-	-	-	-
Trade accounts and notes receivable	8,901,867	-	-	-	-
Loans and other receivables	9,099,444	-	-	-	-
	₩ 22,667,427	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(*1)					
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

(*1) Fair value of financial assets and liabilities measured at amortized cost except borrowings approximates carrying amounts.

- 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 market approach method and discounted cash flow method. 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.
- 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:

(in millions of Won)

	Fair value	Valuation technique	Inputs	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	-	-	-

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- 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:

(in millions of Won)

	Input variable	Favorable changes	Unfavorable changes
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, 2018 and 2017 were as follows:

(in millions of Won)

	2018	2017
Beginning	₩ 880,012	349,090
Acquisition	134,325	658,359
Gain or loss on valuation of financial assets	(34,555)	(10,346)
Other comprehensive income (loss)	26,771	35,126
Impairment	-	(107,934)
Disposal and others	(296,893)	(44,283)
Ending	₩ <u>709,660</u>	<u>880,012</u>

- 4) Finance income and costs by category of financial instrument for the years ended December 31, 2018 and 2017 were as follows:

- ① For the year ended December 31, 2018

(in millions of Won)

	Finance income and costs						Other comprehensive income (loss)
	Interest income (expense)	Gain and loss on valuation	Gain and loss on foreign	Gain and loss on disposal	Others	Total	
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)	-
	₩ <u>(404,038)</u>	<u>13,019</u>	<u>(204,102)</u>	<u>10,690</u>	<u>45,985</u>	<u>(538,446)</u>	<u>(149,400)</u>

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② For the year ended December 31, 2017

(in millions of Won)

	Finance income and costs						Other comprehensive income (loss)	
	Interest income (expense)	Gain and loss on valuation	Gain and loss on foreign	Gain and loss on disposal	Impairment loss	Others		Total
Financial assets at fair value through profit or loss	₩ -	16	-	-	-	-	16	-
Derivative 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 investments	236	-	-	-	-	7	243	-
Loans and receivables	212,155	-	(607,837)	(32,456)	-	(304)	(428,442)	-
Derivative 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)

(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, 2018 and 2017 are as follows:

(in millions of Won)

		2018	2017
Cash and cash equivalents	₩	2,643,865	2,612,530
Derivative assets		49,083	68,290
Short-term financial instrument		6,099,303	5,545,667
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		1,845,381	2,195,466
Trade accounts and notes receivable		8,819,617	9,682,118
Deposit instruments		1,966,558	1,358,311
	₩	<u>21,799,227</u>	<u>21,662,429</u>

The Company provided financial guarantee for the repayment of loans of associates, joint ventures and third parties. As of December 31, 2018 and 2017, the maximum exposure to credit risk related to the financial guarantee amounted to ₩3,147,280 million and ₩3,135,084 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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① Allowance for doubtful accounts as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018	2017
Trade accounts and notes receivable	₩	588,733	634,129
Other accounts receivable		160,729	187,706
Loans		147,980	258,957
Others		19,348	13,672
	₩	<u>916,790</u>	<u>1,094,464</u>

② Impairment losses on financial assets for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>		2018	2017
Bad debt expenses	₩	74,781	173,694
Other bad debt expenses(*1)		81,353	100,920
Impairment loss on available-for-sale financial assets		-	123,214
Less: Recovery of allowance for other bad debt accounts		(18,261)	(2,743)
Less: Recovery of Impairment loss on held-to-maturity financial assets		-	(20)
	₩	<u>137,873</u>	<u>395,065</u>

(*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, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018		2017	
		Trade accounts and notes receivable	Allowance for doubtful accounts	Trade accounts and notes receivable	Allowance for doubtful accounts
Not due	₩	8,173,515	70,418	7,862,077	65,314
Over due less than 1 month		632,082	14,434	445,390	12,546
1 month - 3 months		226,082	4,116	170,682	742
3 months - 12 months		118,094	11,774	384,313	21,030
Over 12 months		1,148,694	487,991	1,453,785	534,497
	₩	<u>10,298,467</u>	<u>588,733</u>	<u>10,316,247</u>	<u>634,129</u>

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- ④ The aging and allowance for doubtful accounts of other receivables as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

	2018		2017	
	Loans and other account receivable	Allowance for doubtful accounts	Loans and other account receivable	Allowance for doubtful accounts
Not due	₩ 1,754,293	140,072	1,888,726	9,672
Over due less than 1 month	100,102	4,307	235,559	35,539
1 month - 3 months	28,351	851	69,372	54,335
3 months - 12 months	59,946	12,411	96,942	64,467
Over 12 months	230,746	170,416	365,202	296,322
	₩ 2,173,438	328,057	2,655,801	460,335

- ⑤ Changes in the allowance for doubtful accounts for the years ended December 31, 2018 and 2017 were as follows:

(in millions of Won)

	2018	2017
Beginning	₩ 1,094,464	977,771
Initial application of K-IFRS No. 1109	107,454	-
Bad debt expenses	74,781	173,694
Other bad debt expenses	63,092	98,177
Others(*1)	(423,001)	(155,178)
Ending	₩ 916,790	1,094,464

(*1) Others for the year ended December 31, 2018 and 2017, included decreases mainly due to write-off amounting to ₩383,714 million and ₩119,964 million, respectively.

(c) Liquidity risk

- 1) Contractual maturities for non-derivative financial liabilities are as follows:

(in millions of Won)

	Book value	Contractual cash flow	Within 1 year	1 year - 5 years	After 5 years
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(*1)	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

(*1) For issued financial guarantee contracts, the maximum amount of the guarantee is allocated to the earliest period in which the guarantee could be called.

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2) Contractual maturities for derivative financial liabilities are as follows:

<i>(in millions of Won)</i>		Within 1 year	1 year - 5 years	After 5 years	Total
Currency forward	₩	11,364	34,743	-	46,107
Currency swap		1,707	5,849	4,369	11,925
Interest rate swap		-	1,467	-	1,467
Others		14,258	-	-	14,258
	₩	<u>27,329</u>	<u>42,059</u>	<u>4,369</u>	<u>73,757</u>

(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, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018		2017	
		Assets	Liabilities	Assets	Liabilities
USD	₩	4,346,481	6,389,276	4,215,151	5,940,380
EUR		657,690	509,437	552,630	454,072
JPY		97,722	389,625	165,356	709,318
Others		259,949	142,868	220,723	117,632

2) As of December 31, 2018 and 2017, 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, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>		2018		2017	
		10% increase	10% decrease	10% increase	10% decrease
USD	₩	(204,280)	204,280	(172,523)	172,523
EUR		14,825	(14,825)	9,856	(9,856)
JPY		(29,190)	29,190	(54,396)	54,396

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(e) Interest rate risk

1) The carrying amount of interest-bearing financial instruments as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018	2017
Fixed rate			
Financial assets	₩	11,565,519	10,943,300
Financial liabilities		(11,781,701)	(11,179,635)
	₩	<u>(216,182)</u>	<u>(236,335)</u>
Variable rate			
Financial liabilities	₩	(8,522,323)	(9,977,040)

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, 2018 and 2017, 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, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>		2018		2017	
		1% increase	1% decrease	1% increase	1% decrease
Variable rate financial instruments	₩	(85,223)	85,223	(99,770)	99,770

24. Share Capital and Capital Surplus

(a) Share capital as of December 31, 2018 and 2017 are as follows:

<i>(Share, in Won)</i>		2018	2017
Authorized shares		200,000,000	200,000,000
Par value	₩	5,000	5,000
Issued shares(*1)		87,186,835	87,186,835
Shared capital(*2)	₩	482,403,125,000	482,403,125,000

(*1) 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.

(*2) 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.

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(b) The changes in issued common stock for the years ended December 31, 2018 and 2017 were as follows:

<i>(share)</i>	2018			2017		
	Issued shares	Treasury shares	Number of Outstanding shares	Issued shares	Treasury shares	Number of Outstanding shares
Beginning	87,186,835	(7,187,231)	79,999,604	87,186,835	(7,189,170)	79,997,665
Disposal of treasury shares	-	1,528	1,528	-	1,939	1,939
Ending	87,186,835	(7,185,703)	80,001,132	87,186,835	(7,187,231)	79,999,604

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

<i>(in millions of Won)</i>		2018	2017
Share premium	₩	463,825	463,825
Gain on disposal of treasury shares		784,047	783,914
Other capital surplus		162,679	164,826
	₩	1,410,551	1,412,565

(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:

<i>(Share, in Won)</i>	Redeemable Convertible Preferred Shares
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%
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.

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25. Hybrid Bonds

(a) Hybrid bonds classified as equity as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>	Date of issue	Date of maturity	Interest rate (%)	2018	2017
Hybrid bond 1-1(*1)	-	-	-	₩ -	800,000
Hybrid bond 1-2(*2)	2013-06-13	2043-06-13	4.60	200,000	200,000
Issuance cost				(616)	(3,081)
				₩ <u>199,384</u>	<u>996,919</u>

(*1) During the year ended December 31, 2018, the Company exercised the call option of the Hybrid bond.

(*2) 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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(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, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>	Date of issue	Date of maturity	Interest rate (%)		2018	2017
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					(429)	(1,532)
				₩	139,571	498,468

(*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:

Hybrid bond 1-4	
Maturity date	30 years (The issuer 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.

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26. Reserves

(a) Reserves as of December 31, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>	2018	2017
Accumulated comprehensive loss of investments in associates and joint ventures	₩ (670,435)	(516,528)
Changes in fair value of equity investments at fair value through other comprehensive income	(295,300)	-
Changes in unrealized fair value of available-for-sale investments	-	230,190
Foreign currency translation differences	(417,817)	(372,166)
Gains or losses on valuation of derivatives	(352)	(136)
Others	(20,464)	(23,916)
	₩ (1,404,368)	(682,556)

(b) Changes in fair value of equity investments at fair value through other comprehensive income and changes in unrealized fair value of available-for-sale investments for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>	2018	2017
Beginning balance	₩ 230,190	276,143
Initial application of K-IFRS No. 1109	(421,525)	-
Changes in unrealized fair value of equity investments	(139,226)	183,761
Reclassification upon disposal	45,737	(299,862)
Impairment on available-for-sale investments	-	96,083
Others	(10,476)	(25,935)
Ending balance	₩ (295,300)	230,190

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, 2018 and 2017 were as follows:

<i>(shares, in millions of Won)</i>	2018		2017	
	Number of shares	Amount	Number of shares	Amount
Beginning	7,187,231	₩ 1,533,054	7,189,170	₩ 1,533,468
Disposal of treasury shares	(1,528)	(326)	(1,939)	(414)
Ending	7,185,703	₩ 1,532,728	7,187,231	₩ 1,533,054

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28. Revenue

(a) Disaggregation of revenue

1) Details of revenue disaggregated by types of revenue and timing of revenue recognition for the years ended December 31, 2018 and 2017 were as follows:

① For the year ended December 31, 2018

<i>(in millions of Won)</i>	Steel	Trading	Construction	Others	Total
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	-	-	6,684,136	272,778	6,956,914
Others	41,041	163,782	17,784	290,051	512,658
	<u>₩ 32,358,009</u>	<u>22,407,717</u>	<u>6,769,410</u>	<u>3,442,641</u>	<u>64,977,777</u>
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	6,642,228	2,536,521	10,373,860
	<u>₩ 32,358,009</u>	<u>22,407,717</u>	<u>6,769,410</u>	<u>3,442,641</u>	<u>64,977,777</u>

② For the year ended December 31, 2017

<i>(in millions of Won)</i>	Steel	Trading	Construction	Others	Total
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	-	-	6,730,271	37,154	6,767,425
Others	54,194	118,147	87,559	205,192	465,092
	<u>₩ 30,230,368</u>	<u>20,802,207</u>	<u>6,886,606</u>	<u>2,735,919</u>	<u>60,655,100</u>
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	6,778,679	1,903,550	8,822,516
	<u>₩ 30,230,368</u>	<u>20,802,207</u>	<u>6,886,606</u>	<u>2,735,919</u>	<u>60,655,100</u>

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(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 K-IFRS No. 1115 "Revenue from Contracts with Customers" and K-IFRS No. 1109 "Financial Instruments", are as follows;

(in millions of Won)

		2018	The date of initial application (January 1, 2018)
Receivables			
Account receivables	₩	8,819,617	8,799,161
Contract assets			
Due from customers for contract work		890,117	737,782
Contract liabilities			
Advance received		592,125	610,387
Due to customers for contract work		709,180	840,067
Unearned revenue		91,872	77,657

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29. Revenue – Contract Balances

(a) Details of in-progress contracts as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

	2018		2017	
	Construction segment	Others	Construction segment	Others
Accumulated cost	₩ 27,860,778	234,092	22,513,972	277,088
Accumulated contract profit	2,266,897	34,815	1,811,066	45,037
Accumulated contract loss	(792,496)	(12,042)	(704,234)	(14,359)
Accumulated contract revenue	29,335,179	256,865	23,620,804	307,766

(b) Details of due from customers for contract work and due to customers for contract work as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

	2018		2017	
	Construction segment	Others	Construction segment	Others
Due from customers for contract work	₩ 914,489	48,571	800,359	49,942
Due to customers for contract work	(676,990)	(32,190)	(780,052)	(41,823)
	₩ <u>237,499</u>	<u>16,381</u>	<u>20,307</u>	<u>8,119</u>

(c) Details of the provisions of construction loss as of December 31, 2018 and 2017 are as follows:

(in millions of Won)

	2018	2017
Construction segment	₩ 31,067	66,442
Others	1,203	1,232
	₩ <u>32,270</u>	<u>67,674</u>

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(d) Due to the factors causing the variation of costs for the year ended December 31, 2018, the estimated total contract costs have changed. Details of changes in estimated total contract costs and the impact on profits or loss for the year ended December 31, 2018 and future periods are as follows:

		Changes in total contract costs	Changes in profit (loss) of contract		
			Net income	Future income (loss)	Total
(in millions of Won)					
Construction segment	₩	419,720	(36,726)	72,454	35,728
Others		4,271	3,574	(3,614)	(40)
	₩	<u>423,991</u>	<u>(33,152)</u>	<u>68,840</u>	<u>35,688</u>

The effect on the current and future profit is estimated based on the circumstances that have occurred from the commencement date of the contracts as of December 31, 2018. The estimation is evaluated for the total contract cost and expected total contract revenue as of the end of the period. Also, it may change during future periods.

(e) 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 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.

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30. Selling and Administrative Expenses

(a) Other administrative expenses

Other administrative expenses for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>	2018	2017
Wages and salaries	₩ 813,467	774,900
Expenses related to post-employment benefits	73,290	78,654
Other employee benefits	176,240	159,920
Travel	40,929	39,790
Depreciation	101,274	97,261
Amortization	112,418	146,314
Communication	10,616	11,740
Electricity expenses	8,309	7,050
Taxes and public dues	71,973	72,826
Rental	69,516	69,976
Repairs	15,291	9,859
Entertainment	11,816	11,582
Advertising	106,875	119,724
Research & development	108,352	125,795
Service fees	165,938	193,387
Vehicles maintenance	8,942	8,211
Industry association fee	9,571	10,140
Conference	14,510	14,494
Increase in provisions	14,433	10,990
Others	51,995	40,493
	₩ <u>1,985,755</u>	<u>2,003,106</u>

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(b) Selling expenses

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

<i>(in millions of Won)</i>	2018	2017
Freight and custody expenses(*1)	₩ 184,675	1,336,969
Operating expenses for distribution center	10,614	10,503
Sales commissions	79,080	115,925
Sales advertising	4,821	3,800
Sales promotion	13,792	12,414
Sample	2,716	1,989
Sales insurance premium	37,251	36,546
Contract cost	16,992	23,061
Others	19,304	16,070
	<u>₩ 369,245</u>	<u>1,557,277</u>

(*1) 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, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>	2018	2017
Administrative expenses	₩ 108,352	125,795
Cost of sales	418,250	361,093
	<u>₩ 526,602</u>	<u>486,888</u>

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32. Finance Income and Costs

Details of finance income and costs for the years ended December 31, 2018 and 2017 were as follows:

(in millions of Won)

	2018	2017
Finance income		
Interest income(*1)	₩ 337,258	212,451
Dividend income	63,345	92,962
Gain on foreign currency transactions	716,060	785,616
Gain on foreign currency translations	212,443	564,016
Gain on derivatives transactions	247,513	210,727
Gain on valuations of derivatives	96,986	64,735
Gain on disposals of available-for-sale financial assets	-	425,684
Gain on valuations of financial assets at fair value through profit or loss	16,149	-
Others	16,216	16,476
	<u>₩ 1,705,970</u>	<u>2,372,667</u>
Finance costs		
Interest expenses	₩ 741,296	653,115
Loss on foreign currency transactions	810,857	756,654
Loss on foreign currency translations	321,748	422,880
Loss on derivatives transactions	208,772	236,273
Loss on valuation of derivatives	40,674	226,487
Impairment loss on available-for-sale financial assets	-	123,214
Loss on valuations of financial assets at fair value through profit or loss	59,442	-
Others	61,627	65,654
	<u>₩ 2,244,416</u>	<u>2,484,277</u>

(*1) Interest income calculated using the effective interest method for the years ended December 31, 2018 and 2017 were ₩197,142 million and ₩130,710 million, respectively.

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33. Other Non-Operating Income and Expenses

Details of other non-operating income and expenses for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>	2018	2017
Other non-operating income		
Gain on disposals of assets held for sale	₩ 27,171	1,180
Gain on disposals of investment in subsidiaries, associates and joint ventures	45,241	81,794
Gain on disposals of property, plant and equipment	53,139	32,145
Gain on disposals of intangible assets	117,139	23,391
Gain on valuation of firm commitment	39,028	56,301
Gain on insurance proceeds	14,034	5,878
Others(*1,2)	227,834	247,792
	<u>₩ 523,586</u>	<u>448,481</u>
Other non-operating expenses		
Impairment loss on assets held for sale	₩ 50,829	-
Loss on disposals of investments in subsidiaries, associates and joint ventures	5,226	19,985
Loss on disposals of property, plant and equipment	117,614	151,343
Impairment loss on property, plant and equipment	1,004,704	117,231
Impairment loss on investment property	51,461	-
Loss on disposals of investment property	9,154	1,966
Impairment loss on intangible assets	337,519	167,995
Increase to provisions	134,632	33,964
Loss on valuation of firm commitment	66,281	43,164
Donations	52,074	51,424
Idle tangible asset expenses	9,257	10,490
Others(*3)	175,711	93,814
	<u>₩ 2,014,462</u>	<u>691,376</u>

(*1) During the year ended December 31, 2018, the Controlling Company recognized ₩55,306 million of tax refund without corporate tax due to the consequences of appeal to tax tribunal against tax investigation as non-operating income.

(*2) The Company has recognized the refund of VAT and others amounting to ₩160,501 million as non-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 were finalized.

(*3) During the year ended December 31, 2018, the Controlling Company recognized ₩52,997 million of additional taxes imposed about value added tax related to imported LNG as non-operating expense.

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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 non-operating expenses in the statements of comprehensive income for the years ended December 31, 2018 and 2017 were as follows (excluding finance costs and income tax expense):

<i>(in millions of Won)</i>	2018	2017
Raw material used,		
changes in inventories and others	₩ 38,761,026	35,967,776
Employee benefits expenses(*2)	3,639,192	3,357,861
Outsourced processing cost	7,462,656	7,074,948
Electricity expenses	949,435	933,045
Depreciation(*1)	2,911,048	2,887,646
Amortization	356,581	409,774
Freight and custody expenses	1,414,940	1,336,969
Sales commissions	79,080	115,925
Loss on disposal of property, plant and equipment	117,614	151,343
Impairment loss on property, plant and equipment	1,004,704	117,231
Impairment loss on goodwill and intangible assets	337,519	167,995
Donations	52,074	51,424
Others	4,445,124	4,253,624
	₩ <u>61,530,993</u>	<u>56,825,561</u>

(*1) Includes depreciation expense of investment property.

(*2) The details of employee benefits expenses for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>	2018	2017
Wages and salaries	₩ 3,372,831	3,105,364
Expenses related to post-employment benefits	266,361	252,497
	₩ <u>3,639,192</u>	<u>3,357,861</u>

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35. Income Taxes

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

<i>(in millions of Won)</i>		2018	2017
Current income taxes(*1)	₩	1,577,581	864,143
Deferred income tax due to temporary differences		(51,724)	320,520
Items recorded directly in equity		144,900	21,560
Income tax expense	₩	<u>1,670,757</u>	<u>1,206,223</u>

(*1) Refund (additional payment) of income taxes when filing a final corporation tax return credited (charged) directly to current income taxes.

(b) The income taxes credited (charged) directly to equity for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>		2018	2017
Net changes in fair value of equity investments	₩		
at fair value through other comprehensive income		47,423	1,271
Remeasurements of defined benefit plans		56,289	22,208
Gain on sale of treasury shares		(50)	(40)
Others		41,238	(1,879)
	₩	<u>144,900</u>	<u>21,560</u>

(c) The following table reconciles the calculated income tax expense based on POSCO's statutory rate (24.2%) to the actual amount of taxes recorded by the Company for the years ended December 31, 2018 and 2017.

<i>(in millions of Won)</i>		2018	2017
Profit before income tax expense	₩	3,562,821	4,179,692
Income tax expense computed at statutory rate		969,414	1,011,023
Adjustments:			
Tax credits		(32,103)	(40,757)
Additional Income tax expense for prior years (Over provisions from prior years)		44,336	(20,912)
Tax effect from tax audit		130,196	-
Investment in subsidiaries, associates and joint ventures		114,856	(12,510)
Tax effects due to permanent differences		64,708	72,421
Effect of tax rate change		-	175,647
Others(*1)		379,350	21,311
		<u>701,343</u>	<u>195,200</u>
Income tax expense	₩	<u>1,670,757</u>	<u>1,206,223</u>
Effective tax rate (%)		46.9%	28.9%

(*1) Includes the effect of undeductible impairment loss related to Synthetic Natural Gas (SNG) facility.

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Notes to the Consolidated Financial Statements, Continued
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(d) The movements in deferred tax assets (liabilities) for the years ended December 31, 2018 and 2017 were as follows:

(in millions of Won)

	2018			2017		
	Beginning	Inc. (Dec.)	Ending	Beginning	Inc. (Dec.)	Ending
Deferred income tax						
due to temporary differences						
Allowance for doubtful accounts(*1)	₩ 273,994	(92,851)	181,143	213,119	60,875	273,994
Reserve for technology developments	(37,987)	37,987	-	(91,960)	53,973	(37,987)
PP&E - Depreciation	14,641	(4,804)	9,837	(11,639)	26,280	14,641
Share of profit or loss of equity-accounted investees	196,042	31,552	227,594	70,259	125,783	196,042
Allowance for inventories valuation	10,780	(104)	10,676	15,651	(4,871)	10,780
PP&E - Revaluation	(1,828,164)	(33,548)	(1,861,712)	(1,524,149)	(304,015)	(1,828,164)
Prepaid expenses	20,000	(2,741)	17,259	19,665	335	20,000
PP&E - Impairment loss	5,540	(927)	4,613	5,295	245	5,540
Gain or loss on foreign currency translation	(48,472)	10,462	(38,010)	(5,957)	(42,515)	(48,472)
Defined benefit obligations	430,117	70,334	500,451	361,838	68,279	430,117
Plan assets	(397,621)	(66,940)	(464,561)	(355,661)	(41,960)	(397,621)
Provision for construction losses	441	6,964	7,405	997	(556)	441
Provision for construction warranty	28,717	41,601	70,318	24,322	4,395	28,717
Accrued income	(12,915)	(179)	(13,094)	(9,441)	(3,474)	(12,915)
Others(*1)	650,488	(216,953)	433,535	726,806	(76,318)	650,488
	<u>(694,399)</u>	<u>(220,147)</u>	<u>(914,546)</u>	<u>(560,855)</u>	<u>(133,544)</u>	<u>(694,399)</u>
Deferred income taxes recognized directly to equity						
Net changes in fair value of equity investments at fair value through other comprehensive income(*1)	(49,236)	206,121	156,885	(50,507)	1,271	(49,236)
Others	72,161	58,111	130,272	51,832	20,329	72,161
	<u>22,925</u>	<u>264,232</u>	<u>287,157</u>	<u>1,325</u>	<u>21,600</u>	<u>22,925</u>
Deferred tax from tax credit						
Tax credit carry-forward and others	118,032	(2,443)	115,589	307,335	(189,303)	118,032
Investments in subsidiaries, associates and joint ventures						
Investments in subsidiaries, associates and joint ventures	68,426	135,512	203,938	86,129	(17,703)	68,426
₩	<u>(485,016)</u>	<u>177,154</u>	<u>(307,862)</u>	<u>(166,066)</u>	<u>(318,950)</u>	<u>(485,016)</u>

(*1) These changes includes the cumulative impact of initial application of K-IFRS No. 1115 and K-IFRS No. 1109.

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(e) Deferred tax assets and liabilities for the years ended December 31, 2018 and 2017 are as follows:

(in millions of Won)

	2018			2017		
	Assets	Liabilities	Net	Assets	Liabilities	Net
Deferred income tax due to temporary differences						
Allowance for doubtful accounts	₩ 181,143	-	181,143	273,994	-	273,994
Reserve for technology developments	-	-	-	-	(37,987)	(37,987)
PP&E - Depreciation	55,354	(45,517)	9,837	59,912	(45,271)	14,641
Share of profit or loss of equity-accounted investees	278,466	(50,872)	227,594	236,637	(40,595)	196,042
Allowance for inventories valuation	10,676	-	10,676	10,780	-	10,780
PP&E - Revaluation	-	(1,861,712)	(1,861,712)	-	(1,828,164)	(1,828,164)
Prepaid expenses	17,259	-	17,259	20,000	-	20,000
PP&E - Impairment loss	5,240	(627)	4,613	5,639	(99)	5,540
Gain or loss on foreign currency translation	121,797	(159,807)	(38,010)	113,760	(162,232)	(48,472)
Defined benefit obligations	500,451	-	500,451	430,117	-	430,117
Plan assets	-	(464,561)	(464,561)	-	(397,621)	(397,621)
Provision for construction losses	7,405	-	7,405	441	-	441
Provision for construction warranty	70,318	-	70,318	28,717	-	28,717
Accrued income	-	(13,094)	(13,094)	-	(12,915)	(12,915)
Others	829,827	(396,292)	433,535	702,538	(52,050)	650,488
	<u>2,077,936</u>	<u>(2,992,482)</u>	<u>(914,546)</u>	<u>1,882,535</u>	<u>(2,576,934)</u>	<u>(694,399)</u>
Deferred income taxes recognized directly to equity						
Net changes in fair value of equity investments at fair value through other comprehensive income	247,921	(91,036)	156,885	110,865	(160,101)	(49,236)
Others	153,609	(23,337)	130,272	92,981	(20,820)	72,161
	<u>401,530</u>	<u>(114,373)</u>	<u>287,157</u>	<u>203,846</u>	<u>(180,921)</u>	<u>22,925</u>
Deferred tax from tax credit						
Tax credit carry-forward and others	115,589	-	115,589	118,032	-	118,032
Investments in subsidiaries, associates and joint ventures						
Investments in subsidiaries, associates and joint ventures	547,662	(343,724)	203,938	563,406	(494,980)	68,426
	<u>₩ 3,142,717</u>	<u>(3,450,579)</u>	<u>(307,862)</u>	<u>2,767,819</u>	<u>(3,252,835)</u>	<u>(485,016)</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.

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36. Earnings per Share

Basic and diluted earnings per share for the years ended December 31, 2018 and 2017 were as follows:

(in Won, except per share information)

	2018	2017
Profit attribute to controlling interest	₩ 1,690,612,430,737	2,790,105,745,202
Interests of hybrid bonds	(17,720,986,299)	(33,048,799,997)
Weighted-average number of common shares outstanding(*1)	<u>80,000,606</u>	<u>79,998,600</u>
Basic and diluted earnings per share	₩ <u>20,911</u>	<u>34,464</u>

(*1) The weighted-average number of common shares used to calculate basic and diluted earnings per share are as follows:

<i>(shares)</i>	2018	2017
Total number of common shares issued	87,186,835	87,186,835
Weighted-average number of treasury shares	<u>(7,186,229)</u>	<u>(7,188,235)</u>
Weighted-average number of common shares outstanding	<u>80,000,606</u>	<u>79,998,600</u>

Since there were no potential shares of common stock which had dilutive effects as of December 31, 2018 and 2017, diluted earnings per share is equal to basic earnings per share.

POSCO and Subsidiaries
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37. Related Party Transactions

(a) Significant transactions between the controlling company and related companies for the years ended December 31, 2018 and 2017 were as follows:

1) For the year ended December 31, 2018

(in millions of Won)

	Sales and others(*1)		Purchase and others(*2)			
	Sales	Others	Purchase of material	Purchase of fixed assets	Outsourced processing cost	Others
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
	<u>13,472,119</u>	<u>143,067</u>	<u>2,931,565</u>	<u>750,275</u>	<u>688,025</u>	<u>428,288</u>
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
	<u>92,189</u>	<u>59,095</u>	<u>1,436,122</u>	<u>215,023</u>	<u>24,192</u>	<u>10,343</u>
₩	<u>13,564,308</u>	<u>202,162</u>	<u>4,367,687</u>	<u>965,298</u>	<u>712,217</u>	<u>438,631</u>

(*1) Sales and others are mainly consist of sales of steel products to subsidiaries, associates and joint ventures.

(*2) Purchases and others are mainly consist of subsidiaries' purchases of construction services and purchases of raw materials to manufacture steel products.

(*3) As of December 31, 2018, the Company provided guarantees to related parties (Note 38).

(*4) Others (purchase) mainly consist of service fees related to maintenance and repair of ERP System.

(*5) 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.

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2) For the year ended December 31, 2017

(in millions of Won)

	Sales and others		Purchase and others			
	Sales	Others	Purchase of material	Purchase of fixed assets	Outsourced processing	Others
Subsidiaries						
POSCO ENGINEERING & CONSTRUCTION CO.,LTD. ₩	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	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 - Companhia 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>
₩	<u>12,751,894</u>	<u>153,870</u>	<u>3,913,323</u>	<u>829,730</u>	<u>650,170</u>	<u>428,940</u>

POSCO and Subsidiaries

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(b) The related account balances of significant transactions between the controlling company and related companies as of December 31, 2018 and 2017 are as follows:

1) December 31, 2018

(in millions of Won)

	Receivables			Payables			
	Trade accounts and notes receivable	Others	Total	Trade accounts and notes payable	Accounts payable	Others	Total
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>

2) December 31, 2017

(in millions of Won)

	Receivables			Payables			
	Trade accounts and notes receivable	Others	Total	Trade accounts and notes payable	Accounts payable	Others	Total
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	17,566	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
	<u>1,969,656</u>	<u>77,657</u>	<u>2,047,313</u>	<u>101,750</u>	<u>208,512</u>	<u>84,112</u>	<u>394,374</u>
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
	<u>10,944</u>	<u>974</u>	<u>11,918</u>	<u>54,172</u>	<u>15,726</u>	<u>-</u>	<u>69,898</u>
₩	<u>1,980,600</u>	<u>78,631</u>	<u>2,059,231</u>	<u>155,922</u>	<u>224,238</u>	<u>84,112</u>	<u>464,272</u>

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(c) Significant transactions between the Company, excluding the controlling company, and related companies for the years ended December 31, 2018 and 2017 were as follows:

1) December 31, 2018

(in millions of Won)

	Sales and others		Purchase and others	
	Sales	Others	Purchase of material	Others
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 - Compania 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-SEAHSTEELWIRE(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>

2) December 31, 2017

(in millions of Won)

	Sales and others		Purchase and others	
	Sales	Others	Purchase of material	Others
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 - Compania 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-SEAHSTEELWIRE(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, 2018

(d) The related account balances of significant transactions between the Company, excluding the controlling company, and related companies as of December 31, 2018 and December 31, 2017 are as follows:

1) December 31, 2018

(in millions of Won)

	Receivables(*1)			Payables			
	Trade accounts and notes receivable	Loan	Others	Total	Trade accounts and notes payable	Others	Total
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
	₩ 707,135	489,639	23,062	1,219,836	78,673	74,194	152,867

(*1) As of December 31, 2018, the Company recognizes bad-debt allowance for receivables amounting to ₩102,694 million.

2) December 31, 2017

(in millions of Won)

	Receivables(*1)			Payables			
	Trade accounts and notes receivable	Loan	Others	Total	Trade accounts and notes payable	Others	Total
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
	₩ 1,011,832	816,304	26,653	1,854,789	7,871	54,589	62,460

(*1) 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, 2018

(e) Significant financial transactions between the Company, excluding the controlling company, and related companies for the years ended December 31, 2018 and 2017 were as follows:

1) December 31, 2018

(in millions of Won)

	Beginning	Lend	Collect	Others(*2)	Ending
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)	-	-
₩	816,304	51,700	(340,180)	(38,185)	489,639

(*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.

2) December 31, 2017

(in millions of Won)

	Beginning	Lend	Collect	Others(*4)	Ending
Associates and joint ventures					
METAPOLIS Co.,Ltd.(*1) ₩	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(*2)	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.(*1)	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-SEAHSTEELWIRE(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	-	-	-	5,357	5,357
POS-AUSTEM WUHAN AUTOMOTIVE	-	-	-	8,571	8,571
SAMHWAN VINA CO., LTD(*3)	-	-	-	1,071	1,071
₩	684,132	522,894	(261,166)	(129,556)	816,304

(*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.

(*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.

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

(f) For the years ended December 31, 2018 and 2017, details of compensation to key management officers were as follows:

<i>(in millions of Won)</i>	2018	2017
Short-term benefits	₩ 115,618	112,688
Long-term benefits	13,400	8,632
Retirement benefits	21,658	20,422
	<u>₩ 150,676</u>	<u>141,742</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).

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 or 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.

POSCO and Subsidiaries

Notes to the Consolidated Financial Statements, Continued

As of December 31, 2018

(b) Details of guarantees

Contingent liabilities on outstanding guarantees and others provided by the Company as of December 31, 2018 are as follows.

<i>(in millions of Won)</i>							
Guarantor	Guarantee beneficiary	Financial institution	Guarantee limit		Guarantee amount		
			Foreign currency	Won equivalent	Foreign currency	Won equivalent	
[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
	Golden Lace DAEWOO Company Limited	KEB Hana Bank	IDR	150,000,000,000	11,520	150,000,000,000	11,520
	POSCO DAEWOO CHINA CO., LTD	Shinhan Bank	USD	9,000,000	10,063	6,000,000	6,708
	Songdo Posco family Housing	Mizuho	USD	8,000,000	8,945	7,290,000	8,151
	POSCO E&C Vietnam Co., Ltd.	SHINYOUNG SECURITIES CO., LTD.	KRW	10,000	10,000	-	-
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	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
	PT. POSCO ICT INDONESIA	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 - Companhia Siderurgica do Pecem	Export-Import Bank of Korea and others	USD	420,000,000	469,602	392,956,955	439,365
	LLP POSUK Titanium	BNDES	BRL	464,060,000	133,686	462,554,370	133,253
	Nickel Mining Company SAS	SMBC	USD	15,000,000	16,772	15,000,000	16,772
POSCO DAEWOO Corporation	GLOBAL KOMSCO Daewoo LLC	SMBC	EUR	46,000,000	58,841	46,000,000	58,841
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	New Songdo International City Development, LLC	ICBC	USD	8,225,000	9,196	8,225,000	9,196
	UITrans LRT Co., Ltd.	Others	KRW	440,000	440,000	432,000	432,000
	Chun-cheon Energy Co., Ltd	Kookmin Bank and others	KRW	20,740	20,740	3,766	3,766
		Kookmin Bank and others	KRW	11,600	11,600	941	941
	Pohang E&E Co., Ltd	Heungjuk 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
POSCO ICT	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
	BTL Enterprise and others	Kyobo Life Insurance Co., Ltd and others	KRW	1,165,352	1,165,352	1,165,352	1,165,352
POSCO AUSTRALIA PTY LTD	Department of Trade and Investment (NSW Government) and others	Woori bank and others	AUD	26,147,711	20,599	26,147,711	20,599
			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

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
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(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> <p>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.</p> <p>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.</p>
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	<p>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.</p>
POSCO ICT	<p>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.</p>

POSCO and Subsidiaries
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(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:

(in millions of Won, in thousands of foreign currencies)

Company	Legal actions	Claim amount	Won equivalent	Description
POSCO	27	KRW 75,218	75,218	Lawsuit on claim for employee right and others(*1)
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(*1)
	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
	1	PKR 124,775	1,003	Lawsuit on claim for damages
POSCO ENGINEERING & CONSTRUCTION., LTD.	120	KRW 442,812	442,812	Lawsuit on claim for damages and others(*1)
POSCO ICT	1	BRL 10,182	2,933	Lawsuit on revocation of claim for damage
	11	KRW 6,452	6,452	Lawsuit on claim for damages and others
	1	USD 1,881	2,103	Lawsuit on claim for damages
POSCO A&C	8	KRW 2,752	2,752	Lawsuit on claim for payment on construction and others
POSCO ENERGY CO., LTD.	3	KRW 3,039	3,039	Lawsuit on claim for damages and others
POSCO E&C CHINA CO., LTD.	3	CNY 44,446	7,234	Lawsuit over contract dispute and others
POSCO COATED & COLOR STEEL Co., Ltd.	1	KRW 1,400	1,400	Lawsuit on claim for payment
POSCO ENGINEERING (THAILAND) CO., LTD.	2	THB 509,191	17,491	Lawsuit on claim for payment on construction and others
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
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.

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(f) Other contingencies

Company	Description
POSCO	POSCO has provided three blank checks to KOREA ENERGY AGENCY as collateral for long-term foreign currency borrowings.
POSCO DAEWOO Corporation	As of December 31, 2018, POSCO DAEWOO Corporation has provided 33 blank promissory notes and 24 blank checks to KOREA ENERGY AGENCY and others as collateral for the guarantee on performance for contracts and others.
POSCO ENGINEERING & CONSTRUCTION CO., LTD.	As of December 31, 2018, POSCO ENGINEERING & CONSTRUCTION CO., LTD. has provided 23 blank checks and 4 blank promissory notes as collateral for agreements and outstanding loans, and has provided joint guarantee of ₩9,596,211 million for guarantee that partners had issued from Korea Housing & Urban Guarantee Corporation and others.
POSCO ICT	As of December 31, 2018, POSCO ICT has provided 2 blank promissory notes and 4 blank checks to financial institutions as collateral for the guarantee on performance for contracts and others.

39. Statements of Cash Flows

(a) Changes in operating assets and liabilities for the years ended December 31, 2018 and 2017 were as follows:

<i>(in millions of Won)</i>	2018	2017
Trade accounts and notes receivable	₩ (40,511)	49,991
Other receivables	(20,786)	113,740
Inventories	(1,572,560)	(1,056,518)
Other current assets	1,118	110,688
Other non-current assets	5,974	12,455
Trade accounts and notes payable	379,742	(607,999)
Other payables	(111,893)	(26,922)
Other current liabilities	(197,478)	(177,137)
Provisions	(116,790)	(145,763)
Payments of severance benefits	(189,165)	(185,220)
Plan assets	(245,214)	3,815
Other non-current liabilities	55,032	(17,404)
	₩ (2,052,531)	(1,926,274)

POSCO and Subsidiaries
Notes to the Consolidated Financial Statements, Continued
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(b) Changes in liabilities arising from financial activities for the year ended December 31, 2018 and 2017 were as follows:

1) December 31, 2018

(in millions of Won)

	Liabilities				Derivatives that hedge borrowings
	Short-term borrowings	long-term borrowings	Dividend payable	Finance lease liabilities	
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	₩ 7,487,780	12,721,490	8,673	94,754	43,417

2) December 31, 2017

(in millions of Won)

	Liabilities				Derivatives that hedge borrowings
	Short-term borrowings	long-term borrowings	Dividend payable	Finance lease liabilities	
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	₩ 8,174,818	12,888,839	7,213	93,018	119,320

POSCO and Subsidiaries
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40. Operating Segments

(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 as those that applied to the consolidated financial statements as of and for the year ended December 31, 2017.

(b) Information about reportable segments as of and for the years ended December 31, 2018 and 2017 were as follows:

1) As of and for the year ended December 31, 2018

<i>(in millions of Won)</i>		Steel	Trading	Construction	Others	Total
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 loss of equity-accounted investees, net		(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

2) As of and for the year ended December 31, 2017

<i>(in millions of Won)</i>		Steel	Trading	Construction	Others	Total
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 investments		(95,261)	-	(18,637)	(13,421)	(127,319)
Share of profit or loss of equity-accounted investees, net		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
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(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

<i>(in millions of Won)</i>		2018	2017
Total revenue for reportable segments	₩	102,258,628	95,059,704
Elimination of inter-segment revenue		(37,280,851)	(34,404,604)
	₩	<u>64,977,777</u>	<u>60,655,100</u>

2) Profit

<i>(in millions of Won)</i>		2018	2017
Total profit for reportable segments	₩	1,331,419	3,160,761
Goodwill and corporate FV adjustments		(77,756)	(84,370)
Elimination of inter-segment profit		638,401	(102,922)
Income tax expense		1,670,757	1,206,223
Profit before income tax expense	₩	<u>3,562,821</u>	<u>4,179,692</u>

3) Assets

<i>(in millions of Won)</i>		2018	2017
Total assets for reportable segments(*1)	₩	101,878,001	101,542,757
Investment in subsidiaries, associates and joint ventures		(15,272,243)	(15,555,972)
Goodwill and corporate FV adjustments		2,722,115	3,368,333
Elimination of inter-segment assets		(11,079,608)	(10,330,159)
	₩	<u>78,248,265</u>	<u>79,024,959</u>

(*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.

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Notes to the Consolidated Financial Statements, Continued
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4) Liabilities

<i>(in millions of Won)</i>		2018	2017
Total liabilities for reportable segments	₩	40,264,320	39,809,138
Goodwill and corporate FV adjustments		321,320	483,693
Elimination of inter-segment liabilities		(9,096,926)	(8,731,880)
	₩	<u>31,488,714</u>	<u>31,560,951</u>

5) Other significant items

a) December 31, 2018

<i>(in millions of Won)</i>		Total segment	Goodwill and corporate FV adjustments	Elimination of inter-segment transactions	Consolidated
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 of equity-accounted investees, net		(1,049,335)	-	1,161,970	112,635
Income tax expense		(1,664,258)	25,921	(32,420)	(1,670,757)
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>(6,681,186)</u>

b) December 31, 2017

<i>(in millions of Won)</i>		Total segment	Goodwill and corporate FV adjustments	Elimination of inter-segment transactions	Consolidated
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 of equity-accounted investees, net		(1,721)	-	12,261	10,540
Income tax expense		(1,274,696)	21,270	47,203	(1,206,223)
Impairment loss of property, plant and equipment and others		(336,719)	(867)	34,619	(302,967)
Impairment loss on available-for-sale investments		(127,319)	-	4,105	(123,214)
	₩	<u>(5,578,296)</u>	<u>(84,488)</u>	<u>302,836</u>	<u>(5,359,948)</u>

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(d) Revenue by geographic area for the years ended December 31, 2018 and 2017 was as follows:

<i>(in millions of Won)</i>		2018	2017
Domestic	₩	41,671,930	38,882,220
Japan		2,084,061	2,200,405
China		6,945,266	6,731,214
Indonesia		1,592,046	1,266,572
Asia-other		7,312,486	6,483,981
North America		1,834,534	1,725,120
Europe		2,000,525	1,721,431
Others		1,536,929	1,644,157
	₩	<u>64,977,777</u>	<u>60,655,100</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, 2018 and 2017 are as follows:

<i>(in millions of Won)</i>		2018	2017
Domestic	₩	28,298,293	30,790,462
Japan		146,490	162,328
China		1,185,828	1,284,561
Indonesia		2,711,032	2,750,084
Asia-other		2,356,904	2,516,715
North America		173,914	277,249
Europe		247,421	262,518
Others		997,831	856,801
	₩	<u>36,117,713</u>	<u>38,900,718</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.