

POSCO DAEWOO Corporation

Separate financial statements
for the years ended December 31, 2018 and 2017
with the independent auditor's report

POSCO DAEWOO Corporation

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Independent auditor's report

The Shareholders and Board of Directors POSCO DAEWOO Corporation

Opinion

We have audited the separate financial statements of POSCO DAEWOO Corporation (the "Company"), which comprise the separate statements of financial position as of December 31, 2018 and 2017, and the separate statements of comprehensive income, separate statements of changes in equity and separate statements of cash flows for the years then ended, and notes to the separate financial statements, including a summary of significant accounting policies.

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

Basis for opinion

We conducted our audits in accordance with Korean Auditing Standards (KGAAS). Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We are independent of the Company in accordance with the ethical requirements that are relevant to our audits of the separate financial statements in the 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 financial statements of the current period. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Occurrence of overseas sales

Sales on the separate financial statements are one of the key indicators of the Company's core financial performance. As a general trading company, the Company mainly engages in trading, and accordingly, its overseas sales account for a significant portion of total sales. We have identified the occurrence of overseas sales as a significant risk as we believe that the risk of misstatement of the separate financial statements is high due to transportation risk and credit risk of overseas sales that are higher than that of the domestic sales and trading environment which is different from that of the domestic.

The major audit procedures we have conducted in this regard are as follows:

- Reviewing the key documents (shipping documents, etc.) generated for overseas sales.
- Confirming actual shipment by inspecting export declaration documents.
- Reviewing the appropriateness of sales cut-off.

Impairment test on subsidiary investments: Myanmar Amara Hotel Project

Daewoo Global Development Pte. Ltd., the Company's subsidiary, has opened Lotte Hotel Yangon in Yangon, Myanmar in September 2017 through Daewoo Amara Co., Ltd., its subsidiary. However, as the hotel continued to record operating losses and stagnant financial performance after the opening, the Company concluded that there were signs of impairment on the investments in subsidiaries. We identified the impairment test as a significant risk, taking into account that the amount of the investment is significant and the value-in-use estimates are complex and it potentially involves subjective judgments.

The major audit procedures we have conducted in this regard are as follows:

- Evaluating the competency and objectivity by observing the work experience and qualifications of external experts hired by the Company.
- Reviewing the rationality of the assumptions applied to the impairment test by communicating with personnel in charge and external experts.
- Utilizing the internal experts of the audit team to examine the variables applied to the valuation model and methodology used to measure recoverable amounts in the external evaluation report.
- Visiting local corporation in Myanmar and conduct observations and inquiries with management on market and business status, future business plans, etc.

Impairment test on investments in associates: Ambatovy Nickel Project

The Company decided to participate in the Ambatovy Nickel Project in 2006 and invested in the shares of Madagascar's local special purpose corporation through the Korea Ambatovy Consortium. The Ambatovy mine began commercial production in 2012, but a large operating loss was recorded as the nickel market price decreased due to oversupply. As a result, the Company conducted impairment test by external evaluation company as of December 31, 2018. We identified the impairment test as a significant risk, taking into account that the amount of the investment is significant and the value-in-use estimates are complex and it potentially involves subjective judgments.

The major audit procedures we have conducted in this regard are as follows:

- Evaluating the competency and objectivity by observing the work experience and qualifications of external experts hired by the Company.
- Reviewing the rationality of the assumptions applied to the impairment test by communicating with personnel in charge and external experts.
- Utilizing the internal experts of the audit team to examine the business plans, variables applied to the valuation model and methodology used to measure recoverable amounts in the external evaluation report.
- Reviewing the investment contracts and the appropriateness of accounting for impairment.

Responsibilities of management and those charged with governance for the separate financial statements

Management is responsible for the preparation and fair presentation of these separate financial statements in accordance with Korean International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of the separate financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the 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.

Auditor's responsibilities for the audit of the separate financial statements

Our objectives are to obtain reasonable assurance about whether the separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with KGAAS 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 separate financial statement.

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

- Identify and assess the risks of material misstatement of the separate 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 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 auditor's report to the related disclosures in the separate financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the separate financial statements, including the disclosures, and whether the separate financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

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 to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguard

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the separate financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter 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 partner in charge of the audit resulting in this independent auditor's report is Kwang Yeol Lee.

Ernst & Young Han Young

March 11, 2019

<p>This audit report is effective as of March 11, 2019 the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the auditor's report date to the time this report is used. Such events and circumstances could significantly affect the accompanying consolidated financial statements and may result in modifications to this report.</p>
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POSCO DAEWOO Corporation

Separate financial statements
for the years ended December 31, 2018 and 2017

“The accompanying separate financial statements, including all footnotes and disclosures, have been prepared by,
and are the responsibility of, the Company.”

Kim, Young-Sang
Chief Executive Officer
POSCO DAEWOO Corporation

POSCO DAEWOO Corporation
Separate statements of financial position
as of December 31, 2018 and 2017

		Korean won in millions		U.S. dollar in thousands (Note 2)
	Notes	2018	2017	2018
Assets				
Current assets				
Cash and cash equivalents	4,29,30	₩ 53,760	₩ 44,350	\$ 48,082
Trade and other receivables	5,29,30	4,258,659	3,518,262	3,808,836
Other current financial assets	6,29,30	66	84	59
Derivative financial assets	18,29,30	53,261	51,066	47,635
Other current assets	7	118,576	114,436	106,052
Inventories	8	783,459	732,612	700,705
		5,267,781	4,460,810	4,711,369
Non-current assets				
Trade and other receivables	5,29,30	413,765	412,817	370,060
Other non-current financial assets	6,29,30	29,944	89,595	26,781
Investments in subsidiaries and associates	9	631,887	746,128	565,144
Property, plant and equipment	10	645,853	637,035	577,634
Intangible assets	11	1,358,280	1,468,727	1,214,811
Investment properties	12,30	154,736	157,631	138,392
Severance benefit assets	16	970	8,224	868
Deferred tax assets	27	264,846	200,675	236,871
Current tax assets		5,183	-	4,636
		3,505,464	3,720,832	3,135,197
Total assets		₩ 8,773,245	₩ 8,181,642	\$ 7,846,566
Liabilities and equity				
Current liabilities				
Trade and other payables	13,29,30	₩ 1,940,101	₩ 1,753,404	\$ 1,735,177
Borrowings	14,29,30	1,936,790	1,745,978	1,732,215
Current portion of bonds	14,29,30	538,509	463,736	481,629
Derivative financial liabilities	18,29,30	44,240	43,454	39,567
Other current liabilities	15	224,565	126,646	200,845
Current tax liabilities		54,682	44,767	48,906
		4,738,887	4,177,985	4,238,339
Non-current liabilities				
Trade and other payables	13,29,30	15,803	23,862	14,134
Borrowings	14,29,30	336,310	372,553	300,787
Bonds	14,29,30	770,515	734,200	689,129
Other non-current liabilities	15	37,962	37,694	33,953
Severance benefit liabilities	16	-	437	-
Provisions	17,18	74,621	59,286	66,739
		1,235,211	1,228,032	1,104,742
Total liabilities		₩ 5,974,098	₩ 5,406,017	\$ 5,343,081

(Continued)

POSCO DAEWOO Corporation
Separate statements of financial position
as of December 31, 2018 and 2017 (cont'd)

	Notes	Korean won in millions		U.S. dollar in thousands (Note 2)
		2018	2017	2018
Equity				
Issued capital	1,19	₩ 616,876	₩ 616,876	\$ 551,718
Capital surplus	19	544,003	544,003	486,542
Other components of equity	19	(6)	(6)	(5)
Accumulated other comprehensive income	6,20	(1,945)	13,383	(1,740)
Retained earnings	21	1,640,219	1,601,369	1,466,970
Total equity		2,799,147	2,775,625	2,503,485
Total liabilities and equity		₩ 8,773,245	₩ 8,181,642	\$ 7,846,566

The accompanying notes are an integral part of the separate financial statements.

POSCO DAEWOO Corporation
Separate statements of comprehensive income
for the years ended December 31, 2018 and 2017

		Korean won in millions		U.S. dollar in thousands (Note 2)
	Notes	2018	2017	2018
Sales	3	₩ 23,308,796	₩ 20,891,526	\$ 20,846,790
Cost of sales	22	(22,523,175)	(19,738,190)	(20,144,151)
Gross profit		785,621	1,153,336	702,639
Selling and administrative expenses	22,23,26,29	(400,336)	(800,522)	(358,050)
Operating profit		385,285	352,814	344,589
Finance income	24,29	769,101	913,158	687,864
Finance costs	24,29	(824,200)	(939,938)	(737,143)
Other income	25,26,29	23,374	45,941	20,905
Other expenses	25,26,29	(219,551)	(162,278)	(196,361)
Profit for the year before tax	3	134,009	209,697	119,854
Income tax expense	27	(36,237)	(59,317)	(32,409)
Profit for the year		₩ 97,772	₩ 150,380	\$ 87,445
Other comprehensive income:				
Other comprehensive income to be reclassified to profit or loss in subsequent periods:				
Net loss on valuation of available -for-sale financial assets		-	(7,746)	-
Other comprehensive income not to be reclassified to profit or loss in subsequent periods:				
Gains on valuation of equity instruments measured at fair value through other comprehensive income	6,20,27,29	(5,621)	-	(5,027)
Re-measurement gain (loss) on defined benefit liabilities	16,27	(5,682)	662	(5,082)
Other comprehensive loss for the year, net of tax		(11,303)	(7,084)	(10,109)
Total comprehensive income for the year, net of tax		₩ 86,469	₩ 143,296	\$ 77,336
Earnings per share				
(Korean won and U.S. dollar):				
Basic	28	₩ 792	₩ 1,234	\$ 0.71
Diluted	28	₩ 792	₩ 1,234	\$ 0.71

The accompanying notes are an integral part of the separate financial statements.

POSCO DAEWOO Corporation
Separate statements of changes in equity
for the years ended December 31, 2018 and 2017

	Korean won in millions						U.S. dollar in thousands (Note 2)
	Accumulated						
	Issued capital	Capital surplus	Other components of equity	comprehensive income	Retained earnings	Total	Total
As of January 1, 2017	₩ 569,381	₩ 333,161	₩ -	₩ 21,129	₩ 1,507,266	₩ 2,430,937	\$ 2,174,168
Profit for the year	-	-	-	-	150,380	150,380	134,496
Net loss on valuation of available-for-sale financial assets	-	-	-	(7,746)	-	(7,746)	(6,928)
Re-measurement loss on defined benefit plans	-	-	-	-	662	662	592
Total comprehensive income	-	-	-	(7,746)	151,042	143,296	128,160
Issuance of capital stock due to business combination	47,495	210,842	-	-	-	258,337	231,050
Acquisition of treasury stock	-	-	(6)	-	-	(6)	(5)
Dividends	-	-	-	-	(56,939)	(56,939)	(50,925)
As of December 31, 2017	₩ 616,876	₩ 544,003	₩ (6)	₩ 13,383	₩ 1,601,369	₩ 2,775,625	\$ 2,482,448
As of January 1, 2018	₩ 616,876	₩ 544,003	₩ (6)	₩ 13,383	₩ 1,601,369	₩ 2,775,625	\$ 2,482,448
Effects of changes in accounting standard	-	-	-	(9,707)	8,446	(1,261)	(1,128)
As of January 1, 2018(After adjustment)	₩ 616,876	₩ 544,003	₩ (6)	₩ 3,676	₩ 1,609,815	₩ 2,774,364	\$ 2,481,320
Profit for the year	-	-	-	-	97,772	97,772	87,445
Net loss on valuation of available-for-sale financial assets	-	-	-	(5,621)	-	(5,621)	(5,027)
Re-measurement gain on defined benefit plans	-	-	-	-	(5,682)	(5,682)	(5,082)
Total comprehensive income	-	-	-	(5,621)	92,090	86,469	77,336
Dividends (Note 21)	-	-	-	-	(61,686)	(61,686)	(55,171)
As of December 31, 2018	₩ 616,876	₩ 544,003	₩ (6)	₩ (1,945)	₩ 1,540,219	₩ 2,799,147	\$ 2,503,485

The accompanying notes are an integral part of the separate financial statements.

POSCO DAEWOO Corporation
Separate statements of cash flows
for the years ended December 31, 2018 and 2017

	Korean won in millions		U.S. dollar in thousands (Note 2)
	2018	2017	2018
Operating activities			
Profit for the year	₩ 97,772	₩ 150,380	\$ 87,445
Non-cash adjustments to reconcile profit for the year to net cash flows provided by (used in) operating activities:			
Depreciation of property, plant and equipment	40,136	34,906	35,897
Amortization of intangible assets	124,545	146,219	111,390
Depreciation of investment properties	2,895	2,920	2,589
Severance and retirement benefits	16,481	17,086	14,741
Bad debt expenses	35,956	75,929	32,158
Interest expenses	110,551	72,543	98,874
Loss on disposal of available-for-sale financial assets	-	22	-
Gain on disposal of available-for-sale financial assets	-	(110)	-
Loss on disposition of investments in subsidiaries and related companies	379	-	339
Gain on Disposal of FVPL (securities)	(5,271)	-	(4,714)
Loss on impairment of investments in subsidiaries and associates	160,085	61,445	143,176
Gain on disposal of disposal groups classified as held for sale	-	(465)	-
Loss on foreign currency translation	47,369	167,414	42,366
Loss on settlement of derivatives	195,473	215,976	174,826
Loss on valuation of derivatives	88,047	75,501	78,747
Loss on valuation of accounts receivable	3,209	-	2,870
Other bad debt expenses	13,244	3,762	11,845
Loss on disposal of property, plant and equipment	440	476	394
Loss on impairment of property, plant and equipment	1,028	-	919
Loss on disposal of intangible assets	75	98	67
Loss on impairment of intangible assets	3,339	74,960	2,986
Income tax expense	36,237	59,317	32,409
Loss on valuation of inventories	6,020	661	5,384
Financial guarantee expenses	3,592	7,434	3,213
Contingency loss	20,993	9,335	18,776
Reversal of contingent liability	(476)	-	(426)
Contribution to provision for restoration	865	241	774
Interest income	(33,436)	(29,783)	(29,904)
Dividend income	(50,110)	(53,180)	(44,817)
Gain on foreign currency translation	(55,860)	(160,736)	(49,960)
Gain on settlement of derivatives	(226,009)	(188,645)	(202,137)
Gain on valuation of derivatives	(81,367)	(90,897)	(72,773)
Gain on valuation of accounts payable	(64)	-	(57)
Reversal of other allowance for doubtful accounts	(2,072)	(464)	(1,853)
Gain on disposal of property, plant and equipment	(197)	(1,441)	(176)
Gain on disposal of intangible assets	(2,536)	-	(2,268)
Reversal of loss on valuation of inventories	(3,749)	(6,561)	(3,353)
Financial guarantee income	(1,635)	(1,888)	(1,462)

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POSCO DAEWOO Corporation
Separate statements of cash flows
for the years ended December 31, 2018 and 2017 (cont'd)

	Korean won in millions		U.S. dollar in thousands (Note 2)
	2018	2017	2018
Working capital adjustments:			
Trade receivables	₩ (823,445)	₩ 244,252	\$ (736,468)
Other current receivables	(5,530)	4,223	(4,946)
Other current assets	39,220	(31,380)	35,077
Inventories	(52,982)	(147,549)	(47,386)
Derivative financial assets	22,447	(48,351)	20,076
Other non-current receivables	520	620	465
Trade accounts payable	242,986	(254,197)	217,320
Other current payables	(55,682)	22,480	(49,801)
Other current liabilities	55,853	7,443	49,953
Other non-current payables	171	(99)	153
Contingent liabilities	(6,702)	(2,232)	(5,994)
Payment of severance benefit	(434)	(412)	(388)
Contribution to plan assets	(15,977)	(26,800)	(14,289)
Interest received	33,824	31,958	30,251
Dividends received	41,647	53,032	37,248
Interest paid	(95,276)	(79,671)	(85,212)
Income tax paid	(91,664)	(68,034)	(81,983)
Net cash flows provided by (used in) operating activities	(165,075)	347,738	(147,639)
Investing activities			
Decrease (increase) in deposits at financial institutions, net	(217)	13,061	(194)
Decrease short-term debt securities	80	-	72
Increase in long-term financial instruments	-	(9)	-
Decrease in long-term financial instruments	-	5	-
Proceeds from disposal of equity instruments	2,209	110	1,976
Decrease in long-term other receivables	-	36	-
Increase in long-term other receivables	(20,174)	(21,349)	(18,043)
Decrease in guarantee deposits	2	254	2
Decrease in long-term guarantee deposits	933	616	834
Increase in long-term guarantee deposits	-	(2,226)	-
Proceeds from disposal of property, plant and equipment	460	1,464	411
Proceeds from disposal of intangible assets	6,646	201	5,944
Decrease (Increase) in short-term loans	47,294	(683)	42,298
Decrease (increase) in current portion of long-term loans	(18,353)	(43,860)	(16,414)
Decrease (increase) in long-term loans	2,435	55,998	2,178
Acquisition of available-for-sale financial assets	-	(300)	-
Acquisition of long-term equity Investments	(400)	-	(358)
Acquisition of subsidiaries	(11,563)	(139,438)	(10,342)
Proceeds from disposal of subsidiaries	17,561	-	15,706
Acquisition of property, plant, and equipment	(32,213)	(18,521)	(28,810)
Acquisition of intangible assets	(29,188)	(101,364)	(26,105)
Proceeds from disposal of disposal groups classified as held for sale	-	717	-
Increase of net cash flows due to business combination	-	22,150	-
Decrease in capital lease receivables	-	104	-
Net cash flows used in investing activities	(34,488)	(233,034)	(30,845)

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POSCO DAEWOO Corporation
Separate statements of cash flows
for the years ended December 31, 2018 and 2017 (cont'd)

	Korean won in millions		U.S. dollar in thousands (Note 2)
	2018	2017	2018
Financing activities			
Issuance of bonds	₩ 573,623	₩ 338,150	\$ 513,034
Redemption of bonds	(464,280)	(284,044)	(415,240)
Decrease in short-term borrowings	384,753	(220,704)	344,113
Proceeds from long-term borrowings	5,060	243,509	4,526
Repayment of long-term borrowings	(230,667)	(132,208)	(206,303)
Dividends paid	(61,686)	(56,939)	(55,170)
Payment of financial lease liabilities	(6)	(796)	(5)
Acquisition of treasury stock	-	(6)	-
Net cash flows provided by (used in) financing activities	206,797	(113,038)	184,955
Net increase in cash and cash equivalents	7,234	1,666	6,471
Cash and cash equivalents at January 1	44,350	43,922	39,665
Net foreign exchange difference	2,176	(1,238)	1,946
Cash and cash equivalents at December 31	₩ 53,760	₩ 44,350	\$ 48,082

The accompanying notes are an integral part of the separate financial statements.

1. Corporate information

POSCO DAEWOO Corporation (the “Company”) was incorporated on December 27, 2000 as a result of a spin-off of the trading segment of Daewoo Corporation. The Company changed its name from Daewoo International Corporation to POSCO DAEWOO Corporation in accordance with the resolution approved at the general shareholders' meeting held on March 14, 2016.

The Company is engaged in various business activities, such as providing international trade, export agency services, intermediary trading, manufacturing, natural resource development and lease service. The primary products sold by the Company include various industrial grade steel, metals, chemicals, automobile parts, machinery, ships, plants, electronics, special materials, grains and petroleum.

The Company listed its shares on the Korea Exchange on March 23, 2001. The Company's capital stock as of December 31, 2018 is ₩616,876 million as a result of shares issued for the merge with the steel business segment of POSCO P&S. POSCO, the Company's largest shareholder, owns 62.90% equity interest in the Company.

2. Basis of preparation and summary of significant accounting policies

2.1 Basis of preparation

The Company prepares statutory financial statements in the Korean language in accordance with *Korean International Financial Reporting Standards* (KIFRS) enacted by the *Act on External Audit of Stock Companies*. The accompanying separate financial statements have been translated into English from the Korean language financial statements. In the event of any differences in interpreting the financial statements or the independent auditors' report thereon, the Korean version, which is used for regulatory reporting purposes, shall prevail.

The separate financial statements have been prepared on a historical cost basis, except for derivative financial instruments, available-for-sale financial assets and others that have been measured at fair value. The carrying values of recognized assets and liabilities that are designated as hedged items in fair value hedges that would otherwise be carried at amortized cost are adjusted to record changes in the fair values attributable to the risks that are being hedged in effective hedge relationships. The separate financial statements are presented in Korean won (KRW) and all values are rounded to the nearest million, except when otherwise indicated.

2.1.1 Financial statements translation

The accompanying separate financial statements are expressed in Korean won, and solely for convenience of the reader, have been translated into United States dollars at the rate of ₩1,118.1 to USD 1, the year-end exchange rate on December 31, 2018. Such translation should not be construed as a representation that the Korean won amount can actually be converted into United States dollars at the exchange rate used for the purpose of such translation.

2.2 Summary of significant accounting policies

2.2.1 Subsidiaries, associates and jointly controlled entities

Pursuant to KIFRS 1027, the accompanying separate financial statements are accounted for, by a parent, investor in an associate on the basis of the direct equity interest rather than on the basis of the reported results and net assets of the investees. Moreover, KIFRS 1027 requires that, in separate financial statements, investments in subsidiaries or associates should be accounted for at cost. All dividends should be recognized in profit or loss within separate financial statements once the right to receive payment has been established.

2.2.2 Current versus non-current classification

The Company presents assets and liabilities in the statement of financial position based on current /non-current classification.

An asset is current when it is:

- Expected to be realized or intended to be sold or consumed in the normal operating cycle
- Held primarily for the purpose of short-term trading
- Expected to be realized within twelve months after the reporting period, or
- Cash or cash equivalent unless restricted from being exchanged or used to settle a liability for at least twelve months after the reporting period

All other assets are classified as non-current.

A liability is current when:

- It is expected to be settled in the normal operating cycle
- It is held primarily for the purpose of short-term trading
- It is due to be settled within twelve months after the reporting period, or
- There is no unconditional right to defer the settlement of the liability for at least twelve months after the reporting period

The Company classifies all other liabilities as non-current.

Deferred tax assets and liabilities are classified as non-current assets and liabilities.

2.2.3 Fair value measurement

The Company measures financial instruments such as derivatives at fair value at each balance sheet date. Fair value related disclosures for financial instruments and non-financial assets that are measured at fair value or where fair values are disclosed, are summarized in the following notes:

	Notes
Disclosure for valuation methods, significant estimates and assumptions	2,6,29 and 30
Quantitative disclosures of fair value measurement hierarchy	30
Investment properties	12
Financial instruments (including those carried at amortized cost)	6,29 and 30

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place either:

- In the principal market for the asset or liability, or
- In the absence of a principal market, in the most advantageous market for the asset or liability

The principal or the most advantageous market must be accessible by the Company.

The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

The Company uses valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs.

2.2.3 Fair value measurement (cont'd)

All assets and liabilities for which fair value is measured or disclosed in the financial statements are categorized within the fair value hierarchy, described as follows, based on the lowest level input that is significant to the fair value measurement as a whole:

- Level 1 — Quoted (unadjusted) market prices in active markets for identical assets or liabilities
- Level 2 — Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observable
- Level 3 — Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable

For assets and liabilities that are recognized in the financial statements at fair value on a recurring basis, the Company determines whether transfers have occurred between levels in the hierarchy by re-assessing categorization (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period.

For the purpose of fair value disclosures, the Company has determined classes of assets and liabilities on the basis of the nature, characteristics and risks of the asset or liability and the level of the fair value hierarchy as explained above.

2.2.4 Revenue from contracts with customers

The Company has applied KIFRS 1115 'Revenue from contracts with customers' since January 1, 2018.

Revenue from contracts with customers is recognized when control of the goods or services are transferred to the customer at an amount that reflects the consideration to which the Company expects to be entitled in exchange for those goods or services.

2.2.4.1 Trade

Classification and implementation of performance obligations

Performance obligation are identified in certain contracts with respect to (1) the sale of goods, and (2) the performance of their duties as part of their trade transactions with customers. The Company recognizes the transaction price allocated to these performance obligations as revenue upon completion of each performance obligation by applying the expected cost plus margin approach.

For the transactions of custom-made equipment, if the Company has no alternative use for assets created by fulfilling obligations and the Company has the enforceable right for the payment for the portion completed up to now, the revenue is recognized by the percentage-of-completion methods.

The Company provides guarantees for goods and services that are defective at the time of sale in accordance with the requirements of the law. Assurance type guarantees are accounted for in accordance with K-IFRS 1037, 'Contingent Liabilities and Contingent Assets.' Guarantees of the types of services classified as separate performance obligations are not recognized.

Variable consideration

If the consideration in a contract includes a variable amount, the Company estimates the amount of consideration to which it will be entitled in exchange for transferring the goods to the customer. The variable consideration is estimated at contract inception and constrained until it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognised will not occur when the associated uncertainty with the variable consideration is subsequently resolved.

Certain contracts provide a customer with a right to return the goods within a specified period. For goods that are expected to be returned, instead of revenue, the Company recognises a refund liability. A right of return asset (and corresponding adjustment to cost of sales) is also recognised for the right to recover products from a customer. If the Company receives short-term advances from its customers, the practical expedient in KIFRS 1115 is used, and the Company does not adjust the promised amount of consideration for the effects of a significant financing component if it expects, at contract inception, that the period between the transfer of the promised good or service to the customer and when the customer pays for that good or service will be one year or less.

2.2.4.1 Trade (cont'd)

Judgment on principal versus agent

The Company controls each good or service prior to providing the goods or services to the customer, taking into account the main responsibilities and obligation of fulfilling the commitments in the trade transaction with the customer, and right to determine prices. Therefore, the Company has generally concluded that it is the principal in its revenue arrangements, except for the agency services, in which sales commission is recognized as revenue.

2.2.4.2 Resource Development Division

Product distribution contracts in some of the contracts of the resource development transaction are not subject to the standard as the counterparties to the contract are not the "customers" as defined in KIFRS 1115. Revenue from gas sales is recognized when the goods are transferred.

2.2.4.3 Others

In addition to the above, the Company has manufacturing sectors, in which the revenue is recognized when the goods or services are transferred.

2.2.5 Cash and cash equivalents

Cash and cash equivalents in the statement of financial position comprise cash at banks and on hand and short-term deposits with an original maturity of three months or less.

2.2.6 Financial instruments

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

2.2.6.1 Financial assets

(1) Initial recognition and measurement

Financial assets are classified, at initial recognition, as subsequently measured at amortized cost, fair value through other comprehensive income (OCI), and fair value through profit or loss.

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Company's business model for managing them. With the exception of trade receivables that do not contain a significant financing component or for which the Company has applied the practical expedient, the Company initially measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs. Trade receivables that do not contain a significant financing component or for which the Company has applied the practical expedient are measured at the transaction price determined under KIFRS 1115.

In order for a financial asset to be classified and measured at amortized cost or fair value through OCI, it needs to give rise to cash flows that are 'solely payments of principal and interest (SPPI)' on the principal amount outstanding. This assessment is referred to as the SPPI test and is performed at an instrument level.

The Company's business model for managing financial assets refers to how it manages its financial assets in order to generate cash flows. The business model determines whether cash flows will result from collecting contractual cash flows, selling the financial assets, or both.

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the market place (regular way trades) are recognized on the trade date, i.e., the date that the Company commits to purchase or sell the asset.

2.2.6.1 Financial assets (cont'd)

(2) Subsequent measurement

For purposes of subsequent measurement, financial assets are classified in four categories:

- Financial assets at amortized cost (debt instruments)
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)
- Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments)
- Financial assets at fair value through profit or loss

Financial assets at amortized cost (debt instruments)

This category is the most relevant to the Company. The Company measures financial assets at amortized cost if both of the following conditions are met:

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

Financial assets at amortized cost are subsequently measured using the effective interest (EIR) method and are subject to impairment. Gains and losses are recognized in profit or loss when the asset is derecognized, modified or impaired.

Financial assets at fair value through OCI (debt instruments)

The Company measures debt instruments at fair value through OCI if both of the following conditions are met:

- The financial asset is held within a business model with the objective of both holding to collect contractual cash flows and selling and
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

For debt instruments at fair value through OCI, interest income, foreign exchange revaluation and impairment losses or reversals are recognized in the statement of profit or loss and computed in the same manner as for financial assets measured at amortized cost. The remaining fair value changes are recognized in OCI. Upon derecognition, the cumulative fair value change recognized in OCI is recycled to profit or loss.

The Company's debt instruments at fair value through OCI includes investments in quoted debt instruments included under other non-current financial assets.

The Company elected to classify irrevocably its non-listed equity investments under this category.

Financial assets designated at fair value through OCI (equity instruments)

Upon initial recognition, the Company can elect to classify irrevocably its equity investments as equity instruments designated at fair value through OCI when they meet the definition of equity under KIFRS 1032 Financial Instruments: Presentation and are not held for trading. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognized as other income in the statement of profit or loss when the right of payment has been established, except when the Company benefits from such proceeds as a recovery of part of the cost of the financial asset, in which case, such gains are recorded in OCI. Equity instruments designated at fair value through OCI are not subject to impairment assessment.

The Company elected to classify irrevocably its non-listed equity investments under this category.

2.2.6.1 Financial assets (cont'd)

Financial assets at fair value through profit or loss

Financial assets at fair value through profit or loss include financial assets held for trading and financial assets designated upon initial recognition at fair value through profit or loss. Financial assets are classified as held for trading if they are acquired for the purpose of selling or repurchasing in the near term. Derivatives, including separated embedded derivatives, are also classified as held for trading unless they are designated as effective hedging instruments. Financial assets with cash flows that are not solely payments of principal and interest are classified and measured at fair value through profit or loss, irrespective of the business model. Notwithstanding the criteria for debt instruments to be classified at amortized cost or at fair value through OCI, as described above, debt instruments may be designated at fair value through profit or loss on initial recognition if doing so eliminates, or significantly reduces, an accounting mismatch.

Financial assets at fair value through profit or loss are carried in the statement of financial position at fair value with net changes in fair value recognized in the statement of profit or loss.

Derivatives and the listed equity investments that were not elected to classify to financial assets at fair value through OCI are included in this category. Dividends on the listed equity investments are recognized as profit or loss when the right is confirmed.

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if: the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss. Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the fair value through profit or loss category.

A derivative embedded within a hybrid contract containing a financial asset host is not accounted for separately. The financial asset host together with the embedded derivative is required to be classified in its entirety as a financial asset at fair value through profit or loss.

(3) Derecognition

A financial asset (or, where applicable, a part of a financial asset or part of a company of similar financial assets) is primarily derecognized (i.e., removed from the Company's statement of financial position) when:

- The rights to receive cash flows from the asset have expired, or
- The Company has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either (a) the Company has transferred substantially all the risks and rewards of the asset, or (b) the Company has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset

When the Company has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if, and to what extent, it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the Company continues to recognize the transferred asset to the extent of its continuing involvement. In that case, the Company also recognizes an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Company has retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Company could be required to repay.

2.2.6.1 Financial assets (cont'd)

(4) Impairment of financial assets

Disclosures related to impairment of financial assets are provided below:

- Disclosures for significant assumptions
- Debt instruments at fair value through OCI
- Trade receivables, including contract assets

The Company recognizes an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Company expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECLs are recognized in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

For trade receivables and contract assets, the Company applies a simplified approach in calculating ECLs. Therefore, the Company does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date. The Company has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

For debt instruments at fair value through OCI, the Company applies the low credit risk simplification. At every reporting date, the Company evaluates whether the debt instrument is considered to have low credit risk using all reasonable and supportable information that is available without undue cost or effort. In making that evaluation, the Company reassesses the internal credit rating of the debt instrument. In addition, the Company considers that there has been a significant increase in credit risk when contractual payments are more than 30 days past due.

The Company's debt instruments at fair value through OCI comprise solely of quoted bonds that are graded in the top investment category (Very Good and Good) by the credit rating agency and, therefore, are considered to be low credit risk investments. It is the Company's policy to measure ECLs on such instruments on a 12-month basis. However, when there has been a significant increase in credit risk since origination, the allowance will be based on the lifetime ECL. The Company uses the ratings from the good credit rating agency both to determine whether the debt instrument has significantly increased in credit risk and to estimate ECLs.

The Company considers a financial asset in default when contractual payments are 90 days past due. However, in certain cases, the Company may also consider a financial asset to be in default when internal or external information indicates that the Company is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Company. A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows.

2.2.6.2 Financial liabilities

(1) Initial recognition and measurement

Financial liabilities are classified, at initial recognition, as financial liabilities at fair value through profit or loss, loans and borrowings, payables, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Company's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts, financial guarantee contracts and derivative financial instruments.

2.2.6.2 Financial liabilities (cont'd)

(2) Subsequent measurement

The measurement of financial liabilities depends on their classification, as described below:

Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as of fair value through profit or loss.

Financial liabilities are classified as held for trading if they are incurred for the purpose of repurchasing in the near term. This category also includes derivative financial instruments entered into by the Company that are not designated as hedging instruments in hedge relationships as defined by KIFRS 1109. Separated embedded derivatives are also classified as held for trading unless they are designated as effective hedging instruments.

Gains or losses on liabilities held for trading are recognized in the statement of profit or loss.

Financial liabilities designated upon initial recognition at fair value through profit or loss are designated at the initial date of recognition, and only if the criteria in KIFRS 1109 are satisfied. The Company has not designated any financial liability as fair value through profit or loss.

Loans and borrowings

This is the category most relevant to the Company. After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortized cost using the EIR method. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the EIR amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortization is included as finance costs in the statement of profit or loss. This category generally applies to interest-bearing loans and borrowings.

(3) Derecognition

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the derecognition of the original liability and the recognition of a new liability. The difference in the respective carrying amounts is recognized in the statement of profit or loss.

2.2.6.3 Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the statement of financial position if there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, to realize the assets and settle the liabilities simultaneously.

2.2.6.4 Derivative financial instruments and hedge accounting

(1) Initial recognition and subsequent measurement

The Company uses derivative financial instruments, such as forward currency contracts, interest rate swaps and forward commodity contracts, to hedge its foreign currency risks, interest rate risks and commodity price risks, respectively. Such derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative.

2.2.6.4 Derivative financial instruments and hedge accounting (cont'd)

For the purpose of hedge accounting, hedges are classified as:

- Fair value hedges when hedging the exposure to changes in the fair value of a recognized asset or liability or an unrecognized firm commitment
- Cash flow hedges when hedging the exposure to variability in cash flows that is either attributable to a particular risk associated with a recognized asset or liability or a highly probable forecast transaction or the foreign currency risk in an unrecognized firm commitment
- Hedges of a net investment in a foreign operation

At the inception of a hedge relationship, the Company formally designates and documents the hedge relationship to which the Company wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge.

Before January 1, 2018, the documentation includes identification of the hedging instrument, the hedged item or transaction, the nature of the risk being hedged and how the Company will assess the effectiveness of changes in the hedging instrument's fair value in offsetting the exposure to changes in the hedged item's fair value or cash flows attributable to the hedged risk. Such hedges are expected to be highly effective in achieving offsetting changes in fair value or cash flows and are assessed on an ongoing basis to determine that they actually have been highly effective throughout the financial reporting periods for which they were designated.

Beginning January 1, 2018, the documentation includes identification of the hedging instrument, the hedged item, the nature of the risk being hedged and how the Company will assess whether the hedging relationship meets the hedge effectiveness requirements (including the analysis of sources of hedge ineffectiveness and how the hedge ratio is determined). A hedging relationship qualifies for hedge accounting if it meets all of the following effectiveness requirements:

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

Hedges that meet the strict criteria for hedge accounting are accounted for, as described below:

(2) Fair value hedges

The change in the fair value of a hedging derivative is recognized in the statement of profit or loss. The change in the fair value of the hedged item attributable to the risk hedged is recorded as part of the carrying value of the hedged item and is also recognized in the statement of profit or loss.

For fair value hedges relating to items carried at amortized cost, any adjustment to carrying value is amortized through profit or loss over the remaining term of the hedge using the EIR method. EIR amortization may begin as soon as an adjustment exists and no later than when the hedged item ceases to be adjusted for changes in its fair value attributable to the risk being hedged.

If the hedged item is derecognized, the unamortized fair value is recognized immediately in profit or loss.

When an unrecognized firm commitment is designated as a hedged item, the subsequent cumulative change in the fair value of the firm commitment attributable to the hedged risk is recognized as an asset or liability with a corresponding gain or loss recognized in profit and loss.

(3) Cash flow hedges

The effective portion of the gain or loss on the hedging instrument is recognized in OCI in the cash flow hedge reserve, while any ineffective portion is recognized immediately in the statement of profit or loss. The cash flow hedge reserve is adjusted to the lower of the cumulative gain or loss on the hedging instrument and the cumulative change in fair value of the hedged item.

2.2.6.4 Derivative financial instruments and hedge accounting (cont'd)

The Company uses forward currency contracts as hedges of its exposure to foreign currency risk in forecast transactions and firm commitments, as well as forward commodity contracts for its exposure to volatility in the commodity prices. The ineffective portion relating to foreign currency contracts is recognized as other expense and the ineffective portion relating to commodity contracts is recognized in other operating income or expenses.

Before January 1, 2018, the Company designated all of the forward contracts as hedging instrument. Any gains or losses arising from changes in the fair value of derivatives were taken directly to profit or loss, except for the effective portion of cash flow hedges, which were recognized in OCI and later reclassified to profit or loss when the hedge item affects profit or loss.

Beginning January 1, 2018, the Company designates only the spot element of forward contracts as a hedging instrument. The forward element is recognized in OCI and accumulated in a separate component of equity under cost of hedging reserve.

The amounts accumulated in OCI are accounted for, depending on the nature of the underlying hedged transaction. If the hedged transaction subsequently results in the recognition of a non-financial item, the amount accumulated in equity is removed from the separate component of equity and included in the initial cost or other carrying amount of the hedged asset or liability. This is not a reclassification adjustment and will not be recognized in OCI for the period. This also applies where the hedged forecast transaction of a non-financial asset or non-financial liability subsequently becomes a firm commitment for which fair value hedge accounting is applied.

For any other cash flow hedges, the amount accumulated in OCI is reclassified to profit or loss as a reclassification adjustment in the same period or periods during which the hedged cash flows affect profit or loss.

If cash flow hedge accounting is discontinued, the amount that has been accumulated in OCI must remain in accumulated OCI if the hedged future cash flows are still expected to occur. Otherwise, the amount will be immediately reclassified to profit or loss as a reclassification adjustment. After discontinuation, once the hedged cash flow occurs, any amount remaining in accumulated OCI must be accounted for depending on the nature of the underlying transaction as described above.

2.2.7 Inventories

Inventories are valued at the lower of cost and net realizable value, with cost being determined using the first-in, first-out method, except for materials in-transit which are stated at cost by the specific identification method. Net realizable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale.

2.2.8 Non-current assets held for sale and discontinued operations

The Company classifies non-current assets and disposal companies classified as held for sale or for distribution to equity holders of the parent if their carrying amounts will be recovered principally through a sale or distribution rather than through continuing use. Such non-current assets and disposal companies classified as held for sale or as held for distribution are measured at the lower of their carrying amount and fair value less costs to sell or to distribute. Costs to sell are the incremental costs directly attributable to the sales, excluding the finance costs and income tax expense.

The criteria for held for sale classification is regarded as met only when the sale is highly probable and the asset or disposal company is available for immediate sale in its present condition. Actions required to complete the sale should indicate that it is unlikely that significant changes to the sale will be made or that the sale will be withdrawn. Management must be committed to the sale expected within one year from the date of the classification.

Property, plant and equipment and intangible assets are not depreciated or amortized once classified as held for sale or as held for distribution.

Assets and liabilities classified as held for sale or for distribution are presented separately as current items in the statement of financial position.

2.2.8 Non-current assets held for sale and discontinued operations (cont'd)

A disposal company qualifies as discontinued operation if it is a component of an entity that either has been disposed of, or is classified as held for sale, and:

- Represents a separate major line of business or geographical area of operations
- Is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations, or
- Is a subsidiary acquired exclusively with a view to resale

Discontinued operations are excluded from the results of continuing operations and are presented as a single amount as profit or loss after tax from discontinued operations in the statement of profit or loss and other comprehensive income.

2.2.9 Property, plant and equipment

Property, plant and equipment is stated at cost, net of accumulated depreciation and/or accumulated impairment losses, if any. 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. The present value of the expected cost for the decommissioning of the asset after its use is included in the cost of the respective asset if the recognition criteria for a provision are met.

Subsequent cost is recognized in the carrying amount of the item of property, plant and equipment, if the following recognition criteria are met:

- It is probable that future economic benefits associated with the item will flow to the Company, and
- Cost can be measured reliably.

The carrying amount of the replaced part is expensed, and the expenditures related to repair and maintenance are reflected in current operation as incurred.

Depreciation is computed using the straight-line method over the estimated useful life of the assets as follows:

	Years
Buildings	40~50
Machinery	4~25
Others	4~5

The assets' residual values, useful lives and methods of depreciation are reviewed at each fiscal year end, and adjusted prospectively, if appropriate.

2.2.10 Investment properties

Property held to earn rental income or for capital appreciation is classified as investment properties. Investment properties are measured initially at cost, including transaction costs. Subsequent to initial recognition, investment properties are stated at cost, net of accumulated depreciation and/or accumulated impairment losses.

Subsequent cost is recognized in the carrying amount of the item of property, plant and equipment, if the following recognition criteria are met.

- It is probable that future economic benefits associated with the item will flow to the Company and;
- Cost can be measured reliably.

The carrying amount of the replaced part is expensed, and the expenditures related to repair and maintenance are reflected in current operation as incurred.

2.2.10 Investment properties (cont'd)

Depreciation of investment properties other than land is calculated on a straight-line basis. The useful lives and depreciation method of investment properties are the same as those of property, plant and equipment. The assets' residual values, useful lives and methods of depreciation are reviewed at each financial year end, and adjusted prospectively, if appropriate.

2.2.11 Intangible assets

Intangible assets acquired separately are measured on initial recognition at cost. The cost of intangible assets acquired in a business combination is their fair value at the date of acquisition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and accumulated impairment losses. Internally generated intangibles, excluding capitalized development costs, are not capitalized and the related expenditure is reflected in profit or loss in the period in which the expenditure is incurred.

Intangible assets that are created internally are stated at cost less accumulated amortization and accumulated impairment losses after initial recognition, on the same basis as intangible assets acquired separately. Acquisition cost of an intangible asset acquired in a business combination and recognized separately from goodwill is the fair value of the acquisition date (assumed as acquisition cost). Intangible assets acquired in a business combination after initial recognition are recognized at cost less accumulated amortization and accumulated impairment losses on the same basis as individually acquired intangible assets. Intangible assets with finite lives as of December 31, 2018 except for the exploration and evaluation assets, development assets and mining rights are amortized using the straight-line method over the useful life of 5~10 years. Memberships are not amortized as their useful life is deemed to be indefinite.

The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at least at each financial year end and the assessment of indefinite life is reviewed annually to determine whether the indefinite life continues to be supportable. Changes in the expected useful life or the expected pattern of consumption of future economic benefits embodied in the asset is accounted for by changing the amortization period or method, as appropriate, and are treated as changes in accounting estimates.

2.2.12 Exploration and evaluation assets, development assets and mining rights

The Company engages in the development of natural resources either by entering into contracts for sharing the extracted natural resources or by acquiring interests in the related projects. Expenditures related to natural resources are recognized as exploration and evaluation assets, development assets or mining rights. The nature of these intangible assets is as follows:

2.2.12.1 Exploration and evaluation assets

Exploration and evaluation assets consist of expenditures for topographical studies, geophysical studies, drilling and appraisal of oil fields. These assets are reclassified into development assets when the reserves are proven successful.

2.2.12.2 Development assets

Development assets consist of expenditures for fields, construction of production facilities and others. These development assets are reclassified as mining rights at inception of the commercial production.

2.2.12.3 Mining rights

Mining rights (production fields) consist of expenditures for improving productivity, oil reservoir management for prediction of oil output and production optimization, and increasing the return rate from crude oil. Mining rights are amortized using the unit of production method.

2.2.13 Impairment of non-financial assets

The Company assesses, at each reporting date, whether there is an indication that an asset may be impaired. If any indication exists, the Company estimates the asset's recoverable amount. When the recoverable amount of asset cannot be estimated separately, the recoverable amount should be estimated based on the cash generating unit. 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.

An asset's recoverable amount is the higher of an asset's or cash-generating unit's (CGU) fair value less costs to sell and its value in use and is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or companies of assets. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset.

Where the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. Impairment losses are recognized in profit or loss. A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognized for the asset in prior years. Such reversal is recognized in the statement of comprehensive income.

2.2.14 Leases

The determination of whether an arrangement is (or contains) a lease is based on the substance of the arrangement at the inception date. The arrangement is assessed for (i) whether fulfilment of the arrangement is dependent on the use of a specific asset or assets or (ii) the arrangement conveys a right to use the asset or assets, even if that right is not explicitly specified in an arrangement.

2.2.14.1 Company as a lessee

Finance leases that transfer substantially all the risks and benefits incidental to ownership of the leased item to the Company, are capitalized at the commencement of the lease at the fair value of the leased property or, if lower, at the present value of the minimum lease payments. Lease payments are apportioned between finance charges and reduction of the lease liability so as to achieve a constant rate of interest on the remaining balance of the liability. Finance charges are recognized in finance costs in the statement of comprehensive income.

A leased asset is depreciated over the useful life of the asset. However, if there is no reasonable certainty that the Company will obtain ownership by the end of the lease term, the asset is depreciated over the shorter of the estimated useful life of the asset and the lease term.

Operating lease payments are recognized as an expense in the statement of comprehensive income on a straight-line basis over the lease term.

2.2.14.2 Company as a lessor

Leases in which the Company does not transfer substantially all the risks and benefits of ownership of an asset are classified as operating leases. Initial direct costs incurred in negotiating an operating lease are added to the carrying amount of the leased asset and recognized over the lease term on the same basis as rental income. Contingent rents are recognized as revenue in the period in which they are earned.

2.2.15 Foreign currency translation

These financial statements are presented in Korean won, which is the Company's functional currency and the currency of the primary economic environment in which the Company operates.

At the end of each reporting period, foreign currency monetary items are translated using the closing rate. Exchange differences arising 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.

2.2.15 Foreign currency translation (cont'd)

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates at the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value is determined.

2.2.16 Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period of time to get ready for its intended use or sale are capitalized as part of the cost of the respective assets. Any investment income on the temporary investment of those borrowings is deducted from borrowing costs. All other borrowing costs are expensed in the period they occur.

2.2.17 Government grants

Government grants are recognized where there is reasonable assurance that the grant will be received and all attached conditions will be complied with.

When the grant relates to an expense item, recognized as income by reducing the related costs on a systemic basis over the periods that the related costs, for which it is intended to compensate, are expensed. When the grant relates to an asset, it is presented in the statement of financial position by deducting the grant in arriving at the carrying amount of the asset. It is recognized in profit or loss over the life of depreciable asset as a reduced depreciation expenses.

2.2.18 Pension benefits

The Company operates a defined benefit pension plan, which requires contributions to be made to a separately administered fund.

The cost of providing benefits under the defined benefit plan is determined using the projected unit credit method. Re-measurements, comprising of actuarial gains and losses, the effect of the asset ceiling, excluding net interest (not applicable to the Company) and the return on plan assets (excluding net interest), are recognized immediately in the statement of financial position with a corresponding debit or credit to retained earnings through OCI in the period in which they occur. Re-measurements are not reclassified to profit or loss in subsequent periods.

Past service costs are recognized in profit or loss on the earlier of:

- The date of the plan amendment or curtailment, and
- The date that the Company recognizes restructuring-related costs

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. The Company recognizes the following changes in the net defined benefit obligation under cost of sales and selling and administrative expenses in profit or loss (by function).

- Service costs comprising current service costs, past-service costs, gains and losses on curtailments and non-routine settlements
- Net interest expense or income

2.2.19 Taxes

Tax expense consists of the current income tax and deferred tax.

2.2.19.1 Current income tax

Current income tax assets and liabilities for the current and prior periods are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted, by the reporting date, in the countries where the Company operates and generates taxable income.

2.2.19.2 Deferred tax

Deferred tax is provided using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes at the reporting date.

Deferred tax liabilities are recognized for all taxable temporary differences, except:

- When the deferred tax liability arises from the initial recognition of goodwill or an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss
- In respect of taxable temporary differences associated with investments in subsidiaries, associates and interests in joint ventures, where the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future

Deferred tax assets are recognized for all deductible temporary differences, carry forward of unused tax credits and unused tax losses, to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, and the carry forward of unused tax credits and unused tax losses can be utilized except:

- When the deferred tax asset relating to the deductible temporary difference arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss
- In respect of deductible temporary differences associated with investments in subsidiaries, associates and interests in joint ventures, deferred tax assets are recognized only to the extent that it is probable that the temporary differences will reverse in the foreseeable future and taxable profit will be available against which the temporary differences can be utilized

The carrying amount of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are reassessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date.

Deferred tax relating to items recognized outside profit or loss is recognized outside profit or loss. Deferred tax items are recognized in correlation to the underlying transaction either in OCI or directly in equity.

Deferred tax assets and deferred tax liabilities are offset, if a legally enforceable right exists to set off current tax assets against current income tax liabilities and the deferred taxes relate to the same taxable entity and the same taxation authority.

Tax benefits acquired as part of a business combination, but not satisfying the criteria for separate recognition at that date, would be recognized subsequently if new information about facts and circumstances changed. The adjustments would either be treated as a reduction to goodwill (as long as it does not exceed goodwill) if it was incurred during the measurement period or in profit or loss.

2.2.19.3 Recognition of current and deferred tax

Current and deferred tax are recognized as income or an expense and included in profit or loss for the period, except to the extent that the tax arises from (a) a transaction or event which is recognized, in the same or a different period, outside profit or loss, either in OCI or directly in equity; or (b) a business combination. In case of a business combination, the income tax effect is taken into account in calculating the goodwill or determining the amount of the acquirer's interest in the net fair value of the identifiable assets, liabilities and contingent liabilities of the acquiree exceeding the cost of the business combination.

2.2.20 Provisions and contingent liabilities

Provisions are recognized when the Company has a present obligation (legal or constructive) 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. When it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation or the amount of the obligation cannot be measured with sufficient reliability, a contingent liability is disclosed, but not recognized.

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.

When the Company expects some or all of a provision to be reimbursed, the reimbursement is recognized as a separate asset, but only when the reimbursement is virtually certain and the amount can be measured reliably.

2.3 Significant accounting judgments, estimates and assumptions

The preparation of the Company's financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosure of contingent liabilities, at the end of the reporting period. However, uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of the asset or liability affected in future periods.

Other disclosures relating to the Company's exposure to risks and uncertainties are disclosed in Note 29, which includes:

- Capital management
- Financial instruments risk management
- Sensitivity analysis disclosures

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

2.3.1 Impairment of non-financial assets

The Company assesses at the end of each reporting period whether there is any indication that non-financial assets may be impaired. If any indication exists, the Company estimates the asset's recoverable amount. Goodwill and intangible assets with indefinite useful lives are tested for impairment annually. To estimate the value in use, management estimates future cash flows from the assets or CGU and determines the discount rate appropriate for the future cash flow.

2.3.2. Pension benefits

The present value of the defined benefit obligation is determined using actuarial valuations. An actuarial valuation involves making various assumptions. It includes the determination of the discount rate, future salary growth rate and mortality rates. Due to the complexity of the valuation, the underlying assumptions and its long term nature, a defined benefit obligation is highly sensitive to changes in these assumptions. All assumptions are reviewed at each reporting date.

2.3.3 Fair value of financial instruments

When the fair value of financial assets and financial liabilities recorded in the statement of financial position cannot be derived from active markets, they are determined using valuation techniques including the discounted cash flow model. The inputs to these models are taken from observable markets where possible, but where this is not feasible, a degree of judgment is required in establishing fair values. The judgments include considerations of inputs such as liquidity risk, credit risk and volatility. Changes in assumptions about these factors could affect the reported fair value of financial instruments.

2.3.4 Provision for expected credit losses of trade receivables and contract assets

The Company uses a provision matrix to calculate ECLs for trade receivables and contract assets. The provision rates are based on days past due for companyings of various customer segments that have similar loss patterns (i.e., by geography, product type, customer type and rating, and coverage by letters of credit and other forms of credit insurance).

The provision matrix is initially based on the Company's historical observed default rates. The Company will calibrate the matrix to adjust the historical credit loss experience with forward-looking information. For instance, if forecast economic conditions (i.e., gross domestic product) are expected to deteriorate over the next year which can lead to an increased number of defaults in the manufacturing sector, the historical default rates are adjusted. At every reporting date, the historical observed default rates are updated and changes in the forward-looking estimates are analyzed.

The assessment of the correlation between historical observed default rates, forecast economic conditions and ECLs is a significant estimate. The amount of ECLs is sensitive to changes in circumstances and of forecast economic conditions. The Company's historical credit loss experience and forecast of economic conditions may also not be representative of customer's actual default in the future.

2.4 New and amended standards and interpretations

The Company applied for the first time certain standards and amendments, which are effective for annual periods beginning on or after January 1, 2018. The nature and the impact of each new standard and amendment are described below:

2.4.1 Amendments to KIFRS 1028 *Investments in Associates and Joint Ventures*

The amendments clarify that an entity that is a venture capital organization, or other qualifying entity, may elect, at initial recognition on an investment-by-investment basis, to measure its investments in associates and joint ventures at fair value through profit or loss. The amendments has no effect on the Company's financial statements as the Company is not a qualifying organization like venture capital.

2.4.2 Amendments to KIFRS 1102 *Share-based Payment*

The amendments clarify that accounting of a modification to the terms and conditions and the method of fair value measurement are the same when a share-based payment transaction changes its classification from cash settled to equity settled. These amendments do not have any impact on the Company's financial statements.

2.4.3 Amendments to KIFRS 2122 *Foreign Currency Transactions and Advance Consideration*

The Interpretation clarifies that, in determining the spot exchange rate to use on initial recognition of the related asset, expense or income (or part of it) on the derecognition of a non-monetary asset or non-monetary liability relating to advance consideration, the date of the transaction is the date on which an entity initially recognizes the non-monetary asset or non-monetary liability arising from the advance consideration. The amendments has no effect on the Company's financial statements

2.4.4 KIFRS 1109 *Financial Instruments*

The Company has applied the KIFRS 1109 *Financial instrument* since January 1, 2018. The Company has not restated the comparative information, based on the transitional provisions. Differences arising from the adoption of KIFRS 1109 have been recognised directly in retained earnings and other components of equity. The details are described in Note 32.

2.4.5 KIFRS 1115 *Revenue from Contracts with Customers*

The Company adopted the KIFRS 1115 Revenue from Contract with Customers. The Company has not restated the comparative information, based on the transitional provisions. Differences arising from the adoption of KIFRS 1115 have been recognised directly in retained earnings and other components of equity using the cumulative catch-up transition method. The details are described in Note 32.

2.5 Standards issued but not yet effective

The standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Company's financial statements are disclosed below.

2.5.1 KIFRS 1116 Leases

KIFRS 1116 *Leases* replaces KIFRS 1017 *Leases*, KIFRS 2104 *Determining whether an Arrangement contains a Lease*, KIFRS 2015 *Operating Leases-Incentives* and KIFRS 2027 *Evaluating the Substance of Transactions Involving the Legal Form of a Lease*. KIFRS 1116 sets out the principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to account for all leases under a single on-balance sheet model similar to the accounting for finance leases under KIFRS 1017. The standard includes two recognition exemptions for lessees – leases of 'low-value' assets (e.g., personal computers) and short-term leases (i.e., leases with a lease term of 12 months or less). At the commencement date of a lease, a lessee will recognize a liability to make lease payments (i.e., the lease liability) and an asset representing the right to use the underlying asset during the lease term (i.e., the right-of-use asset). Lessees will be required to separately recognize the interest expense on the lease liability and the depreciation expense on the right-of-use asset.

Lessees will be also required to remeasure the lease liability upon the occurrence of certain events (e.g., a change in the lease term, a change in future lease payments resulting from a change in an index or rate used to determine those payments). The lessee will generally recognize the amount of the remeasurement of the lease liability as an adjustment to the right-of-use asset. Lessor accounting under KIFRS 1116 is not significantly changed from today's accounting under KIFRS 1017. Lessors will continue to classify all leases using the same classification principle as in KIFRS 1017 and distinguish between two types of leases: operating and finance leases. KIFRS 1116 is effective for annual periods beginning on or after January 1, 2019. KIFRS 1116 also requires lessees and lessors to make more extensive disclosures than under KIFRS 1017.

The Company will elect to use the exemptions proposed by the standard on lease contracts for which the lease terms ends within 12 months as of the date of initial application, and lease contracts for which the underlying asset is of low value. The Company has leases of certain office equipment (i.e., personal computers, printing and photocopying machines) that are considered of low value.

The Company is analyzing the financial impact of adoption on KIFRS 1116 on the 2019 financial statements based on the available information and current status as of December 31, 2018.

2.5.2 Amendments to KIFRS 1109: *Prepayment Features with Negative Compensation*

Under KIFRS 1109, a debt instrument can be measured at amortized cost or at fair value through other comprehensive income, provided that the contractual cash flows are 'solely payments of principal and interest on the principal amount outstanding' (the SPPI criterion) and the instrument is held within the appropriate business model for that classification. The amendments to KIFRS 1109 clarify that a financial asset passes the SPPI criterion regardless of the event or circumstance that causes the early termination of the contract and irrespective of which party pays or receives reasonable compensation for the early termination of the contract. The amendments should be applied retrospectively and are effective from January 1, 2019, with earlier application permitted. These amendments have no impact on the financial statements of the Company.

2.5.3 Amendments to KIFRS 1110 and KIFRS 1028: *Sale or Contribution of Assets between an Investor and its Associate or Joint Venture*

The amendments address the conflict between KIFRS 1110 and KIFRS 1028 in dealing with the loss of control of a subsidiary that is sold or contributed to an associate or joint venture. The amendments clarify that the gain or loss resulting from the sale or contribution of assets that constitute a business, as defined in KIFRS 1103, between an investor and its associate or joint venture, is recognized in full. Any gain or loss resulting from the sale or contribution of assets that do not constitute a business, however, is recognized only to the extent of unrelated investors' interests in the associate or joint venture. The KASB has deferred the effective date of these amendments indefinitely, but an entity that early adopts the amendments must apply them prospectively. The Company will apply these amendments when they become effective.

2.5.4 Amendments to KIFRS 1019: *Plan Amendment, Curtailment or Settlement*

The amendments to KIFRS 1019 address the accounting when a plan amendment, curtailment or settlement occurs during a reporting period. The amendments specify that when a plan amendment, curtailment or settlement occurs during the annual reporting period, an entity is required to:

- Determine current service cost for the remainder of the period after the plan amendment, curtailment or settlement, using the actuarial assumptions used to remeasure the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event
- Determine net interest for the remainder of the period after the plan amendment, curtailment or settlement using: the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event; and the discount rate used to remeasure that net defined benefit liability (asset).

The amendments also clarify that an entity first determines any past service cost, or a gain or loss on settlement, without considering the effect of the asset ceiling. This amount is recognized in profit or loss. An entity then determines the effect of the asset ceiling after the plan amendment, curtailment or settlement. Any change in that effect, excluding amounts included in the net interest, is recognized in other comprehensive income. The amendments apply to plan amendments, curtailments, or settlements occurring on or after the beginning of the first annual reporting period that begins on or after January 1, 2019, with early application permitted. These amendments will apply only to any future plan amendments, curtailments, or settlements of the Company.

2.5.5 Amendments to KIFRS 1028: *Long-term interests in associates and joint ventures*

The amendments clarify that an entity applies KIFRS 1109 to long-term interests in an associate or joint venture to which the equity method is not applied but that, in substance, form part of the net investment in the associate or joint venture (long-term interests). This clarification is relevant because it implies that the expected credit loss model in KIFRS 1109 applies to such long-term interests. The amendments also clarified that, in applying KIFRS 1109, an entity does not take account of any losses of the associate or joint venture, or any impairment losses on the net investment, recognized as adjustments to the net investment in the associate or joint venture that arise from applying KIFRS 1028 Investments in Associates and Joint Ventures. The amendments should be applied retrospectively and are effective from January 1, 2019, with early application permitted. Since the Company does not have such long-term interests in its associate and joint venture, the amendments will not have an impact on its financial statements.

2.5.6 IFRIC Interpretation 23 *Uncertainty over Income Tax Treatment*

The Interpretation addresses the accounting for income taxes when tax treatments involve uncertainty that affects the application of KIFRS 1012 and does not apply to taxes or levies outside the scope of KIFRS 1012, nor does it specifically include requirements relating to interest and penalties associated with uncertain tax treatments. The Interpretation specifically addresses the following:

- Whether an entity considers uncertain tax treatments separately
- The assumptions an entity makes about the examination of tax treatments by taxation authorities
- How an entity determines taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates
- How an entity considers changes in facts and circumstances

The Company has to determine whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments. The approach that better predicts the resolution of the uncertainty should be followed. The interpretation is effective for annual reporting periods beginning on or after January 1, 2019, but certain transition reliefs are available. The Company will apply the interpretation from its effective date. Since the Company operates in a complex multinational tax environment, applying the Interpretation may affect its financial statements. In addition, the Company may need to establish processes and procedures to obtain information that is necessary to apply the Interpretation on a timely basis.

2.5.7 Annual Improvements 2015-2017 Cycle

2.5.7.1 KIFRS 1103 *Business Combinations*

The amendments clarify that, when an entity obtains control of a business that is a joint operation, it applies the requirements for a business combination achieved in stages, including remeasuring previously held interests in the assets and liabilities of the joint operation at fair value. In doing so, the acquirer remeasures its entire previously held interest in the joint operation. An entity applies those amendments to business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after January 1, 2019, with early application permitted. These amendments will apply on future business combinations of the Company.

2.5.7.2 KIFRS 1111 *Joint Arrangements*

A party that participates in, but does not have joint control of, a joint operation might obtain joint control of the joint operation in which the activity of the joint operation constitutes a business as defined in KIFRS 1103. The amendments clarify that the previously held interests in that joint operation are not remeasured. An entity applies those amendments to transactions in which it obtains joint control on or after the beginning of the first annual reporting period beginning on or after January 1, 2019, with early application permitted. These amendments are currently not applicable to the Company but may apply to future transactions.

2.5.7.3 KIFRS 1012 *Income Taxes*

The amendments clarify that the income tax consequences of dividends are linked more directly to past transactions or events that generated distributable profits than to distributions to owners. Therefore, an entity recognizes the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where the entity originally recognized those past transactions or events. An entity applies those amendments for annual reporting periods beginning on or after January 1, 2019, with early application is permitted. When an entity first applies those amendments, it applies them to the income tax consequences of dividends recognized on or after the beginning of the earliest comparative period. Since the Company's current practice is in line with these amendments, the Company does not expect any effect on its financial statements.

2.5.7.4 KIFRS 1023 *Borrowing Costs*

The amendments clarify that an entity treats as part of general borrowings any borrowing originally made to develop a qualifying asset when substantially all of the activities necessary to prepare that asset for its intended use or sale are complete. An entity applies those amendments to borrowing costs incurred on or after the beginning of the annual reporting period in which the entity first applies those amendments. An entity applies those amendments for annual reporting periods beginning on or after January 1, 2019, with early application permitted. Since the Company's current practice is in line with these amendments, the Company does not expect any effect on its financial statements.

2.6 Approval of 2018 financial statements

The financial statements of the Company for the year ended December 31, 2018 were approved at the meeting of the Company's Board of Directors held on February 1, 2019 and are scheduled to be approved at the Company's general shareholders' meeting to be held on March 18, 2019.

3. Segment information

3.1.1 Operating segment

For management purposes, the Company has three reportable operating segments (trading, natural resource development and others). Accounting policies of each segment are the same as those of the Company mentioned in Note 2.

The financial performance and financial position of each segment for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions				U. S. dollar in thousands (Note 2)
	2018				2018
	Trading	Natural resource development	Others	Total	Total
Sales	₩ 22,496,984	₩ 797,404	₩ 14,408	₩ 23,308,796	\$ 20,846,790
Profit (loss) for the year before tax	(17,027)	147,334	3,702	134,009	119,854
Total asset	5,817,618	2,481,587	204,011	8,503,216	7,605,059
Total liabilities	4,027,252	575,369	7,771	4,610,392	4,123,417

	Korean won in millions			
	2017			
	Trading	Natural resource development	Others	Total
Sales	₩ 20,316,844	₩ 561,450	₩ 13,232	₩ 20,891,526
Profit (loss) for the year before tax	61,579	145,009	3,019	209,697
Total asset	5,089,480	2,684,010	207,477	7,980,967
Total liabilities	3,746,019	409,282	8,012	4,163,313

3.1.2 Adjustments and eliminations

Current taxes, deferred taxes and certain financial assets and financial liabilities are not allocated to individual segments as they are accounted for at the enterprise level.

Reconciliation of assets is as follows:

	Korean won in millions	U. S. dollar in thousands (Note 2)
	2018	2018
Segment operating assets	₩ 8,503,216	\$ 7,605,059
Current tax assets	5,183	4,636
Deferred tax assets	264,846	236,871
Total assets	₩ 8,773,245	\$ 7,846,566

Reconciliation of liabilities is as follows:

	Korean won in millions	U. S. dollar in thousands (Note 2)
	2018	2018
Segment operating liabilities	₩ 4,610,392	\$ 4,123,417
Current tax liabilities	54,682	48,906
Current portion of bonds	538,509	481,629
Bonds	770,515	689,129
Total liabilities	₩ 5,974,098	\$ 5,343,081

3.2 Revenue from the contracts with customers

Details of sales except the rental revenue from the investment properties amounting to ₩ 54,549 million (\$ 48,787 thousand) for the year ended December 31, 2018 are as follows:

3.2.1 Sales categorization based on the geographical locations

	Korean won in millions	U. S. dollar in thousands (Note 2)
	2018	2018
Domestic	₩ 4,639,350	\$ 4,149,316
Asia(excluding China)	6,394,337	5,718,931
China	3,039,741	2,718,666
North America	1,536,674	1,374,362
Europe	3,674,549	3,286,423
Others	3,969,596	3,550,305
Total Sales	₩ 23,254,247	\$ 20,798,003

3.2.2 Sales categorization based on the major product and services

	Korean won in millions	U. S. dollar in thousands (Note 2)
	2018	2018
Steel	₩ 15,133,928	\$ 13,535,398
Chemistry/ Commodities	4,754,734	4,252,512
Vehicle component/ Machineries	2,328,700	2,082,730
E&P/ Minerals	754,371	674,690
Others	282,514	252,673
Total Sales	₩ 23,254,247	\$ 20,798,003

3.2.3 Sales categorization based on occurrence

	Korean won in millions	U. S. dollar in thousands (Note 2)
	2018	2018
Export	₩ 8,862,825	\$ 7,926,684
Domestic	3,989,059	3,567,712
Triangular	10,402,363	9,303,607
Total Sales	₩ 23,254,247	\$ 20,798,003

3.2.4 Sales categorization based on the timing of sales recognition

	Korean won in millions	U. S. dollar in thousands (Note 2)
	2018	2018
Sales recognized at once	₩ 22,873,449	\$ 20,457,427
Sales recognized over periods	380,798	340,576
Total Sales	₩ 23,254,247	\$ 20,798,003

3.3 Balance of contract

Changes of balance of contract assets and liabilities for the year ended December 31, 2018 are as follows:

		Korean won in millions				U. S. dollar in thousands (Note 2)
		Beginning balance	2018		Ending balance	2018
			Increase	Decrease		Ending balance
Contract assets	Due from customers	₩ 91,954	₩ -	₩ (40,025)	₩ 51,929	\$ 46,444
Contract liabilities	Advances from customers	88,335	1,251,047	(1,185,584)	153,798	137,553
	Unearned revenues	-	36,530	-	36,530	32,671

4. Cash and cash equivalents

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Savings account and checking account	₩ 44,115	₩ 35,583	\$ 39,456
Other cash equivalents	9,645	8,767	8,626
	<u>₩ 53,760</u>	<u>₩ 44,350</u>	<u>\$ 48,082</u>

5. Trade and other receivables

5.1 Details of trade and other receivables

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Current:			
Trade receivables	₩ 4,161,694	₩ 3,479,185	\$ 3,722,113
Allowance for doubtful accounts	(3,146)	(61,748)	(2,814)
Other receivables	48,311	50,286	43,208
Allowance for doubtful accounts	(891)	(19,513)	(797)
Short-term guarantee deposits	399	400	357
Short-term loans	942	33,409	843
Allowance for doubtful accounts	-	(16,087)	-
Current portion of long-term loans	51,350	52,330	45,926
	<u>4,258,659</u>	<u>3,518,262</u>	<u>3,808,836</u>
Non-current:			
Long-term trade receivables	69,900	93,212	62,516
Allowance for doubtful accounts	(58,135)	(84,827)	(51,994)
Long-term loans	305,361	344,039	273,107
Allowance for doubtful accounts	(10,924)	(2,381)	(9,770)
Long-term other receivables	130,655	69,492	116,854
Allowance for doubtful accounts	(30,009)	(14,567)	(26,839)
Long-term guarantee deposits	6,917	7,849	6,186
	<u>413,765</u>	<u>412,817</u>	<u>370,060</u>
	<u>₩ 4,672,424</u>	<u>₩ 3,931,079</u>	<u>\$ 4,178,896</u>

(*1) The Company recognizes ₩19,303 million (\$17,264 thousand) that was deposited by Kerman Motor Company but cannot be withdrawn because of United States' restriction on Iran as long-term other receivable.

5.2 Allowance for doubtful accounts

Changes in allowance for doubtful accounts related to trade receivables for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Beginning balance	₩ 146,575	₩ 86,521	\$ 131,093
Increase due to business combination	-	25,717	-
Bad debt expenses	35,956	76,052	32,158
Write-off	(119,064)	(36,746)	(106,488)
Foreign exchange translation loss(profit)	(2,186)	(4,969)	(1,955)
Ending balance	₩ 61,281	₩ 146,575	\$ 54,808

5.3 Financial assets transferred but not derecognized

As of December 31, 2018, trade receivables transferred with a book value amounting to ₩1,053,993 million (\$942,664 thousand) are not derecognized. Cash received through factoring of such receivables is accounted for as short-term borrowings.

The Company factored the above trade receivables to financial institutions with recourse. The Company retains the risks of ownership arising from credit risk such as default of debtors. The fair values of the above receivables transferred and the related borrowings are not significantly different from their book values.

6. Other financial assets

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Short-term financial Instruments	₩ -	₩ 80	\$ -
Deposits in financial institutions	66	4	59
	₩ 66	₩ 84	\$ 59

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Held-to-maturity investments	₩ -	₩ 695	\$ -
Financial assets at amortized cost	778	-	696
Available-for-sale financial assets	-	88,888	-
Financial assets at fair value through OCI	27,947	-	24,995
Financial assets at fair value through profit or loss	1,207	-	1,079
Deposits in financial institutions	12	12	11
	₩ 29,944	₩ 89,595	\$ 26,781

POSCO DAEWOO Corporation
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6. Other financial assets (cont'd)

Financial assets measured at fair value as of December 31, 2018 and 2017 are as follows:

	Korean won in millions					U. S. dollar in thousands (Note 2)	
	2018			2017		2018	
	Number of shares	Equity ownership (%)	Acquisition cost	Fair value or net asset value	Book value	Book value	Book value
<FVOCI(securities)>							
Marketable securities:							
TK-Chemical Co., Ltd.(*4)	-	-	₩ -	₩ -	₩ -	₩ 15,641	\$ -
Maruichi Steel Tube Ltd.	120,000	0.15	2,933	4,213	4,213	3,758	3,768
IQ Power Licensing AG	5,119,129	0.75	679	380	380	386	340
			3,612	4,593	4,593	19,785	4,108
Non-marketable securities:							
Daewoo Songdo development	285	-	26	-	-	-	-
ZYLE DAEWOO Motor Sales Corp.	401	-	3	2	2	2	2
DW Development Co., Ltd- Engineering & Construction (Common Share)	70	-	1	1	1	1	1
DW Development Co., Ltd- Engineering & Construction (Preferred Share)	70	-	1	1	1	1	1
N.I.Co.,Ltd.	-	50.00	3,099	-	-	-	-
The Korea Economic Daily	178,881	0.96	1,952	974	974	974	871
Hanil Daewoo Cement Mfg Co., Ltd.(*4)	-	-	-	-	-	-	-
CES Co., Ltd.	156,000	5.34	600	600	600	600	537
Central Corporation	100,474	9.67	1,859	-	-	9,683	-
Hanmi ADM Co., Ltd.	10,000	16.67	1,000	1,000	1,000	1,000	894
Miju Steel Mfg Co., Ltd.	10,005	0.69	182	-	-	-	-
DAEWOO Display Corp.	39,403	4.47	-	-	-	-	-
Shin Pyung Steel co., Ltd.	2,328	10.36	-	-	-	-	-
S&S M Tech Co., Ltd.(*2)	26,390	8.47	1,000	1,000	1,000	1,000	894
KG Power (M) Sdn. Bhd.	1,457,847	6.69	45	-	-	-	-
Discover Mixtech Manufacturing Co., Ltd.(*3)	3,679,880	3.73	4,053	-	-	-	-
Korea Minerals Co., Ltd	269	-	-	-	-	-	-
Shinpoong Daewoo Pharma Co., Ltd. (*4)	-	-	-	-	-	343	-
CJ Philippines INC.	109,200	10.00	349	349	349	349	312
POSCO-Malaysia Sdn. Bhd.(*4)	-	-	-	-	-	7,577	-
Dongjin Vietnam Co., Ltd.	20,000	6.25	803	803	803	803	718
POSCO Assan TST Steel Industry A.S.	24,096,526	10.00	15,460	18,101	18,101	15,460	16,189
DAEWOO El Salvador S.A. DE C.V.	31,262	88.00	3,021	-	-	-	-
Erae Automotive Systems Mexico(*4)	-	-	-	-	-	478	-
POSCO-ITPC S.P.A(*4)	-	-	-	-	-	781	-
Hunchun Pohang Hyundai International Logistics Complex Development Co., Ltd.(*4)	-	-	-	-	-	10,732	-
TES MI S.R.O.	750	3.00	523	523	523	523	468
K.K.Korea Kamchatka Co.Ltd	328	10.00	-	-	-	-	-
KNOC INAM LTD.	10	10.00	-	-	-	-	-
JILIN KDAC Co., Ltd.(*1)	-	-	-	-	-	176	-
			33,977	23,354	23,354	50,483	20,887

6. Other financial assets (cont'd)

	Korean won in millions					U. S. dollar in thousands (Note 2)	
	2018				2017	2018	
	Number of shares	Equity ownership (%)	Acquisition cost	Fair value or net asset value	Book value	Book value	Book value
<FVPL(securities)>							
Erae-automotive system Co., Ltd.(*1)	-	-	₩ -	₩ -	₩ -	₩ 8,906	\$ -
Erae AMS Co.,Ltd.(*1)	-	-	-	-	-	8,906	-
			-	-	-	17,812	-
<FVPL(other securities)>							
Korea Investment Private Placement KEXIM Carbon Credit Special Asset Fund No. 1	-	2.13	263	105	105	106	94
<FVPL(equity investment)>							
POSCO Agricultural Products Export Fund	-	10.00	1,000	1,000	1,000	600	894
Korea Dic & Mold Industry Cooperative	-	-	1	1	1	1	1
Korea Speciality Contractor Finanacial Cooperative	-	-	101	101	101	101	90
			1,102	₩ 1,102	₩ 1,102	₩ 702	\$ 985
			₩ 38,954	₩ 29,154	₩ 29,154	₩ 88,888	\$ 26,074

(*1) It was sold during the current year.

(*2) S&S Metal Co., Ltd. changed its named to S&S M Tech Co., Ltd.

(*3) IQ Power Asia Corp. changed its named to Discover Mixtech Manufacturing Co., Ltd.

(*4) It was reclassified as investments in associates.

Investments in marketable securities, Maruichi Steel Tube Ltd., IQ Power Licensing AG were stated at fair market value as of December 31, 2018. Investment in Central Corporation and POSCO Assan TST Steel Industry A.S. were stated at fair value of ₩0 per share and ₩751 per share, respectively, by using the discounted cash flow method under the income approach. The resulting unrealized gains arising from fair value adjustments on those financial assets amounting to \$5,621 million (\$5,027 thousand) were recorded in accumulated other comprehensive income, net of deferred income tax effect of \$1,795 million (\$1,605 thousand).

7. Other current assets

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
	₩	₩	\$
Advance payments	75,643	112,044	67,653
Allowance for doubtful accounts	-	(956)	-
Prepaid expenses	42,933	3,348	38,399
	₩ 118,576	₩ 114,436	\$ 106,052

8. Inventories

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Merchandise	₩ 515,210	₩ 549,828	\$ 460,790
Valuation allowance	(997)	(641)	(891)
Finished goods	19,926	17,525	17,821
Valuation allowance	(3,832)	(1,727)	(3,427)
Semi-finished goods and Work-in-process	25,950	21,603	23,209
Valuation allowance	(510)	(502)	(456)
Raw materials	81,184	44,850	72,609
Valuation allowance	(852)	(1,049)	(762)
Materials-in-transit	135,960	96,620	121,599
Others	11,420	6,105	10,213
	₩ 783,459	₩ 732,612	\$ 700,705

The loss on valuation of inventories and the reversal of loss on valuation of inventories, which were recorded as costs of sales in 2018, amounted to ₩2,469 million (\$2,208 thousand) and ₩197 million (\$176 thousand), respectively. The loss on valuation of inventories and the reversal of loss on valuation of inventories, which were recorded as costs of sales in 2017, amounted to ₩297 million (\$266 thousand) and ₩6,197 million (\$5,542 thousand), respectively.

9. Investments in subsidiaries and associates

Investments in subsidiaries and associates as of December 31, 2018 and 2017 are as follows:

	Korean won in millions				U. S. dollar in thousands (Note 2)
	2018		2017		2018
	Equity ownership (%)	Book value	Equity ownership (%)	Book value	Book value
<Subsidiaries>					
POSCO DAEWOO America Corp.	100.0	₩ 29,590	100.0	₩ 29,590	\$ 26,456
POSCO DAEWOO Deutschland GmbH	100.0	9,724	100.0	9,724	8,697
POSCO DAEWOO Japan Corp.	100.0	4,729	100.0	4,729	4,230
POSCO DAEWOO Singapore Pte Ltd.	100.0	3,711	100.0	3,711	3,319
POSCO DAEWOO Italia S.R.L.	100.0	3,621	100.0	3,621	3,239
POSCO DAEWOO Mexico S.A. de C.V.	100.0	2,905	100.0	2,905	2,598
POSCO DAEWOO Shanghai Co.,Ltd.	100.0	8,807	100.0	8,807	7,877
POSCO DAEWOO Malaysia Sdn Bhd	100.0	2,192	100.0	2,192	1,960
POSCO DAEWOO India Pvt.,Ltd.	100.0	2,299	100.0	2,299	2,056
DAEWOO Textile LLC	100.0	24,808	100.0	24,808	22,189
POSCO DAEWOO China Co.,Ltd.	100.0	16,009	100.0	16,009	14,319
POSCO DAEWOO Australia Holdings Pty. Ltd.	100.0	124,422	100.0	124,422	111,281
DAEWOO AAPC Corp.	100.0	5,027	100.0	5,027	4,496
Brasil Sao Paulo Steel Processing Center	51.0	-	51.0	-	-
PT. Bio Inti Agrindo	85.0	58,481	85.0	53,905	52,305
POS-South East Asia Pte. Ltd.	100.0	-	100.0	-	-
POS-Gulf SFC L.L.C.	100.0	7,314	97.8	7,314	6,542
Pohang Scrap Recycling Distribution Center Co., Ltd.	51.0	4,550	51.0	7,610	4,070
Golden Lace DAEWOO Co., Ltd.	60.0	6,781	60.0	6,781	6,065
POSCO DAEWOO Ukraine, LLC.	100.0	3,205	100.0	113	2,867
POSCO DAEWOO Vietnam Co.,Ltd.	100.0	4,613	100.0	4,613	4,126
POSCO DAEWOO Myanmar Corp., Ltd.	100.0	5,403	100.0	5,403	4,832

9. Investments in subsidiaries and associates (cont'd)

	Korean won in millions				U. S. dollar in thousands (Note 2)
	2018		2017		2018
	Equity ownership (%)	Book value	Equity ownership (%)	Book value	Book value
POSCO DAEWOO E&P Canada Corp.(*3)	100.0	₩ -	100.0	₩ -	\$ -
KIS Devonian Canada Corporation(*3)	-	-	100.0	44,427	-
DAEWOO Power PNG Ltd.	100.0	14,686	100.0	14,686	13,136
POSCO DAEWOO Power(PNGPOM) Ltd.	100.0	8,217	100.0	10,053	7,349
DAEWOO Global Development Pte. Ltd.	55.5	15,354	55.5	49,344	13,733
DAEWOO Power And Infra (Pty) Ltd.	100.0	1	100.0	1	1
DAEWOO Precious Resources Co.,Ltd.	70.0	4,841	70.0	4,841	4,330
LA SRDC	85.7	150	85.7	150	134
POSCO TMC India Pvt., Ltd.(*2)	73.6	861	-	-	770
		372,301		447,085	332,977
<Associates>					
Blue Ocean Recovery PEF No. 1	27.5	-	27.5	33,300	-
POSCO Mexico Processing Center Holding, LLC(*1)	19.6	11,509	19.6	11,509	10,294
POSCO-ESDC Ltd.	20.0	1,160	20.0	1,160	1,038
POSCO IJPC	20.0	4,665	20.0	4,665	4,172
Shanghai Lansheng Daewoo Corp.	49.0	-	49.0	-	-
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	49.0	876	49.0	876	784
General Medicines Co., Ltd.	33.0	2,990	33.0	2,990	2,674
Korea LNG Ltd.	20.0	2,749	20.0	2,749	2,459
KG Power (M) Sdn. Bhd.	20.0	-	20.0	-	-
Sebang Steel	49.0	484	49.0	484	433
Kwanika UJV (formerly, DAEWOO Minerals Canada Corporation)	35.0	7,173	35.0	7,173	6,416
Global Komsco Daewoo LLC	35.0	4,445	35.0	4,445	3,975
South-East Asia Gas Pipeline Co., Ltd.	25.0	135,899	25.0	150,778	121,536
HyunSon Engineering & Construction(*1)	4.9	281	4.9	97	251
VNS-Daewoo Co., Ltd.	50.0	1,641	40.0	1,319	1,468
SPH Co., Ltd.	50.0	500	50.0	500	447
Korea Siberia Wood Cjsc(*6)	-	-	50.0	-	-
Yulchon Mexico S. A. De C. V.(*1)	10.0	1,349	10.0	1,349	1,207
DMSA/AMSA(*1)	4.0	26,710	4.0	55,268	23,890
PT. Batutua Tembaga Raya	22.0	20,381	22.0	20,381	18,229
IT Engineering(*1)(*4)	10.8	923	-	-	826
POSCO Singapore Lng Trading Pte. Ltd(*4)	25.0	772	-	-	690
Inco Tech(*1)(*4)	10.0	350	-	-	313
TK Chemical Corp.(*1)(*5)	8.8	14,818	-	-	13,254
Hanil DAEWOO Cement Co., Ltd.(*1)(*5)	15.0	-	-	-	-
Shinpoong DAEWOO Pharma Co.,Ltd.(*1)(*5)	3.4	343	-	-	307
POSCO-Malyasia Sdn. Bhd.(*1)(*5)	13.6	7,577	-	-	6,778
Erae Automotive Systems Mexico(*1)(*5)	7.7	478	-	-	428
POSCO-ITPC S.p.A(*1)(*5)	10.0	781	-	-	699
Hunchun POSCO HYUNDAI International Logistics(*1)(*5)	10.0	10,732	-	-	9,599
		259,586		299,043	232,167
	₩	631,887	₩	746,128	\$ 565,144

(*1) These securities are classified as investments in associates even though the Company's equity ownership is below 20%, as the Company is able to exercise significant influence on the investee.

(*2) It was reclassified as a subsidiary due to the additional acquisition of shares in the current period.

(*3) POSCO DAEWOO E&P Canda Corp. and KIS Devonian Canda Corp. are merged in the current period.

(*4) The financial assets are newly acquired in the current period.

(*5) These financial assets are reclassified from financial assets measured at fair value to investments in associates in the current period.

(*6) The financial assets are disposed in the current period.

9. Investments in subsidiaries and associates (cont'd)

	Korean won in millions		
	Carrying amount before impaired	Recoverable amount	Impairment loss
POSCO DAEWOO E&P Canada Corp.(*1)	₩ 44,427	₩ -	₩ 44,427
DMSA/AMSA(*2)	73,242	26,710	46,532
POSCO DAEWOO Power(PNGPOM) Ltd.(*3)	10,053	8,217	1,836
DAEWOO Global Development Pte. Ltd.(*4)	49,344	15,354	33,990
Blue Ocean Recovery PEF No. 1(*5)	33,300	-	33,300
	₩ 210,366	₩ 50,281	₩ 160,085
U. S. dollar in thousands (Note 2)	\$ 188,146	\$ 44,970	\$ 143,176

(*1) POSCO DAEWOO E&P Canada Corp., which is a subsidiary of the Company, disposed Baptist oil fields in Canada to Bellatrix Exploration Ltd. As a result, the Company recognized the impairment loss on the remaining balances due to the remote possibility of recovery.

(*2) As a result of the decline in nickel prices as of the end of the current year, there were indications of impairment to DMSA / AMSA's shares, which were tested by external experts. The recoverable amount of the equity interests are determined based on the value in use and the impairment loss is recognized based on the present value of the estimated future cash flows at the date of the impairment test using a discount rate of 11.93%. If the discount rate used for the valuation is increased or decreased by 1% point, the impairment loss for the period would have been increased by ₩ 9,034 million (\$8,080 thousand) or decreased by ₩ 10,108 million (\$9,040 thousand).

(*3) POSCO DAEWOO Power (PNGPOM) Ltd. estimates the recoverable value of the investee due to the completion of the BOT (Build-Operate-Transfer) project with Papua New Guinea Power Corporation in 2019. Loss on the impairment was recognized for the amounts less than its book value.

(*4) DAEWOO Global Development Pte. Ltd., investment securities, were appraised by external experts based on the cases of similar trades in the neighboring regions. The recoverable amount of the equity interest is determined based on the fair value calculation and the impairment loss is recognized for the amount less than the book value.

(*5) As of the end of the current period, there were indications that the equity interests in Blue Ocean Recovery PEF No. 1(Blue Ocean) are impaired due to deterioration in profitability, decline in the value of ships owned by Daewoo Logistics Corp., which is the investee by Blue Ocean and the impairment test was conducted by outside experts. The recoverable amount of the equity interest is based on the value in use. The discount rate applied was 9.43% for the shipping division and 8.2% for the logistics division. As the Company's investment is subordinate, the Company accounted for the whole remaining balances as impairment loss due to the remote recoverability.

10. Property, plant and equipment

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Acquisition cost	₩ 900,814	₩ 855,513	\$ 805,665
Accumulated depreciation	(249,933)	(213,394)	(223,534)
Accumulated impairment loss	(4,999)	(3,971)	(4,471)
Government grants	(29)	(1,113)	(26)
Book value	₩ 645,853	₩ 637,035	\$ 577,634

Changes in the acquisition cost of property, plant and equipment for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018					
	Beginning balance	Business combination	Acquisition	Disposals	Others	Ending balance
Land	₩ 137,714	₩ -	₩ 19,070	₩ -	₩ -	₩ 156,784
Buildings	140,195	-	11,600	-	-	151,795
Structures	26,260	-	804	(213)	1,047	27,898
Machinery	475,216	-	7,904	(257)	1,709	484,572
Others	70,061	-	9,545	(4,708)	270	75,168
Construction-in-progress	6,067	-	7,165	(61)	(8,574)	4,597
	₩ 855,513	₩ -	₩ 56,088	₩ (5,239)	₩ (5,548)	₩ 900,814
U. S. dollar in thousands(Note 2)	\$ 765,149	\$ -	\$ 50,164	\$ (4,686)	\$ (4,962)	\$ 805,665

	2017					
	Beginning balance	Business combination	Acquisition	Disposals	Others	Ending balance
Land	₩ 15,370	₩ 120,198	₩ 811	₩ -	₩ 1,335	₩ 137,714
Buildings	38,561	98,216	375	-	3,043	140,195
Structures	-	25,509	332	(90)	509	26,260
Machinery	263,665	210,267	2,084	(6,696)	5,896	475,216
Others	30,861	37,317	3,956	(3,368)	1,295	70,061
Construction-in-progress	397	3,387	11,464	-	(9,181)	6,067
	₩ 348,854	₩ 494,894	₩ 19,022	₩ (10,154)	₩ 2,897	₩ 855,513

10. Property, plant and equipment (cont'd)

Changes in accumulated depreciation of property, plant and equipment for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018					
	Beginning balance	Business combination	Depreciation	Disposals	Others	Ending balance
Buildings	₩ 23,947	₩ -	₩ 3,360	₩ -	₩ -	₩ 27,307
Structures	6,511	-	1,078	(23)	-	7,566
Machinery	131,081	-	25,560	(24)	(27)	156,590
Others	51,855	-	11,222	(4,489)	(118)	58,470
	<u>₩ 213,394</u>	<u>₩ -</u>	<u>₩ 41,220</u>	<u>₩ (4,536)</u>	<u>₩ (145)</u>	<u>₩ 249,933</u>
U. S. dollar in thousands (Note 2)	<u>\$ 190,854</u>	<u>\$ -</u>	<u>\$ 36,866</u>	<u>\$ (4,057)</u>	<u>\$ (129)</u>	<u>\$ 223,534</u>

	2017					
	Beginning balance	Business combination	Depreciation	Disposals	Others	Ending balance
Buildings	₩ 4,411	₩ 16,412	₩ 2,918	₩ -	₩ 206	₩ 23,947
Structures	-	5,666	867	(22)	-	6,511
Machinery	33,212	77,478	22,474	(2,083)	-	131,081
Others	20,200	24,957	9,693	(2,995)	-	51,855
	<u>₩ 57,823</u>	<u>₩ 124,513</u>	<u>₩ 35,952</u>	<u>₩ (5,100)</u>	<u>₩ 206</u>	<u>₩ 213,394</u>

Changes in accumulated impairment loss of property, plant and equipment for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018				
	Beginning balance	Business combination	Impairment losses	Disposals	Ending balance
Buildings	₩ 559	₩ -	₩ 656	₩ -	₩ 1,215
Machinery	3,412	-	300	-	3,712
Others	-	-	72	-	72
	<u>₩ 3,971</u>	<u>₩ -</u>	<u>₩ 1,028</u>	<u>₩ -</u>	<u>₩ 4,999</u>
U. S. dollar in thousands (Note 2)	<u>\$ 3,552</u>	<u>\$ -</u>	<u>\$ 919</u>	<u>\$ -</u>	<u>\$ 4,471</u>

	2017				
	Beginning balance	Business combination	Impairment losses	Disposals	Ending balance
Buildings	₩ -	₩ 559	₩ -	₩ -	₩ 559
Machinery	-	7,947	-	(4,535)	3,412
Others	-	7	-	(7)	-
	<u>₩ -</u>	<u>₩ 8,513</u>	<u>₩ -</u>	<u>₩ (4,542)</u>	<u>₩ 3,971</u>

10. Property, plant and equipment (cont'd)

Changes in the government grants for property, plant and equipment for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

2018					
	Beginning balance	Business combination	Received	Depreciation	Ending balance
Machinery	₩ 26	₩ -	₩ -	₩ (12)	₩ 14
Others	1,087	-	-	(1,072)	15
	₩ 1,113	₩ -	₩ -	₩ (1,084)	₩ 29
U. S. dollar in thousands (Note 2)	\$ 995	\$ -	\$ -	\$ (969)	\$ 26

2017					
	Beginning balance	Business combination	Received	Depreciation	Ending balance
Machinery	₩ -	₩ 37	₩ -	₩ (11)	₩ 26
Others	200	1,923	-	(1,036)	1,087
	₩ 200	₩ 1,960	₩ -	₩ (1,047)	₩ 1,113

Property, plant and equipment pledged as collateral as of December 31, 2018 and 2017 are as follows (Korean won in millions and U.S. dollar in thousands):

Collateral provided by	Assets pledged as collateral	Accounts	Borrowed amount	Collateral	Maximum amount of bond (Korean won in millions)		U. S. dollar in thousands (Note 2)
					2018	2017	2018
Korea Development Bank	Land, buildings, machinery	Borrowings	₩ 162,250	Secured interest	₩ 79,000	₩ 79,000	\$ 70,656
				Beneficiary certificates of collateral trust	50,000	50,000	44,719

The Company's machinery is partially provided as collateral (transferrable) in relation to the borrowings to Korea Development Bank as of December 31, 2018.

11. Intangible assets

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Acquisition cost	₩ 2,211,548	₩ 2,193,677	\$ 1,977,952
Accumulated amortization and impairment loss	(840,579)	(712,695)	(751,792)
Government grants	(12,689)	(12,255)	(11,349)
Book value	₩ 1,358,280	₩ 1,468,727	\$ 1,214,811

Changes in acquisition cost of intangible assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018					
	Beginning balance	Business combination	Acquisition	Disposals	Others	Ending balance
Goodwill	₩ 1,033	₩ -	₩ -	₩ -	₩ -	₩ 1,033
Exploration and evaluation assets	306,931	-	3,088	-	(13,129)	296,890
Industrial property rights	4,929	-	135	-	-	5,064
Mining rights	1,828,089	-	18,650	-	-	1,846,739
Development costs	6,711	-	-	-	-	6,711
Membership	16,834	-	3,140	(4,185)	-	15,789
Software	29,150	-	4,906	-	5,266	39,322
	₩ 2,193,677	₩ -	₩ 29,919	₩ (4,185)	₩ (7,863)	₩ 2,211,548
U. S. dollar in thousands (Note 2)	\$ 1,961,969	\$ -	\$ 26,759	\$ (3,743)	\$ (7,033)	\$ 1,977,952

	2017					
	Beginning balance	Business combination	Acquisition	Disposals	Others	Ending balance
Goodwill	₩ 1,033	₩ -	₩ -	₩ -	₩ -	₩ 1,033
Exploration and evaluation assets	204,535	-	99,883	-	2,513	306,931
Industrial property rights	4,669	4	256	-	-	4,929
Mining rights	1,805,428	-	3,206	-	19,455	1,828,089
Development costs	6,711	-	-	-	-	6,711
Membership	12,097	4,152	372	(569)	782	16,834
Software	15,746	11,411	536	-	1,457	29,150
	₩ 2,050,219	₩ 15,567	₩ 104,253	₩ (569)	₩ 24,207	₩ 2,193,677

11. Intangible assets (cont'd)

Changes in accumulated amortization and impairment losses of intangible assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018				
	Beginning balance	Business combination	Amortization	Impairment losses	Ending balance
Goodwill	₩ 1,033	₩ -	₩ -	₩ -	₩ 1,033
Exploration and evaluation assets	87,609	-	-	3,339	90,948
Industrial property rights	4,483	-	167	-	4,650
Mining rights	584,228	-	121,313	-	705,541
Development costs	6,711	-	-	-	6,711
Membership	4,225	-	86	-	4,311
Software	24,406	-	2,979	-	27,385
	₩ 712,695	₩ -	₩ 124,545	₩ 3,339	₩ 840,579
U. S. dollar in thousands (Note 2)	\$ 637,416	\$ -	\$ 111,390	\$ 2,986	\$ 751,792

	2017				
	Beginning balance	Business combination	Amortization	Impairment losses	Ending balance
Goodwill	₩ 1,033	₩ -	₩ -	₩ -	₩ 1,033
Exploration and evaluation assets	31,090	-	-	56,519	87,609
Industrial property rights	4,313	3	167	-	4,483
Mining rights	423,179	-	142,877	18,172	584,228
Development costs	6,711	-	-	-	6,711
Membership	3,614	-	341	270	4,225
Software	13,558	8,014	2,834	-	24,406
	₩ 483,498	₩ 8,017	₩ 146,219	₩ 74,961	₩ 712,695

Changes in government grants for intangible assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018			
	Beginning balance	Amortization	Others	Ending balance
Exploration and evaluation assets	₩ 12,255	₩ 434	₩ -	₩ 12,689
U. S. dollar in thousands (Note 2)	\$ 10,961	\$ 388	\$ -	\$ 11,349

	2017			
	Beginning balance	Amortization	Others	Ending balance
Exploration and evaluation assets	₩ 12,255	₩ -	₩ -	₩ 12,255
Mining rights	703	-	(703)	-
	₩ 12,958	₩ -	₩ (703)	₩ 12,255

11.1 Joint operation

Mining rights and machinery include the Company's proportionate share of the jointly controlled assets. As of December 31, 2018, the list of significant joint operations is as follows:

	Activities	Equity interest (%)	Location
Myanmar A-1/A-3 area	Development and production for gas area	51.00	Myanmar
Offshore midstream	Gas transmission facilities	51.00	Myanmar

12. Investment properties

Investment properties as of December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Acquisition cost	₩ 167,632	₩ 167,632	\$ 149,925
Accumulated depreciation	(12,896)	(10,001)	(11,533)
Book value	₩ 154,736	₩ 157,631	\$ 138,392

Changes in acquisition cost of investment properties for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

2018					
	Beginning balance	Business combination	Acquisition	Others	Ending balance
Land	₩ 51,249	₩ -	₩ -	₩ -	₩ 51,249
Building	116,362	-	-	-	116,362
Structure	21	-	-	-	21
	₩ 167,632	₩ -	₩ -	₩ -	₩ 167,632
U. S. dollar in thousands (Note 2)	\$ 149,925	\$ -	\$ -	\$ -	\$ 149,925

2017					
	Beginning balance	Business combination	Acquisition	Others	Ending balance
Land	₩ 51,703	₩ 881	₩ -	₩ (1,335)	₩ 51,249
Building	116,328	3,030	5	(3,001)	116,362
Structure	-	21	-	-	21
	₩ 168,031	₩ 3,932	₩ 5	₩ (4,336)	₩ 167,632

Changes in accumulated depreciation of investments properties for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

2018					
	Beginning balance	Business combination	Depreciation	Others	Ending balance
Building	₩ 9,997	₩ -	₩ 2,894	₩ -	₩ 12,891
Structure	4	-	1	-	5
	₩ 10,001	₩ -	₩ 2,895	₩ -	₩ 12,896
U. S. dollar in thousands (Note 2)	\$ 8,944	\$ -	\$ 2,589	\$ -	\$ 11,533

2017					
	Beginning balance	Business combination	Depreciation	Others	Ending balance
Building	₩ 7,027	₩ 258	₩ 2,919	₩ (207)	₩ 9,997
Structure	-	3	1	-	4
	₩ 7,027	₩ 261	₩ 2,920	₩ (207)	₩ 10,001

The fair value of investment properties amounted to ₩174,576 million (\$156,136 thousand) and ₩172,420 million (\$154,208 thousand) as of December 31, 2018 and 2017, respectively.

12. Investment properties (cont'd)

Income and expense arising from investment properties for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Rental income	₩ 7,157	₩ 6,042	\$ 6,401
Rental expense	(2,993)	(2,819)	(2,677)
	₩ 4,164	₩ 3,223	\$ 3,724

12.1 Joint arrangement

The Company owns POSCO Tower Songdo, located in Yeonsu-gu, Incheon, in form of a joint arrangement. As of the end of reporting period, the Company owns 60% of the real estate, which is classified as property, plant and equipment and investment properties. The Company classifies these joint arrangements as joint operations. Rental income and expense from the joint operations are recognized as income and expense in proportion to the Company's shares.

13. Trade and other payables

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Current:			
Trade payables	₩ 1,781,799	₩ 1,536,656	\$ 1,593,596
Other payables	133,793	196,950	119,661
Accrued expenses	24,027	19,179	21,489
Guarantee deposits received	482	619	431
	₩ 1,940,101	₩ 1,753,404	\$ 1,735,177
Non-current:			
Long-term other payables	-	804	-
Long-term accrued expenses	897	787	802
Long-term guarantee deposits received	2,970	2,909	2,656
Financial guarantee liabilities	11,936	19,362	10,676
	₩ 15,803	₩ 23,862	\$ 14,134
	₩ 1,955,904	₩ 1,777,266	\$ 1,749,311

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14. Borrowings

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

	Creditor	Annual interest rates as of Dec. 31, 2018	The longest maturity	Korean won in millions		U. S. dollar in thousands (Note 2)
				2018	2017	2018
Current borrowings:						
Short-term borrowings:						
Banker's usance and others	Woori Bank and others	6M Libor + 0.3~1.3% and others	-	₩ 1,896,815	₩ 1,520,180	\$ 1,696,463
				1,896,815	1,520,180	1,696,463
Current-portion of long-term borrowings:						
Energy special account financing loan	Korea Energy Agency	3 year government bond yield -2.25% and others	2019.12.31	5,798	5,601	5,185
Forgivable borrowings	Korea Energy Agency	3 year government bond yield -2.25% and others	2019.12.31	31,887	30,968	28,519
Others	Kookmin Bank and others	3M Libor +1.0% and others	2019.12.31	3,000	190,338	2,683
Less: present value discount				(710)	(1,109)	(635)
				39,975	225,798	35,752
				1,936,790	1,745,978	1,732,215
Non-current borrowings:						
Korean won denominated borrowings:						
Energy special account financing loan	Korea Energy Agency	3 year government bond yield -2.25% and others	2027.12.15	6,808	7,862	6,089
Other borrowings	Korea Rural Community Corporation	2.00% and others	2033.9.15	147,042	145,750	131,511
				153,850	153,612	137,600
Foreign-currency denominated borrowings:						
Energy special account financing loan	Korea Energy Agency	3 year government bond yield -2.25% and others	2027.12.15	19,386	23,121	17,338
Forgivable borrowings	Korea Energy Agency	3 year government bond yield -2.25% and others	Undecided	85,888	122,245	76,816
Other foreign currency borrowings	The Export-Import Bank of Korea	3M Libor+1.60%	2020.12.21	78,267	74,998	70,000
				183,541	220,364	164,154
				337,391	373,976	301,754
Less: present value discount				(1,081)	(1,423)	(967)
				336,310	372,553	300,787
				₩ 2,273,100	₩ 2,118,531	\$ 2,033,002

14. Borrowings (cont'd)

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

	Annual interest rates as of Dec. 31, 2018	Maturity	Korean won in millions		U. S. dollar in thousands (Note 2)
			2018	2017	2018
Current-portion of bonds:					
8-2nd unsecured bond	-	-	₩ -	₩ 150,000	\$ -
11st privately placed bond	-	-	-	214,280	-
14th unsecured bond	-	-	-	100,000	-
10-2nd unsecured bond	3.26%	2019.07.02	220,000	-	196,762
13th unsecured bond	2.02%	2019.07.14	150,000	-	134,156
15th unsecured bond	2.53%	2019.07.08	30,000	-	26,831
17th unsecured bond	3M SGD SOR + 85bp	2019.10.25	139,108	-	124,415
			539,108	464,280	482,164
Less: present value discount on bonds			(599)	(544)	(535)
			538,509	463,736	481,629
Non-current bonds:					
10-2nd unsecured bond	-	-	-	220,000	-
13th unsecured bond	-	-	-	150,000	-
15th unsecured bond	-	-	-	30,000	-
16-1st unsecured bond	2.26%	2020.07.17	130,000	130,000	116,269
16-2nd unsecured bond	2.69%	2022.07.17	70,000	70,000	62,606
17th unsecured bond	-	-	-	136,107	-
18-1st unsecured bond	2.67%	2021.03.02	130,000	-	116,269
18-2nd unsecured bond	3.08%	2023.03.02	70,000	-	62,606
19-1st unsecured bond	2.22%	2021.09.13	70,000	-	62,606
19-2nd unsecured bond	2.53%	2023.09.13	80,000	-	71,550
20th unsecured bond	3M SGD SOR + 90bp	2021.10.15	223,620	-	200,000
			773,620	736,107	691,906
Less: present value discount on bonds			(3,105)	(1,907)	(2,777)
			770,515	734,200	689,129
			₩ 1,309,024	₩ 1,197,936	\$ 1,170,758

15. Other liabilities

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Current:			
Advance received	₩ 153,798	₩ 88,335	\$ 137,553
Withholdings	34,237	38,311	30,621
Income received in advance	36,530	-	32,671
	₩ 224,565	₩ 126,646	200,845
Non-current:			
Long-term withholdings	₩ 37,962	₩ 37,694	33,953
	₩ 262,527	₩ 164,340	\$ 234,798

16. Severance and retirement benefit

The Company operates a defined benefit pension plan for its employees and uses the projected unit credit method in the actuarial valuation of plan assets and the defined benefit obligation.

Principal assumptions used in actuarial valuation as of December 31, 2018 and 2017 are as follows:

	2018	2017
Discount rate (%)	2.33~3.03%	2.87~3.40%
Future salary growth rate (%)	3.00~5.00%	3.00~5.23%
Expected retirement rate (%)	3.28~8.98%	3.09~9.14%

Impacts of discount rate change on the defined benefit obligation are as follows (Korean won in millions):

	1% point decrease	1% point increase
Impact on the defined benefit obligation	₩ 15,154	₩ (12,927)
Rate of change	10.31%	(8.80%)

Impacts of future salary growth rate change on defined benefit obligation are as follows (Korean won in millions):

	1% point decrease	1% point increase
Impact on the defined benefit obligation	₩ (12,861)	₩ 14,756
Rate of change	(8.75%)	10.04%

Net benefit expense recognized in profit or loss related to defined benefit obligation are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Current service cost	₩ 16,353	₩ 16,707	\$ 14,626
Net interest cost	(20)	379	(18)
	₩ 16,333	₩ 17,086	\$ 14,608

16. Severance and retirement benefit (cont'd)

Details of severance benefit liabilities (assets) are as of December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Present value of defined benefit obligation	₩ 146,949	₩ 131,392	\$ 131,427
Fair value of plan assets	(147,919)	(139,179)	(132,295)
Severance benefit liabilities	₩ -	₩ 437	\$ -
Severance benefit assets	₩ (970)	₩ (8,224)	\$ (868)

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Beginning balance	₩ 131,392	₩ 86,361	\$ 117,513
Current service cost	16,353	16,707	14,625
Interest cost	3,715	2,960	3,323
Benefits paid	(9,727)	(6,065)	(8,700)
Re-measurement gain (loss) in OCI:	6,016	(1,943)	5,381
Actuarial changes arising from changes in demographic assumptions	136	330	122
Actuarial changes arising from changes in financial assumptions	5,607	(1,984)	5,015
Others	273	(289)	244
Increase due to business combination	-	33,372	-
Others	(800)	-	(715)
Ending balance	₩ 146,949	₩ 131,392	\$ 131,427

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Beginning balance	₩ 139,179	₩ 82,792	\$ 124,479
Contribution by the company	15,977	26,800	14,290
Interest income	3,735	2,581	3,340
Benefits paid	(9,472)	(5,653)	(8,472)
Re-measurement gain (loss) in OCI:	(1,480)	(1,070)	(1,324)
Actuarial changes arising from changes in financial assumptions	(1,480)	(1,070)	(1,324)
Increase due to business combination	-	33,729	-
Others	(20)	-	(18)
Ending balance	₩ 147,919	₩ 139,179	\$ 132,295

16. Severance and retirement benefit (cont'd)

Details of re-measurement gain (loss) in OCI for the years ended at December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Re-measurement of defined benefit obligation	₩ (6,016)	₩ 1,943	\$ (5,381)
Re-measurement of plan assets	(1,480)	(1,070)	(1,324)
	(7,496)	873	(6,705)
Income tax effect	1,814	(211)	1,623
Other comprehensive income	₩ (5,682)	₩ 662	\$ (5,082)

Analysis of defined benefit plans on future cash flows are as follows:

The estimated contribution for the fiscal year ending December 31, 2018 amounted to ₩15,114 million. The maturity analysis of the Company's un-discounted pension benefit payments at the end of the reporting period is as follows:

	Korean won in millions				
	Less than 1 year	1 year to 2 years	2 years to 5 years	Over 5 years	Total
Amount to be paid	₩ 7,211	₩ 8,050	₩ 32,580	₩ 231,791	₩ 279,632

The weighted average maturity of defined benefit obligations is 9.93~12.07 years.

17. Provisions

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Provision for contingencies (see Note 18)	₩ 45,164	₩ 29,212	\$ 40,394
Provision for restoration	29,457	30,074	26,345
	₩ 74,621	₩ 59,286	\$ 66,739

Changes in provisions for the year ended December 31, 2018 are as follows:

	Korean won in millions			U. S. dollar in thousands (Note 2)
	Provision for contingencies	Provision for restoration	Total	Total
Beginning balance	₩ 29,212	₩ 30,074	₩ 59,286	\$ 53,024
Additions	20,517	865	21,382	19,123
Used	(5,101)	(2,685)	(7,786)	(6,963)
Foreign currency translation	536	1,203	1,739	1,555
Ending balance	₩ 45,164	₩ 29,457	₩ 74,621	\$ 66,739

18. Commitments and contingencies

Changes in provision for contingencies for the year ended December 31, 2018 are as follows (Korean won in millions):

	Beginning Balance	Increase	Transfer	Foreign currency translation	Ending Balance	Principal debt amount
Creditors of Daewoo Corp.	₩ 26,289	₩ 855	₩ -	₩ 432	₩ 27,576	₩ 251,100
Legal proceedings provision	2,796	19,662	(5,101)	104	17,461	-
Provisions for construction warranties	127	-	-	-	127	-
	₩ 29,212	₩ 20,517	₩ (5,101)	₩ 536	₩ 45,164	₩ 251,100
U.S. dollar in thousands (Note 2)	\$ 26,127	\$ 18,350	\$ (4,562)	\$ 479	\$ 40,394	\$ 224,577

18.1 Contingent liabilities carried over from Daewoo Corporation prior to the spin-off

Daewoo Corporation, prior to the split-off, approved a proposal to divide the company into a surviving company and a company that engages in trade and construction sector, respectively, on July 22, 2000. On December 27, 2000, the Company was established as Daewoo International which was divided from the trade sector of Daewoo Corporation. Based on the split-off proposal, the Company and Daewoo Engineering & Construction Co., Ltd. are not obligated to pay any other liabilities of Daewoo Corporation transferred therefrom.

Daewoo Corporation, prior to the split-off, sent notifications to the creditors and guaranteed creditors. As a result, some creditors, including domestic creditors and foreign creditors who did not join the arrangement for a company improvement, raised objections. Daewoo Corporation accounted for a portion of the borrowings of the creditors as the borrowings of the Company and Daewoo Engineering & Construction or transferred them as guaranteed debt and proceeded the split-off. However, these were not fulfilled as there was no full agreement by the creditors.

Accordingly, at the end of the reporting period, the Company made reasonable estimates of the amount of the obligations to the creditors based on the information available and agreement with the creditors. As of December 31, 2018, the Company has recognized ₩27,576 million (\$24,663 thousand) as provision for contingent losses.

The provision for contingent losses in relation to Daewoo Corporation is the reasonable estimates divided at the ratio of 34 to 66 for the Company and Daewoo Engineering & Construction.

IDBI, a creditor of Daewoo Motor India (DMIL), to which Daewoo Corporation provided debt guarantees, filed a lawsuit against DMIL, Daewoo Corporation, Daewoo Engineering & Construction and the Company in Delhi in May 2002 with regards to the disposition of assets and confirmation of the debt. Accordingly, the Company has reasonably estimated the outcome of the lawsuit and reflected it in the provision for contingent loss.

On May 25, 2006, Daewoo Corporation applied for bankruptcy in the Seoul Central District Court pursuant to the Debtor Rehabilitation and Bankruptcy Act, and on June 16, 2006, the bankruptcy proceedings were concluded and the bankruptcy was terminated on May 25, 2017.

18.2 Pending litigations

As of December 31, 2018, the Company is a defendant in pending lawsuits involving 20 claims (domestic: 10 claims, overseas: 10 claims). The total amount of the lawsuits, except one case that the outcome of the pending litigation cannot be reasonably estimated, is ₩ 20,049 million, USD 28,763 thousand, INR 4,518,694 thousand, CAD 79,000 thousand and PKR 124,775 thousand. The Company is involved in 25 pending lawsuits as a plaintiff as of December 31, 2018.

The ultimate outcome of these lawsuits could not be determined. Therefore, the Company has not recognized potential liabilities that may arise as a result of the above litigations as of December 31, 2018 in the financial statements other than lawsuits for which provision for contingencies is recognized.

18.3 Credit facilities

As of December 31, 2018, the Company has letter of credit facilities ("L/C") with Woori Bank and others, document against acceptance facilities ("D/A") and other trading facilities as follows (U.S. dollar in thousands and Korean won in millions):

	Bank	Credit line amount		Outstanding balance	
Local L/C	Woori Bank and others	USD	419,819	USD	412,856
L/C	Woori Bank and others	USD	1,503,500	USD	1,060,814
D/A	Woori Bank and others	USD	1,991,470	USD	785,647
Credit line in foreign currency	Woori Bank and others	USD	376,000	USD	258,164
P-Bond and others	Woori Bank and others	USD	587,983	USD	385,564
Overdraft and others	Woori Bank and others	KRW	7,000		-

18.4 Collateral

The Company has pledged 33 blank promissory notes and 24 blank checks as collateral to Korea Energy Agency and others for the contract performance guarantees as of December 31, 2018.

18.5 Derivatives

The Company entered into currency forwards contracts and commodity futures contracts with financial institutions to hedge against foreign exchange risks and inventory price risks, and details on the maximum credit line amounts are as follows (Korean won in millions and USD in thousands):

Contract	Bank	Derivative credit lines		Details
Currency forwards	Woori Bank	USD	15,000	Limit of loss
	Kookmin Bank	KRW	33,600	Limit of loss
	Suhyup Bank	KRW	10,000	Limit of loss
	Citibank Korea	USD	50,000	Limit of risk transaction
	SC Bank Korea	USD	120,000	Limit of transaction
	UOB(*1)	USD	200,000	Limit of transaction
	Deutsch Bank	USD	13,000	Limit of risk transaction
	Credit Agricole	USD	50,000	Limit of risk transaction
	KEB Hana Bank(*1)	USD	30,000	Limit of loss
	ANZ Bank	USD	10,000	Limit of risk transaction
	Societe Generale	USD	42,000	Limit of risk transaction
	SMBC	USD	200,000	Limit of transaction
	Industrial & Commercial Bank of China	USD	50,000	Limit of risk transaction
	Korea Development Bank	KRW	30,000	Limit of risk transaction
	ING Bank	USD	34,000	Limit of risk transaction
	Mizuho Bank	USD	50,000	Limit of risk transaction
	MUFG Bank	USD	14,000	Limit of loss

18.5 Derivatives (cont'd)

Contract	Bank	Derivative credit lines		Details
Commodity futures	Triland	USD	5,000	Limit of loss
		USD	5,000	Limit of transaction
	Mitsui Bussan	USD	15,000	Limit of loss
		USD	15,000	Limit of transaction
	Toyota	USD	13,000	Limit of loss
		USD	13,000	Limit of transaction
	Societe Generale	USD	20,000	Limit of loss
		USD	20,000	Limit of transaction
	BOCI	USD	15,000	Limit of loss
		USD	15,000	Limit of transaction
	CMS	USD	5,000	Limit of transaction
		USD	5,000	Limit of loss
	Daishin Securities(*2)	USD	5,000	Limit of loss

(*1) Includes limit of transaction on currency swap contracts.

(*2) Includes limit of transaction on currency futures contracts.

Details of unsettled contracts for currency forwards, commodity futures and currency swap contract are as follows (Korean won in millions and USD in thousands):

18.5.1 Unsettled currency forwards

Currency unit	Unsettled contractual amount		Accumulated valuation gain (loss)
	Long position	Short position	
USD	₩ 291,824	₩ 966,376	₩ 5,060
EUR	30,304	616,139	633
JPY	13,603	32,476	(218)
CNY	10,221	32,998	(106)
AED	66	66	-
THB	-	572	(3)
IDR	-	59,364,096	(1,766)
CAD	2,985	13,365	179
GBP	13,404	43,814	(200)
AUD	563	6,838	127
SGD	-	1,025	(4)
			₩ 3,702
U. S. dollar in thousands (Note 2)			\$ 3,311

18.5 Derivatives (cont'd)

18.5.2 Unsettled commodity futures

Commodity	Unsettled contractual amount		Accumulated valuation gain (loss)
	Long position	Short position	
Aluminum	₩ 49,800	₩ 156,377	₩ 10,266
Copper	67,205	83,948	1,558
Nickel	45,526	77,562	5,881
Propane	25,116	29,551	1,570
Soybean	23,742	23,404	(3)
Corn	20,823	20,405	-
Tin	4,977	23,551	(83)
Naphtha	9,323	9,772	627
Wheat	10,476	-	(150)
Fuel Oil	1,248	-	(61)
Rubber	285	-	5
			₩ 19,610
U. S. dollar in thousands (Note 2)			\$ 17,539

18.5.3 Currency swap

Bank	Unsettled contractual amount		Expiration date	Interest swap	Accumulated gain (loss)
	Payment	Receipt			
UOB	USD 75,000	SGD 102,000	Oct. 25, 2019	Pay 3M US\$ Libor+1.15% Receive 3M SGD SOR+0.85%	₩ (787)
Credit Agricole	USD 50,000	SGD 68,000	Oct. 25, 2019	Pay 3M US\$ Libor+1.15% Receive 3M SGD SOR+0.85%	(510)
					₩ (1,297)
U. S. dollar in thousands (Note 2)					\$ (1,160)

Changes in the book value of derivative financial assets (liabilities) for the year ended December 31, 2018 are as follows:

Korean won in millions					
	Beginning balance	Settlement	Valuation gain	Valuation loss	Ending balance
Currency forwards	₩ 2,843	₩ (2,843)	₩ 8,472	₩ (4,770)	₩ 3,702
Commodity futures	(10,078)	10,078	33,867	(14,257)	19,610
Currency swap	1,442	-	-	(2,739)	(1,297)
Firm commitment contracts	13,405	854	39,028	(66,281)	(12,994)
	₩ 7,612	₩ 8,089	₩ 81,367	₩ (88,047)	₩ 9,021
U. S. dollar in thousands (Note 2)	\$ 6,808	\$ 7,234	\$ 72,773	\$ (78,747)	\$ 8,068

The Company uses commodity futures and other financial instruments to hedge its commodity price risks and other risks attributable to firm sales or purchase contracts. The Company applies fair value hedge accounting under which the firm sales or purchase contracts (the firm commitment contract) are designated as the hedged item with commodity futures and others as hedging instruments.

The firm commitment contracts in connection with commodity futures and others were valued at fair value. As a result of such valuation, the resulting unrealized gains and losses on valuation were recorded as firm commitment contracts assets and liabilities, respectively. For the year ended December 31, 2018, settled firm commitment contract assets and liabilities amounting to ₩4,654 million (\$4,162 thousand) and ₩5,508 million (\$4,926 thousand) were deducted sales and cost of sales, respectively.

18.6 Guarantee obligations

Guarantees provided by the Company to certain creditors on behalf of associates/debtors as of December 31, 2018 are as follows:

Debtor	Creditor	Limit amount		Outstanding balance		Year of expiration
		Foreign currency amounts (in thousands)	Korean won equivalent (in millions)	Foreign currency amounts (in thousands)	Korean won equivalent (in millions)	
PT. Bio Inti Agrindo	POSCO-Asia	USD 10,000	₩ 11,181	USD 10,000	₩ 11,181	2019
	PT Bank KEB Hana Indonesia	10,303	11,520	10,303	11,520	2019
	Korea Exim bank	1,500	1,677	1,500	1,677	2019
	Korea Exim bank	4,125	4,612	4,125	4,612	2020
	Korea Exim bank	26,000	29,071	26,000	29,071	2021
	Korea Exim bank	5,000	5,591	5,000	5,591	2022
	Korea Exim bank	22,000	24,598	22,000	24,598	2023
	Korea Exim bank	10,000	11,181	10,000	11,181	2020
	Korea Exim bank	46,500	51,992	46,500	51,992	2019
	Shinhan Bank	14,600	16,324	8,055	9,006	2019
POSCO DAEWOO India Pvt Ltd.	Shinhan Bank	19,500	21,803	1,620	1,811	2019
	Industrial Bank of Korea	8,300	9,280	6,355	7,084	2019
	SMBC	20,000	22,362	15,928	17,809	2019
	Mizuho Bank	15,000	16,772	12,871	14,391	2019
	Woori Bank	10,000	11,181	7,723	8,635	2019
	Credit Agricole	30,000	33,543	25,459	28,466	2019
	Standard chartered, New Delhi	32,000	35,779	-	-	2019
	Korea Exim bank	61,017	68,223	61,017	68,223	2021
	HY Dream 2nd co.,ltd.	65,000	72,677	65,000	72,677	2019
	SMBC	70,000	78,267	70,000	78,267	2021
Golden Lace Daewoo Co., Ltd.	Shinhan Bank	6,500	7,268	3,500	3,913	2021
	Shinhan Bank	2,500	2,795	2,500	2,795	2019
Global Komsco Daewoo L.L.C.	Industrial & Commercial Bank of China	8,225	9,196	8,225	9,196	2019
Sherritt International Corporation	Korea Exim bank	21,818	24,395	4,315	4,824	2023
Ambatovy project investments Ltd.	Korea Exim bank	65,455	73,185	7,716	8,627	2019
Daewoo Power Png Ltd.	Korea Exim bank	47,600	53,222	47,600	53,222	2025
POSCO Assan TST Steel Industry A.S.	ING and others	14,653	16,383	14,653	16,383	2020
POSCO DAEWOO China Co., Ltd.	Mizuho Bank	8,000	8,945	7,290	8,151	2019
		USD 655,596	₩ 733,023	USD 505,235	₩ 564,903	

Principal debtors listed above are related parties of the Company, excluding Sherritt International Corp. and Ambatovy Project Investments Ltd.

Investments in DMSA and AMSA (book value: ₩26,710 million) have been pledged as collateral to creditors in connection with the above payment guarantees.

18.7 Other commitments

18.7.1 Fund supplementary arrangements and stock pledge agreement of Daewoo Global Development Pte. Ltd. (DGDP)

All of the repayment on the principal amount of borrowings from FI by DGDP (₩190,689 million equivalent to \$170,547 thousand) from Export-Import Bank of Korea (₩43,746 million equivalent to \$39,125 thousand) and from POSCO Asia Co. (₩20,191 million equivalent to \$18,058 thousand) has been completed on June 29, 2018, and accordingly, the fund supplementary arrangements and stock pledge agreement have been terminated.

18.7.2 SPH Co., Ltd.

In 2014, the Company and POSCO Engineering & Construction Co., Ltd. established a 50-50 joint venture, SPH Co., Ltd. ("SPH"), for the construction and the lease of company housing. In accordance with the loan agreement between SPH and its creditors, the Company and POSCO Engineering & Construction Co., Ltd. should provide subordinated loan jointly in case that SPH would suffer from lack of funds for redemption of borrowings from its creditors and related interests. The balance of the borrowings was ₩99,000 million (\$88,543 thousand), which was repaid on December 26, 2018. As of December 26, 2018, SPH borrowed ₩110,000 million (\$98,381 thousand) from the lenders and provided the real estate as a collateral trust and ₩20,000 million (\$17,887 thousand) of supplementary fund shall be made by the jointly controlled entity.

18.7.3 Fund supplementary agreement for Korea Ambatovy Consortium (KAC)

The Company invested in the Ambatovy Nickel Project (DMSA / ASMA) in Madagascar through Korea Ambatovy Consortium (KAC), which is composed of Korea Resource Corporation (KORES) and STX Co., Ltd.

As the withdrawal from KAC was approved at the Company's Board of Directors' meeting on July 28, 2016, the Company has officially notified the withdrawal from KAC to participating companies including KORES, and also requested KAC to resolve all legal issues. The Company had also requested for arbitration to Korean Commercial Arbitration Board on November 4, 2016, in connection with the withdrawal notice, settlement of shares, compensation for damages and others but it was not accepted by the Board in 2018. Accordingly, the Company will resume normal operations through the exercise of off-take rights as per the agreement with KAC.

Sheritt International Corp., the operator, has partially transferred the shares in the project Sumitomo and Ambatovy Holdings Limited in November 2017. KAC retains rights and obligation including call options for ownership interest in the newly incorporated entity.

18.7.4 Environmental restoration expenses of Peru Block 8.

The Company and the other participant entered into a contract on the ratio of paying for environmental restoration cost with former operators. However, as the cost of environment restoration is expected to increase, the former operator refused to pay, and the Company applied for an arbitration. As a result of the arbitration in June 2018, the former operator is obligated for 94% of the cost of recovering the polluted area. As due diligence is underway to calculate the environmental restoration cost, the amounts have not yet been determined.

19. Issued capital, capital surplus

Issued capital as of December 31, 2018 is as follows (Korean won in millions, Korean won for par value amount):

	Number of shares authorized	Number of shares issued	Par value	Issued capital	Paid-in capital in excess of par value (capital surplus)
Ordinary shares	500,000,000	123,375,149	₩ 5,000	₩ 616,876	₩ 518,848
U. S. dollar in thousands (Note 2)				\$ 551,718	\$ 464,044

Capital surplus as of December 31, 2018 and 2017 are as:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Paid-in capital in excess of par value	₩ 518,848	₩ 518,848	\$ 464,044
Other capital surplus	25,155	25,155	22,498
	₩ 544,003	₩ 544,003	\$ 486,542

Other components of equity as of December 31, 2018 and 2017 are as follows (Korean won in millions):

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Treasury stocks	₩ (6)	₩ (6)	\$ (5)

20. Accumulated other comprehensive income

Accumulated other comprehensive income of the years ended December 31, 2018 and 2017 are composed of gain on valuation of available-for-sale financial assets and equity instruments.

Changes in gain on valuation of available-for-sale financial assets and equity instruments for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Beginning balance	₩ 13,383	₩ 21,129	\$ 11,969
Effects of IFRS 9	(9,707)	-	(8,682)
Changes during the year	(7,416)	(10,219)	(6,632)
Tax effect	1,795	2,473	1,605
Ending balance	₩ (1,945)	₩ 13,383	\$ (1,740)

21. Retained earnings

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Legal appropriated retained earnings (*1)	₩ 45,341	₩ 39,172	\$ 40,552
Discretionary appropriated retained earnings(*2)	1,492,000	1,409,000	1,334,407
Unappropriated retained earnings	102,878	153,197	92,011
	₩ 1,640,219	₩ 1,601,369	\$ 1,466,970

(*1)) In accordance with the Commercial law, the Company is required to accumulate at least 10% of the dividend from cash dividends at each balance sheet as reserve for profits until the balance reaches 50% of the paid-in capital. It can be used to transfer capital or to protect deficits.

(*2) The voluntary reserve for the Company is the full amount of the business expansion reserves.

Detailed statements of appropriations of retained earnings for the years ended as of December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Retained earnings before appropriations:			
Unappropriated retained earnings carried forward from the prior year	₩ 2,342	₩ 2,155	\$ 2,094
Effects of IFRS 9	8,446	-	7,554
Actuarial gain (loss)	(5,682)	662	(5,082)
Profit for the year	97,772	150,380	87,445
	102,878	153,197	92,011
Appropriations:			
Legal reserve	7,403	6,169	6,620
Reserve for business expansion	19,000	83,000	16,993
Cash dividends	74,025	61,686	66,206
	100,428	150,855	89,819
Unappropriated retained earnings to be carried forward to the next year	₩ 2,450	₩ 2,342	\$ 2,192

Appropriation approval dates for 2018 and 2019 are March 12, 2018 and March 18, 2019, respectively.

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Dividends per share (Korean won and U.S. dollar) (dividend ratio) (A)	₩ 600 (12%)	₩ 500(10%)	\$ 0.537 (10%)
Number of shares (B)	123,374,891	123,374,891	123,374,891
Dividends (A x B)	₩ 74,025	₩ 61,686	\$ 66,206

22. Expenses disclosed by the nature

Expenses disclosed by the nature of expense (cost of sales and selling and administrative expense) for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Cost of goods sold	₩ 22,012,520	₩ 19,582,121	\$ 19,687,434
Employee salaries	145,964	139,513	130,546
Depreciation of property, plant and equipment	40,136	34,906	35,897
Amortization of intangible asset	124,545	146,219	111,390
Depreciation of investment properties	2,895	2,920	2,589
Others	597,451	633,033	534,345
	₩ 22,923,511	₩ 20,538,712	\$ 20,502,201

23. Selling and administrative expenses

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Salaries	₩ 131,940	₩ 124,402	\$ 118,004
Severance benefit	14,024	15,111	12,543
Employee welfare	26,998	25,605	24,146
Travel	8,686	8,012	7,769
Communication	4,510	4,532	4,034
Utilities	318	267	284
Taxes and dues	3,310	3,919	2,960
Rents	10,045	9,792	8,984
Depreciation	7,460	8,324	6,672
Amortization	3,129	3,031	2,798
Repairs	543	381	486
Insurance	30,129	29,134	26,947
Entertainment	493	479	441
Advertising	1,099	1,049	983
Packaging	1,209	507	1,081
Freight (*1)	-	355,512	-
Shipping	29,271	35,113	26,179
Commissions	78,348	87,717	70,072
Bad debt expenses	35,956	75,929	32,158
Supplies	557	552	498
Car maintenance	2,200	2,017	1,968
Printing	340	306	304
Training	2,195	2,038	1,963
Research and development	2,992	2,513	2,676
Sales promotion	3,680	3,452	3,291
Exhibition	142	107	127
Others	762	721	682
	₩ 400,336	₩ 800,522	\$ 358,050

(*1) In accordance with the adoption of KIFRS 15 introduced in 2018, the freight expenses were reclassified from selling and administrative expenses to cost of goods sold as the freight sales are separately recognized from the product sales.

24. Finance income and costs

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Interest income	₩ 33,436	₩ 29,783	\$ 29,904
Financial guarantee income	1,635	1,888	1,462
Dividends income	50,110	53,180	44,817
Gain on foreign currency transactions	315,349	388,029	282,040
Gain on foreign currency translation	55,860	160,736	49,960
Gain on valuation of derivatives	81,367	90,897	72,773
Gain on settlement of derivatives	226,009	188,645	202,137
Gain on valuation of accounts payable	64	-	57
Gain on disposal of long-term securities	5,271	-	4,714
	₩ 769,101	₩ 913,158	\$ 687,864

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Loss on disposal of trade accounts receivable	₩ 39,062	₩ 31,817	\$ 34,936
Interest expenses	110,551	72,543	98,874
Financial guarantee expense	3,592	7,434	3,213
Loss on foreign currency transactions	336,897	369,253	301,312
Loss on foreign currency translation	47,369	167,414	42,365
Loss on valuation of derivatives	88,047	75,501	78,747
Loss on settlement of derivatives	195,473	215,976	174,826
Loss on valuation of accounts receivable	3,209	-	2,870
	₩ 824,200	₩ 939,938	\$ 737,143

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Interest income on cash equivalents	₩ 1,375	₩ 1,200	\$ 1,230
Other interest income	32,061	28,583	28,674
	₩ 33,436	₩ 29,783	\$ 29,904

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Interest on borrowings and bonds	₩ 111,261	₩ 75,041	\$ 99,509
Less: capitalization of borrowing costs	(710)	(2,498)	(635)
	₩ 110,551	₩ 72,543	\$ 98,874

25. Other income and expenses

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Gain on insurance settlement	₩ 40	₩ -	\$ 36
Gain on disposal of property, plant and equipment	197	1,440	176
Gain on disposal of intangible assets	2,536	-	2,268
Gain on disposal of disposal companys classified as held for sale	-	465	-
Gain on disposal of available-for-sale financial assets	-	110	-
Reversal of other bad debt allowance	2,072	464	1,853
Reversal of contingent liability	476	-	426
Miscellaneous income	18,053	43,462	16,146
	₩ 23,374	₩ 45,941	\$ 20,905

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Contribution to provisions for restoration	₩ 865	₩ 241	\$ 774
Other bad debt expense	13,244	3,762	11,845
Loss on disposal of property, plant and equipment	440	476	394
Loss on impairment of property, plant and equipment	1,028	-	919
Loss on disposal of intangible assets	75	98	67
Loss on impairment of intangible assets	3,339	74,960	2,986
Donations	1,684	863	1,506
Contingency loss	20,993	9,335	18,776
Loss on impairment of investments in subsidiaries and associates	160,085	61,445	143,176
Loss on disposal of available-for-sale financial assets	-	22	-
Loss on disposition of investments in subsidiaries and related companies	379	-	339
Miscellaneous expenses	17,419	11,076	15,579
	₩ 219,551	₩ 162,278	\$ 196,361

26. Impairment of financial instrument

Details of impairment of financial instrument for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Bad debt expenses	₩ 35,956	₩ 75,929	\$ 32,158
Other bad debt expenses	14,242	2,930	12,738
Less: reversal of allowance for doubtful accounts	(2,072)	(263)	(1,853)
	₩ 48,126	₩ 78,596	\$ 43,043

27. Income taxes

The major components of income tax expenses for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Current income taxes	₩ 96,396	₩ 70,677	\$ 86,214
Changes in deferred income tax arising from temporary differences	(68,134)	(14,294)	(60,937)
Changes in deferred income tax arising from tax credit carryforwards	3,964	672	3,545
Income tax charged directly to equity	4,011	2,262	3,587
Income tax expense	₩ 36,237	₩ 59,317	\$ 32,409

The reconciliation between income tax expense at the effective income tax rates of the Company and accounting profit before income tax at the Korea statutory tax rate for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Accounting profit before income tax	₩ 134,009	₩ 209,697	\$ 119,854
Tax at the statutory income tax rate	32,430	50,285	29,005
Adjustments:			
Non-taxable income (2018: ₩636 million, 2017: ₩27,465 million)	(154)	(6,646)	(138)
Non-deductible expenses (2018: ₩6,071 million, 2017: ₩22,642 million)	1,469	5,479	1,314
Tax credits	(1,708)	(2,334)	(1,528)
Others	4,200	12,533	3,756
Income tax expense	₩ 36,237	₩ 59,317	\$ 32,409
Effective income tax rates	27.04%	28.29%	27.04%

27. Income taxes (cont'd)

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Gain on valuation of available-for-sale financial assets	₩ -	₩ 2,473	\$ -
Gain on valuation of equity instruments at fair value through OCI	1,795	-	1,605
Re-measurement loss (gain) on defined benefit liabilities	1,814	(211)	1,622
Effects of changes in accounting standard	402	-	360
	₩ 4,011	₩ 2,262	\$ 3,587

Changes in deferred income tax assets and liabilities for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018				
	Beginning balance	Business combination	Recognized in profit or loss	Recognized directly to equity	Ending balance
Valuation of derivatives	₩ (1,154)	₩ -	₩ (447)	₩ -	₩ (1,601)
Loss on impairment of investments	20,018	-	(4,344)	-	15,674
Investments in subsidiaries and associates	75,713	-	42,117	-	117,830
Provisions for severance liability	26,223	-	1,113	1,814	29,150
Severance insurance deposits	(25,893)	-	(5,560)	-	(31,453)
Debt restructuring	(3,995)	-	59	-	(3,936)
Extraordinary loss	1,807	-	3,786	-	5,593
Allowance for doubtful accounts	37,371	-	(24,970)	-	12,401
Depreciation	25,836	-	3,057	-	28,893
Capitalized borrowing costs	(24,557)	-	5,850	-	(18,707)
Accrued expenses	15,230	-	(1,781)	-	13,449
Foreign currency translation	681	-	(33)	-	648
Valuation of available-for-sale financial assets	(4,273)	-	3,099	1,795	621
Financial guarantee liabilities	4,629	-	(1,884)	-	2,745
Borrowings with low interest rates	(613)	-	179	-	(434)
Forgivable borrowings	(6,113)	-	8,302	-	2,189
Others	55,801	-	35,581	402	91,784
	196,711	-	64,124	4,011	264,846
Tax credit carryforwards	3,964	-	(3,964)	-	-
	₩ 200,675	₩ -	₩ 60,160	₩ 4,011	₩ 264,846
U. S. dollar in thousands (Note 2)	\$ 179,478	\$ -	\$ 53,806	\$ 3,587	\$ 236,871

27. Income taxes (cont'd)

	2017				
	Beginning balance	Business combination	Recognized in profit or loss	Recognized directly to equity	Ending balance
Valuation of derivatives	₩ (250)	₩ -	₩ (904)	₩ -	₩ (1,154)
Loss on impairment of investments	11,010	666	8,342	-	20,018
Investments in subsidiaries and associates	54,638	-	21,075	-	75,713
Provisions for severance liability	17,386	7,377	1,671	(211)	26,223
Severance insurance deposits	(13,514)	(6,976)	(5,403)	-	(25,893)
Debt restructuring	(4,119)	-	124	-	(3,995)
Extraordinary loss	22,390	-	(20,583)	-	1,807
Allowance for doubtful accounts	34,378	6,154	(3,161)	-	37,371
Depreciation	26,421	(4,642)	4,057	-	25,836
Capitalized borrowing costs	(25,470)	-	913	-	(24,557)
Accrued expenses	18,221	24	(3,015)	-	15,230
Conversion of debt to equity	1,812	-	(1,812)	-	-
Foreign currency translation	703	-	(22)	-	681
Valuation of available-for-sale financial assets	(6,746)	-	-	2,473	(4,273)
Financial guarantee liabilities	6,041	-	(1,412)	-	4,629
Borrowings with low interest rates	(1,096)	-	483	-	(613)
Forgivable borrowings	2,594	-	(8,707)	-	(6,113)
Others	30,837	4,578	20,386	-	55,801
	175,236	7,181	12,032	2,262	196,711
Tax credit carryforwards	4,636	-	(672)	-	3,964
	₩ 179,872	₩ 7,181	₩ 11,360	₩ 2,262	₩ 200,675

28. Earnings per share

Basic earnings per share for the years ended December 31, 2018 and 2017 are calculated as follows (Korean won in millions, except for per share amounts):

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Profit for the year attributable to ordinary equity holders of the parent	₩ 97,772	₩ 150,380	\$ 87,445
Weighted average number of common shares outstanding	123,374,891	121,839,512	123,374,891
Basic earnings per share (Korean won and U.S. dollar)	₩ 792	₩ 1,234	\$ 0.71

28. Earnings per share (cont'd)

Details of weighted average number of ordinary shares outstanding for the years ended December 31, 2018 and 2017 are as follows:

	2018		
	Number of outstanding shares	Number of days outstanding	Weighted number of shares
Beginning balance	<u>123,374,891</u>	<u>365/365</u>	<u>123,374,891</u>
	2017		
	Number of outstanding shares	Number of days outstanding	Weighted number of shares
Beginning balance	113,876,291	365/365	113,876,291
Issuance of capital stock due to business combination	9,498,858	306/365	7,963,426
Acquisition of treasury stock	(258)	290/365	(205)
	<u>123,374,891</u>		<u>121,839,512</u>

Diluted earnings per share for the years ended December 31, 2018 and 2017 are the same as basic earnings per share as the Company does not have any dilutive potential shares.

29. Financial instruments

29.1 Capital risk management

The primary objective of the Company's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business and maximize shareholder value. To maintain or adjust the capital structure, the Company may adjust the dividend payment to shareholders.

Capital structure of the Company is composed of net borrowings, which is borrowings less cash and cash equivalents, and equity. The Company maintains the same capital risk management policies as prior year. Details of the capital components managed by the Company as of December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Total borrowings (A)	₩ 3,582,124	₩ 3,316,467	\$ 3,203,760
Cash and cash equivalents (B)	(53,760)	(44,350)	(48,082)
Net borrowings (A-B)	₩ 3,528,364	₩ 3,272,117	\$ 3,155,678
Total equity (D)	₩ 2,799,147	₩ 2,775,625	\$ 2,503,485
Gearing ratio ((A-B)/D)	<u>126%</u>	<u>118%</u>	<u>126%</u>

29.2 Financial instruments by category

Financial assets by category as of December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018			
	Financial asset at fair value through profit or loss	Financial asset at amortized costs	Financial asset at fair value through OCI	Total
Cash and cash equivalents	₩ -	₩ 53,760	₩ -	₩ 53,760
Trade and other receivables	18,151	4,240,508	-	4,258,659
Other current financial assets	-	66	-	66
Derivative financial assets	53,261	-	-	53,261
Non-current trade and other receivables	-	413,765	-	413,765
Other non-current financial assets	1,207	790	27,947	29,944
	₩ 72,619	₩ 4,708,889	₩ 27,947	₩ 4,809,455
U. S. dollar in thousands (Note 2)	\$ 64,949	\$ 4,211,509	\$ 24,995	\$ 4,301,453

	2017			
	Financial asset at fair value through profit or loss	Loans and receivables	Available-for-sale financial assets	Total
Cash and cash equivalents	₩ -	₩ 44,350	₩ -	₩ 44,350
Trade and other receivables	-	3,518,262	-	3,518,262
Other current financial assets	-	84	-	84
Derivative financial assets	51,066	-	-	51,066
Non-current trade and other receivables	-	412,817	-	412,817
Other non-current financial assets	-	12	89,583	89,595
	₩ 51,066	₩ 3,975,525	₩ 89,583	₩ 4,116,174

Financial liabilities by category as of December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018		
	Financial liabilities at fair value through profit or loss	Financial liabilities carried at amortized cost	Total
Trade and other payables	₩ -	₩ 1,940,101	₩ 1,940,101
Borrowings	-	1,936,790	1,936,790
Current-portion of bonds	-	538,509	538,509
Derivative financial liabilities	44,240	-	44,240
Non-current trade and other payables	-	15,803	15,803
Long-term borrowings	-	336,310	336,310
Bonds	-	770,515	770,515
	₩ 44,240	₩ 5,538,028	₩ 5,582,268
U. S. dollar in thousands (Note 2)	\$ 39,567	\$ 4,953,071	\$ 4,992,638

29.2 Financial instruments by category (cont'd)

	2017		
	Financial liabilities at fair value through profit or loss	Financial liabilities carried at amortized cost	Total
Trade and other payables	₩ -	₩ 1,753,404	₩ 1,753,404
Borrowings	-	1,745,978	1,745,978
Current-portion of bonds	-	463,736	463,736
Derivative financial liabilities	43,454	-	43,454
Non-current trade and other payables	-	23,862	23,862
Long-term borrowings	-	372,553	372,553
Bonds	-	734,200	734,200
	₩ 43,454	₩ 5,093,733	₩ 5,137,187

Profit or loss by category of financial instruments for the year ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018					
	Financial asset at fair value through profit or loss	Financial asset at amortized cost	Financial asset at fair value through OCI	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Total
Selling and administrative expenses:						
Bad debt expenses	₩ -	₩ (35,956)	₩ -	₩ -	₩ -	₩ (35,956)
Other income (expenses):						
Other bad debt expense	-	(14,242)	-	-	-	(14,242)
Reversal of allowance for doubtful accounts	-	2,072	-	-	-	2,072
Finance income (cost):						
Interest income	-	33,436	-	-	-	33,436
Interest expenses	-	-	-	-	(110,551)	(110,551)
Gain (loss) on Financial guarantee	-	(3,592)	-	-	1,635	(1,957)
Dividend income	1	-	165	-	-	166
Gain (loss) on foreign currency transactions	-	136,092	-	-	(157,640)	(21,548)
Gain (loss) on foreign currency translation	-	3,323	-	-	5,168	8,491
Gain (loss) on valuation of derivatives	81,367	-	-	(88,047)	-	(6,680)
Gain (loss) on settlement of derivatives	226,009	-	-	(195,473)	-	30,536
Gain (loss) on valuation of accounts receivables	(3,209)	-	-	-	-	(3,209)
Gain (loss) on valuation of accounts payable	-	-	-	64	-	64
Loss on disposal of trade receivables	-	(39,062)	-	-	-	(39,062)
Gain (loss) on disposal of long-term securities	5,271	-	-	-	-	5,271
Other comprehensive income	-	-	(7,416)	-	-	(7,416)
	₩ 309,439	₩ 82,071	₩ (7,251)	₩ (283,456)	₩ (261,388)	₩ (160,585)
U. S. dollar in thousands (Note 2)	\$ 276,754	\$ 73,402	\$ (6,485)	\$ (253,515)	\$ (233,779)	\$ (143,623)

29.2 Financial instruments by category (cont'd)

	2017					
	Financial asset at fair value through profit or loss	Financial asset at amortized cost	Financial asset at fair value through OCI	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Total
Selling and administrative expenses:						
Bad debt expenses	₩ -	₩ (75,929)	₩ -	₩ -	₩ -	₩ (75,929)
Other income (expenses):						
Other bad debt expense	-	(2,930)	-	-	-	(2,930)
Reversal of allowance for doubtful accounts	-	263	-	-	-	263
Loss on impairment of available-for-sale financial assets	-	-	-	-	-	-
Gain on disposal of available-for-sale financial assets	-	-	110	-	-	110
Loss on disposal of available-for-sale financial assets	-	-	(22)	-	-	(22)
Finance income (cost):						
Interest income	-	29,783	-	-	-	29,783
Interest expenses	-	-	-	-	(72,543)	(72,543)
Dividend income	-	-	455	-	-	455
Gain (loss) on foreign currency translation	-	160,736	-	-	(167,414)	(6,678)
Gain (loss) on valuation of derivatives	90,897	-	-	(75,501)	-	15,396
Gain (loss) on settlement of derivatives	188,645	-	-	(215,976)	-	(27,331)
Loss on disposal of trade receivables	-	(31,817)	-	-	-	(31,817)
Other comprehensive income	-	-	(10,219)	-	-	(10,219)
	₩ 279,542	₩ 80,106	₩ (9,676)	₩ (291,477)	₩ (239,957)	₩ (181,462)

29.3 Financial risk management

The Company is exposed to market risk (foreign currency risk and interest rate risk), credit risk, and liquidity risk. The primary purpose of Company's financial risk management is to detect potential risk which could decrease the Company's profit and to eliminate, reduce and hedge such risk to an acceptable level. The Company uses derivative financial instruments for hedging special risk such as foreign currency risk. Financial risk management policy of the Company has been consistent with the policy of prior years.

29.3.1 Market risk

Market risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market prices comprise three types of risk: foreign currency risk, interest rate risk and other price risk.

29.3.1.1 Foreign currency risk

The Company is exposed to the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. As of December 31, 2018 and 2017, significant monetary assets and liabilities denominated in major foreign currencies, other than functional currencies are as follows:

	Korean won in millions				U. S. dollar in thousands (Note 2)	
	2018		2017		2018	
	Asset	Liability	Asset	Liability	Asset	Liability
USD	₩ 3,182,272	₩ 3,191,366	₩ 2,838,922	₩ 3,085,954	\$ 2,846,143	\$ 2,854,276
JPY	72,812	74,366	38,013	25,419	65,121	66,511
EUR	626,379	326,354	522,010	229,215	560,217	291,883

Effects of fluctuation in foreign exchange rates on the Company's functional currency by 10% on profit for the year ended December 31, 2018 are as follows (Korean won in millions):

	Increase by 10%	Decrease by 10%
USD	₩ (909)	₩ 909
JPY	(155)	155
EUR	30,003	(30,003)

29.3.1.2 Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Company's exposure to the risk of changes in market interest rates relates primarily to the Company's borrowings and bonds with floating interest rates.

As of December 31, 2018, with all other variables remaining constant, a change of 1% in the floating interest rate on borrowings will have an effect of ₩6,354 million (\$5,683 thousand) on the Company's profit for the year.

29.3.2 Credit risk

Credit risk is the risk that counterparties will not meet its obligations under a financial instrument or customer contract, leading to a financial loss. The Company's exposure to the credit risk relates to operating and financial activities.

29.3.2.1 Trade and other receivables

It is the principle for the Company to conduct transactions only with those with sound financial status by performing credit verification procedures for all counterparties that desire credit transactions with the Company. In addition, the Company manages the balance of accounts receivable by continuously reevaluating credit ratings so that the level of the Company's exposure to the credit risk is maintained at an insignificant level.

29.3.2.2 Other assets

Credit risks associated with the Company's other assets which consist of cash, short-term deposits and short-term and long-term loans arise from the default by the counterparties. Maximum exposure to credit risks will be the book value of the other assets. The Company deposits its surplus funds in Woori Bank and other financial institutions whose credit ratings are high, therefore, credit risk related to financial institutions is considered low.

29.3.2.3 Maximum exposure to credit risk

The book value of a financial asset represents the maximum exposure to a credit risk. If a financial guarantee is provided, the maximum exposure to credit risk is the maximum amount due on the claims of the assured. For borrowing arrangements, the maximum exposure to credit risk is the total commitment amount.

As of December 31, 2018 and 2017, the maximum exposure to credit risk of the Company are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Cash and cash equivalents	₩ 53,760	₩ 44,350	\$ 48,082
Trade and other receivables	4,258,659	3,518,262	3,808,836
Other current financial assets	66	84	59
Derivative financial assets	53,261	51,066	47,635
Non-current trade and other receivables	413,765	412,817	370,060
Other non-current financial assets	29,944	89,595	26,781
Financial guarantee contract	584,903	650,912	523,122
	<u>₩ 5,394,358</u>	<u>₩ 4,767,086</u>	<u>\$ 4,824,575</u>

29.3.2.4 Aging analysis of financial instruments

Aging analysis of non-derivative financial instruments as of December 31, 2018 is as follows (Korean won in millions):

			Past due but not impaired				
	Total	Not past due	Within 30 days	30 days to 60 days	60 days to 90 days	90 days to 120 days	Over 120 days
Cash and cash equivalents	₩ 53,760	₩ 53,760	₩ -	₩ -	₩ -	₩ -	₩ -
Trade and other receivables	4,258,659	3,743,754	376,375	74,091	19,802	2,141	42,496
Other current financial assets	66	66	-	-	-	-	-
Non-current trade and other receivables	413,765	413,765	-	-	-	-	-
Other non-current financial assets	29,944	29,944	-	-	-	-	-
	<u>₩ 4,756,194</u>	<u>₩ 4,241,289</u>	<u>₩ 376,375</u>	<u>₩ 74,091</u>	<u>₩ 19,802</u>	<u>₩ 2,141</u>	<u>₩ 42,496</u>
U. S. dollar in thousands (Note 2)	<u>\$ 4,253,817</u>	<u>\$ 3,793,300</u>	<u>\$ 336,620</u>	<u>\$ 66,265</u>	<u>\$ 17,710</u>	<u>\$ 1,915</u>	<u>\$ 38,007</u>

29.3.3 Liquidity risk

The Company establishes short and long-term capital management plans and analyzes and reviews cash flow budgets against actual cash outflow in order to match the maturity of financial liabilities and financial assets. The Company believes that it has sufficient cash inflows from operating activities and financial assets to redeem financial liabilities that become due.

29.3.3 Liquidity risk (cont'd)

The aggregated maturities of financial liabilities outstanding as of December 31, 2018, excluding present value discount, are as follows (Korean won in millions):

	Within 1 year	1 year to 5 years	Over 5 years	Total
Trade and other payables	₩ 1,940,101	₩ 2,790	₩ 1,077	₩ 1,943,968
Derivative financial liabilities	44,240	-	-	44,240
Borrowings	2,004,467	253,218	106,247	2,363,932
Bonds	560,993	805,440	-	1,366,433
Financial guarantee liabilities	265,018	266,663	53,222	584,903
	₩ 4,814,819	₩ 1,328,111	₩ 160,546	₩ 6,303,476
U. S. dollar in thousands (Note 2)	\$ 4,306,251	\$ 1,187,828	\$ 143,588	\$ 5,637,667

(*1) The maximum amount of guarantees that can be borne by the Company as a result of the financial guarantee contracts at the end of the reporting period is as follows in Note 18.

29.3.4 Changes in liabilities from financial activities

Changes in liabilities from financial activities as of December 31, 2018 and 2017 are as follows (Korean won in millions):

		2018					
	Beginning balance	Business combination	Cash flows from financial activities	Exchange rate changes	Reclassification	Others	Ending balance
Short-term borrowings	₩ 1,520,180	₩ -	₩ 384,753	₩ (8,118)	₩ -	₩ -	₩ 1,896,815
Current portion of long-term borrowings	225,798	-	(224,550)	(3,814)	42,581	(40)	39,975
Current portion of bond	463,736	-	(464,280)	(866)	539,204	715	538,509
Bond	734,200	-	573,623	809	(539,204)	1,087	770,515
Long-term borrowings	372,553	-	(1,057)	6,157	(42,581)	1,238	336,310
	₩ 3,316,467	₩ -	₩ 268,489	₩ (5,832)	₩ -	₩ 3,000	₩ 3,582,124
U. S. dollar in thousands (Note 2)	\$ 2,966,163	\$ -	\$ 240,130	\$ (5,216)	\$ -	\$ 2,683	\$ 3,203,760

		2017					
	Beginning balance	Business combination	Cash flows from financial activities	Exchange rate changes	Reclassification	Others	Ending balance
Short-term borrowings	₩ 1,401,759	₩ 390,753	₩ (220,704)	₩ (51,628)	₩ -	₩ -	₩ 1,520,180
Current portion of long-term borrowings	69,033	8,200	(73,417)	(9,869)	231,709	142	225,798
Current portion of bond	294,733	-	(284,044)	(12,443)	474,210	(8,720)	463,736
Bond	759,477	129,856	338,150	(20,237)	(474,210)	1,164	734,200
Long-term borrowings	456,809	8,250	184,718	(13,155)	(231,709)	(32,360)	372,553
	₩ 2,981,811	₩ 537,059	₩ (55,297)	₩ (107,332)	₩ -	₩ (39,774)	₩ 3,316,467

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29.4 Fair value of financial instruments

Book value and fair value of financial instruments as of December 31, 2018 and 2017 are as follows:

	Korean won in millions				U. S. dollar in thousands (Note 2)	
	2018		2017		2018	
	Book value	Fair value	Book value	Fair value	Book value	Fair value
<Financial assets>						
Financial assets at amortized cost:						
Cash and cash equivalents	₩ 53,760	₩ 53,760	₩ 44,350	₩ 44,350	\$ 48,082	\$ 48,082
Trade and other receivables	4,240,508	4,240,508	3,518,262	3,518,262	3,792,602	3,792,602
Other current financial assets	66	66	84	84	59	59
Non-current trade and other receivables	413,765	413,765	412,817	412,817	370,060	370,060
Other non-current financial assets	790	790	707	707	707	707
	4,708,889	4,708,889	3,976,220	3,976,220	4,211,510	4,211,510
Financial assets at fair value:						
Trade and other receivables	18,151	18,151	-	-	16,234	16,234
Derivative financial assets	53,261	53,261	51,066	51,066	47,635	47,635
Available-for-sale financial assets(*1)	-	-	47,385	47,385	-	-
Financial asset at fair value through OCI	27,947	27,947	-	-	24,995	24,995
Financial asset at fair value through profit or loss(long-term equity investment)	1,102	1,102	-	-	985	985
Financial asset at fair value through profit or loss(other securities)	105	105	-	-	94	94
	100,566	100,566	98,451	98,451	89,943	89,943
	₩ 4,809,455	₩ 4,809,455	₩ 4,074,671	₩ 4,074,671	\$ 4,301,453	\$ 4,301,453
<Financial liabilities>						
Financial liability at amortized cost:						
Trade and other payables	₩ 1,940,101	₩ 1,940,101	₩ 1,753,404	₩ 1,753,404	\$ 1,735,177	\$ 1,735,177
Current portion of borrowings	1,936,790	1,936,790	1,745,978	1,745,978	1,732,215	1,732,215
Current portion of bonds	538,509	542,936	463,736	465,138	481,629	485,588
Non-current trade and other payables	15,803	15,803	23,862	23,862	14,134	14,134
Borrowings	336,310	336,310	372,553	372,553	300,787	300,787
Bonds	770,515	779,146	734,200	739,607	689,129	696,848
	5,538,029	5,551,086	5,093,733	5,100,542	4,953,071	4,964,749
Financial liability at fair value:						
Derivative financial liabilities	44,240	44,240	43,454	43,454	39,567	39,567
	44,240	44,240	43,454	43,454	39,567	39,567
	₩ 5,582,269	₩ 5,595,326	₩ 5,137,187	₩ 5,143,996	\$ 4,992,638	\$ 5,004,316

(*1) Excludes equity securities carried at cost as the fair value of those securities could not be measured reliably.

30. Fair value measurement

30.1 Fair value hierarchy

The Company uses the following hierarchy for determining and disclosing the fair value by valuation technique:

- Level 1: Quoted (unadjusted) prices in active markets for identical assets or liabilities
- Level 2: Other techniques for which all inputs which have a significant effect on the recorded fair value are observable, either directly or indirectly
- Level 3: Techniques which use inputs that have a significant effect on the recorded fair value that are not based on observable market data.

The fair values of financial instruments by fair value hierarchy as of December 31, 2018 are as follows:

	Korean won in millions				U. S. dollar in thousands (Note 2)
	Level 1	Level 2	Level 3	Total	Total
Assets measured at fair value:					
Financial assets at fair value through OCI	₩ 4,593	₩ -	₩ 18,102	₩ 22,695	\$ 20,298
Financial assets at fair value through profit or loss	-	105	-	105	94
Derivative financial assets	-	53,261	-	53,261	47,635
Assets for which fair values are disclosed:					
Cash and cash equivalents	-	53,760	-	53,760	48,082
Trade and other receivables	-	-	4,258,659	4,258,659	3,830,386
Other current financial assets	-	66	-	66	59
Non-current trade and other receivables	-	-	413,765	413,765	370,060
Other non-current financial assets	-	790	-	790	707
Investment properties	-	-	174,576	174,576	156,136
Liabilities measured at fair value:					
Derivative financial liabilities	-	44,240	-	44,240	39,567
Liabilities for which fair values are disclosed:					
Trade and other payables	-	-	1,940,101	1,940,101	1,735,177
Short-term borrowings	-	1,936,790	-	1,936,790	1,732,215
Current-portion of bonds	-	542,936	-	542,936	485,588
Non-current trade and other payables	-	-	15,803	15,803	14,134
Long-term borrowings	-	336,310	-	336,310	300,787
Bonds	-	779,146	-	779,146	696,848

The fair value of financial instruments that are traded in active markets at each reporting date is determined by reference to quoted market prices or dealer price quotations. These instruments are included in Level 1, mostly are classified into fair value measurement financial assets which are listed stocks.

For financial instruments not traded in an active market, the fair value is determined using appropriate valuation techniques. This valuation technique fully makes use of observable market information as possible and internal information at minimum. When every significant variable required for measuring fair value of the instrument is observable, the instrument is classified into Level 2.

When one or more significant variable is not based on observable market information, the instrument is classified into Level 3.

Valuation techniques used to measure fair values of instruments are:

- Quoted prices or dealer price of similar instrument
- Present value discounted by forward exchange rate as of year-end is used for fair value of derivative instrument
- Discounted cash flow and other techniques are used for other instruments

A reasonable approximate value of fair value is used as book values of instruments which are classified into same category with trade and other receivables.

30.1 Fair value hierarchy (cont'd)

The Company used the interest rate for U.S. government treasury bills in determining the fair value of the derivative financial assets and liabilities valued at Level 2 hierarchy. Also, the Company used the risk-free interest rate of 2.54% and market risk premium of 10.21% in determining the fair value measurement financial assets valued at Level 3 hierarchy.

31. Related party transactions

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

	2018	2017
Parent	POSCO Co., Ltd.	POSCO Co., Ltd.
Subsidiaries	POSCO DAEWOO America Corp. POSCO DAEWOO Deutschland GmbH POSCO DAEWOO Japan Corp. POSCO DAEWOO Singapore Pte Ltd. POSCO DAEWOO Italia S.R.L. POSCO DAEWOO China Co., Ltd. DAEWOO Int'l Guangzhou Corp. POSCO DAEWOO Myanmar Corp. Ltd. POSCO DAEWOO Mexico S.A. de C.V. POSCO DAEWOO Malaysia Sdn. Bhd. POSCO DAEWOO Shanghai Co., Ltd. POSCO DAEWOO Waigaiqiao Shanghai Co., Ltd. POSCO DAEWOO India Pvt., Ltd. POSCO DAEWOO Vietnam Co., Ltd. DAEWOO Textile LLC. POSCO DAEWOO Australia Holdings Pty. Ltd. PT. Bio Inti Agrindo DAEWOO AAPC Corp. Brasil Sao Paulo Steel Processing Center POSCO DAEWOO E&P Canada Corp. POSCO DAEWOO Power (PNGPOM) Ltd. DAEWOO Power And Infra (Pty) LTD. DAEWOO Power Png Ltd. DAEWOO Precious Resources Co., Ltd. Golden Lace Daewoo Co., Ltd. POSCO DAEWOO Ukraine, LLC. POSCO South East Asia Pte. Ltd. POSCO-GULF SFC L.L.C. DAEWOO Global Development Pte. Ltd. DAEWOO Amara Co., Ltd. KIS Devonian Canada Corp. LA SRDC Pohang Scrap Recycling Distribution Center Co., Ltd. POSCO TMC India Pvt., Ltd. Blue Ocean Recovery PEF No. 1 POSCO Mexico Processing Center Holding, LLC. POSCO-ESDC Ltd. POSCO IJPC Shanghai Lansheng Daewoo Corp. Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd. General Medicines Co., Ltd. Korea Lng Ltd. KG Power(M) SDN. BHD. Sebang Steel	POSCO DAEWOO America Corp. POSCO DAEWOO Deutschland GmbH POSCO DAEWOO Japan Corp. POSCO DAEWOO Singapore Pte Ltd. POSCO DAEWOO Italia S.R.L. POSCO DAEWOO China Co., Ltd. DAEWOO Int'l Guangzhou Corp. POSCO DAEWOO Myanmar Corp. Ltd. POSCO DAEWOO Mexico S.A. de C.V. POSCO DAEWOO Malaysia Sdn. Bhd. POSCO DAEWOO Shanghai Co., Ltd. POSCO DAEWOO Waigaiqiao Shanghai Co., Ltd. POSCO DAEWOO India Pvt., Ltd. POSCO DAEWOO Vietnam Co., Ltd. DAEWOO Textile LLC. POSCO DAEWOO Australia Holdings Pty. Ltd. PT. Bio Inti Agrindo DAEWOO AAPC Corp. Brasil Sao Paulo Steel Processing Center POSCO DAEWOO E&P Canada Corp. POSCO DAEWOO Power (PNGPOM) Ltd. DAEWOO Power And Infra (Pty) LTD. DAEWOO Power Png Ltd. DAEWOO Precious Resources Co., Ltd. Golden Lace Daewoo Co., Ltd. POSCO DAEWOO Ukraine, LLC. POSCO South East Asia Pte. Ltd. POSCO-GULF SFC L.L.C. DAEWOO Global Development Pte. Ltd. DAEWOO Amara Co., Ltd. KIS Devonian Canada Corp. LA SRDC Pohang Scrap Recycling Distribution Center Co., Ltd. - Blue Ocean Recovery PEF No. 1 POSCO Mexico Processing Center Holding, LLC. POSCO-ESDC Ltd. POSCO IJPC Shanghai Lansheng Daewoo Corp. Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd. General Medicines Co., Ltd. Korea Lng Ltd. KG Power(M) SDN. BHD. Sebang Steel

31. Related party (cont'd)

	2018	2017
Associates	<p>Kwanika Copper Corp.</p> <p>Global Komsco Daewoo LLC</p> <p>South-East Asia Gas Pipeline Co.,Ltd.</p> <p>HyunSon Engineering & Construction</p> <p>VNS-DAEWOO Co.,Ltd.</p> <p>SPH Co., Ltd.</p> <p>Korea Siberia Wood CJCS</p> <p>Yulchon Mexico S. A. DE C. V.</p> <p>DMSA/AMSA</p> <p>PT. Batutua Tembaga Raya</p> <p>IT Engineering</p> <p>POSCO Singapore LNG Trading Pte. Ltd</p> <p>Inco Tech.</p> <p>TK Chemical Corp.</p> <p>Hanil DAEWOO Cement Co., Ltd.</p> <p>Shinpoong DAEWOO Pharma Co.,Ltd.</p> <p>POSCO-Malaysia SDN.BHD.</p> <p>Erae Automotive Systems Mexico</p> <p>POSCO-ITPC S.p.A</p> <p>Hunchun POSCO HYUNDAI International Logistics</p>	<p>Kwanika Copper Corp.</p> <p>Global Komsco Daewoo LLC</p> <p>South-East Asia Gas Pipeline Co.,Ltd.</p> <p>HyunSon Engineering & Construction</p> <p>VNS-DAEWOO Co.,Ltd.</p> <p>SPH Co., Ltd.</p> <p>Korea Siberia Wood CJCS</p> <p>Yulchon Mexico S. A. DE C. V.</p> <p>DMSA/AMSA</p> <p>PT. Batutua Tembaga Raya</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p>
Others	<p>POSCO Asia Co., Ltd.</p> <p>POSCO-Vietnam Co.,Ltd.</p> <p>POSCO-Thainox</p> <p>POSCO ASSAN TST Steel Industry</p> <p>POSCO-AAPC</p> <p>POSCO C&C Co., Ltd.</p> <p>POSCO America Corp.</p> <p>Zhangjiagang Pohang Stainless Steel Co., Ltd.</p> <p>POSCO-Foshan Steel Processing Center Co., Ltd.</p> <p>Companhia Siderurgica Do Pecem</p> <p>POSCO Energy Co., Ltd.</p> <p>POSCO VST Co., Ltd.</p> <p>POSCO SS-VINA</p> <p>PT. Krakatau POSCO</p> <p>POSCO Maharashtra Steel Pvt. Ltd.</p> <p>Daewoo Human Resources S.A. DE C.V.</p> <p>DAEWOO Logistics Corp. etc.</p>	<p>POSCO Asia Co., Ltd.</p> <p>POSCO-Vietnam Co.,Ltd.</p> <p>POSCO-Thainox</p> <p>POSCO ASSAN TST Steel Industry</p> <p>POSCO-AAPC</p> <p>POSCO C&C Co., Ltd.</p> <p>POSCO America Corp.</p> <p>Zhangjiagang Pohang Stainless Steel Co., Ltd.</p> <p>POSCO-Foshan Steel Processing Center Co., Ltd.</p> <p>Companhia Siderurgica Do Pecem</p> <p>POSCO Energy Co., Ltd.</p> <p>POSCO VST Co., Ltd.</p> <p>POSCO SS-VINA</p> <p>PT. Krakatau POSCO</p> <p>POSCO Maharashtra Steel Pvt. Ltd.</p> <p>Daewoo Human Resources S.A. DE C.V.</p> <p>DAEWOO Logistics Corp. etc.</p>

POSCO DAEWOO Corporation
Notes to the separate financial statements
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31. Related party transactions (cont'd)

Significant transactions with related parties for the years ended December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018					
	Sales and others			Purchase and others		
	Sales	Others	Total	Purchase	Others	Total
Parent company:						
POSCO(*1)	₩ 754,877	₩ 747	₩ 755,624	₩ 5,766,687	₩ 128,242	₩ 5,894,929
Subsidiaries:						
POSCO DAEWOO Waigaoqiao Shanghai Co., Ltd.	10,191	-	10,191	1,937	-	1,937
PT. Bio Inti Agrindo	-	1,172	1,172	1,861	-	1,861
POSCO DAEWOO Vietnam Co., Ltd.	27,411	-	27,411	-	2,393	2,393
POSCO DAEWOO Myanmar Corp.	3	-	3	-	642	642
Daewoo Power PNG Ltd.	834	1,374	2,208	-	-	-
POSCO DAEWOO Power (PNGPOM) Ltd.	423	2,897	3,320	-	-	-
POSCO DAEWOO America Corp	1,229,085	-	1,229,085	193,084	2,764	195,848
POSCO DAEWOO Deutschland GmbH	569,924	-	569,924	-	644	644
POSCO DAEWOO Japan Corp.	515,683	-	515,683	120,688	711	121,399
POSCO DAEWOO Singapore Pte. Ltd.	1,649,439	-	1,649,439	64,796	719	65,515
POSCO DAEWOO Italia S.R.L.	673,872	-	673,872	201	2,979	3,180
POSCO DAEWOO China Co., Ltd.	194,093	-	194,093	245	4,457	4,702
Daewoo Textile LLC	10,061	-	10,061	77,653	380	78,033
POSCO DAEWOO Australia Holdings Pty. Ltd.	164	-	164	-	-	-
POSCO DAEWOO E&P Canada Corp.	-	1,822	1,822	-	-	-
POSCO DAEWOO Mexico S.A. de C.V.	127,899	-	127,899	-	4,423	4,423
POSCO DAEWOO Malaysia Sdn. Bhd.	365,895	-	365,895	90,981	1,874	92,855
POSCO DAEWOO Shanghai Co., Ltd.	219,923	-	219,923	3,614	3,583	7,197
POSCO DAEWOO India Private Ltd.	32,373	-	32,373	-	3,058	3,058
POSCO South East Asia Pte. Ltd.	52	-	52	-	-	-
Pohang Scrap Recycling Distribution Center Co., Ltd.	-	1,308	1,308	378	5,615	5,993
Golden Lace DAEWOO Co., Ltd.	-	-	-	11,085	-	11,085
LA SRDC	-	-	-	30,213	-	30,213
DAEWOO Global Development Pte. Ltd.	2,201	-	2,201	-	-	-
POSCO DAEWOO Ukraine, LLC.	-	-	-	-	114	114
POSCO TMC India Pte. Ltd.	162	-	162	-	-	-
Associates:						
POSCO Mexico Processing Center Holding LLC	274,542	-	274,542	256	-	256
SPH Co., Ltd.	50	-	50	-	-	-
PT. Batutua Tembaga Raya	-	172	172	15,663	-	15,663
POSCO-ESDC Ltd.	-	59	59	-	3,439	3,439
POSCO IJPC	70,170	-	70,170	15	-	15
General Medicines Co., Ltd.	4,604	353	4,957	-	-	-
Korea LNG Ltd.	-	7,634	7,634	-	-	-
DMSA/AMSA	-	-	-	50,996	-	50,996
South-East Asia Gas Pipeline Co., Ltd.	-	39,141	39,141	-	-	-
Global Komsco Daewoo LLC	-	-	-	14,770	19	14,789
Yulchon Mexico SA. DE C.V.	2,109	-	2,109	-	-	-
Sebang Steel	-	-	-	13,585	-	13,585
POSCO Singapore LNG Trading Pte. Ltd.	79,664	-	79,664	-	-	-
POSCO-Malaysia SDN. BHD.	101,090	-	101,090	15,166	-	15,166
POSCO-ITPC	100,686	-	100,686	-	-	-
Hunchun Posco Hyundai International Logistics Complex Development Co., Ltd	2,022	-	2,022	-	-	-
TK Chemical Corp.	185,115	-	185,115	80,927	-	80,927

POSCO DAEWOO Corporation
Notes to the separate financial statements
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31. Related party transactions (cont'd)

2018						
	Sales and others			Purchase and others		
	Sales	Others	Total	Purchase	Others	Total
Others:						
POSCO Asia Co., Ltd.	₩ 73,267	₩ -	₩ 73,267	₩ 610,008	₩ 149	₩ 610,157
POSCO-Vietnam	117,595	-	117,595	68,291	-	68,291
POSCO-Thainox	127,816	-	127,816	87,981	77	88,058
POSCO Assan TST Steel Industry A.S.	344,859	-	344,859	93,443	11	93,454
POSCO-AAPC	12,579	-	12,579	-	-	-
POSCO C&C Co., Ltd.	76,683	-	76,683	261,726	249	261,975
POSCO America Corp.	82,262	-	82,262	-	-	-
Zhangjiagang Pohang Stainless Steel Co., Ltd.	80,917	-	80,917	504	-	504
POSCO-Foshan Steel Processing Center Co., Ltd.	41,323	-	41,323	150	-	150
COMPANHIA SIDERURGICA DO PECEM	221,493	-	221,493	282,818	1,515	284,333
POSCO ENERGY Co., Ltd.	4,391	-	4,391	93	-	93
POSCO VST Co., Ltd.	152,285	-	152,285	55,064	44	55,108
POSCO SS-VINA	289,034	-	289,034	1,810	-	1,810
PT. KRAKATAU POSCO	54,593	-	54,593	146,564	6	146,570
POSCO Maharashtra Steel PVT. LTD.	4,248	-	4,248	121,144	-	121,144
Others	806,852	598	807,450	42,353	69,484	111,837
	₩ 9,694,814	₩ 57,277	₩ 9,752,091	₩ 8,326,750	₩ 237,591	₩ 8,564,341
U. S. dollar in thousands (Note 2)	\$ 8,670,793	\$ 51,227	\$ 8,722,020	\$ 7,447,232	\$ 212,495	\$ 7,659,727

2017						
	Sales and others			Purchase and others		
	Sales	Others	Total	Purchase	Others	Total
Parent company:						
POSCO(*1)	₩ 594,230	₩ -	₩ 594,230	₩ 5,096,615	₩ 119,899	₩ 5,216,514
Subsidiaries:						
POSCO DAEWOO Waigaoqiao Shanghai Co., Ltd.	9,558	-	9,558	5,807	-	5,807
PT. Bio Inti Agrindo	-	815	815	-	-	-
POSCO DAEWOO Vietnam Co., Ltd.	25,620	-	25,620	-	2,727	2,727
POSCO DAEWOO Myanmar Corp.	3	-	3	-	550	550
Daewoo Power PNG Ltd.	1,612	-	1,612	-	-	-
POSCO DAEWOO Power (PNGPOM) Ltd.	431	5,737	6,168	-	-	-
POSCO DAEWOO America Corp	1,019,890	-	1,019,890	86,227	3,955	90,182
POSCO DAEWOO Deutschland GmbH	497,653	-	497,653	1,653	537	2,190
POSCO DAEWOO Japan Corp.	591,070	-	591,070	77,089	561	77,650
POSCO DAEWOO Singapore Pte. Ltd.	1,401,587	-	1,401,587	26,694	623	27,317
POSCO DAEWOO Italia S.R.L.	462,805	-	462,805	-	2,967	2,967
POSCO DAEWOO China Co., Ltd.	192,773	-	192,773	465	5,461	5,926
Daewoo Textile LLC	8,174	-	8,174	77,509	-	77,509
POSCO DAEWOO Australia Holdings Pty. Ltd.	174	3,274	3,448	-	-	-
POSCO DAEWOO E&P Canada Corp.	-	279	279	-	-	-
POSCO DAEWOO Mexico S.A. de C.V.	125,039	-	125,039	-	3,825	3,825
POSCO DAEWOO Malaysia Sdn. Bhd.	260,501	-	260,501	23,469	1,602	25,071
POSCO DAEWOO Shanghai Co., Ltd.	90,172	-	90,172	-	2,638	2,638
POSCO DAEWOO India Private Ltd.	31,871	-	31,871	-	3,555	3,555
POSCO South East Asia Pte. Ltd.	14,122	65	14,187	2,798	-	2,798
DAEWOO Power and Infra(PTY) LTD	526	-	526	-	-	-
Pohang Scrap Recycling Distribution Center Co., Ltd.	-	222	222	92	3,603	3,695
Golden Lace DAEWOO Co., Ltd	-	-	-	469	-	469
LA SRDC	-	-	-	8,768	-	8,768
DAEWOO Global Deveopment Pte. Ltd.	2,244	-	2,244	-	-	-
DAEWOO Amara Co., Ltd.	378	-	378	-	-	-

POSCO DAEWOO Corporation
Notes to the separate financial statements
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31. Related party transactions (cont'd)

	2017					
	Sales and others			Purchase and others		
	Sales	Others	Total	Purchase	Others	Total
Associates:						
POSCO Mexico Processing Center Holding LLC	₩ 267,740	₩ -	₩ 267,740	₩ 326	₩ -	₩ 326
SPH Co., Ltd.	50	-	50	-	-	-
PT. Batutua Tembaga Raya	-	-	-	21,024	-	21,024
POSCO-ESDC Ltd.	-	-	-	-	2,732	2,732
POSCO IJPC	53,756	-	53,756	29	-	29
Shanghai Lansheng Daewoo Corp.	245	-	245	-	257	257
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	43,764	-	43,764	-	-	-
General Medicines Co., Ltd.	6,889	441	7,330	-	-	-
Korea LNG Ltd.	-	6,439	6,439	-	-	-
DMSA/AMSA	-	95	95	47,092	-	47,092
South-East Asia Gas Pipeline Co., Ltd.	-	61,989	61,989	-	-	-
Global Komsco DAEWOO L.L.C.	-	-	-	14,754	-	14,754
Yulchon Mexico S.A. DE C.V.	893	-	893	-	-	-
Sebang Steel	473	-	473	19,362	-	19,362
Others:						
POSCO Asia Co., Ltd.	52,172	-	52,172	657,683	12	657,695
POSCO-Vietnam	91,930	-	91,930	75,075	-	75,075
POSCO-Thainox	100,583	-	100,583	75,693	-	75,693
POSCO Assan TST Steel Industry A.S.	354,424	-	354,424	55,754	-	55,754
POSCO-AAPC	30,818	-	30,818	-	-	-
POSCO C&C Co., Ltd.	117,428	-	117,428	228,575	14	228,589
POSCO America Corp.	112,105	-	112,105	134	-	134
Zhangjiagang Pohang Stainless Steel Co., Ltd.	101,633	-	101,633	426	-	426
POSCO-Foshan Steel Processing Center Co., Ltd.	55,628	-	55,628	-	-	-
COMPANHIA SIDERURGICA DO PECÉM	67,261	-	67,261	115,397	209	115,606
POSCO-Malaysia SDN. BHD.	60,046	-	60,046	10,075	-	10,075
POSCO-ITPC	80,283	-	80,283	-	-	-
POSCO Energy Co., Ltd.	24,638	-	24,638	-	-	-
POSCO VST Co., Ltd.	133,695	-	133,695	38,320	-	38,320
POSCO SS-VINA	198,690	-	198,690	9,082	-	9,082
PT. Krakatau POSCO	-	-	-	243,175	-	243,175
POSCO Maharashtra Steel PVT. LTD.	42,717	-	42,717	174,206	-	174,206
Others	684,779	22	684,801	63,640	30,574	94,214
	₩ 8,013,073	₩ 79,378	₩ 8,092,451	₩ 7,257,477	₩ 186,301	₩ 7,443,778

(*1) In addition to the above transactions, dividends paid to POSCO for the years ended December 31, 2018 and 2017 amounted to ₩38,801 million (\$34,703 thousand) and ₩34,341 million (\$30,714 thousand), respectively.

POSCO DAEWOO Corporation
Notes to the separate financial statements
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31. Related party transactions (cont'd)

Significant outstanding balances of receivables and payables with related parties as of December 31, 2018 and 2017 are summarized as follows (Korean won in millions):

	2018					
	Receivables(*2)			Payables		
	Trade receivables	Others	Total	Trade payables	Others	Total
Parent company:						
POSCO	₩ 7,094	₩ 1,532	₩ 8,626	₩ 429,502	₩ 9,031	₩ 438,533
Subsidiary:						
POSCO DAEWOO Waigaoqiao Shanghai Co., Ltd.	4,487	-	4,487	33	-	33
PT. Bio Inti Agrindo(*1)	-	31,393	31,393	-	622	622
POSCO DAEWOO Vietnam Co., Ltd.	9,137	47	9,184	-	207	207
POSCO DAEWOO E&P Canada Corp.(*1)	-	14,602	14,602	-	-	-
Daewoo Power PNG Ltd.	34	1,668	1,702	-	712	712
POSCO South East Asia Pte. Ltd.(*1)	-	11,181	11,181	-	-	-
POSCO DAEWOO Power (PNGPOM) Ltd.(*1)	-	3,914	3,914	-	71	71
POSCO DAEWOO America Corp	258,102	7,689	265,791	22,883	13,025	35,908
POSCO DAEWOO Deutschland GmbH	253,281	-	253,281	-	134	134
POSCO DAEWOO Japan Corp.	88,263	3,628	91,891	13,505	149	13,654
POSCO DAEWOO Singapore Pte. Ltd.	269,712	-	269,712	-	66	66
POSCO DAEWOO Italia S.R.L.	175,231	-	175,231	112	68	180
POSCO DAEWOO China Co., Ltd.	43,337	337	43,674	-	510	510
Daewoo Textile LLC	5,661	12,785	18,446	-	9	9
POSCO DAEWOO Australia Holdings Pty. Ltd.	44	4,472	4,516	-	-	-
POSCO DAEWOO Mexico S.A. de C.V.	65,149	-	65,149	-	1,230	1,230
POSCO DAEWOO Malaysia Sdn. Bhd.	59,843	-	59,843	310	321	631
POSCO DAEWOO Shanghai Co., Ltd.	57,100	-	57,100	-	427	427
POSCO DAEWOO India Private Ltd.	4,589	523	5,112	-	378	378
Brasil Sao Paulo Steel Processing Center(*1)	539	-	539	-	-	-
POSCO DAEWOO Myanmar Corp.	3	-	3	-	36	36
Pohang Scrap Recycling Distribution Center Co., Ltd.	-	-	-	28	418	446
Golden Lace Daewoo Co., Ltd.	-	2,390	2,390	-	50	50
LA SRDC	-	-	-	1,349	-	1,349
DAEWOO Global Developmnet Pte. Ltd.	1,864	1,946	3,810	-	1,219	1,219
Associate:						
POSCO Mexico Processing Center Holding LLC	106,632	-	106,632	-	-	-
PT Batutua Tembaga Raya(*1)	-	35,271	35,271	-	-	-
Yulchon Mexico S.A. DE C.V.	618	-	618	-	8	8
POSCO IJPC	12,192	-	12,192	-	-	-
Shanghai Lansheng Daewoo Corp.	99	2,605	2,704	-	333	333
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	397	-	397	-	549	549
General Medicines Co., Ltd.	1,949	369	2,318	-	-	-
Korea LNG Ltd	-	1,051	1,051	-	-	-
DMSA/AMSA(*1)	-	65,912	65,912	-	-	-
South-East Asia Gas Pipeline Co., Ltd.(*1)	-	191,107	191,107	-	-	-
Global Komsco Daewoo LLC	-	785	785	-	13	13
POSCO-ESDC Ltd.	-	-	-	-	267	267
Sebang Steel	-	-	-	52	-	52
POSCO-Malaysia SDN. BHD.	18,023	-	18,023	192	-	192
POSCO-ITPC	26,658	-	26,658	-	-	-
Hunchun Posco Hyundai International Logistics Complex Development Co., Ltd	835	-	835	-	-	-
TK Chemical Corp.	40,684	-	40,684	4,949	-	4,949

POSCO DAEWOO Corporation
Notes to the separate financial statements
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31. Related party transactions (cont'd)

2018								
	Receivables			Payables				
	Trade receivables	Others	Total	Trade payables	Others	Total		
Others:								
POSCO C&C Co., Ltd.	₩ 6,064	₩ -	₩ 6,064	₩ 19,815	₩ 1	₩ 19,816		
POSCO America Corp.	7,319	-	7,319	-	-	-		
POSCO Asia Co., Ltd.	9,200	-	9,200	290,206	-	290,206		
Zhangjiagang Pohang Stainless Steel Co., Ltd.	21,381	-	21,381	-	-	-		
POSCO ENERGY CO., LTD	-	-	-	-	1,949	1,949		
POSCO-Foshan Steel Processing Center Co., Ltd.	6,491	-	6,491	-	-	-		
POSCO-Vietnam	45,244	-	45,244	2,014	-	2,014		
Companhia Siderurgica Do Pecem	62,211	-	62,211	62,596	-	62,596		
POSCO-Thainox	19,246	-	19,246	6,500	-	6,500		
POSCO VST Co., Ltd.	74,350	-	74,350	4,432	-	4,432		
POSCO SS-VINA	184,547	-	184,547	-	-	-		
POSCO Assan TST Steel Industry A.S.	318,981	99	319,080	3,414	93	3,507		
PT. KRAKATAU POSCO	19,138	-	19,138	1,255	-	1,255		
Others	164,605	3,820	168,425	2,508	4,273	6,781		
	₩ 2,450,334	₩ 399,126	₩ 2,849,460	₩ 865,655	₩ 36,169	₩ 901,824		
U. S. dollar in thousands (Note 2)	\$ 2,191,516	\$ 356,968	\$ 2,548,484	\$ 774,220	\$ 32,349	\$ 806,568		

2017								
	Receivables			Payables				
	Trade receivables	Others	Total	Trade payables	Others	Total		
Parent company:								
POSCO	₩ 19,900	₩ 70	₩ 19,970	₩ 475,066	₩ 19,297	₩ 494,363		
Subsidiary:								
POSCO DAEWOO Waigaoqiao Shanghai Co., Ltd.	1,022	-	1,022	-	-	-		
PT. Bio Inti Agrindo(*1)	-	30,056	30,056	-	792	792		
POSCO DAEWOO Vietnam Co., Ltd.	10,668	45	10,713	-	189	189		
POSCO DAEWOO E&P Canada Corp.(*1)	-	17,531	17,531	-	-	-		
Daewoo Power PNG Ltd.	-	658	658	-	779	779		
POSCO South East Asia Pte. Ltd.(*1)	-	8,571	8,571	-	-	-		
POSCO DAEWOO Power (PNGPOM) Ltd.(*1)	-	3,546	3,546	-	68	68		
POSCO DAEWOO America Corp	259,758	4,751	264,509	13,415	11,889	25,304		
POSCO DAEWOO Deutschland GmbH	197,196	-	197,196	192	36	228		
POSCO DAEWOO Japan Corp.	60,892	-	60,892	6,901	70	6,971		
POSCO DAEWOO Singapore Pte. Ltd.	155,587	-	155,587	3,289	59	3,348		
POSCO DAEWOO Italia S.R.L.	152,117	-	152,117	-	224	224		
POSCO DAEWOO China Co., Ltd.	10,267	312	10,579	2	541	543		
Daewoo Textile LLC	4,454	17,930	22,384	809	34	843		
POSCO DAEWOO Australia Holdings Pty. Ltd.	46	-	46	-	-	-		
POSCO DAEWOO Mexico S.A. de C.V.	37,668	-	37,668	-	324	324		
DAEWOO Int'l Guangzhou Corp.	1,134	-	1,134	-	-	-		
POSCO DAEWOO Malaysia Sdn. Bhd.	31,914	1,305	33,219	6,390	1,451	7,841		
POSCO DAEWOO Shanghai Co., Ltd.	36,893	-	36,893	-	656	656		
POSCO DAEWOO India Private Ltd.	2,667	547	3,214	-	427	427		
Brasil Sao Paulo Steel Processing Center(*1)	24,846	32,175	57,021	-	-	-		
POSCO DAEWOO Myanmar Corp.	3	-	3	-	24	24		
Pohang Scrap Recycling Distribution Center Co., Ltd.	-	-	-	-	449	449		
Golden Lace DAEWOO Co., Ltd.	-	813	813	-	-	-		
LA SRDC	-	-	-	1,250	-	1,250		
DAEWOO Global Development Pte. Ltd	-	2,258	2,258	-	60	60		

31. Related party transactions (cont'd)

	2017					
	Receivables			Payables		
	Trade receivables	Others	Total	Trade payables	Others	Total
Associate:						
POSCO Mexico Processing Center Holding LLC	₩ 93,452	₩ 5	₩ 93,457	₩ 321	₩ -	₩ 321
SPH Co., Ltd.	5	-	5	-	-	-
PT Batutua Tembaga Raya	-	29,048	29,048	3	-	3
Yulchon Mexico S.A. DE C.V.	402	-	402	-	-	-
POSCO IJPC	11,790	-	11,790	-	-	-
Shanghai Lansheng Daewoo Corp.	95	-	95	-	319	319
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	2,082	-	2,082	-	526	526
General Medicines Co., Ltd.	2,481	-	2,481	-	37	37
Korea LNG Ltd	-	793	793	-	-	-
DMSA/AMSA(*1)	-	75,702	75,702	-	-	-
South-East Asia Gas Pipeline Co., Ltd.(*1)	-	229,880	229,880	-	-	-
Global Komsco Daewoo LLC	-	600	600	247	41	288
POSCO-ESDC Ltd.	-	-	-	-	143	143
Sebang Steel	-	-	-	50	-	50
Others:						
POSCO C&C Co., Ltd.	4,904	-	4,904	16,973	-	16,973
POSCO America Corp.	1,279	-	1,279	-	-	-
POSCO Asia Co., Ltd.	7,348	-	7,348	200,002	-	200,002
Zhangjiagang Pohang Stainless Steel Co., Ltd.	12,590	-	12,590	-	-	-
POSCO Energy Co., Ltd	-	-	-	-	5,654	5,654
POSCO-Foshan Steel Processing Center Co., Ltd.	6,217	-	6,217	-	-	-
POSCO-Vietnam Co., Ltd.	25,486	-	25,486	4,229	-	4,229
Companhia Siderurgica Do Pecem	27,205	13,353	40,558	-	-	-
POSCO-Thainox	10,649	-	10,649	4,198	-	4,198
POSCO-Malaysia SDN. BHD.	2,246	-	2,246	660	-	660
POSCO-ITPC	16,891	-	16,891	-	-	-
POSCO VST Co., Ltd.	50,211	-	50,211	2,120	-	2,120
POSCO Maharashtra Steel PVT. LTD.	-	-	-	18,672	-	18,672
POSCO-AAPC	2,366	-	2,366	-	-	-
POSCO SS-VINA	135,058	-	135,058	1,417	-	1,417
POSCO Assan TST Steel Industry A.S.	249,677	139	249,816	2,821	143	2,964
PT. Krakatau POSCO	-	-	-	19,006	-	19,006
Others	185,509	12	185,521	9,249	4,250	13,499
	<u>₩ 1,854,975</u>	<u>₩ 470,100</u>	<u>₩ 2,325,075</u>	<u>₩ 787,282</u>	<u>₩ 48,482</u>	<u>₩ 835,764</u>

(*1) A allowance for the trade receivables amounted to ₩45,961 million (\$41,106 thousand) and ₩29,736 million (\$26,595 thousand) as of December 31, 2018 and 2017, respectively.

(*2) The above other receivables include the committed loans and the changes in the amount for the year ended in December 31, 2018 are as follows (Korean won in millions):

31. Related party transactions (cont'd)

Korean won in millions						
	Beginning balance	Increase (Include capitalized interest)	Decrease	Transfer to equity	Foreign exchange translation and others	Ending balance
PT. Batutua Tembaga Raya	₩ 29,048	₩ 4,678	₩ -	₩ -	₩ 1,374	₩ 35,100
POSCO DAEWOO Power(PNGPOM) Ltd..	3,512	-	(2,381)	-	107	1,238
DMSA/AMSA	69,713	9,623	-	(17,559)	2,520	64,297
South-East Asia Gas Pipeline Company Ltd.	229,880	-	(47,569)	-	8,796	191,107
POSCO South East Asia Pte. Ltd.	8,571	2,144	-	-	466	11,181
POSCO DAEWOO E&P Canada Corp.	17,190	-	(2,513)	-	(75)	14,602
PT. Bio Inti Agrindo	29,089	-	-	-	1,267	30,356
Brasil Saopaulo Steel Processing Center	32,142	-	(33,759)	-	1,617	-
DAEWOO Power Png Ltd.	-	208	-	-	(4)	204
	₩ 419,145	₩ 16,653	₩ (86,222)	₩ (17,559)	₩ 16,068	₩ 348,085
	\$ 374,873	\$ 14,894	\$ (77,115)	\$ (15,704)	\$ 14,370	\$ 311,318

Key management personnel compensation

Compensations for key management personnel for the years ended December 31, 2018 and 2017 are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Salaries	₩ 16,353	₩ 16,605	\$ 14,626
Long-term employee benefits	1,613	1,651	1,443
Severance and retirement benefits	2,178	2,117	1,947
	₩ 20,144	₩ 20,373	\$ 18,016

Guarantees provided to related parties

Guarantees provided to related parties as of December 31, 2018 and 2017 are as follows (Korean won in millions):

	Limit amount		Executed amount	
	2018	2017	2018	2017
Subsidiaries:				
DAEWOO Textile LLC	₩ -	₩ 4,286	₩ -	₩ 4,286
PT. Bio Inti Agrindo	151,423	129,505	151,423	129,505
POSCO DAEWOO India Pvt.,Ltd.	167,044	296,887	87,202	88,959
DAEWOO Power PNG Ltd.	53,222	58,284	53,222	58,284
DAEWOO Global Development Pte. Ltd.	219,167	23,178	219,167	23,178
Golden Lace DAEWOO Co., Ltd.	10,063	-	6,708	-
POSCO DAEWOO China Co., Ltd.	8,945	-	8,151	-
Associates:				
Global Komsco Daewoo LLC	9,196	8,812	9,196	8,812
Others:				
POSCO Assan TST Steel Industry A.S.	16,383	15,699	16,383	15,699
	₩ 635,443	₩ 536,651	₩ 551,452	₩ 328,723
U. S. dollar in thousands (Note 2)	\$ 568,324	\$ 479,967	\$ 493,205	\$ 294,001

32. Accumulated effect of accounting change

32. 1 Application of KIFRS 1109 Financial instruments

As described in Note 2, the Company has applied KIFRS 1109 since January 1, 2018 and the 2017 comparative information is not restated based on the transitional provisions. Detailed impacts of application of KIFRS 1109 on the financial statements are as follows.

Detailed impacts of KIFRS 1109 on equity are as follows (Korean won in millions):

	Other components of equity	Retained earnings	Total
Reclassified from available-for-sales financial assets to financial assets at fair value through OCI	₩ (4,330)	₩ 4,330	₩ -
Reclassified from available-for-sales financial assets to financial assets at fair value through profit or loss	(8,477)	8,477	-
Changes from incurred loss model to expected credit loss model	-	(592)	(592)
Tax effects	3,099	(2,956)	143
	₩ (9,708)	₩ 9,259	₩ (449)
U. S. dollar in thousands (Note 2)	\$ (8,683)	\$ 8,281	\$ (402)

Detailed lists of replacement between other components of equity and retained earnings because of reclassification on financial assets available-for-sale for the year ended at December 31, 2018 are as follows (Korean won in millions):

	Components of other capital	Retained earnings	Total
Reclassified from Available-for-sales financial assets to financial assets at fair value through OCI(*1)			
DAEWOO SONGDO Development	₩ (26)	₩ 26	₩ -
N.I.Co.,Ltd.	(3,099)	3,099	-
The Korea Economic Daily	(978)	978	-
Miju Steel Mfg Co., Ltd.	(182)	182	-
KG Power (M) Sdn. Bhd.	(45)	45	-
	₩ (4,330)	₩ 4,330	-
Reclassified from available-for-sales financial assets to financial assets at fair value through profit or loss(*2)			
Erae-automotive system corp.	(4,317)	4,317	-
Erae-ams corp.	(4,317)	4,317	-
Investment in Korea Investment Private Placement KEXIM Carbon Credit Special Asset Fund No. 1	157	(157)	-
	₩ (8,477)	₩ 8,477	₩ -
	₩ (12,807)	₩ 12,807	-
U. S. dollar in thousands (Note 2)	\$ (11,454)	\$ 11,454	\$ -

(*1) As previously recognized impairment loss on available-for-sale securities was replaced with loss on long-term financial assets at fair value through OCI, the corresponding amount was replaced from retained earnings to OCI.

(*2) As previously recognized impairment loss on available-for-sale securities was are replaced with loss on financial assets at fair value through profit or loss and loss on other securities, the corresponding amount were replaced from OCI to retained earnings.

32.1 Application of KIFRS 1109 Financial instruments (cont'd)

Reclassifications of financial assets due to the adoption of KIFRS 1109 as of since January 1, 2018 are as follows (Korean won in millions):

	Category of measurement		Amount		
	KIFRS 1039	KIFRS 1109	KIFRS 1039	KIFRS 1109	Difference
Financial instrument at fair value through profit or loss (equity instrument)	Available-for-sales financial assets	Financial assets at fair value through profit or loss	₩ 17,812	₩ 17,812	₩ -
Financial instrument at fair value through OCI (equity instrument)	Available-for-sales financial assets	Financial assets at fair value through OCI	70,269	70,269	-
Financial instrument at fair value through OCI (equity investment)	Available-for-sales financial assets	Financial assets at fair value through profit or loss	702	702	-
Financial instrument at fair value through profit or loss (other securities)	Available-for-sales financial assets	Financial assets at fair value through profit or loss	105	105	-
Financial instrument at fair value through profit or loss (debt instrument)	Short-term financial assets	Financial assets at fair value through profit or loss	80	80	-
Financial instrument at amortized cost	Held-to-maturity securities	Financial assets at amortized cost	695	695	-

32.2 Application of KIFRS 1115 Revenue from contracts with customers

As described in Note 2, the Company has applied KIFRS 1115 to outstanding contracts as of January 1, 2018 and the 2017 comparative information is not restated based on the transitional provisions. Detailed impacts of KIFRS 1115 application on the financial statements are as follows.

Changes of beginning balance of retained earnings as of January 1, 2018 are as follows (Korean won in millions):

	Korean won in millions		
	Before tax	Tax effect	After tax
Identification of performance obligation and allocation of transaction price (*1)	₩ (481)	₩ 116	₩ (365)
Performance obligation fulfilled over a period of time (*2)	(591)	143	(448)
Retained earnings adjustment –KIFRS 1115	₩ (1,072)	₩ 259	₩ (813)
U. S. dollar in thousands (Note 2)	\$ (959)	\$ 232	\$ (727)

(*1) Upon application of KIFRS 1115, the sale of goods and transportation services are identified as distinct performance obligation in some contracts of the trade transactions with the customer. The Company recognizes the transaction price allocated to these performance obligations as revenue upon completion of each performance obligation by applying expected cost plus margin approach.

(*2) According to KIFRS1115, an entity can recognize the revenue by applying percentage-of-completion method(POC) if the entity does not have alternative use to the assets created by performing obligation and it has enforceable right for payment for the portion completed up to now. The Company recognizes revenue by applying POC only if the conditions above are satisfied by analyzing the contract terms for the transaction of custom-made equipment.

32.2 Application of KIFRS 1115 Revenue from contracts with customer (cont'd)

Details of items on the financial statements that are affected by the application of KIFRS 1115 are as follows (Korean won in millions):

	Korean won in millions		
	Before KIFRS 1115	Adjustment	Reported amount
Assets	₩ 8,736,870	₩ 36,375	₩ 8,773,245
Liabilities	5,937,569	36,529	5,974,098
Equity	2,799,301	(154)	2,799,147
Sales	23,303,238	5,558	23,308,796
Cost of goods sold & selling and administrative expenses	22,918,871	4,640	22,923,511
Operating incomes	384,367	918	385,285

33. Events after reporting period

The Company resolved to provide equity investment of \$38,000 thousand and payment guarantee of up to \$27,000 thousand for the grain exporting terminal business in Ukraine at the Board of Directors on February 1, 2019.

The Company issued unsecured public bonds of ₩250,000 million for the financing of operating fund on March 7, 2019.