POSCO DAEWOO Corporation and its subsidiaries

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

POSCO DAEWOO Corporation
and its subsidiaries

Table of contents

Ernst & Young Han Young
Taeyoung Building, 111, Yeouigongwon-ro,
Yeongdeungpo-gu, Seoul 07241 Korea

Tel: +82 2 3787 6600
Fax: +82 2 783 5890
ey.com/kr

Independent auditor's report

The Shareholders and Board of Directors
POSCO DAEWOO Corporation

Opinion

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

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

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 consolidated financial statements section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audits of the consolidated 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 consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Occurrence of overseas sales
Sales on the consolidated financial statements are one of the key indicators of the Group's core financial performance. As a general trading company, the Group 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 consolidated 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 Group'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 Group 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 Group.
- 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 Group 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 Group 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 Group.
- 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 consolidated financial statements

Management is responsible for the preparation and fair presentation of these consolidated 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 consolidated financial statements that are free from material misstatement, whether due to fraud or error.

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

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

EY한영
Building a better working world

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

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an 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 consolidated financial statements.

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

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

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

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our 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.

EY 한영
Building a better working world

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

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.

POSCO DAEWOO Corporation
and its subsidiaries

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

"The accompanying consolidated 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 and its subsidiaries
Consolidated statements of financial position
as of December 31, 2018 and 2017

	Notes	Korean won in millions		U.S dollar in thousands (Note 2)
		2018	2017	2018
Assets				
Current assets				
Cash and cash equivalents	4,29,30	₩ 201,468	₩ 178,490	$ 180,188
Trade and other receivables	5,29,30	4,229,168	3,533,602	3,782,460
Other current financial assets	6,29,30	14,838	6,638	13,271
Derivative financial assets	18,29,30	53,268	51,067	47,642
Other current assets	7	150,765	168,908	134,840
Inventories	8	1,330,664	1,108,833	1,190,112
		5,980,171	5,047,538	5,348,513
Non-current assets				
Trade and other receivables	5,29,30	368,002	357,315	329,132
Other non-current financial assets	6,29,30	37,543	94,316	33,577
Investments in associates	9	347,696	372,979	310,970
Property, plant and equipment	10	1,294,345	1,324,846	1,157,629
Intangible assets	11	1,445,593	1,625,226	1,292,901
Investment properties	12,30	154,736	157,631	138,392
Severance benefit assets	16	970	8,224	868
Other non-current assets	7	3,697	3,530	3,307
Deferred tax assets	27	243,086	178,381	217,410
Current tax assets		5,181	-	4,634
		3,900,849	4,122,448	3,488,820
Total assets		**₩ 9,881,020**	**₩ 9,169,986**	**$ 8,837,333**
Liabilities				
Current liabilities				
Trade and other payables	13,29,30	₩ 2,057,123	₩ 1,870,530	$ 1,839,838
Borrowings	14,29,30	2,427,425	2,333,424	2,171,027
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	284,636	178,844	254,571
Current tax liabilities		69,148	47,920	61,844
		5,421,081	4,937,908	4,848,476
Non-current liabilities				
Trade and other payables	13,29,30	13,408	22,032	11,992
Borrowings	14,29,30	652,936	501,434	583,969
Bonds	14,29,30	770,515	734,200	689,129
Other non-current liabilities	15	44,359	45,050	39,674
Severance benefit liabilities	16	3,397	3,290	3,038
Provisions	17,18	71,880	63,962	64,288
Deferred tax liabilities	27	13,906	9,634	12,437
		1,570,401	1,379,602	1,404,527
Total liabilities		**₩ 6,991,482**	**₩ 6,317,510**	**$ 6,253,003**

POSCO DAEWOO Corporation and its subsidiaries
Consolidated statements of financial position
as of December 31, 2018 and 2017

	Notes	Korean won in millions		U.S dollar in thousands (Note 2)
		2018	2017	2018
Equity				
Equity attributable to owners				
Issued capital	19	₩ 616,876	₩ 616,876	$ 551,718
Capital surplus	19	553,976	553,439	495,462
Other components of equity	19	(8)	(6)	(7)
Accumulated other comprehensive income	6,20	(15,867)	(4,936)	(14,191)
Retained earnings	21	1,732,277	1,644,385	1,549,304
		2,887,254	2,809,758	2,582,286
Non-controlling interests		2,284	42,718	2,044
Total equity		**2,889,538**	**2,852,476**	**2,584,330**
Total liabilities and equity		**₩ 9,881,020**	**₩ 9,169,986**	**$ 8,837,333**

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

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

	Notes	Korean won in millions 2018	Korean won in millions 2017	U.S dollar in thousands (Note 2) 2018
Sales	3	**₩ 25,173,940**	**₩ 22,571,654**	**$ 22,514,927**
Cost of sales	22	**(24,199,884)**	**(21,263,109)**	**(21,643,756)**
Gross profit		**974,056**	**1,308,545**	**871,171**
Selling and administrative expenses	22,23,26,29	(501,433)	(907,231)	(448,469)
Operating profit		**472,623**	**401,314**	**422,702**
Share of profit in associates	9	44,703	60,384	39,981
Share of loss in associates	9	(28,610)	(28,925)	(25,588)
Finance income	24,29	759,798	892,930	679,544
Finance costs	24,29	(919,294)	(1,003,418)	(822,192)
Other income	25,26,29	24,547	50,321	21,954
Other expenses	25,26,29	(177,682)	(124,646)	(158,915)
Profit for the year before tax	3	**176,085**	**247,960**	**157,486**
Income tax expense	27	(60,344)	(81,142)	(53,970)
Profit for the year		**₩ 115,741**	**₩ 166,818**	**$ 103,516**
Other comprehensive income for the year				
Other comprehensive income to be reclassified to profit or loss in subsequent periods:				
Net loss on valuation of available-for-sale financial assets	20,27	-	(7,746)	-
Equity adjustments in equity method investments	9,20,27	12,596	10,427	11,266
Loss on equity adjustments in equity method investments	9,20,27	(14,468)	(65,239)	(12,940)
Exchange differences on translation of foreign operations	20,27	3,478	(31,367)	3,111
Other comprehensive income not to be reclassified to profit or loss in subsequent periods:				
Loss on valuation of equity instruments measured at fair value through other comprehensive income	6,20,27,29	(7,871)	-	(7,040)
Equity adjustments in equity method investments	9,20,27	5,852	-	5,234
Re-measurement gain (loss) on defined benefit liabilities	16,27	(5,539)	612	(4,954)
Other comprehensive income (loss) for the year, net of tax		**(5,952)**	**(93,313)**	**(5,323)**
Total comprehensive income for the year, net of tax		**₩ 109,789**	**₩ 73,505**	**$ 98,193**
Profit for the year attributable to:				
Owners of the parent		₩ 155,174	₩ 175,880	$ 138,784
Non-controlling interests		(39,433)	(9,062)	(35,268)
		₩ 115,741	₩ 166,818	$ 103,516
Total comprehensive income attributable to:				
Owners of the parent		₩ 147,097	₩ 83,093	$ 131,559
Non-controlling interests		(37,308)	(9,588)	(33,366)
		₩ 109,789	₩ 73,505	$ 98,193
Earnings per share (Korean won and U.S. dollar):				
Basic earnings per share attributable to ordinary equity holders of the parent	28	₩ 1,258	₩ 1,444	$ 1.13
Diluted earnings per share attributable to ordinary equity holders of the parent	28	₩ 1,258	₩ 1,444	$ 1.13

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

POSCO DAEWOO Corporation and its subsidiaries
Consolidated 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)
	Equity attributable to owners of the parent								
	Issued Capital	Capital	Other	Accumulated	Retained	Subtotal	Non-	Total	Total
As of January 1, 2017	**₩ 569,381**	**₩ 333,161**	**₩ -**	**₩ 88,463**	**₩ 1,524,830**	**₩ 2,515,835**	**₩ (12,183)**	**₩ 2,503,652**	**$ 2,239,202**
Profit for the year	-	-	-	-	175,880	175,880	(9,062)	166,818	149,198
Net loss on valuation of available-for-sale financial assets	-	-	-	(7,746)	-	(7,746)	-	(7,746)	(6,928)
Equity adjustments in equity method investments	-	-	-	(54,812)	-	(54,812)	-	(54,812)	(49,022)
Exchange differences on translation of foreign operations	-	-	-	(30,841)	-	(30,841)	(526)	(31,367)	(28,054)
Re-measurement loss on defined benefit liabilities	-	-	-	-	612	612	-	612	547
Total comprehensive income	**-**	**-**	**-**	**(93,399)**	**176,492**	**83,093**	**(9,588)**	**73,505**	**65,741**
Issuance of capital stock due to business combination	47,495	210,842	-	-	-	258,337	-	258,337	231,050
Acquisition of treasury stock	-	-	(6)	-	-	(6)	-	(6)	(5)
Dividends	-	-	-	-	(56,937)	(56,937)	-	(56,937)	(50,923)
Dividends of subsidiary	-	-	-	-	-	-	(213)	(213)	(191)
Paid-in capital increase of subsidiary	-	29	-	-	-	29	5,360	5,389	4,820
Paid-in capital decrease of subsidiary	-	(1,174)	-	-	-	(1,174)	(619)	(1,793)	(1,604)
Changes in consolidated companies	-	10,581	-	-	-	10,581	59,961	70,542	63,091
As of December 31, 2017	**₩ 616,876**	**₩ 553,439**	**₩ (6)**	**₩ (4,936)**	**₩ 1,644,385**	**₩ 2,809,758**	**₩ 42,718**	**₩ 2,852,476**	**$ 2,551,181**
As of January 1, 2018	**₩ 616,876**	**₩ 553,439**	**₩ (6)**	**₩ (4,936)**	**₩ 1,644,385**	**₩ 2,809,758**	**₩ 42,718**	**₩ 2,852,476**	**$ 2,551,181**
Effects of changes in accounting policies	-	-	-	(9,707)	6,223	(3,484)	(2)	(3,486)	(3,117)
As of January 1, 2018 (After adjustment)	**₩ 616,876**	**₩ 553,439**	**₩ (6)**	**₩ (14,643)**	**₩ 1,650,608**	**₩ 2,806,274**	**₩ 42,716**	**₩ 2,848,990**	**$ 2,548,064**
Profit for the year	-	-	-	-	155,174	155,174	(39,433)	115,741	103,516
Net loss on valuation of equity instruments at FVOCI	-	-	-	(7,871)	-	(7,871)	-	(7,871)	(7,040)
Equity adjustments in equity method investments	-	-	-	3,980	-	3,980	-	3,980	3,560
Exchange differences on translation of foreign operations	-	-	-	1,353	-	1,353	2,125	3,478	3,111
Re-measurement gain on defined benefit liabilities	-	-	-	-	(5,539)	(5,539)	-	(5,539)	(4,954)
Total comprehensive income	**-**	**-**	**-**	**(2,538)**	**149,635**	**147,097**	**(37,308)**	**109,789**	**98,193**
Dividends	-	-	-	-	(61,687)	(61,687)	-	(61,687)	(55,172)
Dividends of subsidiary	-	-	-	-	-	-	(1,256)	(1,256)	(1,123)
Paid-in capital increase of subsidiary	-	-	-	-	-	-	808	808	723
Changes in consolidated companies	-	631	-	-	-	631	535	1,166	1,043
Paid-in capital decrease of subsidiary	-	(94)	-	-	-	(94)	(3,210)	(3,304)	(2,955)
Other Equity adjustments	-	-	(2)	1,314	(6,279)	(4,967)	-	(4,967)	(4,442)
As of December 31, 2018	**₩ 616,876**	**₩ 553,976**	**₩ (8)**	**₩ (15,867)**	**₩ 1,732,277**	**₩ 2,887,254**	**₩ 2,285**	**₩ 2,889,539**	**$ 2,584,331**

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

POSCO DAEWOO Corporation and its subsidiaries
Consolidated 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	₩ 115,741	₩ 166,818	$ 103,516
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	93,971	62,043	84,045
Depreciation of investment properties	2,895	2,920	2,589
Amortization of intangible assets	129,140	150,222	115,500
Severance and retirement benefits	16,759	17,353	14,989
Bad debt expenses	27,990	77,035	25,034
Interest expenses	146,164	87,983	130,725
Loss on impairment of property, plant and equipment	34,339	1,130	30,712
Loss on impairment of intangible assets	5,495	80,873	4,915
Loss on disposal of available-for-sale financial assets	-	2,866	-
Loss on disposal of associates	379	67	339
Share of loss in associates	28,610	28,925	25,588
Loss on disposal of property, plant and equipment	506	543	453
Loss on disposal of intangible assets	75	98	67
Loss on foreign currency translation	72,280	170,207	64,645
Loss on settlement of derivatives	196,358	217,715	175,618
Loss on valuation of derivatives	87,926	75,623	78,639
Other bad debt expenses	5,954	1,389	5,325
Income tax expense	60,344	81,142	53,970
Loss on valuation of inventories	6,872	661	6,146
Financial guarantee expense	3,592	7,434	3,213
Contribution to provision for contingencies	15,033	25,619	13,445
Contribution to provision for restoration	894	248	800
Loss on impairment of available-for-sale financial assets	50,438	-	45,110
Loss on valuation of trade receivable	3,209	-	2,870
Interest income	(34,053)	(31,019)	(30,456)
Share of profit in associates	(44,703)	(60,384)	(39,981)
Gain on disposal of available-for-sale financial assets	-	(110)	-
Gain on disposal of associates	-	(2,300)	-
Dividends income	(166)	(456)	(148)
Gain on foreign currency translation	(56,337)	(154,698)	(50,386)
Gains on valuation of fair value of biological assets	(6,312)	-	(5,645)
Gain on valuation of trade payable	(64)	-	(57)
Gain on settlement of derivatives	(226,700)	(189,223)	(202,755)
Gain on valuation of derivatives	(81,374)	(90,878)	(72,779)
Reversal of other allowance for doubtful accounts	(2,072)	(464)	(1,853)
Gain on disposal of property, plant and equipment	(1,141)	(1,612)	(1,020)
Gain on disposal of intangible assets	(2,536)	-	(2,268)
Reversal of loss on valuation of inventories	(7,332)	(7,720)	(6,558)
Financial guarantee income	(355)	(209)	(318)
Gain on disposal of disposal groups classified as held for sale	(5)	(465)	(4)
Reversal of provision	(2,920)	(438)	(2,612)
Loss on impairment of associates	43,359	2,791	38,779
Gain on disposal of long-term equity instrument	(5,271)	-	(4,714)

(Continued)

POSCO DAEWOO Corporation and its subsidiaries
Consolidated 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	₩ (743,535)	₩ 153,021	$ (665,000)
Other current receivables	(22,223)	5,151	(19,877)
Other current assets	100,045	14,781	89,477
Inventories	(209,439)	(109,741)	(187,318)
Derivative financial assets	22,374	(49,635)	20,010
Other non-current receivables	1,630	620	1,457
Decrease in other non-current assets	(365)	(2,657)	(326)
Trade payables	212,897	(236,420)	190,410
Other current payables	(75,715)	39,650	(67,718)
Other current liabilities	64,388	(17,646)	57,587
Other non-current payables	(1,632)	(4,217)	(1,460)
Other non-current liabilities	10	(1,486)	9
Payment of severance benefit	(436)	(576)	(390)
Contribution to plan assets	(15,977)	(26,800)	(14,289)
Decrease in provisions for contingencies	(3,677)	-	(3,289)
Provision for restoration	-	(2,082)	-
Interest received	34,614	26,236	30,958
Dividends received	39,813	44,203	35,608
Interest paid	(130,888)	(88,082)	(117,063)
Income tax paid	(94,991)	(83,810)	(84,958)
Net cash flows provided by (used in) operating activities	**(146,125)**	**382,239**	**(130,694)**
Investing activities			
Decrease in long-term other receivables	-	37	-
Increase in long-term other receivables	(20,536)	(23,065)	(18,367)
Decrease (increase) in short-term loans	2,692	(683)	2,408
Decrease in long-term loans	49,445	59,206	44,222
Increase in long-term loans	(15,255)	(38,100)	(13,644)
Decrease (increase) in short-term financial instruments	(8,312)	33,457	(7,434)
Increase in long-term financial instruments	(55)	(11)	(49)
Decrease in long-term financial instruments	-	5	-
Decrease in short-term debt securities (FVPL)	80	-	72
Proceeds from disposal of available-for-sale financial assets	-	3,816	-
Decrease in guarantee deposits	23	213	21
Decrease in long-term guarantee deposits	1,603	616	1,434
Increase in long-term guarantee deposits	-	(6,829)	-
Proceeds from disposal of property, plant and equipment	6,118	1,623	5,472
Proceeds from disposal of intangible assets	6,646	201	5,944
Acquisition of available-for-sale financial assets	-	(299)	-
Acquisition of associates	(2,230)	(24,024)	(1,994)
Acquisition of long-term equity investments	(400)	-	(358)
Disposal of long-term equity investments	2,209	-	1,976
Acquisition of property, plant and equipment	(98,953)	(72,773)	(88,501)
Acquisition of intangible assets	(34,543)	(103,359)	(30,894)
Capital lease receivables	-	104	-
Proceeds from disposal of associates	14,880	30,857	13,308
Proceeds from disposal of disposal groups classified as held for sale	1,504	717	1,345
Changes in subsidiaries	-	(122,689)	-
Increase(decrease) of net cash flows due to business combination	(712)	29,377	(637)
Net cash flows used in investing activities	**₩ (95,796)**	**₩ (231,603)**	**$ (85,676)**

(Continued)

POSCO DAEWOO Corporation and its subsidiaries
Consolidated 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			
Increase (decrease) in short-term borrowings, net	₩ 454,572	₩ (273,388)	$ 406,558
Proceeds from long-term borrowings	262,557	281,184	234,824
Repayment of long-term borrowings	(485,702)	(152,203)	(434,399)
Issuance of bonds	573,623	338,150	513,035
Paid-in capital increase of subsidiaries	808	5,389	723
Dividends paid	(61,687)	(56,937)	(55,172)
Redemption of bonds	(464,280)	(284,044)	(415,239)
Payment of capital lease liabilities	(11,791)	(2,599)	(10,546)
Dividends of subsidiary	(1,256)	(213)	(1,123)
Acquisition of treasury stock	-	(6)	-
Paid-in capital decrease of subsidiary	-	(1,793)	-
Net cash flows provided by (used in) financing activities	**266,844**	**(146,460)**	**238,661**
Net increase in cash and cash equivalents	24,923	4,176	22,291
Cash and cash equivalents at January 1	178,490	173,709	159,637
Net foreign exchange difference	(1,945)	605	(1,740)
Cash and cash equivalents at December 31	**₩ 201,468**	**₩ 178,490**	**$ 180,188**

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

1. Corporate information

1.1 The parent company

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, distribution, 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, grain 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 amounts to ₩616,876 million as a result of shares issued for the merger with the steel business segment of POSCO P&S on March 1, 2017. POSCO, the Company's largest shareholder, owns 62.90% equity interest in the Company.

1.2 Consolidated subsidiaries

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

				Equity ownership (%)	
Subsidiaries	Business	Number of shares	Country of domicile	2018	2017
POSCO DAEWOO America Corp.	Trading	555,000	USA	100	100
POSCO DAEWOO Deutschiland GmbH	Trading	-	Germany	100	100
POSCO DAEWOO Japan Corp.	Trading	9,600	Japan	100	100
POSCO DAEWOO Singapore Pte Ltd.	Trading	3,500,000	Singapore	100	100
POSCO DAEWOO China Co.,Ltd.	Trading	-	China	100	100
POSCO DAEWOO Italia S.R.L.	Trading	-	Italy	100	100
DAEWOO Textile LLC	Cotton spinning	-	Uzbekistan	100	100
POSCO DAEWOO Australia Holdings Pty. Ltd.(*1)	Natural resource development	119,676,667	Australia	100	100
POSCO DAEWOO Mexico S.A. de C.V.	Trading	53,078	Mexico	100	100
POSCO DAEWOO Shanghai Co.,Ltd.	Trading	-	China	100	100
POSCO DAEWOO Malaysia Sdn Bhd	Trading	6,091,002	Malaysia	100	100
POSCO DAEWOO India Pvt.,Ltd.	Trading	8,940,000	India	100	100
DAEWOO Int'l Guangzhou Corp.	Trading	-	China	100	100
DAEWOO AAPC Corp.	Steel manufacturing	5,000	USA	100	100
Brasil Saopaulo Steel Processing Center	Steel manufacturing	-	Brazil	51	51
PT. Bio Inti Agrindo	Natural resource development	496,340	Indonesia	85	85
POSCO DAEWOO Waigaoqiao Shanghai Co., Ltd.	Trading	-	China	100	100
POSCO DAEWOO Vietnam Co., Ltd.	Trading	-	Vietnam	100	100
POSCO DAEWOO E&P Canada Corp.	Natural resource development	1,542	Canada	100	100
POSCO DAEWOO Myanmar Corp.	Trading	493,240	Myanmar	100	100
DAEWOO Power and Infra(PTY) Ltd.	Service	1,000	RSA	100	100
POSCO DAEWOO Power(PNGPOM) Ltd.	Service	16,791,045	Papua New Guinea	100	100
DAEWOO Precious Resources Co.,Ltd.	Natural resource development	4,200	Myanmar	70	70
DAEWOO Power PNG Ltd.	Service	36,239,782	Papua New Guinea	100	100
POSCO-GULF SFC L.L.C.	Steel manufacturing	217,231	UAE	100	98
Pohang Scrap Recycling Distribution Center Co., Ltd.	Steel manufacturing	909,979	Korea	51	51
POSCO South East Asia Pte. Ltd.	Trading	1,020,000	Singapore	100	100
Golden Lace DAEWOO Company Limited.	Grain crop/ Wholesales	60,000	Myanmar	60	60
POSCO DAEWOO Ukraine, LLC.	Grain procurement	-	Ukraine	100	100
DAEWOO Global Development Pte. Ltd.	Hotel	44,379,098	Singapore	55	55
DAEWOO Amara Co.,Ltd.	Hotel	680,000	Myanmar	85	85
KIS Devonian Canada Corp. (*3)	Natural resource development	-	Canada	-	100
LA SRDC	Steel manufacturing	135,000	USA	86	86
POSCO TMC India Pvt. Ltd.(*2)	Steel manufacturing	876,041	India	74	-

1.2 Consolidated subsidiaries (cont'd)

(*1) POSCO DAEWOO Australia Holdings Pty. Ltd. is the holding company that has 100% ownership interests in POSCO DAEWOO Narrabri Investment Pty. Ltd. and POSCO DAEWOO Australia Pty. Ltd.
(*2) It was newly included during the current year as the Group acquired equity shares thereof.
(*3) It was merged to POSCO DAEWOO E&P Canada Corp in 2018.

1.3 Summarized financial information of the Company and its subsidiaries

Summarized financial information of the Company and its subsidiaries for the year ended December 31, 2018 is as follows (Korean won in millions):

	Assets	Liabilities	Equity	Sales	Net profit (loss)
POSCO DAEWOO America Corp.	₩ 415,837	₩ 352,603	₩ 63,234	₩ 1,551,078	₩ 7,712
POSCO DAEWOO Deutschiland GmbH	280,435	266,527	13,909	567,908	69
POSCO DAEWOO Japan Corp.	232,760	224,314	8,447	699,328	456
POSCO DAEWOO Singapore Pte Ltd.	280,603	276,709	3,894	1,745,061	81
POSCO DAEWOO Italia S.R.L.	188,163	177,520	10,644	700,544	4,446
POSCO DAEWOO China Co.,Ltd.	86,971	78,220	8,750	277,774	(2,283)
POSCO DAEWOO Myanmar Corp.	3,531	281	3,250	13,140	81
POSCO DAEWOO Mexico S.A. de C.V.	102,592	91,993	10,598	233,052	956
DAEWOO Int'l Guangzhou Corp.	170	2,310	(2,140)	-	(42)
POSCO DAEWOO Malaysia Sdn Bhd	32,533	29,111	3,421	472,550	321
POSCO DAEWOO Waigaoqiao Shanghai Co., Ltd.	4,819	5,889	(1,069)	15,758	(234)
POSCO DAEWOO Shanghai Co.,Ltd.	116,422	108,597	7,824	295,136	318
POSCO DAEWOO India Pvt.,Ltd.	103,733	95,682	8,051	848,181	1,543
POSCO DAEWOO Vietnam Co., Ltd.	44,700	41,397	3,303	268,017	(700)
POSCO South East Asia Pte. Ltd.	8,104	11,636	(3,532)	55	(1,044)
DAEWOO Textile LLC	98,112	35,463	62,649	147,251	5,196
POSCO DAEWOO Australia Holdings Pty. Ltd.(*1)	120,237	17,398	102,838	27,962	6,845
PT. Bio Inti Agrindo	224,951	190,821	34,131	38,418	1,179
Brasil Saopaulo Steel Processing Center	5,359	36,126	(30,767)	-	1,614
POSCO DAEWOO E&P Canada Corp.	5,389	14,642	(9,253)	7,968	(51,202)
POSCO DAEWOO Power(Pngpom) Ltd.	16,831	6,520	10,311	29,185	4,899
DAEWOO Power And Infra(PTY) Ltd.	45	-	45	-	-
DAEWOO Precious Resources Co.,Ltd.	-	-	-	-	(5,570)
DAEWOO Power PNG Ltd.	77,286	59,431	17,855	43,171	6,145
POSCO-GULF SFC L.L.C.	9,110	2,703	6,406	8	(6,141)
Pohang Scrap Recycling Distribution Center Co., Ltd.	16,426	6,578	9,848	5,482	504
Golden Lace DAEWOO Company., Ltd.	18,238	9,296	8,942	13,545	(714)
POSCO DAEWOO Ukraine, LLC.	2,995	2	2,993	939	(255)
DAEWOO Global Development Pte. Ltd.	305,318	277,231	28,087	553	(58,832)
DAEWOO Amara Co., Ltd.	309,705	297,012	12,693	27,509	(57,280)
LA SRDC	1,409	949	461	29,803	103
POSCO TMC India Pvt. Ltd.(*2)	15,570	13,350	2,220	31,069	284

(*1) The financial information of POSCO DAEWOO Australia Holdings Pty. Ltd. is the consolidated financial information of POSCO DAEWOO Narrabri Investment Pty. Ltd. and POSCO DAEWOO Australia Pty. Ltd., the subsidiaries.
(*2) It was included during the current year.

2. Basis of preparation and summary of significant accounting policies

2.1 Basis of preparation

The Company and its subsidiaries (collectively, the "Group") 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 consolidated 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.

2.1 Basis of preparation (cont'd)

The consolidated financial statements have been prepared on a historical cost basis, except for derivative financial instruments, debt and equity instruments 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 consolidated 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 consolidated 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 US$ 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.

2.1.2 Basis of consolidation

The consolidated financial statements comprise the financial statements of the Group and its subsidiaries as of December 31, 2018. Control is achieved when the Group is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Specifically, the Group controls an investee, if and only if, the Group has:

- Power over the investee (i.e. existing rights that give it the current ability to direct the relevant activities of the investee)
- Exposure, or rights, to variable returns from its involvement with the investee, and
- The ability to use its power over the investee to affect its returns

When the Group has less than a majority of the voting or similar rights of an investee, the Group considers all relevant facts and circumstances in assessing whether it has power over an investee, including:

- The contractual arrangement with the other vote holders of the investee
- Rights arising from other contractual arrangements
- The Group's voting rights and potential voting rights

The Group re-assesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control. Consolidation of a subsidiary begins when the Group obtains control over the subsidiary and ceases when the Group loses control of the subsidiary. Assets, liabilities, income and expenses of a subsidiary acquired or disposed of during the year are included in the statement of comprehensive income from the date the Group gains control until the date the Group ceases to control the subsidiary.

Profit or loss and each component of other comprehensive income (OCI) are attributed to the equity holders of the parent of the Group and to the non-controlling interests, even if this results in the non-controlling interests having a deficit balance. When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with the Group's accounting policies. All intra-group assets and liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated in full on consolidation.

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction.

If the Group loses control over a subsidiary, it derecognizes the related assets (including goodwill), liabilities, non-controlling interest and other components of equity while any resultant gain or loss is recognized in profit or loss. Any investment is recognized at fair value.

2.2 Summary of significant accounting policies

2.2.1 Business combinations

Business combinations are accounted for using the acquisition method, unless it is a combination involving entities or businesses under common control. The cost of an acquisition is measured as the aggregate of the consideration transferred, measured at acquisition date fair value and the amount of any non-controlling interest in the acquiree. Acquisition-related costs incurred are expensed in the period the services are provided, except the issuing cost of debt and equity instruments.

Goodwill is initially measured at cost, being the excess of the aggregate of the consideration transferred and the amount recognized for non-controlling interests, and any previous interest held, over the net identifiable assets acquired and liabilities assumed. If the fair value of the net assets acquired is in excess of the aggregate consideration transferred, the Group re-assesses whether it has correctly identified all of the assets acquired and all of the liabilities assumed and reviews the procedures used to measure the amounts to be recognized at the acquisition date. If the re-assessment still results in an excess of the fair value of net assets acquired over the aggregate consideration transferred, then the gain is recognized in profit or loss. For each business combination, the acquirer measures the non-controlling interest in the acquiree at the proportionate share of the acquiree's identifiable net assets.

2.2.2 Investment in an associate and joint ventures

An associate is an entity over which the Group has significant influence. Significant influence is the power to participate in the financial and operating policy decisions of the investee, but is not control or joint control over those policies.

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

The Group's investments in its associate and joint venture are accounted for using the equity method. Under the equity method, the investment in an associate or a joint venture is initially recognized at cost. The carrying amount of the investment is adjusted to recognize changes in the Group's share of net assets of the associate or joint venture since the acquisition date.

The statement of comprehensive income reflects the Group's share of the results of operations of the associate or joint venture. Any change in OCI of those investees is presented as part of the Group's OCI. In addition, when there has been a change recognized directly in the equity of the associate or joint venture, the Group recognizes its share of any changes, when applicable, in the statement of changes in equity. Unrealized gains and losses resulting from transactions between the Group and the associate or joint venture are eliminated to the extent of the interest in the associate or joint venture.

The aggregate of the Group's share of profit or loss of an associate and a joint venture is shown on the face of the statement of comprehensive income outside operating profit and represents profit or loss after tax and non-controlling interests in the subsidiaries of the associate or joint venture.

The financial statements of the associate or joint venture are prepared for the same reporting period as the Group. When necessary, adjustments are made to bring the accounting policies in line with those of the Group.

After application of the equity method, the Group determines whether it is necessary to recognize an impairment loss on its investment in its associate or joint venture. At each reporting date, the Group determines whether there is objective evidence that the investment in the associate or joint venture is impaired. If there is such evidence, the Group calculates the amount of impairment as the difference between the recoverable amount of the associate or joint venture and its carrying value, then recognizes the loss as other expenses in the statement of comprehensive income.

2.2.2 Investment in an associate and joint ventures (cont'd)

Upon loss of significant influence over the associate or joint control over the joint venture, the Group measures and recognizes any retained investment at its fair value. Any difference between the carrying amount of the associate or joint venture upon loss of significant influence or joint control and the fair value of the retained investment and proceeds from disposal is recognized in profit or loss.

2.2.3 Goodwill

Goodwill is initially measured at cost, being the excess of the consideration transferred and the amount recognized for non-controlling interest over the net identifiable assets acquired and liabilities assumed of the consolidated subsidiaries. After initial recognition, goodwill is measured at cost less any accumulated impairment losses.

For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the Group's cash generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units. Goodwill is tested for impairment annually and when circumstances indicate that the carrying value may be impaired. Impairment is determined for goodwill by assessing the recoverable amount of each cash-generating unit (or group of cash-generating units) to which the goodwill relates. Where the recoverable amount of the cash generating unit is less than their carrying amount, the impairment loss is first allocated to the carrying amounts of the goodwill of the cash generating unit and the residual impairment loss is allocated based on the relative carrying amounts of other assets of the cash generating unit. Impairment losses relating to goodwill cannot be reversed in future periods. Where goodwill forms part of a cash-generating unit and part of the operation within that unit is disposed of, the goodwill associated with the operation disposed of is included in the carrying amount of the operation when determining the gain or loss on disposal of the operation.

2.2.4 Current versus non-current classification

The Group 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 Group classifies all other liabilities as non-current.

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

2.2.5 Fair value measurement

The Group 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 Group.

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 Group 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.

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 Group 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 Group 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.

2.2.6 Revenue from contracts with customers

The Group 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 Group expects to be entitled in exchange for those goods or services.

2.2.6.1 Trade

Classification and implementation of performance obligations

Performance obligations are identified in certain contracts with respect to (1) the sale of goods, and (2) transport services for the performance of their duties as part of their trade transactions with customers. The Group 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 Group has no alternative use for assets created by fulfilling obligations and the Group 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 Group 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 KIFRS 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 Group 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 recognized 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 Group recognizes a refund liability. A right of return asset (and corresponding adjustment to cost of sales) is also recognized for the right to recover products from a customer. If the Group receives short-term advances from its customers, the practical expedient in KIFRS 1115 is used, and the Group 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.

Judgment on principal versus agent

The Group 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 Group 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.

2.2.6.2 Resource development sector

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.

2.2.6.3 Others

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

2.2.7 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.

2.2.8 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.

2.2.8.1 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 Group's business model for managing them. With the exception of trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient, the Group 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 Group 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 Group'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 Group commits to purchase or sell the asset.

(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 Group. The Group 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 Group 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.

2.2.8.1 Financial assets (cont'd)

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 Group's debt instruments at fair value through OCI includes investments in quoted debt instruments included under other non-current financial assets.
The Group 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 Group 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 Group 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 Group elected to classify irrevocably its non-listed equity investments under this category.

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.

2.2.8.1 Financial assets (cont'd)

(3) Derecognition

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

- The rights to receive cash flows from the asset have expired, or
- The Group 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 Group has transferred substantially all the risks and rewards of the asset, or (b) the Group has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset

When the Group 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 Group continues to recognize the transferred asset to the extent of its continuing involvement. In that case, the Group 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 Group 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 Group could be required to repay.

(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 Group 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 Group 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 Group applies a simplified approach in calculating ECLs. Therefore, the Group does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date. The Group 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 Group applies the low credit risk simplification. At every reporting date, the Group 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 Group reassesses the internal credit rating of the debt instrument. In addition, the Group considers that there has been a significant increase in credit risk when contractual payments are more than 30 days past due.

2.2.8.1 Financial assets (cont'd)

The Group'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 Group'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 Group uses the ratings from the credit rating gency both to determine whether the debt instrument has significantly increased in credit risk and to estimate ECLs.

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

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

(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 Group 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 Group has not designated any financial liability as fair value through profit or loss.

Loans and borrowings
This is the category most relevant to the Group. 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.

2.2.8.2 Financial liabilities

(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.

2.2.8.3 Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated 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.

2.2.8.4 Derivative financial instruments and hedge accounting

(1) Initial recognition and subsequent measurement

The Group 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.

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 Group formally designates and documents the hedge relationship to which the Group 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 Group 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 Group 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 Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

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

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

(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.

The Group 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 Group 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 Group 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.

2.2.9 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.

2.2.10 Non-current assets held for sale and discontinued operations

The Group classifies non-current assets and disposal groups 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 groups 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 group 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.

A disposal group 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 comprehensive income.

2.2.11 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 Group, 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.

2.2.11 Property, plant and equipment (cont'd)

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

	Useful life (years)
Buildings	40 ~ 50
Structures	8 ~ 30
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.

2.2.12 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 investment properties, if the following recognition criteria are met:

- It is probable that future economic benefits associated with the item will flow to the Group, 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 operations as incurred.

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 fiscal year end, and adjusted prospectively, if appropriate.

2.2.13 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.

2.2.14 Exploration and evaluation assets, development assets, and mining rights

The Group 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:

2.2.14.1 Exploration and evaluation assets

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

2.2.14.2 Development assets

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

2.2.14.3 Mining rights

Mining rights (production fields) consist of expenditure 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.

2.2.15 Impairment of non-financial assets

The Group assesses, at each reporting date, whether there is an indication that an asset may be impaired. If any indication exists, the Group 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 groups 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 consolidated statement of comprehensive income.

2.2.16 Leases

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

2.2.16.1 Group as a lessee

A lease that transfers substantially all the risks and rewards incidental to ownership to the Group is classified as a finance lease. Finance leases are capitalized at the commencement of the lease at the inception date 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 profit or loss.

A leased asset is depreciated over the useful life of the asset. However, if there is no reasonable certainty that the Group 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.

An operating lease is a lease other than a finance lease. Operating lease payments are recognized as an operating expense in the statement of profit or loss on a straight-line basis over the lease term.

2.2.16.2 Group as a lessor

Leases in which the Group 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 and arranging 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.

2.2.17 Foreign currency translation

The Group's consolidated financial statements are presented in Korean won, which is also the parent company's functional currency. Each entity in the Group determines its own functional currency and items included in the financial statements of each entity are measured using that functional currency.

Transactions in foreign currencies are initially recorded by the entities at their respective functional currency spot rates at the date the transaction first qualifies for recognition. Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency spot rate of exchange at the reporting date. 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 but the 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.

Foreign exchange differences are related to the assets under construction for future production and foreign currency differences excluding the cost of assets considered as interest cost adjustment for foreign currency borrowings, foreign exchange differences arising from transactions to avoid certain foreign currency risks, monetary bonds or obligations incurring from item comprising net investment in foreign operations with no planned settlement are recognized as profit or loss for the period in which they are incurred.

On consolidation the assets and liabilities of foreign operations are translated into Korean won at the rate of exchange prevailing at the reporting date and their profit or loss and OCI are translated at the average exchange rates for the period. The exchange differences arising on the translation are recognized in OCI. On disposal of a foreign operation, the component of OCI relating to that particular foreign operation is recognized in profit or loss.

2.2.18 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.

2.2.19 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, it is 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.

2.2.20 Pension benefits

The Group 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 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 Group recognizes restructuring-related costs

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. The Group recognizes the following changes in the net defined benefit obligation as selling and administrative expenses in profit or loss:

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

2.2.21 Taxes

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

2.2.21.1 Current income tax

Current income tax assets and liabilities are measured at the amount expected to be recovered from or paid to the taxation authorities. Taxable income excludes profit or loss that added or deducted to taxable income of other periods, tax exemption and non-deductible items so that the profit or loss of comprehensive income statement is different from the taxable income. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted at the reporting date in the countries where the Group operates and generates taxable income.

2.2.21.2 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.

2.2.21.2 Deferred tax (cont'd)

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 in goodwill (as long as it does not exceed goodwill) if it was incurred during the measurement period or in profit or loss.

2.2.21.3 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.

2.2.22 Provisions and contingent liabilities

Provisions are recognized when the Group 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 Group 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 Group'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 Group'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 Group 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 Group 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

Where 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 Group uses a provision matrix to calculate ECLs for trade receivables and contract assets. The provision rates are based on days past due for groupings 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 Group's historical observed default rates. The Group 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 Group'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 Group 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 Group's consolidated financial statements as the Group 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 Group's consolidated 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 Group's consolidated financial statements

2.4.4 KIFRS 1109 *Financial Instruments*

The Group has applied KIFRS 1109 *Financial Instruments* since January 1, 2018. The Group has not restated the comparative information, based on the transitional provisions. Differences arising from the adoption of KIFRS 1109 have been recognized 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 Group adopted the KIFRS 1115 Revenue from Contract with Customers. The Group has not restated the comparative information, based on the transitional provisions. Differences arising from the adoption of KIFRS 1115 have been recognized 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 Group'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 Group 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 Group has leases of certain office equipment (i.e., personal computers, printing and photocopying machines) that are considered of low value.

The Group 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 consolidated financial statements of the Group.

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 Group 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 Group.

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 Group does not have such long-term interests in its associate and joint venture, the amendments will not have an impact on its consolidated 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 Group 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 Group will apply the interpretation from its effective date. Since the Group operates in a complex multinational tax environment, applying the Interpretation may affect its consolidated financial statements. In addition, the Group 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 Group.

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 Group 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 Group's current practice is in line with these amendments, the Group does not expect any effect on its consolidated 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 Group's current practice is in line with these amendments, the Group does not expect any effect on its consolidated financial statements.

2.6 Approval of 2018 consolidated financial statements

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

3. Segment information

3.1 Operating segment

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

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

	2018 (Korean won in millions)					U. S. dollar in thousands (Note 2)
	Trading	Natural resource development	Others	Consolidation adjustment	Total	Total
Sales:						
Total sales	₩ 30,184,567	₩ 871,761	₩ 342,922	₩ -	₩ 31,399,250	$ 28,082,685
Inter-segment sales	(6,099,053)	(1,820)	(124,437)	-	(6,225,310)	(5,567,758)
Net sales	₩ 24,085,514	₩ 869,941	₩ 218,485	₩ -	₩ 25,173,940	$ 22,514,927
Profit (loss) for the year before tax	₩ 2,533	₩ 101,085	₩ (84,561)	₩ 157,008	₩ 176,085	$ 157,486
Total asset	7,718,991	2,832,164	1,080,414	(1,998,815)	9,632,754	8,615,289
Total liabilities	5,790,041	798,230	752,432	(1,741,300)	5,599,403	5,007,963

	2017 (Korean won in millions)					U. S. dollar in thousands (Note 2)
	Trading	Natural resource development	Others	Consolidation adjustment	Total	Total
Sales:						
Total sales	₩ 26,800,337	₩ 615,937	₩ 234,166	₩ -	₩ 27,650,440	$ 24,729,845
Inter-segment sales	(4,988,521)	-	(90,265)	-	(5,078,786)	(4,542,336)
Net sales	₩ 21,811,816	₩ 615,937	₩ 143,901	₩ -	₩ 22,571,654	$ 20,187,509
Profit (loss) for the year before tax	₩ 73,168	₩ 147,167	₩ (1,752)	₩ 29,378	₩ 247,961	$ 221,770
Total asset	6,605,703	3,069,569	1,154,531	(1,843,735)	8,986,068	8,036,909
Total liabilities	5,136,075	608,998	721,326	(1,404,380)	5,062,019	4,527,340

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	₩ 9,632,754	$ 8,615,289
Current tax assets	5,180	4,634
Deferred tax assets	243,086	217,410
Total assets	₩ 9,881,020	$ 8,837,333

3.1.2 Adjustments and eliminations (cont'd)

Reconciliation of liabilities is as follows:

	Korean won in millions	U. S. dollar in thousands (Note 2)
	2018	2018
Segment operating liabilities	₩ 5,599,403	$ 5,007,963
Current tax liabilities	69,148	61,844
Deferred tax liabilities	13,907	12,437
Current portion of bonds	538,509	481,629
Non-current bonds	770,515	689,129
Total liabilities	₩ 6,991,482	$ 6,253,002

3.2 Revenue from the contract 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		
	Total sales	Inter-Segment sales	Net sales
Domestic	₩ 4,644,170	₩ (618,715)	₩ 4,025,455
Asia (excluding China)	10,799,331	(2,595,079)	8,204,253
China	3,628,409	(424,030)	3,204,379
North America	3,125,532	(1,228,202)	1,897,330
Europe	4,943,940	(1,231,610)	3,712,330
Others	4,203,319	(127,674)	4,075,645
Total	₩ 31,344,701	₩ (6,225,310)	₩ 25,119,391
U.S. dollar in thousands (note 2)	$ 28,033,898	$ (5,567,758)	$ 22,466,140

3.2.2 Sales categorization based on the major product and services

	Korean won in millions						U. S. dollar in thousands (Note 2)
	Steel	Chemistry/ Commodities	Vehicle component/ Machineries	E&P/ Minerals	Others	Total	Total
Sales:							
Total sales	₩ 20,055,974	₩ 7,268,438	₩ 2,711,169	₩ 328,514	₩ 980,606	₩ 31,344,701	$ 28,033,898
Inter-segment sales						(6,225,310)	(5,567,758)
Net sales						₩ 25,119,391	$ 22,466,140

3.2.3 Sales categorization based on occurrence

	Korean won in millions						U. S. dollar in thousands (Note 2)
	Export	Domestic	Triangular	Total sales	Inter-segment sales	Net sales	Net sales
Sales:	₩ 8,789,218	₩ 3,833,638	₩ 18,721,845	₩ 31,344,701	₩ (6,225,310)	₩ 25,119,391	22,466,140

3.2.4 Sales categorization based on the timing of sales recognition

	Korean won in millions					U. S. dollar in thousands (Note 2)
	Sales recognized at once	Sales recognized through period	Total sales	Inter-Segment sales	Net sales	Net sales
Sales:	₩ 30,910,008	₩ 434,693	₩ 31,344,701	₩ (6,225,310)	₩ 25,119,391	22,466,140

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)
		2018				2018
		Beginning balance	Increase	Decrease	Ending balance	Ending balance
Contract assets	Due from customers	₩ 91,954	₩ -	₩ (40,025)	₩ 51,929	$ 46,444
Contract liabilities	Advances from customers	137,976	1,276,036	(1,209,695)	204,317	182,736
	Unearned revenues	538	42,092	-	42,630	38,127

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
Cash	₩ 590	₩ 1,265	$ 528
Savings account and checking account	185,647	165,769	166,038
Other cash equivalents	15,231	11,456	13,622
	₩ 201,468	₩ 178,490	$ 180,188

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	₩ 4,109,755	₩ 3,486,934	$ 3,675,660
Allowance for doubtful accounts	(21,721)	(74,497)	(19,427)
Other receivables	91,704	87,571	82,018
Allowance for doubtful accounts	(4,077)	(20,141)	(3,646)
Accrued income	1,702	366	1,522
Short-term guarantee deposits	536	555	479
Short-term loans	1,158	1,594	1,036
Allowance for doubtful accounts	-	(16)	-
Current portion of long-term loans	50,111	51,236	44,818
	4,229,168	3,533,602	3,782,460
Non-current:			
Long-term trade receivables	73,805	101,852	66,009
Allowance for doubtful accounts	(59,223)	(90,458)	(52,968)
Long-term loans	249,283	289,166	222,952
Allowance for doubtful accounts	(14)	(2,381)	(13)
Long-term other receivables	119,760	58,220	107,110
Allowance for doubtful accounts	(30,008)	(14,567)	(26,838)
Long-term guarantee deposits	14,399	15,483	12,879
	368,002	357,315	329,132
	₩ 4,597,170	₩ 3,890,917	$ 4,111,592

(*1) The Group 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 related to trade receivables

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	₩ 164,955	₩ 93,338	$ 147,532
Increase due to business combination	11	38,943	10
Bad debt expenses	27,990	77,035	25,034
Write-off	(119,064)	(36,746)	(106,488)
Foreign exchange translation loss (profit)	7,052	(7,615)	6,307
Ending balance	₩ 80,944	₩ 164,955	$ 72,395

5.3 Financial assets transferred but not derecognized

As of December 31, 2018, trade receivables transferred with a book value amounting to ₩517,523 million ($462,859 thousand) are not derecognized. Cash received through factoring of such receivables is accounted for as short-term borrowings.

The Group factored the above trade receivables to financial institutions with recourse. The Group 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
Deposits in financial institutions	₩ 14,838	₩ 6,638	$ 13,271

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	-	93,600	-
Financial assets at fair value through OCI	35,483	-	31,735
Financial assets at fair value through profit or loss	1,207	-	1,080
Deposits in financial institutions	75	21	66
	₩ 37,543	₩ 94,316	$ 33,577

6. Other financial assets (cont'd)

Details of financial instruments 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
<Financial assets at fair value through OCI>							
Marketable securities:							
TK-Chemical Co., Ltd. (*4)	-	-	₩ -	₩ -	₩ -	₩ 15,461	$ -
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
Bellatrix exploration	5,463,500	6.75	5,814	2,824	2,824	-	2,525
			9,426	7,417	7,417	19,785	6,633
Non-marketable securities:							
DAEWOO Songdo Development Co.,Ltd.	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	-	-	-	-	-
Shinpyung Industry Co., Ltd.	2,328	10.36	-	-	-	-	-
S&S Metal 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	-
Dongji 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.AT. 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 Kamchatk Co., Ltd	328	10.00	-	-	-	-	-
Knoc Inam Ltd	10	10.00	-	-	-	-	-
Jilin Kdac Co., Ltd (*1)	-	-	-	-	-	176	-
Others	-	-	4,712	4,712	4,712	4,712	4,214
			₩ 38,689	₩ 28,066	₩ 28,066	₩ 55,196	$ 25,102

6. Other financial assets (cont'd)

	Korean won in millions						U. S. dollar in thousands (Note 2)
	2018					2017	2018
	Number of shares	Equity owner-ship (%)	Acquisition cost	Fair value or net asset value	Book value	Book value	Book value
<Financial assets at fair value through profit or loss>							
Erae automotive system (*1)	-	-	₩ -	₩ -	₩ -	₩ 8,905	$ -
Erae AMS Co,.Ltd.(*1)	-	-	-	-	-	8,906	-
Korea Investment Private Placement KEXIM Carbon Credit Special Asset Fund No. 1	-	2.13	263	105	105	106	94
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	91
			1,365	1,207	1,207	18,620	1,080
			₩ ` 49,480	₩ 36,690	₩ 36,690	₩ 93,600	$ 32,815

(*1) The Group disposed the shares in the current period.
(*2) S&S Metal Co,.Ltd changed its name.
(*3) IQ Power Asia changed its name.
(*4) These financial assets are reclassified to the associates in the current period.

Investments in marketable securities, Maruichi Steel Tube Ltd, IQ Power Licensing AG, Bellatrix were stated at fair market value as of December 31, 2018.

Investments in Central Corporation were stated at fair value by using the discounted cash flow method under the income approach. Investment in Korea Investment Private Placement KEXIM Carbon Credit Special Asset Fund No. 1 was valued at net asset value (NAV) as of December 31, 2018. The resulting unrealized gains arising from fair value adjustments amounting to ₩7,871 million ($7,040 thousand) were recorded in accumulated other comprehensive income, net of deferred income tax effect (liability) of ₩1,795 million ($1,605 thousand).

As of December 31, 2018 and 2017, deposits in financial institutions amounting to ₩10,151 million ($9,079 thousand) and ₩25,471 million ($22,781 thousand) are restricted in use in accordance with relevant financial agreements, respectively.

7. Other assets

Other current and non-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
Other current assets:			
Advance payments	₩ 90,330	₩ 157,176	$ 80,789
Allowance for doubtful accounts	(1,582)	(2,546)	(1,415)
Prepaid expenses	53,095	11,627	47,487
Allowance for doubtful accounts	(2,570)	(2,886)	(2,299)
Others	11,492	5,538	10,278
	150,765	168,909	134,840
Other non-current assets:			
Long-term prepaid expenses	3,697	3,530	3,307
	₩ 154,462	₩ 172,439	$ 138,147

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	₩ 853,749	₩ 714,521	$ 763,571
Valuation allowance	(1,921)	(4,293)	(1,718)
Finished goods	36,576	26,197	32,713
Valuation allowance	(3,840)	(1,727)	(3,434)
Semi-finished goods and Work-in-process	29,066	23,875	25,996
Valuation allowance	(510)	(502)	(456)
Raw materials	101,060	60,320	90,385
Valuation allowance	(852)	(1,049)	(762)
Materials-in-transit	305,926	285,391	273,612
Others	11,410	6,100	10,205
	₩ 1,330,664	₩ 1,108,833	$ 1,190,112

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 ₩6,872 million ($6,146 thousand) and ₩7,332 million ($6,558 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 ₩661 million ($591 thousand) and ₩7,720 million ($6,905 thousand), respectively.

9. Investments in associates

Investments in associates 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
	Number of shares	Equity owner-ship (%)	Acquisition cost	Proportionate net asset value	Book value	Book value	Book value
Shanghai Lansheng Daewoo Corp.	-	49.00	₩ 5,312	₩ 1,489	₩ 1,393	₩ 1,401	$ 1,246
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	-	49.00	161	1,689	1,690	1,699	1,511
Korea LNG Ltd.	2,400	20.00	-	43,555	43,554	35,837	38,954
General Medicines Co., Ltd.	9,702	33.00	736	1,512	1,516	8,372	1,356
POSCO IJPC	5,603,939	20.00	5,953	3,321	3,065	2,738	2,741
DMSA/AMSA(*1)(*6)	-	4.00	269,294	54,298	26,709	56,749	23,888
POSCO Mexico Processing Center Holding LLC(*1)	-	19.64	14,004	16,092	15,419	13,315	13,790
POSCO ESDC Ltd.	-	20.00	757	1,588	1,588	1,501	1,420
KG Power (M) SDN. BHD.	3,000,000	20.00	1,062	(1,204)	-	-	-
Global Komsco Daewoo LLC	-	35.00	4,445	3,218	3,177	1,577	2,841
South-East Asia Gas Pipeline Company Ltd.	50,082	25.04	135,899	179,459	179,459	197,859	160,504
Blue Ocean Recovery PEF No. 1 (*6)	333	27.52	33,300	36,117	-	19,620	-
VNS-Daewoo Co., Ltd.	-	50.00	4,550	1,612	1,526	1,641	1,365
SPH Co., Ltd.	100,000	50.00	500	5,761	500	171	447
PT. Batutua Tembaga Raya	128,285	22.00	14,785	12,700	20,479	21,721	18,316
Yulchon Mexico S.A. De C.V.(*1)	18,267,000	10.00	1,349	952	952	1,035	851
HyunSon Engineering & Construction(*1)	2,369	4.89	281	157	148	34	132
POSCO LNG Singapore Pte. Ltd (*3)	698,647	25.00	772	710	710	-	635
IT engineering (*1) (*3)	7,100	10.84	923	400	585	-	523
Inco tech Inc. (*1) (*3)	350,000	10.00	350	213	242	-	216
Sebang Steel	49	49.00	484	330	524	473	469
Kwanika Copper Corp.	8,200,000	35.00	7,173	6,707	6,963	7,236	6,228
Hunchun POSCO Hyundai International logisitics (*1) (*4)	-	10.00	10,732	8,568	8,569	-	7,664
POSCO-Malaysia SDN.BHD. (*1) (*4)	24,128,000	13.63	7,905	(1,114)	4,506	-	4,030
POSCO-ITPC S.p.A (*1) (*4)	-	10.00	781	1,361	1,362	-	1,218
TK-Chemical (*1) (*4)	8,000,000	8.80	14,818	21,330	22,322	-	19,964
Daewoo-hanil Co., Ltd. (*1) (*4)	300,000	15.00	1,500	(1,674)	-	-	-
Shinpoong Daewoo pharma Co., Ltd. (*1) (*4)	-	3.42	343	381	396	-	354
Erae automotive system Mexico (*1) (*4)	-	7.65	478	343	342	-	307
Korea Siberia wood cjsc (*5)	-	-	-	-	-	-	-
			538,647	399,871	347,696	372,979	310,970
Government grants (*2)			(10,986)	-	-	-	-
			₩ 527,661	₩ 399,871	₩ 347,696	₩ 372,979	$ 310,970

(*1) These securities are classified as investments in associates even though the Group's equity ownership is below 20%, as the Group is able to exercise significant influence on the investee.
(*2) Differences between the nominal amount and the fair value of the borrowings related to the acquisition of interest in DMSA/AMSA were measured at initial recognition.
(*3) The financial assets are newly acquired in the current period.
(*4) These financial assets are reclassified from long-term securities to investments in associates in the current period.
(*5) The financial assets are disposed in the current period.
(*6) The Group recognized the amount that book value exceeds the recoverable amount as the loss of impairment.

9. Investments in associates (cont'd)

	Book value before the impairment	Recoverable amount	Impairment loss
DMSA/ AMSA (*1)	₩ 54,314	₩ 26,710	₩ 27,604
Blue Ocean Recovery PEF No. 1 (*2)	15,755	-	15,755
	₩ 70,069	₩ 26,710	₩ 43,359
U. S. dollar in thousands (Note 2)	$ 62,668	$ 23,889	$ 38,779

(*1) 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), respectively.
(*2) 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.

Changes in the carrying amount of associates for the years ended 2018 and 2017 are as follows (Korean won in millions):

	2018								
	Beginning balance	Business combination	Acquisition and transfer	Disposal	Share of the associate's profit (loss)	Impairment	Dividends	Others	Ending balance
Shanghai Lansheng Daewoo Corp.	₩ 1,401	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ (8)	₩ 1,393
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	1,699	-	-	-	-	-	-	(9)	1,690
Korea LNG Ltd.	35,837	-	-	-	10,542	-	(10,544)	7,719	43,554
General Medicines Co., Ltd.	8,372	-	-	-	1,002	-	(353)	(7,505)	1,516
POSCO IJPC	2,738	-	-	-	319	-	-	8	3,065
DMSA/AMSA	56,749	-	17,973	-	(21,197)	(27,604)	-	788	26,709
POSCO Mexico Processing Center Holding LLC	13,315	-	-	-	1,669	-	-	435	15,419
POSCO ESDC Ltd.	1,501	-	-	-	152	-	(59)	(6)	1,588
KG Power(M) SDN. BHD	-		-		-	-	-	-	-
Global Komsco Daewoo LLC	1,577	-	-	-	1,508	-	-	92	3,177
South-East Asia Gas Pipeline Company Ltd.	197,859	-	-	(14,880)	17,708	-	(29,301)	8,073	179,459
Blue Ocean Recovery PEF No. 1	19,620	-	-	-	(2,175)	(15,755)	-	(1,690)	-
VNS-Daewoo Co., Ltd.	1,641	-	322	-	(478)	-	-	41	1,526
SPH Co., Ltd.	171	-	-	-	329	-	-	-	500
PT. Batutua Tembaga Raya	21,721	-	-	-	(1,817)	-	-	575	20,479
Yulchon Mexico S.A. De C.V.	1,035	-	-	-	(133)	-	-	50	952
HyunSon Engineering & Construction	34	-	184	-	(76)	-	-	6	148
POSCO Singapore LNG Trading Pte. Ltd	-	-	772	-	(70)	-	-	8	710
IT engineering	-	-	923	-	(261)	-	-	(77)	585
Inco tech Inc.	-	-	350	-	(106)	-	-	(2)	242
Sebang Steel	473	-	-	-	32	-	-	19	524
Kwanika Copper corp.	7,236	-	-	-	(8)	-	-	(265)	6,963
Hunchun POSCO Hyundai international logistics	-	-	10,732	-	(817)	-	-	(1,346)	8,569
POSCO-Malysia SDN.BHD	-	-	7,577	-	(1,318)	-	-	(1,753)	4,506
POSCO-ITPC S.p.A	-	-	781	-	672	-	-	(91)	1,362
TK-Chemical	-	-	14,818	-	10,682	-	-	(3,178)	22,322
Daewoo-hanil Co., Ltd.	-	-	-	-	-	-	-	-	-
Shinpoong Daewoo pharma Co., Ltd.	-	-	343	-	87	-	-	(34)	396
Erae automotive systems Mexico	-	-	478	-	(153)	-	-	17	342
	₩ 372,979	₩ -	₩ 55,253	₩ (14,880)	₩ 16,093	₩ (43,359)	₩ (40,257)	₩ 1,867	₩ 347,696
U. S. dollars in thousands (Note 2)	$ 333,583	$ -	$ 49,417	$ (13,308)	$ 14,393	$ (38,779)	$ (36,005)	$ 1,669	$ 310,970

9. Investments in associates (cont'd)

	2017								
	Beginning balance	Business combination	Acquisition and transfer	Disposal	Share of the associate's profit (loss)	Impairment	Dividends	Others(*1)	Ending balance
Shanghai Lansheng Daewoo Corp.	₩ 1,904	₩ -	₩ -	₩ -	₩ (401)	₩ -	₩ -	₩ (102)	₩ 1,401
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	2,035	-	-	-	(229)	-	-	(107)	1,699
Korea LNG Ltd.	56,737	-	-	-	6,489	-	(6,439)	(20,950)	35,837
General Medicines Co., Ltd.	6,895	-	-	-	4,097	-	(441)	(2,179)	8,372
POSCO IJPC	2,823	-	-	-	298	-	-	(383)	2,738
DMSA/AMSA	69,149	-	14,388	-	(19,062)	-	-	(7,726)	56,749
POSCO Mexico Processing Center Holding LLC	11,513	-	-	(1,299)	2,120	-	-	981	13,315
POSCO ESDC Ltd.	1,373			-	114	-	-	14	1,501
Global Komsco Daewoo LLC	916	-	-	-	806	-	-	(145)	1,577
South-East Asia Gas Pipeline Company Ltd.	216,787	-	-	-	42,896	-	(37,016)	(24,808)	197,859
Blue Ocean Recovery PEF No. 1	37,656	-	-	-	(8,411)	-	-	(9,625)	19,620
VNS-Daewoo Co., Ltd.	1,847	-		-	(1)	-	-	(205)	1,641
SPH Co., Ltd.	272	-		-	(101)	-	-	-	171
PT. Batutua Tembaga Raya	22,327	-	-	-	3,309	(2,791)	-	(1,124)	21,721
Yulchon Mexico S.A. De C.V.	868	-	-	-	249	-	-	(82)	1,035
HyunSon Engineering & Construction	54	-	-	-	(13)	-	-	(7)	34
Kwanika Copper Corp.(*4)	-	-	7,173	-	(29)	-	-	92	7,236
Sebang Steel(*2)	-	484	-	-	5	-	-	(16)	473
La srdc(*2)(*3)	-	145	-	(132)	(23)	-	-	10	-
Daewoo Global Development Pte. Ltd(*3)	13,836	-	16,851	(29,792)	(654)	-	-	(241)	-
	₩ 446,992	₩ 629	₩ 38,412	₩ (31,223)	₩ 31,459	₩ (2,791)	₩ (43,896)	₩ (66,603)	₩ 372,979

Details of unrealized gain or loss from intercompany transactions reflected in share of profit in associates are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
General Medicines Co., Ltd.	₩ 99	₩ (27)	$ 89
Global KOMSCO Daewoo LLC.	(19)	(15)	(17)
POSCO IJPC	58	16	52
POSCO Mexico Processing Center Holding. LLC.	476	80	426
DMSA/AMSA	(3)	(24)	(3)
PT. Batutua Tembaga Raya	42	(65)	38
Sebang Steel	14	(19)	12
	₩ 667	₩ (54)	$ 597

The summarized financial information of major associates as of and for the year ended December 31, 2018 are as follows (Korean won in millions):

	Korea LNG Ltd.	DMSA/AMSA	South-East Asia Gas Pipeline Co.,Ltd.
Current assets	₩ 712	₩ 564,815	₩ 165,850
Non-current assets	217,171	4,998,032	1,560,560
Current liabilities	5	361	818,589
Non-current liabilities	105	4,205,078	191,142
Sales	54,537	731,127	343,471
Net profit (loss)	52,720	(529,844)	70,717
Other comprehensive income (loss)	-	-	-
Total comprehensive income (loss)	52,720	(529,844)	70,717
Dividend received from associates	10,544	-	29,301

9. Investments in associates (cont'd)

The summarized financial information of other associates as of and for the year ended December 31, 2018 are as follows (Korean won in millions):

	Total assets	Total liabilities	Sales	Net profit (loss)
Shanghai Lansheng Daewoo Corp.	₩ 3,185	₩ 145	₩ -	₩ -
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	47,650	44,202	-	-
General Medicines Co., Ltd.	9,280	4,697	30,106	3,400
POSCO IJPC	71,822	55,216	117,450	1,301
POSCO Mexico Processing Center Holding LLC	396,817	314,862	669,739	6,075
POSCO ESDC Ltd.	10,658	2,718	23,300	735
KG Power(M) SDN. BHD.	6,684	12,707	-	-
Global Komsco Daewoo LLC	39,737	30,542	20,947	4,363
Blue Ocean Recovery PEF No. 1	305,876	174,640	459,491	(5,924)
VNS-Daewoo Co., Ltd.	3,237	13	128	(957)
SPH Co., Ltd.	125,070	113,548	239,121	11,179
PT. Batutua Tembaga Raya	332,305	274,580	128,609	(8,451)
Yulchon Mexico S.A. De C.V.	34,791	25,275	13,352	(1,329)
HyunSon Engineering & Construction	23,038	19,837	1	(1,559)
POSCO LNG Singapore Pte. Ltd	2,842	-	77,921	(278)
IT Engineering	13,288	9,593	1,400	(2,409)
Inco tech Inc.	15,653	13,525	-	(1,059)
Sebang Steel	18,178	17,505	53,407	37
Kwanika Copper Corp.	19,485	322	-	(24)
Hunchun POSCO Hyundai International logisitics	95,926	10,246	4,515	(2,862)
POSCO Malaysia SDN. BHD	64,747	72,920	123,672	1,726
POSCO ITPC S.p.A	99,129	85,517	98,161	3,960
TK-Chemical	665,502	423,150	794,664	24,410
Daewoo-hanil Co., Ltd.	3,884	15,048	-	-
Shinpoong DAEWOO Pharma Co., Ltd	12,517	1,386	9,959	1,388
Erae Automotive systems Mexico	7,125	2,648	-	-

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	₩ 1,910,284	₩ 1,820,511	$ 1,708,509
Accumulated depreciation	(558,546)	(469,541)	(499,549)
Accumulated impairment loss	(57,364)	(25,011)	(51,305)
Government grants	(29)	(1,113)	(26)
Book value	₩ 1,294,345	₩ 1,324,846	$ 1,157,629

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	Change in scope of consolidation	Transfer and others	Ending balance
Land	₩ 148,066	₩ -	₩ 69	₩ (266)	₩ -	₩ -	₩ 147,869
Buildings	538,814	-	11,693	(81)	-	3,415	553,841
Machinery	785,494	-	23,864	(367)	4,116	1,044	814,151
Others	175,285	-	13,410	(6,617)	701	3,711	186,490
Construction-in-progress	102,821	-	49,917	(4,324)	-	(29,254)	119,160
Bearer plants	70,031		-	-	-	18,742	88,773
	₩ 1,820,511	₩ -	₩ 98,953	₩ (11,655)	₩ 4,817	₩ (2,342)	₩ 1,910,284
U. S. dollars in thousands (Note 2)	$ 1,628,218	$ -	$ 88,501	$ (10,424)	$ 4,308	$ (2,095)	$ 1,708,509

	2017						
	Beginning balance	Business combination	Acquisition	Disposals	Change in scope of consolidation	Transfer and others	Ending balance
Land	₩ 18,614	₩ 127,616	₩ 845	₩ -	₩ -	₩ 991	₩ 148,066
Buildings	126,745	124,015	880	-	273,574	13,600	538,814
Machinery	540,012	222,013	9,234	(6,696)	5,666	15,265	785,494
Others	61,445	69,793	6,570	(4,912)	26,288	9,880	175,285
Construction-in-progress	222,889	3,527	55,744	-	-	(179,339)	102,821
Bearer plants	-	-	-	-	-	70,031	70,031
	₩ 969,705	₩ 553,185	₩ 73,273	₩ (11,608)	₩ 305,528	₩ (69,572)	₩ 1,820,511

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	Transfer and others	Change in scope of consolidation	Ending balance
Buildings	₩ 57,502	₩ -	₩ 13,146	₩ (31)	₩ (1,701)	₩ -	₩ 68,916
Machinery	324,516	-	54,384	(29)	1,649	1,546	382,066
Bearer plants	4,516	-	3,635	-	(149)	-	8,002
Others	83,007	-	23,890	(5,290)	(2,398)	353	99,546
	₩ 469,541	₩ -	₩ 95,055	₩ (5,350)	₩ (2,599)	₩ 1,899	₩ 558,546
U. S. dollars in thousands (Note 2)	$ 419,945	$ -	$ 85,015	$ (4,785)	$ (2,324)	$ 1,698	$ 499,549

	2017						
	Beginning balance	Business combination	Depreciation	Disposals	Transfer and others	Change in scope of consolidation	Ending balance
Buildings	₩ 32,045	₩ 20,922	₩ 5,739	₩ -	₩ (1,647)	₩ 443	₩ 57,502
Machinery	228,252	82,735	32,102	(2,083)	(17,321)	831	324,516
Bearer plants	-	-	4,830	-	(314)	-	4,516
Others	40,833	32,929	20,417	(4,160)	(7,626)	614	83,007
	₩ 301,130	₩ 136,586	₩ 63,088	₩ (6,243)	₩ (26,908)	₩ 1,888	₩ 469,541

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	Disposals	Others	Change in scope of consolidation	Ending balance
Buildings	₩ 16,170	₩ -	₩ 29,737	₩ -	₩ 178	₩ -	₩ 46,085
Machinery	7,601	-	2,964	-	(1,969)	-	8,596
Others	1,240	-	1,638	(187)	(8)	-	2,683
	₩ 25,011	₩ -	₩ 34,339	₩ (187)	₩ (1,799)	₩ -	₩ 57,364
U. S. dollars in thousands (Note 2)	$ 22,369	$ -	$ 30,712	$ (167)	$ (1,609)	$ -	$ 51,305

	2017						
	Beginning balance	Business combination	Impairment	Disposals	Others	Change in scope of consolidation	Ending balance
Buildings	₩ 1,414	₩ 14,905	₩ 850	₩ -	₩ -	₩ (999)	₩ 16,170
Machinery	874	11,375	195	(4,535)	-	(308)	7,601
Others	-	1,488	85	(263)	-	(70)	1,240
	₩ 2,288	₩ 27,768	₩ 1,130	₩ (4,798)	₩ -	₩ (1,377)	₩ 25,011

The Group conducted an appraisal and assessment on PPE of DAEWOO Global Development Pte. Ltd. with independent experts considering the trading example price on the similar industry and usable value and recognized the impairment of ₩29,206 million ($26,121 thousand) based on the fair value measurement.

In addition, the appraisal and assessment on PPE of Brazil Sao Paulo Steel Processing Center and POSCO-GULF SFC L.L.C. with the independent experts were conducted considering trading price and recognized the ₩1,866 million ($1,669 thousand) and ₩2,188 million ($1,957 thousand) of impairment loss based on the fair value measurement.

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

Changes in government grants 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	Change in scope of consolidation	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	Depreciation	Change in scope of consolidation	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):

Provider	Pledged assets	Creditor	2018	2017
POSCO DAEWOO Corporation	Land Buildings Machinery	Korea Development Bank	₩ 79,000 ₩ 50,000	₩ 79,000 ₩ 50,000
DAEWOO Textile LLC	Machinery Buildings	Hamkor Bank and others	$ 5,263	$ 11,791

11. Intangible assets

Changes in the net book value 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	Disposal and transfer	Amortization	Impairment	Change in scope of consolidation	Others	Ending balance
Goodwill	₩ 12,409	₩ -	₩ -	₩ -	₩ -	₩ (779)	₩ -	₩ -	₩ 11,630
Industrial property rights	1,561	-	135	-	(364)	-	-	33	1,365
Mining rights	1,367,390	-	18,650	(62,152)	(125,295)	-	-	(1,012)	1,197,581
Exploration and evaluation assets	207,067	-	2,654	-	-	(3,339)	-	(13,129)	193,253
Development assets	4,841	-	-	-	-	(64)	-	64	4,841
Membership	26,827	-	3,181	(4,185)	(373)	(1,313)	-	563	24,700
Software	5,131	-	5,013	5,266	(3,108)	-	-	(79)	12,223
	₩ 1,625,226	₩ -	₩ 29,633	₩ (61,071)	₩ (129,140)	₩ (5,495)	₩ -	₩ (13,560)	₩ 1,445,593
U. S. dollar in thousands (Note 2)	$ 1,453,561	$ -	$ 26,503	$ (54,620)	$ (115,500)	$ (4,915)	$ -	$ (12,128)	$ 1,292,901

	2017								
	Beginning balance	Business combination	Acquisition	Disposal and transfer	Amortization	Impairment	Change in scope of consolidation	Others	Ending balance
Goodwill	₩ 13,189	₩ -	₩ -	₩ -	₩ -	₩ (779)	₩ -	₩ (1)	₩ 12,409
Industrial property rights	780	1	457	-	(375)	-	-	698	1,561
Mining rights	1,469,865	-	3,445	-	(146,408)	(22,605)	46,573	16,520	1,367,390
Exploration and evaluation assets	163,387	-	99,883	-	-	(56,730)	(1,046)	1,573	207,067
Development assets	4,449	-	1,463	-	-	(489)	-	(582)	4,841
Membership	9,383	4,173	464	(569)	(396)	(270)	14,006	36	26,827
Software	2,714	3,296	536	-	(3,043)	-	-	1,628	5,131
	₩ 1,663,767	₩ 7,470	₩ 106,248	₩ (569)	₩ (150,222)	₩ (80,873)	₩ 59,533	₩ 19,872	₩ 1,625,226

11. Intangible assets (cont'd)

11.1 Book value of goodwill allocated to Group's CGU as of December 31, 2018 and 2017 are as follows (Korean won in millions):

	2018	2017
PT. Bio Inti Agrindo (*1)	₩ 10,851	₩ 10,851
Posco Daewoo Power(PNGPOM) Ltd (*2)	779	1,558
	₩ 11,630	₩ 12,409
U. S. dollar in thousands (Note 2)	$ 10,402	$ 11,098

(*1) Recoverable amount of PT. Bio Inti Agrindo is determined based on the usable value measured with independent experts. The usable value is measured by future cash flow from 2019 to 2043 based on the management's business plan with the 12% discount rate. The recoverable amount of CGU estimated on December 31, 2018 exceeds the book value but the possibility of the excessive amount to be canceled out exists depending on reasonable changes in assumptions. If the discount rate increases to exceeding 13%, the excessive amount can be canceled out.
(*2) POSCO DAEWOO Power (PNGPOM) Ltd reflect the impairment based on the business period as the business under BOT with the government finished in 2019.

11.2 Join Operation

Mining rights and machinery include the Group'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	$ 149,926
Accumulated depreciation	(12,896)	(10,001)	(11,534)
Book value	₩ 154,736	₩ 157,631	$ 138,392

12. Investment properties (cont'd)

Changes in the 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
Buildings	116,362	-	-	-	116,362
Structures	21	-	-	-	21
	₩ 167,632	₩ -	₩ -	₩ -	₩ 167,632
U. S. dollar in thousands (Note 2)	$ 149,926	$ -	$ -	$ -	$ 149,926

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

Changes in the accumulated depreciation on investment 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
Buildings	₩ 9,997	₩ -	₩ 2,894	₩ -	₩ 12,891
Structures	4	-	1	-	5
	₩ 10,001	₩ -	₩ 2,895	₩ -	₩ 12,896
U. S. dollar in thousands (Note 2)	$ 8,945	$ -	$ 2,589	$ -	$ 11,534

	2017				
	Beginning balance	Business combination	Depreciation	Others	Ending balance
Buildings	₩ 7,027	₩ 258	₩ 2,919	₩ (207)	₩ 9,997
Structures	-	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.

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. Investment properties (cont'd)

Joint arrangement

The Group owns POSCO Tower Songdo, located in Yeonsu-gu, Incheon, in form of a joint arrangement. As of the end of reporting period, the Group owns 60% of the real estate, which is classified as property, plant and equipment and investment properties. The Group 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 Group'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	₩ 1,854,508	₩ 1,586,274	$ 1,658,624
Other payables	166,435	235,615	148,855
Accrued expenses	35,000	47,804	31,303
Guarantee deposits received	1,180	837	1,055
	2,057,123	1,870,530	1,839,838
Non-current:			
Long-term other payables	567	1,231	507
Long-term accrued expenses	1,083	832	969
Long-term guarantee deposits received	2,970	2,908	2,656
Financial guarantee liabilities	8,788	17,061	7,860
	13,408	22,032	11,992
	₩ 2,070,531	₩ 1,892,562	$ 1,851,830

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 2018	Korean won in millions 2017	U. S. dollar in thousands (Note 2) 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
Subsidiaries' borrowings				467,489	385,960	418,021
				2,364,204	1,906,140	2,114,484
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	5,186
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
Subsidiaries' borrowings				23,246	201,486	20,791
Less: present value discount				(710)	(1,109)	(635)
				63,221	427,284	56,543
				2,427,425	2,333,424	2,171,027
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 and others	2.00% and others	2033. 09.15	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	Korea EXIM Bank	3M Libor+1.60%	2020.12.21	78,267	74,998	70,000
Subsidiaries' borrowings				316,626	128,881	283,181
				500,167	349,245	447,336
				654,017	502,857	584,936
Less: present value discount				(1,081)	(1,423)	(967)
				652,936	501,434	583,969
				₩ 3,080,361	₩ 2,834,858	$ 2,754,996

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	$ -
11th privately placed bond	-	-	-	214,280	-
14th unsecured bond	-	-	-	100,000	-
10-2nd unsecured bond	3.26%	2019.07.02	220,000	-	196,762
13th public offered 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)	(536)
			538,509	463,736	481,629
Non-current bonds:					
10-2nd unsecured bond	-	-	-	220,000	-
13th public offered 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 LIBOR + 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	₩ 204,317	₩ 137,976	$ 182,736
Unearned revenue	42,630	538	38,127
Withholdings	35,122	40,330	31,412
Other current liabilities	2,567	-	2,296
	₩ 284,636	₩ 178,844	254,571
Non-current:			
Long-term withholdings	₩ 37,962	₩ 37,694	33,952
Other non-current liabilities	6,397	7,355	5,722
	₩ 44,359	₩ 45,049	39,674
	₩ 328,995	₩ 223,893	$ 294,245

16. Severance and retirement benefit

The Group 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 (%)	2.33~8.70%	2.87~3.40%
Future salary growth rate (%)	2.87~10.00%	3.00~5.23%
Expected retirement rate (%)	3.79~8.98%	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	₩ 15,332	₩ (13,020)
Rate of change	10.2%	(8.66%)

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	₩ (12,953)	₩ 14,664
Rate of change	(8.62%)	9.75%

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	₩ 16,712	₩ 16,906	$ 14,947
Net interest cost	(101)	447	(90)
	₩ 16,611	₩ 17,353	$ 14,857

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	₩ 150,345	₩ 134,246	$ 134,465
Fair value of plan assets	(147,919)	(139,179)	(132,295)
Severance benefit liabilities	3,396	3,291	3,038
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	₩ 134,246	₩ 88,804	$ 120,066
Current service cost	16,712	16,906	14,947
Interest cost	3,715	3,028	3,323
Benefits paid	(9,728)	(6,229)	(8,700)
Re-measurement gain (loss) in OCI:	6,008	(1,894)	5,373
Actuarial changes arising from changes in demographic assumptions	141	330	126
Actuarial changes arising from changes in financial assumptions	5,355	(1,934)	4,789
Others	512	(290)	458
Transfer from related parties	-	33,483	-
Others	(608)	148	(544)
Ending balance	₩ 150,345	₩ 134,246	$ 134,465

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	$ 124,478
Contribution by the company	15,977	26,800	14,289
Interest income	3,816	2,581	3,413
Benefits paid	(9,471)	(5,653)	(8,471)
Re-measurement gain (loss) in OCI:	(1,284)	(1,070)	(1,148)
Actuarial changes arising from changes in financial assumptions	(1,284)	(1,070)	(1,148)
Transfer from related parties	-	33,729	-
Others	(298)	-	(266)
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	₩ (6,008)	₩ 1,894	$ (5,374)
Re-measurement of plan assets	(1,284)	(1,070)	(1,148)
	(7,292)	824	(6,522)
Income tax effect	1,753	(212)	1,568
Other comprehensive income	₩ (5,539)	₩ 612	$ (4,954)

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($13,518 thousand). The maturity analysis of the Group'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 5 years	Over 5 years	Total
Amount to be paid	₩ 7,212	₩ 40,668	₩ 231,822	₩ 279,702

The weighted average maturity of the defined benefit obligations of the Group ranges from 8.93 to 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)	₩ 42,113	₩ 32,085	$ 37,665
Provision for restoration	29,767	31,877	26,623
	₩ 71,880	₩ 63,962	$ 64,288

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	₩ 32,085	₩ 31,877	₩ 63,962	$ 57,206
Business combination	15,033	894	15,927	14,245
Reversal	(2,920)	-	(2,920)	(2,612)
Used	-	(1,457)	(1,457)	(1,303)
Transfer	(2,213)	(2,675)	(4,888)	(4,372)
Foreign currency translation	128	1,128	1,256	1,124
Ending balance	₩ 42,113	₩ 29,767	₩ 71,880	$ 64,288

18. Commitments and contingencies

18.1 Provision for contingencies

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

	Provision						
	Beginning balance	Business combination	Reversal	Transfer	Foreign currency translation	Ending balance	Principal debt amount
Creditors of Daewoo Corp.	₩ 26,289	₩ 855	₩ -	₩ -	₩ 432	₩ 27,576	₩ 251,100
Legal proceedings provision	5,669	14,178	(2,920)	(2,213)	(304)	14,410	-
Provisions for construction warranties	127	-	-	-	-	127	-
	₩ 32,085	₩ 15,033	₩ (2,920)	₩ (2,213)	₩ 128	₩ 42,113	₩ 251,100
U.S. dollar in thousands (Note 2)	$ 28,696	$ 13,445	$ (2,612)	$ (1,979)	$ 115	$ 37,665	$ 224,577

18.1.1 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 Group was established as Daewoo International was split off from the trade sector of Daewoo Corporation. Based on the split-off proposal, the Group 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 Group 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 Group 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 Group 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 Group 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 Group in Delhi in May 2002 with regards to the disposition of assets and confirmation of the debt. Accordingly, the Group 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.

18.1.2 Provision for litigation and others

The Group recognized probable outflow of resources amounting to ₩14,537 million ($13,002 thousand) as provision for contingencies in connection with lawsuits. (See Note 18.2 and 18.7)

18.2 Pending litigations

As of December 31, 2018, the Group is a defendant in pending lawsuits involving 45 claims (domestic: 10 claims and overseas: 35 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 40,814 thousand, INR 4,518,694 thousand, CAD 79,000 thousand, PKR 124,775 thousand, BRL 4,671 thousand. The Group is involved in 31 pending lawsuits as a plaintiff as of December 31, 2018.

The ultimate outcome of these lawsuits could not be determined. Therefore, the Group 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 Group has letter of credit facilities (“L/C”) with Woori Bank and others, document against acceptance facilities (“D/A”) and other trading facilities as follows (Korean won in millions and USD in thousands):

	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	KRW	-

18.4 Collateral

The Group has pledged 33 blank promissory notes, 24 blank checks and notes in aggregate of JPY 938,825 thousand as collateral to Korea Energy Agency and others for the contract performance guarantees and other purposes as of December 31, 2018.

18.5 Derivatives

The Group 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 General	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
	CIMB Bank	MYR	500	Limit of loss
	EUGENE Investment CO., LTD	RMB	516	Limit of loss
	Shinhan Bank	USD	12,000	Limit of transaction

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 Currency forwards
18.5.1

Currency unit	Unsettled contractual amount		Accumulated valuation gain (loss)
	Long position	Short position	
USD	₩ 291,824	₩ 967,169	₩ 5,068
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	(1,767)
CAD	2,985	13,365	179
GBP	13,404	43,814	(200)
AUD	563	6,838	127
SGD	-	1,025	(4)
			₩ 3,709
U. S. dollar in thousands (Note 2)			$ 3,317

18.5 Derivatives (cont'd)

18.5.2 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	Valuation 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	₩ (2,963)	8,479	₩ (4,649)	₩ 3,709
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	₩ 7,969	81,374	₩ (87,926)	₩ 9,028
U. S. dollar in thousands (Note 2)	$ 6,808	$ 7,127	72,779	$ (78,639)	$ 8,075

The Group uses commodity futures and other financial instruments to hedge its commodity price risks and other risks attributable to firm sales or purchase contracts. The Group 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 Group to certain creditors on behalf of associates/debtors as of December 31, 2018 are as follows:

		Limit amount		Outstanding balance		
Debtor	Creditor	Foreign currency amounts (in thousands)	Korean won equivalent (in millions)	Foreign currency amounts (in thousands)	Korean won equivalent (in millions)	Year of expiration
Sherritt International Corporation	Korea Exim bank	USD 21,818	₩ 24,395	USD 4,315	₩ 4,824	2023
Ambatovy project investments Ltd.	Korea Exim bank	65,455	73,185	7,716	8,627	2019
Global Komsco Daewoo	Industrial & Commercial Bank of China	8,225	9,196	8,225	9,196	2019
POSCO Assan TST Steel Industry	ING and others	14,653	16,383	14,653	16,383	2020
		USD 110,151	₩ 123,159	USD 34,909	₩ 39,030	

Principal debtors listed above are related parties of the Group, excluding Sherritt International Corp. and Ambatovy Project Investments Ltd. (see Note 31).

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 Collateralized Assets Collateralized assets of Daewoo Global Development Pte. Ltd.

For the borrowings of Daewoo Amara Co., Ltd. from KDB-DWS Lotus Pte. Ltd., deposits of ₩6,807 million and performance security and warranty security provided by POSCO Engineering & Construction and Myanmar POSCO Engineering & Construction Co., Ltd., are provided as collateral. The balance of the borrowings at the end of the reporting period is ₩284,046 million ($254,043 thousand).

18.7.4 Commitments to supplement funds for Korea Ambatovy Consortium (KAC)

The Group 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 Group's Board of Directors' meeting on July 28, 2016, the Group has officially notified the withdrawal from KAC to participating companies including KORES, and also requested KAC to resolve all legal issues. The Group 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 Group will resume normal operations through the exercise of off-take rights as per the agreement with KAC.

Sherritt 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 12.83% in the newly incorporated entity.

18.7.5 Environmental restoration expenses of Peru Block 8.

The Group 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 Group 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 and 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 follows:

	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	35,128	34,591	31,418
	₩ 553,976	₩ 553,439	$ 495,462

19. Issued capital and capital surplus (cont'd)

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

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Treasury stocks	₩ (6)	₩ (6)	$ (5)
Other capital adjustments	(2)	-	(2)
	₩ (8)	₩ (6)	$ (7)

20. Other components of equity and accumulated other comprehensive income

Accumulated other comprehensive income as of 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	₩ -	₩ 13,383	$ -
Gains or losses on equity financial assets at fair value through OCI	(4,195)	-	(3,752)
Change in equity adjustment in equity method investments	191,295	172,848	171,089
Negative change in equity adjustment in equity method investments	(184,477)	(170,010)	(164,992)
Cumulative exchange differences on translations of foreign operations	(18,490)	(21,157)	(16,536)
	₩ (15,867)	₩ (4,936)	$ (14,191)

21. Retained earnings

Details of 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)	₩ 45,613	₩ 39,444	$ 40,795
Discretionary appropriated retained earnings (*2)	1,492,000	1,409,000	1,334,407
Unappropriated retained earnings	194,664	195,941	174,102
	₩ 1,732,277	₩ 1,644,385	$ 1,549,304

(*1) In accordance with the Commercial law, the Group 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 Group is the full amount of the business expansion reserves.

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	₩ 61,687	$ 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	₩ 23,285,363	₩ 20,917,299	$ 20,825,832
Material costs	117,550	106,852	105,134
Changes in inventories	20,431	(45)	18,273
Employee salaries	209,411	204,494	187,292
Depreciation of property, plant and equipment	93,971	62,043	84,045
Amortization of intangible asset	129,140	150,222	115,500
Depreciation of investment properties	2,895	2,920	2,589
Others	842,556	726,555	753,560
	₩ 24,701,317	₩ 22,170,340	$ 22,092,225

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	₩ 183,644	₩ 168,706	$ 164,246
Severance benefit	14,369	15,448	12,851
Employee benefits	34,350	34,640	30,722
Travel	12,579	10,849	11,250
Communication	5,686	5,695	5,085
Utilities	2,872	1,220	2,569
Taxes and dues	10,412	11,197	9,312
Rents	20,141	18,238	18,014
Depreciation	26,093	15,799	23,337
Amortization	4,977	5,522	4,451
Repairs	1,715	928	1,534
Insurance	33,937	31,645	30,352
Entertainment	1,943	1,871	1,738
Advertising	1,271	1,259	1,137
Packaging	1,209	442	1,081
Freight	10,057	383,123	8,995
Shipping	29,271	35,113	26,179
Commissions	62,328	74,172	55,745
Bad debt expenses	27,990	77,035	25,034
Supplies expenses	2,228	1,653	1,993
Vehicles maintenance expenses	2,401	2,260	2,147
Publication expenses	441	415	394
Training expenses	2,402	2,189	2,148
Development expenses	2,992	2,594	2,676
Sales promotional expenses	4,240	3,491	3,792
Exhibition expenses	142	107	127
Samples expenses	359	191	321
Miscellaneous expenses	898	394	804
Conference expenses	502	559	449
Other selling and administrative expenses	147	915	132
Reversal of provision	(163)	(439)	(146)
	₩ 501,433	₩ 907,231	$ 448,469

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	₩ 34,053	₩ 31,019	$ 30,456
Financial guarantee income	355	209	318
Dividends income	166	456	148
Gain on foreign currency transactions	355,478	426,446	317,931
Gain on foreign currency translation	56,337	154,699	50,386
Gain on valuation of derivatives	81,374	90,878	72,779
Gain on settlement of derivatives	226,700	189,223	202,755
Gain on disposal of long-term equity instrument	5,271	-	4,714
Gain on valuation of trade payable	64	-	57
	₩ 759,798	₩ 892,930	$ 679,544

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 receivable	₩ 39,426	₩ 32,352	$ 35,262
Interest expenses	146,164	87,983	130,725
Financial guarantee expense	4,512	7,434	4,035
Loss on foreign currency transactions	369,419	412,105	330,398
Loss on foreign currency translation	72,280	170,206	64,645
Loss on valuation of derivatives	87,926	75,623	78,639
Loss on settlement of derivatives	196,358	217,715	175,618
Loss on valuation on trade receivable	3,209	-	2,870
	₩ 919,294	₩ 1,003,418	$ 822,192

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	₩ 2,062	₩ 1,936	$ 1,844
Other interest income	31,991	29,083	28,612
	₩ 34,053	₩ 31,019	$ 30,456

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	₩ 151,198	₩ 95,306	$ 135,228
Less: capitalization of borrowing costs	(5,034)	(7,323)	(4,503)
	₩ 146,164	₩ 87,983	$ 130,725

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 disposal of property, plant and equipment	₩ 1,141	₩ 1,612	$ 1,020
Gain on disposal of intangible assets	2,536	-	2,268
Gain on disposal of disposal groups classified as held for sale	5	465	4
Reversal of contingent liabilities	2,920	-	2,612
Reversal of other allowance for doubtful accounts	2,072	464	1,853
Gain on disposal of associates	-	2,300	-
Miscellaneous income	15,873	45,370	14,197
Gain on disposal of available-for-sale financial assets	-	110	-
	₩ 24,547	₩ 50,321	$ 21,954

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	₩ 894	₩ 248	$ 800
Other bad debt expenses	5,954	1,389	5,325
Loss on disposal of property, plant and equipment	506	543	453
Loss on impairment of property, plant and equipment	34,339	1,130	30,712
Loss on disposal of intangible assets	75	98	67
Loss on impairment of intangible assets	5,495	80,873	4,915
Loss on impairment of other non-current assets	26	-	23
Donations	1,889	954	1,689
Contribution to provision for contingencies	15,033	25,619	13,445
Loss on disposal of available-for-sale financial assets	-	2,866	-
Loss on impairment of available-for-sale financial assets	50,438	-	45,110
Loss on disposal of associates	379	67	339
Loss on impairment of associates	43,359	2,791	38,779
Miscellaneous expenses	19,295	8,068	17,258
	₩ 177,682	₩ 124,646	$ 158,915

26. Impairment of financial instruments

Details of impairment of financial 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
Bad debt expenses	₩ 27,990	₩ 77,035	$ 25,034
Other bad debt expenses	6,952	2,939	6,217
Less: reversal of allowance for doubtful accounts	(2,072)	(263)	(1,853)
	₩ 32,870	₩ 79,711	$ 29,398

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	₩ 117,566	₩ 76,386	$ 105,148
Changes in deferred income tax arising from temporary differences	(64,397)	(15,584)	(57,595)
Changes in deferred income tax arising from tax credit carryforwards	3,964	672	3,545
Income tax charged directly to equity	3,211	19,668	2,872
Income tax expense	₩ 60,344	₩ 81,142	$ 53,970

The reconciliation between income tax expense at the effective income tax rates of the Group 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	₩ 176,085	₩ 247,960	$ 157,486
Tax at the statutory income tax rate	42,151	59,545	37,699
Adjustments:			
Non-taxable income	(154)	(6,646)	(138)
Non-deductible expenses	1,469	5,479	1,314
Tax credits	(1,708)	(2,334)	(1,528)
Others	18,586	25,098	16,623
Income tax expense	₩ 60,344	₩ 81,142	$ 53,970
Effective income tax rates	34.27%	32.72%	34.27%

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	₩ 1,795	₩ 2,473	$ 1,605
Re-measurement loss (gain) on defined benefit liabilities	1,753	(211)	1,568
Other comprehensive income arising from investments in associates	(740)	17,406	(662)
Effects of changes in accounting standard	403	-	361
	₩ 3,211	₩ 19,668	$ 2,872

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
Investment in subsidiaries and associates	52,768	-	41,296	(740)	93,324
Provisions for severance liability	26,224	-	1,113	1,753	29,090
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
Gain on 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	46,817	-	33,464	403	80,684
	164,783	-	61,186	3,211	229,180
Tax credit carryforwards	3,964	-	(3,964)	-	-
	₩ 168,747	₩ -	₩ 57,222	₩ 3,211	₩ 229,180
U. S. dollar in thousands (Note 2)	$ 150,923	$ -	$ 51,178	$ 2,872	$ 204,973

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
Investment in subsidiaries and associates	17,873	-	17,489	17,406	52,768
Provisions for severance liability	17,387	7,377	1,671	(211)	26,224
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
Gain on 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	34,973	4,641	7,203	-	46,817
	142,608	7,244	(4,737)	19,668	164,783
Tax credit carryforwards	4,636	-	(672)	-	3,964
	₩ 147,244	₩ 7,244	₩ (5,409)	₩ 19,668	₩ 168,747

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	₩ 155,174	₩ 175,880	$ 138,784
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)	₩ 1,258	₩ 1,444	$ 1.13

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	123,374,891	365/365	123,374,891

	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)
	123,374,891		121,839,512

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

29. Financial instruments

29.1 Capital risk management

The primary objective of the Group'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 Group may adjust the dividend payment to shareholders.

Capital structure of the Group is composed of net borrowings, which is borrowings less cash and cash equivalents, and equity. The Group maintains the same capital risk management policies as prior year. Details of the capital components managed by the Group 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)	₩ 4,389,385	₩ 4,032,794	$ 3,925,754
Cash and cash equivalents (B)	(201,468)	(178,490)	(180,188)
Net borrowings (A-B)	₩ 4,187,917	₩ 3,854,304	$ 3,745,566
Total equity (D)	₩ 2,889,539	₩ 2,852,476	$ 2,584,331
Gearing ratio ((A-B)/D)	145%	135%	145%

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	₩ -	₩ 201,468	₩ -	₩ 201,468
Trade and other receivables	18,151	4,211,017	-	4,229,168
Other current financial assets	-	14,838	-	14,838
Derivative financial assets	53,268	-	-	53,268
Non-current trade and other receivables	-	368,002	-	368,002
Other non-current financial assets	1,207	853	35,483	37,543
	₩ 72,626	₩ 4,796,178	₩ 35,483	₩ 4,904,287
U. S. dollar in thousands (Note 2)	$ 64,955	$ 4,289,580	$ 31,735	$ 4,386,270

	2017			
	Financial asset at fair value through profit or loss	Loans and receivables	Available-for-sale financial assets	Total
Cash and cash equivalents	₩ -	₩ 178,490	₩ -	₩ 178,490
Trade and other receivables	-	3,533,602	-	3,533,602
Other current financial assets	-	6,638	-	6,638
Derivative financial assets	51,066	-	-	51,066
Non-current trade and other receivables	-	357,315	-	357,315
Other non-current financial assets	-	716	93,600	94,316
	₩ 51,066	₩ 4,076,761	₩ 93,600	₩ 4,221,427

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	₩ -	₩ 2,057,123	₩ 2,057,123
Borrowings	-	2,427,425	2,427,425
Current-portion of bonds	-	538,509	538,509
Derivative financial liabilities	44,240	-	44,240
Non-current trade and other payables	-	13,408	13,408
Long-term borrowings	-	652,936	652,936
Bonds	-	770,515	770,515
	₩ 44,240	₩ 6,459,916	₩ 6,504,156
U. S. dollar in thousands (Note 2)	$ 39,567	$ 5,777,584	$ 5,817,151

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	₩ -	₩ 1,870,530	₩ 1,870,530
Borrowings	-	2,333,424	2,333,424
Current-portion of bonds	-	463,736	463,736
Derivative financial liabilities	43,454	-	43,454
Non-current trade and other payables	-	22,032	22,032
Long-term borrowings	-	501,434	501,434
Bonds	-	734,200	734,200
	₩ 43,454	₩ 5,925,356	₩ 5,968,810

Profit or loss by category of financial instruments for the years 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	₩ -	₩ (27,990)	₩ -	₩ -	₩ -	₩ (27,990)
Other income (expenses):		-	-	-	-	-
Other bad debt expenses	-	(6,952)	-	-	-	(6,952)
Reversal of allowance for doubtful account	-	2,072	-	-	-	2,072
Loss on impairment of available-for-sale financial assets	-	-	-	-	-	-
Gain on disposal of available-for-sale financial assets	-	-	-	-	-	-
Loss on disposal of available-for-sale financial assets	-	-	-	-	-	-
Finance income (costs):						
Interest income	-	34,053	-	-	-	34,053
Interest expenses	-	-	-	-	(146,164)	(146,164)
Dividend income	1	-	165	-	-	166
Gain (loss) on foreign currency transaction	-	355,478	-	-	(369,419)	(13,941)
Gain (loss) on foreign currency translation	-	(3,330)	-	-	(12,612)	(15,942)
Gain (loss) on valuation of derivatives	81,374	-	-	(87,926)	-	(6,552)
Gain (loss) on settlement of derivatives	226,700	-	-	(196,358)	-	30,342
Loss on disposal of trade receivables	-	(39,426)	-	-	-	(39,426)
Other comprehensive income	-	-	(9,605)	-	-	(9,605)
	₩ 308,075	₩ 313,905	₩ (9,440)	₩ (284,284)	₩ (528,195)	₩ (199,939)
U. S. dollar in thousands (Note 2)	$ 275,534	$ 280,749	$ (8,443)	$ (254,256)	$ (472,404)	$ (178,820)

29.2 Financial instruments by category (cont'd)

	2017					
	Financial asset at fair value through profit or loss	Loans and receivables	Available-for-sale financial assets	Financial liabilities at fair value through profit or loss	Financial liabilities carried at amortized cost	Total
Selling and administrative expenses:						
Bad debt expenses	₩ -	₩ (77,035)	₩ -	₩ -	₩ -	₩ (77,035)
Other income (expenses):						
Other bad debt expenses	-	(2,939)	-	-	-	(2,939)
Reversal of allowance for doubtful account	-	263	-	-	-	263
Gain on disposal of available-for-sale financial assets	-	-	110	-	-	110
Loss on disposal of available-for-sale financial assets	-	-	(2,866)	-	-	(2,866)
Finance income (costs):						
Interest income	-	31,019	-	-	-	31,019
Interest expenses	-	-	-	-	87,983	87,983
Dividend income	-	-	455	-	-	455
Gain (loss) on foreign currency translation	-	154,699	-	-	(170,206)	(15,507)
Gain (loss) on valuation of derivatives	90,878	-	-	(75,623)	-	15,255
Gain (loss) on settlement of derivatives	189,223	-	-	(217,715)	-	(28,492)
Loss on disposal of trade receivables	-	(32,352)	-	-	-	(32,352)
Other comprehensive income	-	-	(10,219)	-	-	(10,219)
	₩ 280,101	₩ 73,655	₩ (12,520)	₩ (293,338)	₩ (82,223)	₩ (34,325)

29.3 Financial risk management

The Group is exposed to market risk (foreign currency risk and interest rate risk), credit risk, and liquidity risk. The primary purpose of Group's financial risk management is to detect potential risk which could decrease the Group's profit and to eliminate, reduce and hedge such risk to an acceptable level. The Group uses derivative financial instruments for hedging special risk such as foreign currency risk. Financial risk management policy of the Group 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 Group 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 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	₩ 3,529,226	₩ 3,543,317	₩ 2,968,111	₩ 3,407,804	$ 3,156,449	$ 3,169,052
JPY	77,458	74,366	38,013	25,419	69,276	66,511
EUR	639,675	326,363	535,553	239,969	572,109	291,891

Effects of fluctuation in foreign exchange rates on the Group'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	₩ (1,409)	₩ 1,409
JPY	309	(309)
EUR	31,331	(31,331)

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 Group's exposure to the risk of changes in market interest rates relates primarily to the Group'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 ₩15,858 million ($ 14,183 thousand) on the Group'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 Group'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 Group to conduct transactions only with those with sound financial status by performing credit verification procedures for all counterparties that desire credit transactions with the Group. In addition, the Group manages the balance of accounts receivable by continuously reevaluating credit ratings so that the level of the Group's exposure to the credit risk is maintained at an insignificant level.

29.3.2.2 Other assets

Credit risks associated with the Group'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 Group 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 Group are as follows:

	Korean won in millions		U. S. dollar in thousands (Note 2)
	2018	2017	2018
Cash and cash equivalents	₩ 201,468	₩ 178,490	$ 180,188
Trade and other receivables	4,229,168	3,533,602	3,782,460
Other current financial assets	14,838	6,638	13,271
Derivative financial assets	53,268	51,066	47,642
Non-current trade and other receivables	368,002	357,315	329,132
Other non-current financial assets	37,543	94,316	33,577
Financial guarantee contract	59,030	346,700	52,794
	₩ 4,963,317	₩ 4,568,127	$ 4,439,064

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	₩ 201,468	₩ 201,468	₩ -	₩ -	₩ -	₩ -	₩ -
Trade and other receivables	4,229,168	3,788,568	304,442	75,598	19,730	2,066	38,764
Other current financial assets	14,838	14,838	-	-	-	-	-
Non-current trade and other receivables	368,002	368,002	-	-	-	-	-
Other non-current financial assets	37,543	37,543	-	-	-	-	-
	₩ 4,851,019	₩ 4,410,419	₩ 304,442	₩ 75,598	₩ 19,730	₩ 2,066	₩ 38,764
U. S. dollar in thousands (Note 2)	$ 4,338,627	$ 3,944,566	$ 272,284	$ 67,613	$ 17,646	$ 1,848	$ 34,670

29.3.3 Liquidity risk

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

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	₩ 2,057,123	₩ 3,535	₩ 996	₩ 2,061,654
Derivative financial liabilities	44,240	-	-	44,240
Borrowings	2,453,813	819,832	159,469	3,433,114
Bonds	560,993	805,440	-	1,366,433
Financial guarantee liabilities	-	34,206	24,824	59,030
	₩ 5,116,169	₩ 1,663,013	₩ 185,289	₩ 6,964,471
U. S. dollar in thousands (Note 2)	$ 4,575,771	$ 1,487,356	$ 165,717	$ 6,228,844

29.3.3 Liquidity risk (cont'd)

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

29.3.4 Changes in liabilities from financial activities

Changes in liabilities from financial activities for the years ended at 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	Transfer of current portion	Others	Ending balance
Short-term borrowings	₩ 1,906,140	₩ 234	₩ 454,572	₩ 3,258	₩ -	₩ -	₩ 2,364,204
Current portion of long-term borrowings	427,284	-	(479,583)	(1,327)	116,886	(39)	63,221
Current portion of bond	463,736	-	(464,280)	(866)	539,204	715	538,509
Long-term borrowings	501,434	-	256,440	10,710	(116,886)	1,238	652,936
Bond	734,200	-	573,623	809	(539,204)	1,087	770,515
	₩ 4,032,794	₩ 234	₩ 340,772	₩ 12,584	₩ -	₩ 3,001	₩ 4,389,385
U. S. dollar in thousands (Note 2)	$ 3,606,828	$ 209	$ 304,778	$ 11,255	$ -	$ 2,684	$ 3,925,754

	2017						
	Beginning balance	Business combination	Cash flows from financial activities	Exchange rate changes	Transfer of current portion	Others	Ending balance
Short-term borrowings	₩ 1,775,558	₩ 465,944	₩ (273,388)	₩ (61,974)	₩ -	₩ -	₩ 1,906,140
Current portion of long-term borrowings	103,465	186,052	(93,412)	(10,172)	251,800	(10,449)	427,284
Current portion of bond	294,733	-	(284,044)	(12,443)	474,210	(8,720)	463,736
Bond	592,243	8,299	222,394	(32,888)	(251,800)	(36,814)	501,434
Long-term borrowings	759,477	129,856	338,150	(20,237)	(474,210)	1,164	734,200
	₩ 3,525,476	₩ 790,151	₩ (90,300)	₩ (137,714)	₩ -	₩ (54,819)	₩ 4,032,794

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	₩ 201,468	₩ 201,468	₩ 178,490	₩ 178,490	$ 180,188	$ 180,188
Trade and other receivables	4,211,017	4,211,017	3,533,602	3,533,602	3,766,226	3,766,226
Other current financial assets	14,838	14,383	6,638	6,638	13,271	13,271
Non-current trade and other receivables	368,002	368,002	357,315	357,315	329,132	329,132
Other non-current financial assets	853	853	716	716	763	763
	4,796,178	4,796,178	4,076,761	4,076,761	4,289,579	4,289,579
Financial assets at fair value:						
Trade and other receivables	18,151	18,151	-	-	16,234	16,234
Derivative financial assets	53,268	53,268	51,066	51,066	47,642	47,642
Available-for-sale financial assets (*1)	-	-	47,385	47,385	-	-
Financial assets at fair value through OCI	35,483	35,483	-	-	31,735	31,735
Financial assets at fair value through profit or loss (long-term fund)	1,102	1,102	-	-	986	986
Financial assets at fair value through profit or loss (Other securities)	105	105	-	-	94	94
	108,109	108,109	98,451	98,451	96,690	96,690
	₩ 4,904,287	₩ 4,904,287	₩ 4,175,212	₩ 4,175,212	$ 4,386,269	$ 4,386,269
<Financial liabilities>						
Financial liabilities at amortized cost:						
Trade and other payables	₩ 2,057,123	₩ 2,057,123	₩ 1,870,530	₩ 1,870,530	$ 1,839,838	$ 1,839,838
Borrowings	2,427,425	2,427,425	2,333,424	2,333,424	2,171,027	2,171,027
Current portion of bonds	538,509	542,936	463,736	465,138	481,629	485,588
Non-current trade and other payables	13,408	13,408	22,032	22,032	11,992	11,992
Borrowings	652,936	652,936	501,434	501,434	583,969	583,969
Bonds	770,515	779,145	734,200	739,607	689,129	696,848
	6,459,916	6,472,973	5,925,356	5,932,165	5,777,584	5,789,262
Financial liabilities at fair value:						
Derivative financial liabilities	44,240	44,240	43,454	43,454	39,567	39,567
	₩ 6,504,157	₩ 6,517,214	₩ 5,968,810	₩ 5,975,619	$ 5,817,151	$ 5,828,829

(*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 Group 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):

	Level 1	Level 2	Level 3	Total
Assets measured at fair value:				
Financial assets at fair value through OCI	₩ 22,235	₩ -	₩ 13,248	₩ 35,483
Financial assets at fair value through profit or loss	-	105	-	105
Derivative financial assets	-	53,268	-	53,268
Assets for which fair values are disclosed:				
Cash and cash equivalents	-	201,468	-	201,468
Trade and other receivables	-	-	4,229,168	4,229,168
Other current financial assets	-	14,838	-	14,383
Non-current trade and other receivables	-	-	368,002	368,002
Other non-current financial assets	-	790	-	790
Investment properties	-	-	174,576	174,576
Liabilities measured at fair value:				
Derivative financial liabilities	-	44,240	-	44,240
Liabilities for which fair values are disclosed:				
Trade and other payables	-	-	2,057,123	2,057,123
Borrowings	-	2,427,425	-	2,427,425
Current-portion of bonds	-	538,509	-	538,509
Non-current trade and other payables	-	-	13,408	13,408
Long-term borrowings	-	652,936	-	652,936
Bonds	-	770,515	-	770,515

30.2 Assumption used for fair value valuation technique

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 financial assets at fair value 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.

30.2 Assumption used for fair value valuation technique (cont'd)

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.

The Group 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 Group used the risk-free interest rate of 2.54% and market risk premium of 10.21% in determining the fair value of financial assets at fair value 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
Related parities	Blue Ocean Corporate's Financial Stabilization Private Equity Fund No. 1	Blue Ocean Corporate's Financial Stabilization Private Equity Fund No. 1
	POSCO Mexico Processing Center Holding LLC.	POSCO Mexico Processing Center Holding LLC.
	POSCO-ESDC Ltd.	POSCO-ESDC Ltd.
	POSCO IJPC	POSCO IJPC
	Shanghai Lansheng DAEWOO Corp	Shanghai Lansheng DAEWOO Corp
	Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.
	General Medicines Co., Ltd.	General Medicines Co.,Ltd.
	Korea LNG Ltd.	Korea LNG Ltd.
	KG Power(M) SDN. BHD.	KG Power(M) SDN. BHD.
	Sebang steel	Sebang steel
	Kwanika Copper Corp	Kwanika Copper Corp
	Global Komsco Daewoo LLC.	Global Komsco Daewoo LLC.
	South-East Asia Gas Pipeline Co., Ltd	South-East Asia Gas Pipeline Co., Ltd
	HyunSon Engineering & Construction	HyunSon Engineering & Construction
	VNS-DAEWOO Co., Ltd.	VNS-DAEWOO Co., Ltd.
	SPH Co, Ltd.	SPH Co, Ltd.
	Korea Siberia Wood CJSC	Korea Siberia Wood CJSC
	Yulchon Mexico S.A. DE C. V.	Yulchon Mexico S.A. DE C. V.
	DMSA/AMSA	DMSA/AMSA
	PT. Batutua Tembaga Raya	PT. Batutua Tembaga Raya
	IT Engineering. Co., Ltd	-
	POSCO Singapore LNG Trading Pte. Ltd.	-
	Inco tech Inc.	-
	TK-Chemical Corp.	-
	Daewoo-hanil Co., Ltd.	-
	Shinpoong Daewoo Pharma Co., Ltd.	-
	POSCO-Malaysia SDN. BHD.	-
	Erae Automotive Systems Mexico	-
	POSCO-ITPC S.p.A	-
	Hunchun POSCO HYUNDAI International Logistics	-
Others	POSCO Asia Co., Ltd.	POSCO Asia Co., Ltd.
	POSCO-Vietnam Co., Ltd.	POSCO-Vietnam Co., Ltd.
	POSCO-Thainox	POSCO-Thainox
	POSCO ASSAN TST Steel industry	POSCO ASSAN TST Steel industry
	POSCO-AAPC	POSCO-AAPC
	POSCO Coated & Color Steel Co., Ltd.	POSCO Coated & Color Steel Co., Ltd.
	POSCO America Corp.	POSCO America Corp.
	Zhangjiagang Pohang Stainless Steel Co., Ltd.	Zhangjiagang Pohang Stainless Steel Co., Ltd.
	POSCO-Foshan Steel Processing Center Co., Ltd.	POSCO-Foshan Steel Processing Center Co., Ltd.
	Companhia Siderurgica Do Pecem	Companhia Siderurgica Do Pecem
	POSCO Energy Co., Ltd.	POSCO Energy Co., Ltd.
	POSCO VST Co., Ltd.	POSCO VST Co., Ltd.
	POSCO SS-VINA	POSCO SS-VINA
	PT. Krakatau POSCO	PT. Krakatau POSCO
	POSCO Maharashtra Steel PVT. LTD.	POSCO Maharashtra Steel PVT. LTD.
	Daewoo Human Resources S.A. DE C.V.	Daewoo Human Resources S.A. DE C.V.
	DAEWOO Logistics Corp, etc.	DAEWOO Logistics Corp, etc.

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

31. Related party transactions (cont'd)

	2018					
	Sales and others			Purchase and others		
	Sales	Others	Total	Purchase	Others	Total
Parent company:						
POSCO (*1)	₩ 1,047,304	₩ 747	₩ 1,048,051	₩ 5,778,322	₩ 128,244	₩ 5,906,566
Associates:						
POSCO Mexico Processing Center Holding LLC	355,118	-	355,118	272	-	272
SPH Co., Ltd.	50	-	50	-	-	-
PT. Batutua Tembaga Raya	-	172	172	15,663	-	15,663
POSCO-ESDC Ltd.	-	59	59	-	5,069	5,069
POSCO IJPC	70,186	-	70,186	15	-	15
General Medicines Co., Ltd.	4,621	353	4,974	-	-	-
Korea LNG Ltd.	-	7,634	7,634	-	-	-
DMSA/AMSA	-	-	-	50,996	-	50,996
South-East Asia Gas Pipeline Company Limited	-	39,140	39,140	-	-	-
Global Komsco Daewoo LLC	-	-	-	14,769	19	14,788
Yulchon Mexico S.A. DE C.V	2,109	-	2,109	-	-	-
Sebang steel	-	-	-	13,585	-	13,585
POSCO Singapore LNG Trading Pte. Ltd	79,663	-	79,663	-	-	-
Poso-Malaysia SDN. BHD	101,340	-	101,340	16,516	-	16,516
Posco-ITPC	101,334	-	101,334	-	-	-
Hunchun Posco Hyundai International Logisitcs Complex Development Co., Ltd	2,022	-	2,022	-	-	-
TK-Chemical Co., Ltd.	185,115	-	185,115	80,926	-	80,926
Others:						
POSCO Asia Co., Ltd	73,412	-	73,412	610,008	1,047	611,055
POSCO-Vietnam	299,573	-	299,573	68,291	-	68,291
POSCO-Thainox	127,942	-	127,942	87,981	77	88,058
POSCO Assan TST Steel Industry A.S.	345,042	-	345,042	93,443	11	93,454
POSCO-AAPC	106,757	-	106,757	10,840	-	10,840
POSCO Coated & Color Steel Co., Ltd	76,683	-	76,683	261,726	249	261,975
POSCO America Corp.	82,890	-	82,890	61,513	1	61,514
Zhangjiagang Pohang Stainless Steel Co., Ltd	96,462	-	96,462	4,645	-	4,645
POSCO-Foshan Steel Processing Center Co., Ltd	57,618	-	57,618	857	-	857
Companhia Siderurguca Do Pecem,	221,499	-	221,499	282,818	1,515	284,333
POSCO Energy Co., Ltd.	4,391	-	4,391	93	-	93
POSCO VST Co., Ltd.	156,059	-	156,059	56,510	44	56,554
POSCO SS-VINA	289,250	-	289,250	12,862	-	12,862
PT. Krakatau POSCO	54,825	-	54,825	146,564	6	146,570
POSCO Maharashtra Steel Pvt. Ltd.	919,418	-	919,418	125,196	-	125,196
Daewoo Human Resources S.A. DE C.V.	-	-	-	-	1,141	1,141
Other affiliates of POSCO	845,993	599	846,592	242,938	125,306	368,244
	₩ 5,706,676	₩ 48,704	₩ 5,755,380	₩ 8,037,349	₩ 262,729	₩ 8,300,078
U. S. dollar in thousands (Note 2)	$ 5,103,905	$ 43,560	$ 5,147,464	$ 7,188,399	$ 234,978	$ 7,423,377

31. Related party transactions (cont'd)

	2017					
	Sales and others			Purchase and others		
	Sales	Others	Total	Purchase	Others	Total
Parent company:						
POSCO(*1)	₩ 790,912	₩ -	₩ 790,912	₩ 5,129,258	₩ 120,256	₩ 5,249,514
Associates:						
POSCO Mexico Processing Center Holding LLC	351,602	-	351,602	397	-	397
SPH Co., Ltd.	50	-	50	-	-	-
PT. Batutua Tembaga Raya	-	-	-	21,024	-	21,024
POSCO-ESDC Ltd.	-	-	-	-	4,186	4,186
POSCO IJPC	53,812	-	53,812	29	-	29
Shanghai Lansheng Daewoo Corporation	247	-	247	-	257	257
Shanghai Waigaoqiao Free Trade Zone Lansheng Daewoo Int'l Trading Co., Ltd.	43,775	-	43,775	-	-	-
General Medicines Co., Ltd.	6,939	441	7,380	-	-	-
Korea LNG Ltd.	-	6,439	6,439	-	-	-
DMSA/AMSA	-	95	95	47,092	-	47,092
South-East Asia Gas Pipeline Company Limited	-	61,989	61,989	-	-	-
Global Komsco Daewoo LLC	-	-	-	14,754	-	14,754
Yulchon Mexico S.A. DE C.V.	893	-	893	-	-	-
Sebang Steel	474	-	474	19,362	-	19,362
Others						
POSCO Asia Co., Ltd.	70,391	-	70,391	657,683	250	657,933
POSCO-Vietnam	178,717	-	178,717	75,075	-	75,075
POSCO-Thainox	100,669	-	100,669	75,693	-	75,693
POSCO Assan TST Steel Industry A.S.	354,615	-	354,615	55,754	-	55,754
POSCO-AAPC	105,437	-	105,437	12,083	-	12,083
POSCO C&C Co., Ltd.	117,428	-	117,428	228,575	14	228,589
POSCO America Corp.	113,044	-	113,044	71,605	-	71,605
Zhangjiagang Pohang Stainless Steel Co., Ltd.	137,485	-	137,485	426	-	426
POSCO-Foshan Steel Processing Center Co., Ltd	61,978	-	61,978	713	-	713
Companhia Siderurgica Do Pecem	67,265	-	67,265	115,397	209	115,606
POSCO-Malaysia SDN BHD.	60,246	-	60,246	10,075	-	10,075
POSCO-ITPC	80,903	-	80,903	2,668	-	2,668
POSCO Energy Co., Ltd.	24,638	-	24,638	-	-	-
POSCO VST Co., Ltd	133,802	-	133,802	38,320	-	38,320
POSCO SS-VINA	198,764	-	198,764	14,481	-	14,481
PT. Krakatau POSCO	-	-	-	243,175	-	243,175
POSCO Maharashtra Steel Pvt. Ltd.	756,998	-	756,998	175,354	-	175,354
Other affiliates of POSCO	762,193	21	762,214	232,280	63,579	295,859
	₩ 4,573,277	₩ 68,985	₩ 4,642,262	₩ 7,241,273	₩ 188,751	₩ 7,430,024

31. Related party transactions (cont'd)

(*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.

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

	2018					
	Receivables and others			Payables and others		
	Trade receivables	Others	Total	Trade payables	Others	Total
Parent company:						
POSCO	₩ 17,792	₩ 1,559	₩ 19,351	₩ 434,066	₩ 9,329	₩ 443,395
Associates:						
POSCO Mexico Processing Center Holding LLC	124,080	-	124,080	-	-	-
PT. Batutua Tembaga Raya	-	35,271	35,271	-	-	-
POSCO-ESDC Ltd.	-	-	-	-	497	497
POSCO IJPC	12,192	-	12,192	-	-	-
Shanghai Lansheng DAEWOO Corp.	99	2,606	2,705	-	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	-	65,912	65,912	-	-	-
South-East Asia Gas Pipeline Company Limited	-	191,107	191,107	-	-	-
Global Komsco Daewoo LLC	-	785	785	-	13	13
Yulchon Mexico S.A. DE C.V	618	-	618	-	8	8
Sebang steel	-	-	-	52	-	52
POSCO-Malaysia SDN. BHD	18,023	-	18,023	1,067	-	1,067
POSCO-ITPC	26,658	-	26,658	-	-	-
Hunchun POSCO Hyundai International Logisitcs Complex Development Co., Ltd	835	-	835	-	-	-
TK-Chemical Co., Ltd	40,684	-	40,684	4,949	-	4,949
Others:						
POSCO Asia Co., Ltd.	9,200	-	9,200	290,206	21,355	311,561
POSCO-Vietnam	62,532	-	62,532	2,014	-	2,014
POSCO-Thainox	19,246	-	19,246	6,500	-	6,500
POSCO Assan TST Steel Industry A.S.	318,981	99	319,080	3,414	93	3,507
POSCO-AAPC	12,549	-	12,549	407	-	407
POSCO Coated & Color Steel Co., Ltd.	6,064	-	6,064	19,815	1	19,816
POSCO America Corp.	7,319	-	7,319	4,751	9	4,760
Zhangjiagang Pohang Stainless Steel Co,. Ltd.	21,381	-	21,381	-	-	-
POSCO-Foshan Steel Processing Center Co., Ltd.	7,829	-	7,829	-	-	-
Companhia Siderurgica Do Pecem	62,211	-	62,211	62,596	-	62,596
POSCO Energy Co., Ltd.	-	-	-	-	1,949	1,949
POSCO VST Co., Ltd..	74,408	-	74,408	4,432	-	4,432
POSCO SS-VINA	184,547	-	184,547	1	-	1
PT.Krakatau POSCO	19,138	-	19,138	1,255	-	1,255
POSCO Maharashtra Steel Pvt. Ltd.	45,819	-	45,819	6,085	-	6,085
Other affiliates of POSCO	168,997	4,023	173,020	17,406	6,877	24,283
	₩ 1,263,548	₩ 302,782	₩ 1,566,330	₩ 859,016	₩ 41,013	₩ 900,029
U. S. dollar in thousands (Note 2)	$ 1,130,085	$ 270,800	$ 1,400,885	$ 768,282	$ 36,681	$ 804,963

31. Related party transactions (cont'd)

	2017					
	Receivables and others(*1)			Payables and others		
	Trade receivables	Others	Total	Trade payables	Others	Total
Parent company:						
POSCO	₩ 26,313	₩ 70	₩ 26,383	₩ 480,939	₩ 19,636	₩ 500,575
Associates:						
POSCO Mexico Processing Center Holding LLC	107,892	5	107,897	321	-	321
SPH Co., Ltd.	5	-	5	-	-	-
PT. Batutua Tembaga Raya	-	29,048	29,048	3	-	3
POSCO-ESDC LTD.	-	-	-	-	271	271
POSCO IJPC	11,790	-	11,790	-	-	-
Shanghai Lansheng Daewoo Corporation	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	-	75,702	75,702	-	-	-
South-east Asia Gas Pipeline Co Ltd	-	229,880	229,880	-	-	-
Global Komsco Daewoo LLC	-	600	600	247	41	288
Yulchon Mexico S.A. DE C.V.	402	-	402	-	-	-
Sebang Steel	-	-	-	50	-	50
Others:						
POSCO Asia Co., Ltd	7,348	-	7,348	200,002	10,736	210,738
POSCO-Vietnam	31,073	-	31,073	4,229	-	4,229
POSCO-Thainox	10,649	-	10,649	4,198	-	4,198
POSCO Assan TST Steel Industry A.S.	249,677	139	249,816	2,821	143	2,964
POSCO-AAPC	14,752	-	14,752	678	-	678
POSCO C&C Co., Ltd.	4,904	-	4,904	16,973	-	16,973
POSCO America Corp.	1,279	-	1,279	285	-	285
Zhangjiagang Pohang Stainless Steel Co., Ltd.	12,590	-	12,590	-	3,279	3,279
POSCO-Foshan Steel Processing Center Co., Ltd.	7,029	-	7,029	59	-	59
Companhia Siderurgica Do Pecem	27,205	13,353	40,558	-	-	-
POSCO-Malaysia SDN.BHD.	2,246	-	2,246	660	-	660
POSCO-ITPC	16,891	-	16,891	675	-	675
POSCO Energy Co., Ltd.	-	-	-	-	5,654	5,654
POSCO VST Co., Ltd.	50,211	-	50,211	2,120	-	2,120
POSCO SS-VINA	135,058	-	135,058	1,665	-	1,665
PT. Krakatau POSCO	-	-	-	19,006	-	19,006
POSCO Maharashtra Steel Pvt. LTD.	78,927	-	78,927	20,327	-	20,327
Other affiliates of POSCO	187,285	12	187,297	11,922	35,661	47,584
	₩ 988,184	₩ 349,602	₩ 1,337,786	₩ 767,180	₩ 76,303	₩ 843,484

The allowance for doubtful accounts for the above receivables for the years ended December 31, 2018 and 2017 amounted to ₩343 million ($307 thousand) and ₩2,331 million ($2,085 thousand), respectively.

(*1) Other receivables from DMSA/AMSA, South-east Asia Gas Pipeline Company Limited ("SEAGP"), and PT. Batutua Tembaga Raya include loan investments in accordance with the relevant agreements. The changes in such loan investments during the year ended December 31, 2018 are as follows (Korean won in millions):

31. Related party transactions (cont'd)

	Beginning balance	Increase(*)	Decrease	Debt-for-Equity Swap	Foreign exchange translation and others	Ending balance
DMSA/AMSA	₩ 69,713	₩ 9,623	₩ -	₩ (17,559)	₩ 2,520	₩ 64,297
SEAGP	229,880	-	(47,569)	-	8,796	191,107
PT. Batutua Tembaga Raya	29,089	-	-	-	1,267	30,356
	₩ 328,682	₩ 9,623	₩ (47,569)	₩ (17,559)	₩ 12,583	₩ 285,760
U. S. dollar in thousands (Note 2)	$ 293,965	$ 8,607	$ (42,544)	$ (15,704)	$ 11,254	$ 255,576

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 the related parties

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

	Limit amount		Executed amount	
	2018	2017	2018	2017
Associate:				
Global Komsco Daewoo LLC	₩ 9,196	₩ 8,812	₩ 9,196	₩ 8,812
Other related parties:				
POSCO Assan TST Steel Industry A.S.	16,383	15,699	16,383	15,699
	₩ 25,579	₩ 24,511	₩ 25,579	₩ 24,511
U. S. dollar in thousands (Note 2)	$ 22,877	$ 21,922	$ 22,877	$ 21,922

Details of asset provided to guarantee borrowing of DMSA/AMSA which are related parties as of December 31, 2018 are as follows (Korean won in millions):

Providing for	Assets provided	Guaranteed amount	Who provided	Reason
DMSA/ AMSA	Shares of DMSA/ AMSA	₩ 26,710	PF Creditors	Guarantee for PF

32. Accumulated effect of accounting change

32.1 Application of KIFRS 1109 Financial instruments

As described in Note 2, the Group 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):

	Components of other capital	Retained earnings	Non-controlling interests	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	-	(2,755)	(2)	(2,757)
Tax effects	3,099	(3,829)	-	(730)
	₩ (9,708)	₩ 6,223	₩ (2)	₩ (3,487)
U. S. dollar in thousands (Note 2)	$ (8,683)	$ 5,566	$ (2)	$ (3,119)

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 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 profit or loss (equity instrument)	Available-for –sales financial assets	Financial assets at fair value through profit or loss	18,619	18,619	-
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 Group has applied KIFRS 1115 to non-completed 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.

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

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	₩ (558)	₩ 133	₩ (424)
Performance obligation fulfilled over a period of time	(590)	143	(448)
Retained earnings adjustment –KIFRS 1115	(1,148)	276	(872)
U. S. dollar in thousands (Note 2)	$ (1,027)	$ 247	$ (780)

(*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 Group 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 Group recognizes revenue by applying the POC only if the conditions above are satisfied by analyzing the contract terms for the transaction of custom-made equipment.

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	₩ 9,830,837	₩ 50,184	₩ 9,881,021
Liabilities	6,941,104	50,378	6,991,482
Equity	2,889,734	(195)	2,889,539
Sales	25,174,523	(583)	25,173,940
Cost of goods sold & Selling and administrative expenses	24,702,854	(1,537)	24,701,317
Operating incomes	₩ 471,669	₩ 954	₩ 472,623

33. Business combination

POSCO TMC India Pvt. Ltd. located in India became a subsidiary of the Group as of January 1, 2018 as the Group acquired 74% of its shares. As per the accounting treatment for business combination under common control, the assets and liabilities of the business unit of the merged company are recognized as book values of the parent company in the consolidated financial statements and the difference between the consideration transferred was recognized as capital surplus.

Fair values of identifiable assets and liabilities of the company on the acquisition date are as follows:

	Korean won in million	U. S. dollar in thousands (Note 2)
Assets	₩ 10,987	$ 9,827
Cash and cash equivalents	148	131
Property, plant and equipment	2,977	2,663
Other assets	7,862	7,032
Liabilities	8,960	8,014
Net assets	₩ 2,027	$ 1,812
Share portion of acquisition	74%	74%
Net asset acquired	₩ 1,492	$ 1,334
Consideration transferred	₩ 861	$ 770
Goodwill	-	-

Net cash outflow of business combination is as follows:

	Korean won in million	U. S. dollar in thousands (Note 2)
Consideration transferred	₩ 861	$ 770
Less: cash and cash equivalents of the acquired subsidiary	(148)	(131)
Cash outflow	₩ 713	$ 637

34. Events after reporting period

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