

Lotte Chemical Corporation and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2017 and 2016
with the independent auditors' report



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Independent auditors' report

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Independent auditors' report

The Shareholders and Board of Directors Lotte Chemical Corporation

We have audited the accompanying consolidated financial statements of Lotte Chemical Corporation (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as at December 31, 2017 and 2016, and the consolidated statements of profit or loss and other comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility 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.

Auditors' responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the Republic of Korea. Those standards require that we comply with ethical requirements and plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements 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 entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Group as at December 31, 2017 and 2016, and its financial performance and cash flows for the years then ended in accordance with Korean International Financial Reporting Standard.



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March 8, 2018

This audit report is effective as at March 8, 2018, the independent auditors' report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the date of the independent auditors' report 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.

Lotte Chemical Corporation and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2017 and 2016

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

Kim, Gyo-Hyun
President and Chief Executive Officer
Lotte Chemical Corporation

Lotte Chemical Corporation and its subsidiaries
Consolidated statements of financial position
as at December 31, 2017 and 2016

(Korean won in thousands)

	<u>Notes</u>	<u>2017</u>	<u>2016</u>
Assets			
Current assets:			
Cash and cash equivalents	42	\ 1,685,211,989	\ 2,202,944,465
Short-term financial instruments	4	3,086,656,513	425,756,559
Financial assets at fair value through profit or loss (FVTPL)	6	2,434,730	6,685,073
Available-for-sale (AFS) financial assets	7	100,046,195	20,588,275
Trade accounts and other accounts receivable	5,41	1,667,550,761	1,551,920,459
Inventories	9	1,535,989,484	1,477,157,254
Finance lease receivables	10	138,598	138,598
Current income tax assets		15,381,901	16,403,225
Other financial assets	8,23	19,507,537	13,242,873
Other current assets	11	<u>112,551,631</u>	<u>136,839,115</u>
		8,225,469,339	5,851,675,896
Non-current assets:			
Long-term financial instruments	4	67,512,500	67,515,500
Non-current AFS financial assets	7	255,241,155	304,235,250
Non-current finance lease receivables	10	2,888,358	3,014,311
Investments in associates	12	1,438,963,136	1,288,114,097
Investments in joint ventures	13	945,616,487	848,082,771
Property, plant and equipment	15	6,716,184,181	5,546,663,157
Investment properties	16	114,606,809	99,471,563
Goodwill	17	723,796,857	723,796,857
Other intangible assets	18	986,777,410	1,068,600,007
Other non-current financial assets	4,8,23	20,253,421	20,898,713
Other non-current assets	11	15,230,235	5,552,910
Deferred tax assets	36	<u>38,431,213</u>	<u>39,213,138</u>
		<u>11,325,501,762</u>	<u>10,015,158,274</u>
Total assets		\ <u>19,550,971,101</u>	\ <u>15,866,834,170</u>

(Continued)

Lotte Chemical Corporation and its subsidiaries
Consolidated statements of financial position
as at December 31, 2017 and 2016 (cont'd)

(Korean won in thousands)

	Notes	2017	2016
Liabilities			
Current liabilities:			
Trade accounts and other accounts payable	19,41	\ 1,420,006,265	\ 1,076,521,956
Financial liabilities at FVTPL	20	133,610	-
Short-term borrowings and current portion of bonds payable	21	1,498,617,635	1,745,873,962
Income tax payables		516,405,147	365,609,756
Other financial liabilities	22,23	181,182,416	94,350,572
Other current liabilities	25	161,173,577	146,913,527
Current provisions	26	<u>13,372,649</u>	<u>19,540,529</u>
		3,790,891,299	3,448,810,302
Non-current liabilities:			
Financial liabilities at FVTPL	20	25,238,395	-
Long-term borrowings and bonds payable	21	2,703,800,471	2,439,574,476
Net defined benefit liability	24	26,509,773	23,195,913
Deferred tax liabilities	36	587,754,528	524,809,517
Other non-current financial liabilities	22,23	43,060,202	14,558,573
Other non-current liabilities	25	10,557,221	7,735,920
Non-current provisions	26	<u>108,392,151</u>	<u>7,332,298</u>
		3,505,312,741	3,017,206,697
Total liabilities		<u>7,296,204,040</u>	<u>6,466,016,999</u>
Equity			
Equity attributable to equity holders of the parent:			
Issued capital	27	171,377,095	171,377,095
Other paid-in capital	28	880,743,872	478,576,150
Retained earnings	29	10,582,113,943	8,486,992,509
Other components of equity	30	<u>(144,606,746)</u>	<u>226,166,597</u>
		11,489,628,164	9,363,112,351
Non-controlling interests		<u>765,138,897</u>	<u>37,704,820</u>
Total equity		<u>12,254,767,061</u>	<u>9,400,817,171</u>
Total liabilities and equity		<u>\ 19,550,971,101</u>	<u>\ 15,866,834,170</u>

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

Lotte Chemical Corporation and its subsidiaries
Consolidated statements of profit or loss and other comprehensive income
for the years ended December 31, 2017 and 2016

(Korean won in thousands except per share amounts)

	<u>Notes</u>	<u>2017</u>	<u>2016</u>
Sales	3,31,41	\ 15,874,510,690	\ 13,223,540,874
Cost of sales	37,41	(12,081,876,223)	(9,956,835,878)
Gross profit		3,792,634,467	3,266,704,996
Selling and administrative expenses	32,37,41	(862,913,509)	(722,451,059)
Operating income	3	2,929,720,958	2,544,253,937
Finance income	3,33	253,053,656	156,147,423
Finance costs	3,34	(273,186,323)	(241,023,186)
Share of profit in associates and joint ventures	12,13	284,443,693	71,447,129
Other non-operating income	3,35	213,268,097	232,893,826
Other non-operating expenses	3,35	(322,614,040)	(276,346,029)
Income before income tax	3	3,084,686,041	2,487,373,100
Income tax expense	36	(800,109,103)	(650,188,181)
Net income		2,284,576,938	1,837,184,919
Other comprehensive income (loss)			
<i>Other comprehensive income not to be reclassified to profit or loss in subsequent periods:</i>			
Remeasurement loss on defined benefit plans	24	(14,646,011)	(5,608,108)
Retained earning adjustments in equity method	12,13	553,134	1,658,336
Foreign currency translation differences of foreign operations		(43,476,748)	1,200,129
<i>Other comprehensive income to be reclassified to profit or loss in subsequent periods:</i>			
Gain (loss) on valuation of AFS financial assets	7	12,632,614	(6,609,388)
Equity adjustments in equity method	12,13	(29,013,393)	(2,207,050)
Gain on valuation of derivative financial instruments	23	945,848	591,063
Foreign currency translation differences of foreign operations		(355,338,412)	96,884,211
		(428,342,968)	85,909,193
Total comprehensive income		\ 1,856,233,970	\ 1,923,094,112
Net income attributable to:			
Equity holders of the parent		\ 2,243,875,142	\ 1,835,812,632
Non-controlling interests		40,701,796	1,372,287
Comprehensive income attributable to:			
Equity holders of the parent		1,859,116,215	1,920,537,276
Non-controlling interests		(2,882,245)	2,556,836
Earnings per share			
Basic and diluted	38	\ 65,625	\ 54,488

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

Lotte Chemical Corporation and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2017 and 2016

(Korean won in thousands)

	Attributable to the equity holders of the parent					Non-controlling interests	Total equity
	Issued capital	Other paid-in capital	Retained earnings	Other components of equity			
As at January 1, 2016	\ 171,377,095	\ 476,522,242	\ 6,739,344,146	\ 137,507,762	\ 30,834,830	\ 7,555,586,075	
Dividends (Note 29)	-	-	(84,230,077)	-	(11,585)	(84,241,662)	
Changes in ownership interests in subsidiaries	-	2,053,908	-	-	2,884,114	4,938,022	
Business combination	-	-	-	-	1,440,625	1,440,625	
Total comprehensive income:							
Net income	-	-	1,835,812,632	-	1,372,287	1,837,184,919	
Remeasurement loss on defined benefit plans	-	-	(5,592,528)	-	(15,580)	(5,608,108)	
Retained earning adjustments in equity method	-	-	1,658,336	-	-	1,658,336	
Loss on valuation of AFS financial assets	-	-	-	(6,609,388)	-	(6,609,388)	
Equity adjustments in equity method	-	-	-	(350,440)	-	(350,440)	
Gain on valuation of derivative financial instruments	-	-	-	591,063	-	591,063	
Foreign currency translation differences of foreign operations	-	-	-	95,027,600	1,200,129	96,227,729	
	-	-	1,831,878,440	88,658,835	2,556,836	1,923,094,111	
As at December 31, 2016	\ 171,377,095	\ 478,576,150	\ 8,486,992,509	\ 226,166,597	\ 37,704,820	\ 9,400,817,171	

(Continued)

Lotte Chemical Corporation and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2017 and 2016 (cont'd)

(Korean won in thousands)

	Attributable to the equity holders of the parent					Total equity
	Issued capital	Other paid-in capital	Retained earnings	Other components of equity	Non-controlling interests	
As at January 1, 2017	\ 171,377,095	\ 478,576,150	\ 8,486,992,509	\ 226,166,597	\ 37,704,820	\ 9,400,817,171
Dividends (Note 29)	-	-	(134,768,124)	-	(14,756)	(134,782,880)
Changes in ownership interests in subsidiaries	-	204,904,997	-	-	730,331,078	935,236,075
Disposal of treasury stock	-	197,262,725	-	-	-	197,262,725
Total comprehensive income:						
Net income	-	-	2,243,875,142	-	40,701,796	2,284,576,938
Remeasurement loss on defined benefit plans	-	-	(14,538,718)	-	(107,293)	(14,646,011)
Retained earnings adjustments in equity method	-	-	553,134	-	-	553,134
Gain on valuation of AFS financial assets	-	-	-	12,632,614	-	12,632,614
Equity adjustments in equity method	-	-	-	(29,013,393)	-	(29,013,393)
Gain on valuation of derivative financial instruments	-	-	-	945,848	-	945,848
Foreign currency translation differences of foreign operations	-	-	-	(355,338,412)	(43,476,748)	(398,815,160)
	-	-	2,229,889,558	(370,773,343)	(2,882,245)	1,856,233,970
As at December 31, 2017	\ 171,377,095	\ 880,743,872	\ 10,582,113,943	\ (144,606,746)	\ 765,138,897	\ 12,254,767,061

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

Lotte Chemical Corporation and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2017 and 2016

(Korean won in thousands)

	<u>2017</u>	<u>2016</u>
Operating activities		
Net income	\ 2,284,576,938	\ 1,837,184,919
Adjustments to reconcile net income to net cash flows:		
Income tax expense	800,109,103	650,188,181
Interest income	(62,758,353)	(28,814,876)
Interest expenses	107,123,860	76,514,065
Dividend income	(794,571)	(690,201)
Share of profit in associates and joint ventures	(294,237,429)	(89,488,666)
Share of loss in associates and joint ventures	9,793,735	18,041,537
Gain on valuation of financial assets at FVTPL	(6,457,141)	(649,594)
Loss on valuation of financial liabilities at FVTPL	28,345,993	2,032,866
Gain on disposal of financial assets at FVTPL	(778,494)	-
Loss on disposal of financial liabilities at FVTPL	21,670	-
Gain on disposal of AFS financial assets	(10,574,887)	-
Loss on disposal of AFS financial assets	4,376	-
Impairment loss on AFS financial assets	48,923,000	6,329,000
Loss on foreign exchange translation	62,377,256	93,138,781
Gain on foreign exchange translation	(100,926,659)	(58,479,396)
Gain on valuation of derivative financial instruments	(700,741)	(12,258,968)
Loss on valuation of derivative financial instruments	42,982,149	565,190
Gain on settlement of derivative financial instruments	(3,050,694)	(6,580,540)
Loss on settlement of derivative financial instruments	5,685,585	7,598,904
Gain on disposal of property, plant and equipment	(1,387,455)	(401,119)
Loss on disposal of property, plant and equipment	11,072,969	20,281,471
Impairment loss on property, plant and equipment	-	19,142,620
Loss on disposal of intangible assets	24,961	-
(Reversal of) loss on valuation of inventories	(289,243)	(5,331,065)
Bad debt expenses	53,079	593,182
(Reversal of) other bad debt expenses	(7,115)	(646,950)
Depreciation	605,950,239	561,225,936
Amortization	85,212,994	67,924,995
Transfer to (reversal of) provisions	(5,476,056)	15,721,570
Pension benefits costs	42,631,246	37,277,569
Long-term employee benefits	1,913,628	2,200,807
	<u>1,364,787,005</u>	<u>1,375,435,299</u>
Changes in working capital:		
Trade accounts receivable	(172,619,571)	(128,102,962)
Other accounts receivable	20,477,189	(2,570,904)
Inventories	(100,974,124)	(125,775,162)
Other financial assets	(13,324,228)	(14,027,744)
Other assets	36,970,779	(36,060,777)
Trade accounts payable	314,219,287	153,551,640
Other accounts payable	(24,261,554)	35,301,782
Other financial liabilities	44,822,960	32,549,112
Other liabilities	16,717,672	(9,005,148)
Net defined benefit liability	(52,070,914)	(44,554,750)
	<u>69,957,496</u>	<u>(138,694,913)</u>
Income taxes paid	<u>(590,310,041)</u>	<u>(373,285,876)</u>
Net cash flows from operating activities	\ 3,129,011,398	\ 2,700,639,429

(Continued)

Lotte Chemical Corporation and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2017 and 2016 (cont'd)

(Korean won in thousands)

	<u>2017</u>	<u>2016</u>
Investing activities		
Cash inflows from investing activities:		
Decrease in short-term financial instruments	-	454,282,387
Decrease in long-term financial instruments	3,000	247,854
Proceeds from disposal of AFS financial assets	40,512,841	639,020
Decrease in other financial assets	2,005,837	3,094,321
Proceeds from disposal of property, plant and equipment	2,937,892	10,927,988
Proceeds from disposal of intangible assets	300,000	-
Interest received	52,361,499	32,124,085
Dividends received	61,409,802	30,190,201
Settlement of derivative transaction	2,597,841	3,988
	<u>162,128,712</u>	<u>531,509,844</u>
Cash outflows from investing activities:		
Increase in short-term financial instruments	2,786,597,801	10,675,647
Acquisition of financial assets at FVTPL	-	11,178,676
Increase in long-term financial instruments	1,206,738	-
Acquisition of AFS financial assets	4,739,817	125,128,200
Acquisition of investments in associates	-	418,692,212
Acquisition of investments in joint ventures	54,899,995	13,400,000
Increase in other financial instruments	9,688,917	732,074
Acquisition of property, plant and equipment	2,019,897,194	1,588,147,531
Acquisition of intangible assets	2,655,888	6,881,760
Acquisition of investment properties	-	19,136,013
Net cash outflows from business combination	-	1,902,173,556
	<u>4,879,686,350</u>	<u>4,096,145,669</u>
Net cash flows used in investing activities	(4,717,557,638)	(3,564,635,825)
Financing activities		
Cash inflows from financing activities:		
Increase in short-term borrowings	1,919,940,374	2,265,614,490
Increase in long-term borrowings	795,174,954	102,146,880
Issuance of bonds	189,446,260	758,400,400
Disposal of investments in subsidiaries	-	4,933,346
Settlement of derivative transaction	5,060,033	-
Disposal of treasury stock	213,366,140	-
Changes in ownership interests in subsidiaries	935,236,076	-
	<u>4,058,223,835</u>	<u>3,131,095,116</u>
Cash outflows from financing activities:		
Repayment of short-term borrowings	2,495,821,718	1,623,466,323
Repayment of long-term borrowings	18,998,112	49,455,039
Repayment of bonds	200,000,000	190,000,000
Dividends paid	134,782,880	84,241,662
Interest paid	90,352,011	82,409,692
Settlement of derivative transaction	3,738,865	1,018,364
	<u>2,943,693,586</u>	<u>2,030,591,080</u>
Net cash flows from financing activities	1,114,530,249	1,100,504,036
Net increase (decrease) in cash and cash equivalents	(474,015,991)	236,507,640
Cash and cash equivalents at January 1	2,202,944,465	1,942,218,656
Net foreign exchange difference	(43,716,485)	24,218,169
Cash and cash equivalents at December 31	<u>1,685,211,989</u>	<u>2,202,944,465</u>

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

Lotte Chemical Corporation and its subsidiaries
Notes to the consolidated financial statements
December 31, 2017 and 2016

1. Corporate information

1.1 Company

Lotte Chemical Corporation (the "Company") was incorporated on March 16, 1976 to manufacture and distribute a range of petrochemical products. The Company's plants are located in the Yeosu, Daesan and Ulsan Petrochemical Complex. The Company is headquartered in Seoul and its branch offices are located in Busan, Daegu and Daejeon to market its petrochemical products. The Company's shares have been listed on the KOSPI Market of the Korea Exchange (formerly, the Korea Stock Exchange) since May 30, 1991.

The Company acquired Lotte Daesan Co., Ltd. on January 1, 2009 and KP Chemical Corp. on December 27, 2012, and changed its name to its current form from Honam Petrochemical Corp.

The major shareholders of the Company as at December 31, 2017 are as follows:

Shareholders	Number of shares	Equity ownership (%)
Lotte Property & Development	10,718,818	31.27
Hotel Lotte Co., Ltd.	4,346,818	12.68
Lotte Holdings Co., Ltd.	3,186,000	9.30
Others	16,023,783	46.75
	34,275,419	100.00

1.2 Consolidated subsidiaries

(1) Details of the Company's subsidiaries included in consolidation as at December 31, 2017 and 2016 are as follows:

Subsidiary	Year-end	Principal business activities	2017		Country of domicile
			Equity ownership (%)	Non-controlling interests (%)	
Lotte Chemical Trading (Shanghai) Corp.	December 31	Wholesale	100.00	-	China
Lotte Chemical Engineering Plastics (Jiaying) Co., Ltd.	December 31	Chemical production	100.00	-	China
Lotte Chemical (Jiaying) Corp.	December 31	Chemical production	100.00	-	China
Lotte Chemical Titan Holding Berhad and its subsidiaries (*1)	December 31	Chemical production	76.01	23.99	Malaysia and others
Sambark LFT Co., Ltd.	December 31	Chemical production	99.51	0.49	Korea
DACC Aerospace Co., Ltd.	December 31	Parts production	100.00	-	Korea
Lotte Chemical Alabama Corp.	December 31	Chemical production	100.00	-	United States
Lotte Chemical Engineering Plastics (Hefei) Co., Ltd.	December 31	Chemical production	100.00	-	China
KP Chemtech Corp.	December 31	Chemical production	100.00	-	Korea
Lotte Chemical Pakistan Limited	December 31	Chemical production	75.01	24.99	Pakistan
Lotte Chemical UK Limited	December 31	Chemical production	100.00	-	United Kingdom
Lotte Chemical Poland Sp. zo.o.	December 31	Wholesale	100.00	-	Poland
Lotte Chemical USA Corp. and its subsidiaries (*2)	December 31	Chemical production	90.41	9.59	United States
Lotte Chemical Engineering Plastic (Shenyang) Co., Ltd.	December 31	Chemical production	100.00	-	China
Lotte Advanced Materials Co., Ltd. and its subsidiaries (*3)	December 31	Chemical production	100.00	-	Korea

Lotte Chemical Corporation and its subsidiaries
Notes to the consolidated financial statements
December 31, 2017 and 2016

1. Corporate information (cont'd)

1.2 Consolidated subsidiaries (cont'd)

Subsidiary	Year-end	Principal business activities	2016		Country of domicile
			Equity ownership (%)	Non-controlling interests (%)	
Lotte Chemical Trading (Shanghai) Corp.	December 31	Wholesale	100.00	-	China
Lotte Chemical Engineering Plastics (Jiaxing) Co., Ltd.	December 31	Chemical production	100.00	-	China
Lotte Chemical (Jiaxing) Corp.	December 31	Chemical production	100.00	-	China
Lotte Chemical Titan Holding Berhad and its subsidiaries	December 31	Chemical production	100.00	-	Malaysia and others
Sambar LFT Co., Ltd.	December 31	Chemical production	99.51	0.49	Korea
DACC Aerospace Co., Ltd.	December 31	Parts production	100.00	-	Korea
Lotte Chemical Alabama Corp.	December 31	Chemical production	100.00	-	United States
Lotte Chemical Engineering Plastics (Hefei) Co., Ltd.	December 31	Chemical production	100.00	-	China
KP Chemtech Corp.	December 31	Chemical production	100.00	-	Korea
Lotte Chemical Pakistan Limited	December 31	Chemical production	75.01	24.99	Pakistan
Lotte Chemical UK Limited	December 31	Chemical production	100.00	-	United Kingdom
Lotte Chemical Poland Sp. zo.o.	December 31	Wholesale	100.00	-	Poland
Lotte Chemical USA Corp. and its subsidiaries	December 31	Chemical production	100.00	-	United States
Lotte Chemical Engineering Plastic (Shenyang) Co., Ltd.	December 31	Chemical production	100.00	-	China
Lotte Advanced Materials Co., Ltd. and its subsidiaries (*3)	December 31	Chemical production	100.00	-	Korea

(*1) On July 11, 2017, Lotte Chemical Titan Holding Berhad, a subsidiary of the Group, newly issued 580,000,000 common shares at the Malaysian Stock Exchange, which resulted in a change in the Group's equity ownership from 100% to 76.01%, considering treasury stocks.

(*2) As a result of the aforementioned capital increase of Lotte Chemical Titan Holding Berhad, the equity ownership of Lotte Chemical USA Corp., which is owned by Lotte Chemical Titan Holding Berhad, has been changed from 40% to 30.41% and the Group's equity ownership of Lotte Chemical USA Corp. has also been changed from 100% to 90.41%.

(*3) The Company has entered into a shareholder agreement with Samsung SDI Co., a non-controlling interest shareholder of Lotte Advanced Materials Co., Ltd. Under the agreement, the Company has been granted with put and call options on the entire common stock of Lotte Advanced Materials Co., Ltd. owned by Samsung SDI Co. when the Company acquired 90% equity interest in Lotte Advance Material Co., Ltd. Accordingly, the Company is deemed to have acquired the remaining 10% equity interest from Samsung SDI Co. and the equity interest is added to the acquisition cost while option prices are accounted for as long-term borrowings (see Note 13).

(2) Changes of scope in consolidation for the year ended December 31, 2016 are as follows:

	Entity	Description
Newly included	Lotte Advanced Materials Co., Ltd. and its subsidiaries	Newly acquired

Lotte Chemical Corporation and its subsidiaries
Notes to the consolidated financial statements
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1. Corporate information (cont'd)

1.2 Consolidated subsidiaries (cont'd)

(3) Summarized financial position of subsidiaries as at December 31, 2017 and 2016 is as follows (Korean won in thousands):

	2017					
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Controlling interests	Non-controlling interests
Lotte Chemical Trading (Shanghai) Corp.	54,371,271	30,658,424	47,928,674	-	37,101,021	-
Lotte Chemical Engineering Plastics (Jiaxing) Co., Ltd.	41,617,411	11,319,136	8,674,212	-	44,262,335	-
Lotte Chemical (Jiaxing) Corp.	53,674,115	64,296,052	37,919,375	40,020,149	40,030,643	-
Lotte Chemical Titan Holding Berhad and its subsidiaries	1,513,859,047	1,972,341,228	223,861,833	205,319,008	3,051,801,034	5,218,400
Sambark LFT Co., Ltd.	34,556,348	23,973,448	21,833,473	2,163,802	34,532,521	-
DACC Aerospace Co., Ltd.	8,367,607	11,750,097	4,641,006	15,958,867	(482,169)	-
Lotte Chemical Alabama Corp.	10,082,487	8,150,096	5,566,158	-	12,666,425	-
Lotte Chemical Engineering Plastics (Hefei) Co., Ltd.	8,191,776	12,903,669	2,448,622	5,236,800	13,410,023	-
KP Chemtech Corp.	42,923,326	12,199,034	28,067,857	844,366	26,210,137	-
Lotte Chemical Pakistan Limited	127,121,205	71,524,139	94,339,864	951,349	103,354,131	-
Lotte Chemical UK Limited	174,763,881	98,599,444	227,780,310	139,634,410	(94,051,395)	-
Lotte Chemical Poland Sp. zo.o.	17,335,286	90,522	16,879,356	44,701	501,751	-
Lotte Chemical USA Corp. and its subsidiaries	122,441,137	1,935,986,718	10,429,096	696,155,068	1,351,843,691	-
Lotte Chemical Engineering Plastics (Shenyang) Co., Ltd.	5,204,115	12,400,365	2,792,067	-	14,812,413	-
Lotte Advanced Materials Co., Ltd. and its subsidiaries	1,148,051,578	921,493,251	467,755,349	12,703,960	1,587,071,810	2,013,710

	2016					
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Controlling interests	Non-controlling interests
Lotte Chemical Trading (Shanghai) Corp.	92,534,208	23,821,723	82,414,155	-	33,941,776	-
Lotte Chemical Engineering Plastics (Jiaxing) Co., Ltd.	39,573,334	14,071,394	11,740,435	-	41,904,293	-
Lotte Chemical (Jiaxing) Corp.	47,220,275	59,106,924	14,739,113	54,054,348	37,533,738	-
Lotte Chemical Titan Holding Sdn. Bhd. and its subsidiaries	896,717,890	1,548,882,538	170,497,841	107,033,588	2,161,980,408	6,088,591
Sambark LFT Co., Ltd.	28,367,974	25,541,285	19,197,153	3,306,410	31,405,696	-
DACC Aerospace Co., Ltd.	6,367,297	11,610,233	4,754,529	15,833,484	(2,610,483)	-
Lotte Chemical Alabama Corp.	8,404,041	10,103,679	4,531,606	725,100	13,251,014	-
Lotte Chemical Engineering Plastics (Hefei) Co., Ltd.	9,219,397	14,400,733	3,459,085	5,544,320	14,616,725	-
KP Chemtech Corp.	35,141,615	13,526,037	22,018,284	1,002,710	25,646,658	-
Lotte Chemical Pakistan Limited	122,925,585	79,291,268	82,876,210	868,947	118,471,696	-
Lotte Chemical UK Limited	132,452,931	97,340,508	314,255,759	-	(84,462,320)	-
Lotte Chemical Poland Sp. zo.o.	14,695,957	19,961	14,861,645	-	(145,727)	-
Lotte Chemical USA Corp. and its subsidiaries	53,978,641	983,775,481	4,622,459	-	1,033,131,663	-
Lotte Chemical Engineering Plastics (Shenyang) Co., Ltd.	5,501,173	11,320,142	143,838	-	16,677,477	-
Lotte Advanced Material Co., Ltd. and its subsidiaries	899,555,308	886,653,357	444,296,628	247,462	1,339,939,342	1,725,233

Lotte Chemical Corporation and its subsidiaries
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1. Corporate information (cont'd)

1.2 Consolidated subsidiaries (cont'd)

(4) Summarized financial performance of subsidiaries for the years ended December 31, 2017 and 2016 is as follows (Korean won in thousands):

	2017					
	Sales	Operating income (loss)	Net income (loss)	Total comprehensive income (loss)	Net income attributable to non- controlling interests	Total comprehensive income (loss) attributable to non- controlling interests
Lotte Chemical Trading (Shanghai) Corp.	289,344,341	4,591,443	5,159,234	5,159,234	-	-
Lotte Chemical Engineering Plastics (Jiaxing) Co., Ltd.	77,183,723	7,089,709	4,791,307	4,791,307	-	-
Lotte Chemical (Jiaxing) Corp.	132,557,397	(2,201,343)	(2,204,096)	(2,204,096)	-	-
Lotte Chemical Titan Holding Berhad and its subsidiaries	2,044,940,846	280,778,950	268,918,598	309,949,214	(189,419)	(870,191)
Sambark LFT Co., Ltd.	96,259,296	7,432,726	6,442,200	6,567,009	-	-
DACC Aerospace Co., Ltd.	20,162,864	2,471,148	2,072,139	2,128,314	-	-
Lotte Chemical Alabama Corp.	19,571,939	1,386,929	969,660	969,660	-	-
Lotte Chemical Engineering Plastics (Hefei) Co., Ltd.	13,329,080	(65,148)	(405,193)	(405,193)	-	-
KP Chemtech Corp.	175,244,354	800,817	397,819	563,479	-	-
Lotte Chemical Pakistan Limited	397,748,641	8,090,012	4,428,066	4,317,457	-	-
Lotte Chemical UK Limited	357,267,673	(3,197,353)	(12,039,626)	(12,039,626)	-	-
Lotte Chemical Poland Sp. zo.o.	53,581,361	274,225	643,692	643,692	-	-
Lotte Chemical USA Corp. and its subsidiaries	-	(8,030,671)	(14,851,519)	(14,851,519)	-	-
Lotte Chemical Engineering Plastics (Shenyang) Co., Ltd.	547,237	(1,009,150)	(961,919)	(961,919)	-	-
Lotte Advanced Materials Co., Ltd. and its subsidiaries	2,894,156,122	332,591,758	250,951,722	247,420,945	340,131	288,478
	2016					
	Sales	Operating income (loss)	Net income (loss)	Total comprehensive income (loss)	Net income attributable to non- controlling interests	Total comprehensive income attributable to non- controlling interests
Lotte Chemical Trading (Shanghai) Corp.	298,488,417	10,685,338	7,530,459	7,530,459	-	-
Lotte Chemical Engineering Plastics (Jiaxing) Co., Ltd.	80,961,433	11,035,452	7,840,797	7,840,797	-	-
Lotte Chemical (Jiaxing) Corp.	134,655,727	(1,636,704)	(6,544,645)	(6,544,645)	-	-
Lotte Chemical Titan Holding Berhad and its subsidiaries	2,285,117,299	505,865,264	377,774,853	377,013,591	195,616	407,268
Sambark LFT Co., Ltd.	77,287,625	9,195,279	6,704,767	6,659,414	-	-
DACC Aerospace Co., Ltd.	19,668,012	2,983,905	1,346,294	1,384,761	-	-
Lotte Chemical Alabama Corp.	20,035,731	2,551,280	2,614,921	2,514,764	-	-
Lotte Chemical Engineering Plastics (Hefei) Co., Ltd.	15,332,325	1,243,909	962,836	962,836	-	-
KP Chemtech Corp.	141,496,595	(2,261,896)	(2,771,920)	(2,313,798)	-	-
Lotte Chemical Pakistan Limited	385,418,188	3,266,506	3,588,047	3,526,509	-	-
Lotte Chemical UK Limited	273,504,078	(10,518,666)	(19,152,122)	(19,152,122)	-	-
Lotte Chemical Poland Sp. zo.o.	42,196,112	(20,068)	(331,753)	(331,616)	-	-
Lotte Chemical USA Corp. and its subsidiaries	-	(242,176)	(6,771)	(6,771)	-	-
Lotte Chemical Engineering Plastics (Shenyang) Co., Ltd.	-	(647,896)	(577,266)	(577,266)	-	-
Lotte Advanced Material Co., Ltd. and its subsidiaries (*1)	1,950,761,669	239,750,037	180,976,443	172,374,084	239,262	296,192

(*1) Includes only the financial results after the Company's acquisition date of the equity interest.

Lotte Chemical Corporation and its subsidiaries
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1. Corporate information (cont'd)

1.2 Consolidated subsidiaries (cont'd)

(5) Details of non-controlling interests in subsidiaries as at and for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017				
	Equity interest (%)	Non-controlling interests	Net income (loss) attributable to non-controlling interests	Total comprehensive income (loss) attributable to non-controlling interests	Dividends paid to non-controlling interests
Lotte Chemical Titan Holding Berhad and its subsidiaries (*1)	23.99	\ 607,288,310	\ 39,602,277	\ 4,915,899	\ -
Sambark LFT Co., Ltd.	0.49	169,764	32,534	33,148	14,756
Lotte Chemical Pakistan Limited	24.99	25,967,207	1,114,471	(392,903)	-
Lotte Chemical USA Corp. and its subsidiaries	9.59	129,699,906	(387,618)	(7,778,521)	-
Lotte Advanced Material Co., Ltd. and its subsidiaries (*2)	-	2,013,710	340,131	340,131	-
		<u>\ 765,138,897</u>	<u>\ 40,701,796</u>	<u>\ (2,882,246)</u>	<u>\ 14,756</u>

	2016				
	Equity interest (%)	Non-controlling interests	Net income (loss) attributable to non-controlling interests	Total comprehensive income (loss) attributable to non-controlling interests	Dividends paid to non-controlling interests
Lotte Chemical Titan Holding Berhad and its subsidiaries (*1)	-	\ 6,088,591	\ 195,616	\ 407,268	\ -
Sambark LFT Co., Ltd.	0.49	153,539	32,859	32,390	-
Lotte Chemical Pakistan Limited	24.99	29,737,457	904,550	1,820,984	-
Lotte Advanced Material Co., Ltd. and its subsidiaries (*2)	-	1,725,233	239,262	296,193	11,585
		<u>\ 37,704,820</u>	<u>\ 1,372,287</u>	<u>\ 2,556,835</u>	<u>\ 11,585</u>

(*1) Represents financial information attributable to the non-controlling interests of Lotte Chemical Titan Holding Sdn. Bhd. and its subsidiaries.

(*2) Represents financial information attributable to the non-controlling interests of Lotte Advanced Material Co., Ltd and its subsidiaries.

(6) Changes in equity ownership in subsidiaries without loss of control for the year ended December 31, 2017 are as follows (Korean won in thousands):

	2017				
	Equity ownership before change (%)	Equity ownership after change (%)	Consideration paid	Changes in non-controlling interests	Changes in other paid-in capital
Lotte Chemical Titan Holding Berhad and its subsidiaries	100.00	76.01	\ 935,236,076	\ 591,974,231	\ 343,261,845
Lotte Chemical USA Corp. and its subsidiaries	100.00	90.41	-	138,356,848	(138,356,848)

2. Basis of preparation and summary of significant accounting policies

2.1 Basis of preparation

The Company and its subsidiaries (collectively, the "Group") have prepared statutory consolidated financial statements 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.

Significant accounting policies used for the preparation of the consolidated financial statements are stated below. Except for the new and amended standards and interpretations effective as at January 1, 2017, these accounting policies have been applied consistently for the current and the comparative periods.

The consolidated financial statements have been prepared on a historical cost basis, except for certain non-current assets and financial instruments that are measured at revalued amounts or fair values, as explained below. Historical cost is generally measured at the fair value of the consideration given.

The Group's consolidated financial statements for submission to the annual shareholders' meeting have been approved by the Board of Directors on February 23, 2018.

(1) The following new standards and amendments to KIFRS have been applied in the current year. The nature and the impact of each new standard or amendment is described below:

Amendments to KIFRS 1007 *Statement of Cash Flows: Disclosure Initiative*

The amendments require entities to provide disclosure of changes in their liabilities arising from financing activities, including both changes arising from cash flows and non-cash changes (such as foreign exchange gains or losses). The Group has provided the information for both the current and the comparative periods in Note 43.

Amendments to KIFRS 1012 *Income Taxes: Recognition of Deferred Tax Assets for Unrealised Losses*

The amendments clarify that an entity needs to consider whether tax law restricts the sources of taxable profits against which it may make deductions on the reversal of deductible temporary difference related to unrealized losses. Furthermore, the amendments provide guidance on how an entity should determine future taxable profits and explain the circumstances in which taxable profit may include the recovery of some assets for more than their carrying amount. These amendments do not have any impact on the Group.

Annual Improvements Cycle - 2014-2016

The major components of the annual improvements cycle 2014-2016 adopted by the Group since January 1, 2017 are as follows. These amendments do not have any impact on the consolidated financial statements of the Group.

Amendments to KIFRS 1112 *Disclosure of Interests in Other Entities: Clarification of the scope of disclosure requirements in KIFRS 1112*

The amendments clarify that the disclosure requirements in KIFRS 1112, other than those in paragraphs B10–B16, apply to an entity's interest in a subsidiary, a joint venture or an associate (or a portion of its interest in a joint venture or an associate) that is classified (or included in a disposal group that is classified) as held for sale.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.1 Basis of preparation (cont'd)

(2) 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.

KIFRS 1109 *Financial Instruments*

KIFRS 1109 *Financial Instruments*, issued on September 25, 2015, is effective for annual periods beginning on or after January 1, 2018, with early application permitted. The final version of KIFRS 1109 will replace KIFRS 1039 *Financial Instruments: Recognition and Measurement* and all previous versions of KIFRS 1109. The Group plans to adopt KIFRS 1109 from the annual periods beginning on or after January 1, 2018.

Under the standard, retrospective application is required, but providing comparative information is not compulsory for certain cases such as classification and measurement of financial instruments, and impairment. For hedge accounting, the requirements are generally applied prospectively, with some limited exceptions such as accounting for time value of options.

The main features of the standard include: a business model for the managing financial assets; classification and measurement of financial assets based on contractual cash flow characteristics of financial assets; an impairment model for financial instruments based on expected credit losses; the hedged item that meet the requirements of hedge accounting, increases in hedging instruments, or changes in the evaluation method for hedge effectiveness.

The effective implementation of the standard will likely require analyses on financial effects, establishment of accounting policies, development of an accounting system, and stabilization of the system. The effect on the financial statements for the first-time adoption of the standard may differ depending on the selection and judgment of accounting policies in accordance with the standard, as well as the Group's financial instruments and economic conditions during the period.

The Group is conducting a preliminary assessment of the potential impact on the 2017 consolidated financial statements based on the current status and information available as at December 31, 2017 to assess the financial impact of the first adoption of KIFRS 1109.

Classification and measurement of financial assets

KIFRS 1109 requires the Group to classify financial instruments as subsequently measured at amortized cost, fair value through other comprehensive income (FVOCI), or fair value through profit or loss (FVTPL), on the basis of the holder's business model and instrument's contractual cash flow characteristics as shown below. Hybrid contracts with hosts that are assets, are classified in their entirety instead of bifurcating the embedded derivatives.

Objective of the business model	Characteristics of contractual cash flows	
	Composed solely of principal and interest	Other
Collecting contractual cash flows	Subsequently measured at amortized cost (*1)	
Collecting contractual cash flows and selling	FVOCI (*1)	FVTPL (*2)
Selling or other purposes	FVTPL	

(*1) An entity may irrevocably designate a financial asset as measured at FVTPL if doing so eliminates or reduces an accounting mismatch.

(*2) An entity may make an irrevocable election to present in OCI changes in the fair value of an investment in an equity instrument that is not held for trading.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.1 Basis of preparation (cont'd)

The requirements for classifying the financial assets as measured at amortized cost or FVOCI under the standard are more stringent than the requirements of the current KIFRS 1039; as a result, the increase in the proportion of financial assets subject to FVTPL measurement may increase the volatility in profit or loss upon adoption of KIFRS 1109.

As at December 31, 2017, the Group has loans and receivables of ₩ 6,546,295 million, AFS financial assets of ₩ 355,287 million, derivative assets designated as a hedge of ₩ 1,059 million and financial assets at FVTPL of ₩ 4,567 million.

Classification and measurement of financial liabilities

Based on the new KIFRS 1109, changes in the fair value of a financial liability designated as measured at FVTPL that arise from changes in the liability's credit risk are presented in OCI, instead of profit or loss. The changes in the liability's credit risk are recognized in profit or loss if the changes create or enlarge an accounting mismatch had it been presented in OCI.

Some of the changes in the fair value of financial liabilities designated as at FVTPL, which were recognized in profit or loss under the current KIFRS 1039, are presented in OCI; therefore, gains and losses on valuation of financial liabilities may decrease.

As at December 31, 2017, the Group has designated ₩25,372 million of the financial liabilities of ₩5,872,039 million as a financial liability measured at FVTPL and the fair value decrease of the financial liabilities amounting to ₩28,346 million was recognized as a loss for the year ended December 31, 2017.

According to the preliminary assessment results, maturity profiles of financial liabilities at FVTPL as at December 31, 2017 are mostly short and credit risk fluctuation of financial liabilities is insignificant, therefore the impact of financial liabilities on financial statements will not be significant upon adoption of KIFRS 1109.

Impairment: financial assets and contract assets

Under the current KIFRS 1039, impairment losses are recognized when there is objective evidence of impairment based on an incurred loss model; however, under KIFRS 1109, impairment losses are recognized on debt instruments, lease receivables, contract assets, loan commitment, and financial guarantee contracts that were accounted for at amortized cost, or FVOCI, based on an expected credit loss impairment model.

KIFRS 1109 outlines a three-stage model for 12-month expected credit losses, or lifetime expected credit losses based on changes in credit risk since initial recognition of financial assets; as a result, credit losses can be recognized earlier than the current KIFRS 1039.

Classification (*1)		Loss allowance
Stage 1	Credit risk on a financial instrument has not increased significantly since initial recognition. (*2)	12-month ECL: Expected credit losses that result from default events that are possible within 12 months after the reporting date
Stage 2	Credit risk on a financial instrument has increased significantly since initial recognition.	Lifetime ECL: Expected credit losses that result from all possible default events over the expected life of the financial instrument
Stage 3	Credit-impaired	

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.1 Basis of preparation (cont'd)

- (*1) For trade receivables or contract assets in accordance with KIFRS 1115 *Revenue from Contracts with Customers*, which does not contain a significant financing component, the Group is to measure the loss allowance at an amount equal to lifetime expected credit losses; however, if it contains a significant financial component, the Group can choose as its accounting policy to measure the loss allowance at an amount equal to lifetime expected credit losses. For lease receivables, the Group may choose as its accounting policy to measure the loss allowance at an amount equal to lifetime expected credit losses.
- (*2) For financial instruments with low credit risk at the reporting date, it may be considered that the credit risk did not increase significantly.

Under KIFRS 1109, the Group is to recognize the cumulative changes in lifetime expected credit losses since initial recognition as a loss allowance for a financial asset that is considered credit-impaired at initial recognition.

As at December 31, 2017, the Group holds loans and receivables, of ₩6,547,630 million designated as measured at amortized cost, and recognized a loss allowance of ₩1,335 million for the instrument.

KIFRS 1115 *Revenue from Contracts with Customers*

KIFRS 1115 *Revenue from Contracts with Customers*, which was issued on November 6, 2015, is effective for annual periods beginning on or after 1 January 2018, with early application permitted. The new standard will supersede the following KIFRS: KIFRS 1018 *Revenue*, KIFRS 1011 *Construction Contracts*, KIFRS 2031 *Revenue-Barter Transactions Involving Advertising Services*, KIFRS 2113 *Customer Loyalty Programmes*, KIFRS 2115 *Agreements for the Construction of Real Estate*, and KIFRS 2118 *Transfers of Assets from Customers*.

The Group applies KIFRS 1115 beginning on or after January 1, 2018, with the cumulative effect of initial adoption to be recognized as retained earnings effective January 1, 2018.

The current KIFRS 1018 provides the criteria for the recognition of revenue relating to: sale of goods, rendering of services, interest, royalties, dividends and construction contracts; however, under the new KIFRS 1115, revenue is recognized by applying a five-stage revenue recognition model (① Identify a contract with a customer. → ② Identify the performance obligations in the contract. → ③ Determine the transaction price → ④ Allocate the transaction price to the separate performance obligations in the contract. → ⑤ Recognize revenue when the entity satisfies a performance obligation) to its all contracts with customers.

For the purpose of adopting KIFRS 1115, the Group has formed a task force team consisting of members of the accounting department and an accounting firm, which is an external consultant, on October 2017. In conjunction with an assistance from the relevant business division, the Group analyzed the profit structure of the Group. KIFRS 1115 will affect not only certain accounting treatments but also overall business operations including, but not limited to, sales strategies and activities. As a result, the Group has provided trainings to its employees in relation to the adoption of the new standards and regularly reports to management the adoption plan and the progress status.

The Group has performed a financial impact assessment of KIFRS 1115 on its consolidated financial statements, and the results are as follows. This assessment is based on available information as at December 31, 2017 and may be subject to changes arising from further information available to the Group in the future.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.1 Basis of preparation (cont'd)

1) Identifying performance obligation

The Group's exports are classified into direct exports and local exports. For some of the direct exports, the terms of the CFR and CIF in accordance with the International Rules for Interpretation of Trade Terms (INCOTERMS 2010) issued by the International Chamber of Commerce (ICC) are applied. On adoption of KIFRS 1115, the maritime transport that the Group provides in accordance with the related terms is identified as a separate performance obligation distinct from the supply of goods. In the case of the Group, revenue from the transportation service is included in the existing transaction price, and the cost of the service, which has been recognized as selling, general and administrative expenses, is recognized as cost of revenue.

The Group is analyzing the financial impacts as at December 31, 2017, and the Group expects no significant impact on its consolidated financial statements except for reclassification.

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 recognised in full. Any gain or loss resulting from the sale or contribution of assets that do not constitute a business, however, is recognised only to the extent of unrelated investors' interests in the associate or joint venture. The IASB has deferred the effective date of these amendments indefinitely, but an entity that early adopts the amendments must apply them prospectively. These amendments are not expected to have any impact on the Group.

KIFRS 1102 *Classification and Measurement of Share-based Payment Transactions* — Amendments to KIFRS 1102

The KASB issued amendments to KIFRS 1102 *Share-based Payment* that address three main areas: the effects of vesting conditions on the measurement of a cash-settled share-based payment transaction; the classification of a share-based payment transaction with net settlement features for withholding tax obligations; and accounting where a modification to the terms and conditions of a share-based payment transaction changes its classification from cash settled to equity settled.

On adoption, entities are required to apply the amendments without restating prior periods, but retrospective application is permitted if elected for all three amendments and other criteria are met. The amendments are effective for annual periods beginning on or after January 1, 2018, with early application permitted. These amendments are not expected to have any impact on the Group.

KIFRS 1116 *Leases*

KIFRS 1116 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 recognise 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 recognise the interest expense on the lease liability and the depreciation expense on the right-of-use asset.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.1 Basis of preparation (cont'd)

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 recognise the amount of the remeasurement of the lease liability as an adjustment to the right-of-use asset. Lessor accounting under KIFRS 1116 is substantially unchanged 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 also requires lessees and lessors to make more extensive disclosures than under KIFRS 1017. KIFRS 1116 is effective for annual periods beginning on or after January 1, 2019. Early application is permitted, but not before an entity applies KIFRS 1115. A lessee can choose to apply the standard using either a full retrospective or a modified retrospective approach. The standard's transition provisions permit certain reliefs.

The Group will assess the potential effect of the amendments on its consolidated financial statements. The Group will apply these amendments on the required effective date.

Transfers of Investment Property — Amendments to KIFRS 1040

The amendments clarify when an entity should transfer property, including property under construction or development into, or out of investment property. The amendments state that a change in use occurs when the property meets, or ceases to meet, the definition of investment property and there is evidence of the change in use. A mere change in management's intentions for the use of a property does not provide evidence of a change in use. Entities should apply the amendments prospectively to changes in use that occur on or after the beginning of the annual reporting period in which the entity first applies the amendments. An entity should reassess the classification of property held at that date and, if applicable, reclassify property to reflect the conditions that exist at that date. Retrospective application in accordance with KIFRS 1008 is only permitted if it is possible without the use of hindsight. These amendments are effective for annual periods beginning on or after January 1, 2018. Early application of the amendments is permitted and must be disclosed. These amendments are not expected to have any impact on the Group's consolidated financial statements.

Annual Improvements 2014-2016 Cycle

These improvements include:

KIFRS 1101 First-time Adoption of International Financial Reporting Standards - Deletion of short-term exemptions for first-time adopters

Short-term exemptions in paragraphs E3–E7 of KIFRS 1101 were deleted because they have now served their intended purpose. The amendment is effective from January 1, 2018. This amendment is not applicable to the Group.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.1 Basis of preparation (cont'd)

KIFRS 1028 Investments in Associates and Joint Ventures - Clarification that measuring investees at fair value through profit or loss is an investment-by-investment choice

The amendments clarify that:

- An entity that is a venture capital organisation, 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.
- If an entity, that is not itself an investment entity, has an interest in an associate or joint venture that is an investment entity, the entity may, when applying the equity method, elect to retain the fair value measurement applied by that investment entity associate or joint venture to the investment entity associate's or joint venture's interests in subsidiaries. This election is made separately for each investment entity associate or joint venture, at the later of the date on which: (a) the investment entity associate or joint venture is initially recognised; (b) the associate or joint venture becomes an investment entity; and (c) the investment entity associate or joint venture first becomes a parent.

The amendments should be applied retrospectively and are effective from January 1, 2018, with earlier application permitted. If an entity applies those amendments for an earlier period, it must disclose that fact. These amendments are not expected to have any impact on the Group's consolidated financial statements.

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 recognises the non-monetary asset or non-monetary liability arising from the advance consideration. If there are multiple payments or receipts in advance, then the entity must determine the transaction date for each payment or receipt of advance consideration. Entities may apply the amendments on a fully retrospective basis. Alternatively, an entity may apply the Interpretation prospectively to all assets, expenses and income in its scope that are initially recognised on or after:

- (i) The beginning of the reporting period in which the entity first applies the interpretation, or
- (ii) The beginning of a prior reporting period presented as comparative information in the financial statements of the reporting period in which the entity first applies the interpretation.

The Interpretation is effective for annual periods beginning on or after January 1, 2018. Early application of interpretation is permitted and must be disclosed. The Group does not expect any effect on its consolidated financial statements.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.2 Basis of consolidation

The consolidated financial statements incorporate the financial statements of the Company and entities including special purpose entities controlled by the Company and its subsidiaries. Control is achieved where the Group (i) has the power over the investee; (ii) is exposed, or has rights, to variable returns from its involvement with the investee and (iii) has the ability to use its power over the investee to affect its returns. The Group reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control listed above.

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

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

Gains and losses on subsidiaries acquired or disposed of during the year are included in the consolidated statements of comprehensive income from the date the Group gains control until the date when the Group ceases to control the subsidiary. Profit or loss and each component of other comprehensive income are attributed to the owners of the Group and to the non-controlling interests. Total comprehensive income of subsidiaries is attributed to the owners 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 in line with the Group's accounting policies.

All intragroup transactions, related assets, liabilities, income and expenses are eliminated in full on consolidation.

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

When the Group loses control of a subsidiary, a gain or loss on disposal is calculated as the difference between (i) the aggregate of the fair value of the consideration received and the fair value of any retained interest and (ii) the previous carrying amount of the assets including goodwill, and liabilities of the subsidiary and any non-controlling interests.

When assets of the subsidiary are carried at revalued amounts or fair value and the related cumulative gain or loss has been recognized in OCI and accumulated in equity, the amounts previously recognized in OCI and accumulated in equity are accounted for as if the Group had directly disposed of the relevant assets (i.e., reclassified to profit or loss or transferred directly to retained earnings). The fair value of any investment retained in the former subsidiary at the date when control is lost is recognized as the fair value on initial recognition for subsequent accounting under KIFRS 1039 or, when applicable, the cost on initial recognition of an investment in an associate or a joint venture.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.3 Business combination

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

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

- Deferred tax assets or liabilities and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with KIFRS 1012 and KIFRS 1019;
- Liabilities or equity instruments related to share-based payment arrangements of the venture or share-based payment arrangements of the Group entered into to replace share-based payment arrangements of the venture are measured in accordance with KIFRS 1102 *Share-Based Payment*, at the acquisition date and
- Assets (or disposal groups) that are classified as held for sale in accordance with KIFRS 1105 *Non-Current Assets Held for Sale and Discontinued Operations*, are measured in accordance with that standard.

Goodwill is 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.

Non-controlling interests in an acquiree that are present ownership interests and entitle their holders to a proportionate share of the entity's net assets in the event of liquidation may be initially measured either at fair value or at the non-controlling interests' proportionate share of the recognized amounts of the acquiree's identifiable net assets. The choice of measurement is made on a transaction-by-transaction basis. Other types of non-controlling interests are measured at fair value or, when applicable, on the basis specified in another KIFRS.

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

The subsequent accounting for changes in the fair value of the contingent consideration that do not qualify as measurement-period adjustments depends on how the contingent consideration is classified. Contingent consideration that is classified as equity is not remeasured at subsequent reporting dates and its subsequent settlement is accounted for within equity. Contingent consideration that is classified as an asset or a liability is remeasured at subsequent reporting dates in accordance with KIFRS 1039 or KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets*, as appropriate, with the corresponding gain or loss being recognized in profit or loss.

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.3 Business combination (cont'd)

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

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

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

Any excess of the cost of acquisition over the Group's share of the net fair value of the identifiable assets, liabilities and contingent liabilities of an associate or a joint venture recognized at the date of acquisition is recognized as goodwill, which is included within the carrying amount of the investment. Any excess of the Group's share of the net fair value of the identifiable assets, liabilities and contingent liabilities over the cost of acquisition, after reassessment, is recognized immediately in profit or loss.

Upon disposal of an associate or a joint venture that results in the Group losing significant influence over that associate or joint venture, any retained investment is measured at fair value at that date and the fair value is regarded as its fair value on initial recognition as a financial asset in accordance with KIFRS 1039. The difference between the previous carrying amount of the associate or joint venture attributable to the retained interest and its fair value is included in the determination of the gain or loss on disposal of the associate or joint venture. In addition, the Group accounts for all amounts previously recognized in OCI in relation to that associate or joint venture on the same basis we would be required if that associate or joint venture had directly disposed of the related assets or liabilities. Therefore, if a gain or loss previously recognized in OCI by that associate or joint venture would be reclassified to profit or loss on the disposal of the related assets or liabilities, the Group reclassifies the gain or loss from equity to profit or loss as reclassification adjustment when it loses significant influence over that associate or joint venture.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.4 Investments in associates and joint ventures (cont'd)

When the Group reduces its ownership interest in an associate or a joint venture, but the Group continues to use the equity method, the Group reclassifies to profit or loss the proportion of the gain or loss that had previously been recognized in OCI relating to that reduction in ownership interest if that gain or loss would be reclassified to profit or loss on the disposal of the related assets or liabilities. In addition, the Group applies KIFRS 1105 to a portion of investment in an associate or a joint venture that meets the criteria to be classified as held for sale.

The requirements of KIFRS 1039 *Financial Instruments: Recognition and Measurement* are applied to determine whether it is necessary to recognize any impairment loss with respect to the Group's investment in an associate or a joint venture. When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment in accordance with KIFRS 1036 by comparing its recoverable amount (higher of value in use and fair value less costs to sell) with its carrying amount, any impairment loss recognized forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognized in accordance with KIFRS 1036 to the extent that the recoverable amount of the investment subsequently increases.

The Group continues to use the equity method when an investment in an associate becomes an investment in a joint venture or an investment in a joint venture becomes an investment in an associate.

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

2.5 Investments in joint operations

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

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

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

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

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

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.6 Goodwill

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

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

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

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

The Group's policy for goodwill arising on the acquisition of an associate is described in Note 2.4.

2.7 Non-current assets held for sale

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

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

When the Group is committed to a sale plan involving disposal of an investment, or a portion of an investment, in an associate or joint venture, the investment or the portion of the investment that will be disposed of is classified as held for sale when the criteria described above are met, and the Group discontinues the use of the equity method in relation to the portion that is classified as held for sale. Any retained portion of an investment in an associate or a joint venture that has not been classified as held for sale continues to be accounted for using the equity method. The Group discontinues the use of the equity method at the time of disposal when the disposal results in the Group losing significant influence over the associate or joint venture.

After the disposal takes place, the Group accounts for any retained interest in the associate or joint venture in accordance with KIFRS 1039 *Financial Instruments: Recognition and Measurement*, unless the retained interest continues to be an associate or a joint venture, in which case the Group uses the equity method.

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.8 Revenue recognition

Revenue is measured at the fair value of the consideration received or receivable less estimated customer returns, rebates and other similar allowances. The Group recognizes revenue when the amount of revenue can be measured reliably, when it is probable that the economic benefits associated with the transaction will flow to the Group and when the following criteria specific to each of the Group's activities are met:

(1) Sale of goods

Revenue from the sale of goods is recognized when the Group has transferred the significant risks and rewards of ownership of the goods to the buyer.

(2) Dividend and interest income

Dividend income from investments is recognized when the shareholder's right to receive payment has been established.

Interest income is accrued on a timely basis, by reference to the principal outstanding and at the effective interest rate applicable, which is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset to that asset's net carrying amount on initial recognition.

(3) Rental income

The Group's policy for recognition of revenue from operating leases is described in Note 2.9 below.

(4) Rendering of services

Revenue from rendering of services is recognized by reference to the stage of completion. To measure the revenue from rendering of services reliably, the Group uses methods to determine the progress, such as survey results on work progress, the ratio of used capabilities to total capabilities and the ratio of costs incurred to total estimated costs.

(5) License fees and royalties

License fee and royalty revenue are recognized on an accrual basis in accordance with the substance of the relevant agreement.

2.9 Lease

A lease is classified at the inception date as a finance lease or an operating lease. Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

(1) Group as a lessee

Assets held under finance leases are initially recognized as assets of the Group at their fair value at the inception of the lease or, if lower, at the present value of the minimum lease payments. The corresponding liability to the lessor is included in the consolidated statements of financial position as a finance lease payable. Lease payments are apportioned between finance expenses and reduction of the finance lease payable to achieve a constant rate of interest on the remaining balance of the liability. Finance expenses are recognized immediately in profit or loss, unless they are directly attributable to qualifying assets, in which case they are capitalized in accordance with the Group's general policy on borrowing costs (see Note 2.11). Contingent rentals are recognized as expenses in the periods in which they are incurred.

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

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.9 Lease (cont'd)

(2) Group as a lessor

In case of financial leases, financial lease receivables are recognized at the amount of the net investment in a lease. Interest income is recognized for the uncollected amount of the net investment in a financial lease using the effective interest method.

Operating lease income is recognized on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

2.10 Foreign currency translation

The Group's consolidated financial statements are presented in the currency of the primary economic environment in which the Group operates, and the functional and reporting currency of the Company is Korean won (KRW).

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

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

- Exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings;
- Exchange differences on transactions entered into in order to hedge certain foreign currency risks (see Note 2.23 for hedging accounting policies); and
- Exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur, forming part of the net investment in the foreign operation, which are recognized initially in OCI and reclassified from equity to profit or loss on disposal or partial disposal of the net investment.

These are recognized in OCI until the net investment is disposed of, at which time, the cumulative amount is reclassified to profit or loss.

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.10 Foreign currency translation (cont'd)

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

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

Goodwill and fair value adjustments arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the closing rate. Such exchange differences are recognized in equity.

2.11 Borrowing costs

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

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

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

2.12 Government subsidies

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

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

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

Government subsidies related to income are recognized in profit or loss on a systematic basis over the periods in which the Group recognizes as expenses the related costs for which the grants are intended to compensate. Government subsidies that are receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the Group with no future related costs are recognized in profit or loss in the period in which they become receivable.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.13 Pension benefits costs and termination benefits

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

For defined benefit retirement plans, the cost of providing benefits is determined using the projected unit credit method, with actuarial valuations being carried out at the end of each reporting period. Remeasurement, comprising actuarial gains and losses, the effect of the changes to the asset ceiling, if applicable, and the return on plan assets excluding interest, is reflected immediately in the statement of financial position with a charge or credit recognized in OCI in the period in which they occur. Remeasurement recognized in OCI is reflected immediately in retained earnings and will not be reclassified to profit or loss. Past service cost is recognized in profit or loss in the period of a plan amendment. Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit liability or asset. Defined benefit costs are composed of service cost including current service cost, past service cost, as well as gains and losses on curtailments and settlements, net interest expense (income) and remeasurement.

The Group presents the service cost and net interest expense (income) components in profit or loss, and the remeasurement component in OCI. Curtailment gains and losses are accounted for as past service costs.

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

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

2.14 Taxes

Income tax consists of current and deferred taxes.

(1) Current income tax

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

(2) Deferred tax

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the consolidated financial statements and the corresponding tax bases used in the computation of taxable income. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable income will be available against which those deductible temporary differences can be utilized.

Such deferred tax assets and liabilities are not recognized if the temporary difference arises from goodwill or from the initial recognition other than in a business combination of other assets and liabilities in a transaction that affects neither the taxable income nor the accounting income.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.14 Taxes (cont'd)

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

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

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

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

(3) Recognition of current income tax and deferred tax

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

2.15 Inventories

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

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.16 Financial instruments

Financial assets are recognized when a group entity becomes a party to the contractual provisions of the instruments. Financial assets are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issuance of financial assets are added to the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets at FVTPL are recognized immediately in profit or loss.

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

Financial assets are classified into the following specified categories: financial assets at FVTPL, held-to-maturity investments, AFS financial assets and loans and receivables. The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

(1) Effective interest rate method

The effective interest rate method is a method of calculating the amortized cost of a debt instrument and allocating interest income over the relevant periods. The effective interest rate is the rate that exactly discounts estimated future cash receipts including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts through the expected life of the debt instrument, or, where appropriate, a shorter period, to the net carrying amount at initial recognition.

Income is recognized on an effective interest basis for debt instruments other than those financial assets classified at FVTPL.

(2) Financial assets at FVTPL

Financial assets are classified as financial assets at FVTPL when the financial asset is either held for trading or it is designated as a financial asset at FVTPL upon initial recognition. Every financial instrument, containing one or more embedded derivatives, treated separately from the host contract, is classified as held for trading if it is a derivative that is not designated and effective as a hedge. Financial assets at FVTPL are stated at fair value, with any gains or losses arising from remeasurement recognized in profit or loss.

A financial asset is classified as held for trading if:

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

A financial asset other than a financial asset held for trading may be designated as a financial asset at FVTPL upon initial recognition if:

- Such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- The financial asset forms part of a group of financial assets or financial liabilities or both, which is managed and its performance is evaluated on a fair value basis, in accordance with the Group's documented risk management or investment strategy, and information about the grouping is provided internally on that basis or
- It forms part of a contract containing one or more embedded derivatives, and KIFRS 1039 permits the entire combined contract (asset or liability) to be designated as a financial asset at FVTPL.

Financial assets at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any dividend or interest earned on the financial asset and is included in 'finance income and costs' line in the consolidated statements of comprehensive income.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.16 Financial instruments (cont'd)

(3) Held-to-maturity investments

Non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the Group has the positive intent and ability to hold to maturity are classified as held-to-maturity investments. Held-to-maturity investments are measured at amortized cost using the effective interest rate method, less any impairment, with interest income recognized on an effective yield basis.

(4) AFS financial assets

AFS financial assets are non-derivatives that are either designated as AFS or are not classified as financial assets at FVTPL, held-to-maturity investments or loans and receivables.

They are subsequently measured at fair value at the end of each reporting period. Changes in the carrying amount of AFS monetary financial assets relating to changes in foreign currency rates (see below), interest income calculated using the effective interest method and dividends on AFS equity investments are recognized in profit or loss. Other changes in the carrying amount of AFS financial assets are recognized in OCI and accumulated in gain (loss) on valuation of AFS financial assets. When the investment is disposed of or is determined to be impaired, the cumulative gain or loss previously accumulated in gain (loss) on valuation of AFS financial assets is reclassified to profit or loss.

Dividends on AFS equity instruments are recognized in profit or loss when the Group's right to receive the dividends is established.

The fair value of AFS monetary financial assets denominated in a foreign currency is determined in that foreign currency and translated at the spot rate prevailing at the end of the reporting period. The foreign exchange gains and losses that are recognized in profit or loss are determined based on the amortized cost of the monetary asset. Other foreign exchange gains and losses are recognized in OCI.

Unquoted AFS financial assets, whose fair value cannot be measured reliably and derivative financial instruments, which are linked to unquoted equity financial assets and are settled by the delivery of such equity financial assets, are carried at acquisition cost less any impairment.

(5) Loans and receivables

Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables.' Loans and receivables are measured at amortized cost using the effective interest rate method, less any impairment. Interest income is recognized by applying the effective interest rate, except for short-term receivables when the effect of discounting is immaterial.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.16 Financial instruments (cont'd)

(6) Impairment of financial assets

Financial assets, other than those at FVTPL, are assessed for indicators of impairment at the end of each reporting period. Financial assets are considered to be impaired when there is objective evidence that events after the initial recognition of the financial asset affected changes in the estimated future cash flows of the financial asset.

For AFS equity investments, a significant or prolonged decline in the fair value of the security below its cost is considered to be objective evidence of impairment.

For all other financial assets, objective evidence of impairment could include:

- Significant financial difficulty of the issuer or counterparty;
- Default or delinquency in interest or principal payments;
- It becoming probable that the borrower will enter bankruptcy or financial reorganization or
- The disappearance of an active market for that financial asset because of financial difficulties

For certain categories of financial asset, such as trade receivables, assets that are assessed not to be impaired individually are, in addition, assessed for impairment on a collective basis. Objective evidence of impairment for a portfolio of receivables could include the Group's past experience of collecting payments, as well as observable changes in national or local economic conditions that correlate with default on receivables.

For financial assets carried at amortized cost, the amount of the impairment loss is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the current market rate of return for a similar financial asset. Such impairment loss will not be reversed in subsequent periods.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets with the exception of trade receivables, where the carrying amount is reduced through the use of an allowance account. When a trade receivable is considered uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account. Changes in the carrying amount of the allowance account are recognized in profit or loss.

When an AFS financial asset is considered to be impaired, cumulative gains or losses previously recognized in OCI are reclassified to profit or loss in that period.

For financial assets measured at amortized cost, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, the previously recognized impairment loss is reversed through profit or loss to the extent that the carrying amount of the investment at the date the impairment is reversed does not exceed what the amortized cost would have been had the impairment not been recognized.

With respect to AFS equity securities, impairment losses previously recognized in profit or loss are not reversed through profit or loss. Any increase in fair value subsequent to an impairment loss is recognized in OCI. With respect to AFS debt securities, impairment losses are subsequently reversed through profit or loss if an increase in the fair value of the investment can be objectively related to an event occurring after the recognition of the impairment loss.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.16 Financial instruments (cont'd)

(7) Derecognition of financial assets

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

On derecognition of a financial asset in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the accumulated gain or loss that had been recognized in OCI and accumulated in equity is recognized in profit or loss.

On derecognition of a financial asset other than in its entirety (e.g., when the Group retains an option to repurchase part of a transferred asset, or it retains a residual interest and such a retained interest indicates that the transferor has neither transferred nor retained substantially all the risks and rewards of ownership and has retained control of the transferred asset), the Group allocates the previous carrying amount of the financial asset between the part it continues to recognize under continuing involvement and the part it no longer recognizes on the basis of the relative fair value of those parts on the date of the transfer. The difference between the carrying amount allocated to the part that is no longer recognized and the sum of the consideration received for the part that is no longer recognized and any cumulative gain or loss allocated to it that had been recognized in OCI is recognized in profit or loss. A cumulative gain or loss that had been recognized in OCI is allocated between the part that continues to be recognized and the part that is no longer recognized on the basis of the relative fair value of those parts.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.17 Property, plant and equipment

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

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

The Group does not depreciate land. Depreciation is calculated on a straight-line basis over the estimated useful lives of the asset as follows:

	<u>Useful life (years)</u>
Buildings	10–50
Structures	15–50
Machinery	6–30
Vehicles	4–5
Fixtures and furniture	4–5
Tools and equipment	4–5
Others	1–5

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

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

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.18 Investment properties

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

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

While land is not depreciated, all other investment property is depreciated based on the respective assets' estimated useful lives ranging from 40 to 50 years using the straight-line method.

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

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

2.19 Intangible assets

(1) Intangible assets acquired separately

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

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

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

An internally generated intangible asset arising from development or from the development phase of an internal project is recognized if, and only if, it has been demonstrated the technical feasibility and development of new product and the ability to measure reliably the expenditure attributable to the intangible asset during its development.

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

Subsequent to initial recognition, internally generated intangible assets are reported at cost, less accumulated amortization and accumulated impairment losses.

(3) Intangible assets acquired in a business combination

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.19 Intangible assets (cont'd)

(4) Derecognition of intangible assets

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

(5) Estimated useful life of intangible assets

The Group does not amortize membership and goodwill acquired in business combination. Amortization is calculated on a straight-line basis over the estimated useful lives of the asset as follows:

	<u>Useful life (Years)</u>
Industrial property rights	5-10
Others	4-5
Customer relationship and others	10-15

2.20 Impairment of tangible and intangible assets other than goodwill

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

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

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

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.21 Provisions

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

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

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

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

2.22 Financial liabilities and equity instruments

(1) Classification as debt or equity

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

(2) Equity instruments

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

When the Group reacquires the Company's stock, it is less on the equity directly. The profit or loss on disposal of the treasury stock is not recognized as profit or loss.

(3) Financial liabilities

Financial liabilities are recognized when the Group becomes a party to the contractual provisions of the instruments. Financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the issue of financial liabilities are added to or deducted from the fair value of the financial liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to acquisition of financial liabilities at FVTPL are recognized immediately in profit or loss.

Financial liabilities are classified as either financial liabilities at FVTPL or other financial liabilities.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.22 Financial liabilities and equity instruments (cont'd)

(4) Financial liabilities at FVTPL

Financial liabilities are classified as financial liabilities at FVTPL when the financial liability is either held for trading or it is designated as a financial liability at FVTPL.

A financial liability is classified as held for trading if:

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

A financial liability other than a financial liability held for trading may be designated as a financial liability at FVTPL upon initial recognition if:

- Such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- The financial liability forms part of a group of financial assets or liabilities or both, which is managed and its performance is evaluated on a fair value basis, in accordance with the Group's documented risk management or investment strategy, and information about the grouping is provided internally on that basis or
- It forms part of a contract containing one or more embedded derivatives, and KIFRS 1039 permits the entire combined contract (asset or liability) to be designated as a financial liability at FVTPL

Financial liabilities at FVTPL are stated at fair value, with any gains or losses arising from remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any interest paid on the financial liability and is included in its profit or loss.

(5) Other financial liabilities

Other financial liabilities are subsequently measured at amortized cost using the effective interest rate method with interest expense recognized on an effective yield basis.

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

(6) Financial guarantee contract liabilities

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

Financial guarantee contract liabilities are initially measured at their fair values and, if not designated as a financial liability at FVTPL, are subsequently measured at the higher of:

- (a) The amount of the obligation under the contract, as determined in accordance with KIFRS 1037; and
- (b) The amount initially recognized, less cumulative amortization recognized in accordance with the KIFRS 1018 *Revenue*

(7) Derecognition of financial liabilities

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

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.23 Derivative financial instruments

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

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

A derivative with a positive fair value is recognized as a financial asset; a derivative with a negative fair value is recognized as a financial liability. A derivative is presented as a non-current asset or a non-current liability if the remaining maturity of the instrument is more than 12 months and it is not expected to be realized or settled within 12 months. Other derivatives are presented as current assets or current liabilities.

(1) Embedded derivatives

Derivatives embedded in other financial instruments or other host contracts are treated as separate derivatives when their risks and characteristics are not closely related to those of the host contracts and the host contracts are not measured as financial liabilities at FVTPL.

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

(2) Hedge accounting

The Group designates certain hedging instruments, which include derivatives, embedded derivatives and non-derivatives with respect to foreign currency risk, as either fair value hedges, cash flow hedges or hedges of net investments in foreign operations. Hedges of foreign exchange risk on firm commitments are accounted for as cash flow hedges.

At the inception of the hedge relationship, the entity documents the relationship between the hedging instrument and the hedged item, along with its risk management objectives and its strategy for undertaking various hedge transactions. Furthermore, at the inception of the hedge and on an ongoing basis, the Group documents whether the hedging instrument is highly effective in offsetting changes in fair values or cash flows of the hedged item.

(3) Fair value hedges

Changes in the fair value of derivatives that are designated and qualify as fair value hedges are recognized in profit or loss immediately, together with any changes in the fair value of the hedged asset or liability that are attributable to the hedged risk. The changes in the fair value of the hedging instrument and the change in the hedged item attributable to the hedged risk are recognized in the line item of the consolidated statements of comprehensive income related to the hedged item.

Hedge accounting is discontinued when the Group revokes the hedging relationship; when the hedging instrument expires or is sold, terminated or exercised or when it no longer qualifies for hedge accounting. The fair value adjustment to the carrying amount of the hedged item arising from the hedged risk is amortized to profit or loss from the such date.

2. Basis of preparation and summary of significant accounting policies (cont'd)

2.23 Derivative financial instruments (cont'd)

(4) Cash flow hedges

The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in other comprehensive income. The gain or loss related to the ineffective portion is recognized immediately in profit or loss.

Amounts previously recognized in other comprehensive income and accumulated in equity are reclassified to profit or loss in the periods when the hedged item is recognized in profit or loss, in the same line of the consolidated statements of comprehensive income as the recognized hedged item. However, when the forecast transaction that is hedged results in the recognition of a non-financial asset or a non-financial liability, the gains and losses previously accumulated in equity are transferred from equity and included in the initial measurement of the cost of the non-financial asset or liability.

Hedge accounting is discontinued when the Group revokes the hedging relationship; when the hedging instrument expires or is sold, terminated or exercised or it no longer qualifies for hedge accounting. Any gain or loss accumulated in equity at that time remains in equity and is recognized when the forecast transaction is ultimately recognized in profit or loss. When a forecast transaction is no longer expected to occur, the gain or loss accumulated in equity is recognized immediately in profit or loss.

2.24 Fair value

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

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

Level 1: Quoted (unadjusted) prices in active markets for identical assets or liabilities

Level 2: Inputs other than quoted prices included within level 1, that are observable for the asset or liability, either directly or indirectly and

Level 3: Unobservable inputs for the asset or liability

2.25 Significant accounting judgments, estimates and assumptions

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

The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from those estimates.

Lotte Chemical Corporation and its subsidiaries
Notes to the consolidated financial statements
December 31, 2017 and 2016

3. Segment information

Goods or services provided by each reportable business segment are as follows:

Segment	Goods or services
Monomer	Ethylene glycol (EG), Styrene Monomer (SM), Butadiene (BD), Ethylene oxide adduct (EOA), Methyl Methacrylate (MMA), Purified Terephthalic Acid (PTA) and Purified Isophthalic Acid (PIA)
Polymer	High-density Polyethylene (HDPE), Low-density Polyethylene (LDPE), Linear low-density Polyethylene (LLDPE), Polypropylene (PP), Polyethylene Terephthalate (PET), Polycarbonate (PC), Acrylonitrile Butadiene Styrene (ABS), Foamed Polystyrene (EPS) and Engineering Plastics (EP)
Basic petrochemicals	Ethylene, Propylene, Benzene, Toluene, Xylene, Para-Xylene and Ortho-Xylene
Others	Property lease and labor dispatch services, etc.

Operating results by business segment for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017					Total
	Monomer	Polymer	Primary oil content	Others	Consolidation adjustments	
Sales	4,328,764,128	9,998,110,553	2,232,472,782	162,057,233	(846,894,006)	15,874,510,690
Operating income	1,278,794,459	1,490,142,770	178,281,365	50,369,802	(67,867,438)	2,929,720,958
Finance income	102,092,013	122,681,482	14,407,977	14,643,101	(770,917)	253,053,656
Finance costs	125,015,643	127,765,424	15,853,847	6,187,375	(1,635,966)	273,186,323
Other non-operating income	122,275,575	174,908,358	16,929,786	8,438,254	(109,283,876)	213,268,097
Other non-operating expenses	178,686,547	218,734,400	24,828,058	17,299,000	(116,933,965)	322,614,040
Income before income tax	1,199,459,857	1,441,232,786	168,937,224	49,964,782	225,091,392	3,084,686,041

	2016					Total
	Monomer	Polymer	Primary oil content	Others	Consolidation adjustments	
Sales	3,536,868,903	8,752,802,969	1,520,403,818	171,847,078	(758,381,894)	13,223,540,874
Operating income	814,279,557	1,615,414,394	145,293,841	53,330,391	(84,064,247)	2,544,253,936
Finance income	57,703,433	90,525,295	8,523,576	2,004,255	(2,609,136)	156,147,423
Finance costs	87,864,441	138,375,203	12,602,163	4,435,508	(2,254,129)	241,023,186
Other non-operating income	82,952,510	193,509,460	13,245,564	1,845,620	(58,659,328)	232,893,826
Other non-operating expenses	85,454,917	200,881,549	14,531,820	7,226,246	(31,748,503)	276,346,029
Income before income tax	781,616,141	1,560,192,398	139,928,998	45,518,512	(39,882,949)	2,487,373,100

The accounting policies of the business segments are the same as those explained in Note 2. The income of each segment represents the income to which income tax expense is not allocated. The income of each segment is required to be reported on the same basis as is used internally to evaluate operating segments' performances and to decide how to allocate resources to operating segments.

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3. Segment information (cont'd)

Assets and liabilities by business segments as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017					
	Monomer	Polymer	Primary oil content	Others	Consolidation adjustments	Total
Total assets	\ 4,223,598,726	\ 6,858,957,520	\ 2,498,548,225	\ 12,074,413,018	\ (6,104,546,388)	\ 19,550,971,101
Total liabilities	1,901,379,557	2,080,630,633	1,232,108,690	2,267,821,938	(185,736,779)	7,296,204,039

	2016					
	Monomer	Polymer	Primary oil content	Others	Consolidation adjustments	Total
Total assets	\ 2,772,037,216	\ 6,428,993,695	\ 2,366,164,952	\ 10,226,374,736	\ (5,926,736,429)	\ 15,866,834,170
Total liabilities	1,159,950,714	1,817,305,208	1,252,238,701	2,253,212,956	(16,690,580)	6,466,016,999

The Group conducts operations in the Republic of Korea, Malaysia, the United Kingdom, Pakistan, China and other regions. Details of operating income and non-current assets by regions are as follows (Korean won in thousands):

	Income from external customers		Non-current assets (*1)	
	2017	2016	2017	2016
Korea	\ 12,763,884,480	\ 10,046,156,782	\ 5,151,221,036	\ 5,195,182,623
China	698,858,898	645,371,999	110,008,232	103,590,644
Malaysia	1,626,131,568	1,837,012,155	1,277,037,063	1,021,920,889
United States	214,706,848	174,961,234	1,944,402,021	997,419,259
Mexico	5,680,514	3,626,168	302,917	352,290
Indonesia	418,809,278	448,105,144	145,140,098	104,714,102
Thailand	9,045,458	6,518,869	14,088,624	388,756
Pakistan	397,748,641	385,418,188	54,928,025	59,405,742
United Kingdom	224,262,356	273,504,078	98,599,443	97,340,508
Germany	142,732,840	26,438,417	29,077,647	374,036
Poland	56,139,939	42,196,112	10,830	2,467
Hungary	32,957,136	92,613,622	330,019	12,994,571
	16,590,957,956	13,981,922,768	8,825,145,955	7,593,685,887
Consolidation adjustment	(716,447,266)	(758,381,894)	(268,550,463)	(149,601,392)
	\ 15,874,510,690	\ 13,223,540,874	\ 8,556,595,492	\ 7,444,084,495

(*1) Excluded financial instruments, investments in associates and joint ventures, deferred tax assets and pension plan assets.

Information about key customers

Due to the nature of the Group's operations, there is no major customer that accounts for 10% or more of the Group's total sales.

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4. Restricted financial instruments

Details of restricted deposits as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

Account	Bank	2017	2016	Details
Short-term financial instruments	Shinhan Bank and others	\ 13,641	\ 68,278	Development expense
Other financial assets	Deutsche Bank	6,121	11,505	Deposit for corporate purchase card
	Citibank	6,121	-	Deposit for corporate purchase card
Long-term financial instruments	Woori Bank and others	6,500	9,500	Guarantee deposits for checking accounts
	Industrial Bank of Korea	67,500,000	67,500,000	Mutual benefit fund
		\ 67,532,383	\ 67,589,283	

5. Trade accounts and other accounts receivable

Details of trade accounts receivable and other receivable as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Trade accounts receivable	\ 1,601,292,678	\ -	\ 1,488,980,065	\ -
Less allowance for doubtful accounts	(1,295,988)	-	(5,294,521)	-
Trade receivables, net	1,599,996,690	-	1,483,685,544	-
Other accounts receivable	67,592,843	-	68,329,131	-
Less allowance for doubtful accounts	(38,772)	-	(94,216)	-
Other accounts receivable, net	67,554,071	-	68,234,915	-
	\ 1,667,550,761	\ -	\ 1,551,920,459	\ -

Policies for trade receivables and other receivables

Relating to trade and other receivables, the Group holds payment guarantees and titles to real estate as collateral, and collateral levels are readjusted periodically by reviewing the credit limit and reassessing the customer's credit.

The Group recognizes allowances for doubtful accounts based on its past experience. The Group estimates a recoverable amount of a receivable of which a loss event has been identified on an individual basis through individual assessment, and recognizes the difference between the estimated recoverable amount and the carrying amount as an impairment loss. In determining the recoverability of the receivables, the Group considers the changes in credit ratings from the credit granting date until the end of the reporting period. The Group evaluates the concentration of risk with respect to trade receivables as low (limited), as its customers are diversified and unrelated to one another (located in several jurisdictions and industries and operate in largely independent markets).

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5. Trade accounts and other accounts receivable (cont'd)

An aging analysis of the trade accounts and other accounts receivable that are overdue, but are not impaired as at December 31, 2017 and 2016 is as follows (Korean won in thousands):

	2017			
	60-90 days	90-180 days	Over 180 days	Total
Trade accounts receivable	\ 154,772,363	\ 5,017,048	\ 18,040,026	\ 177,829,437
Other accounts receivable	968,100	-	176,781	1,144,881
	<u>\ 155,740,463</u>	<u>\ 5,017,048</u>	<u>\ 18,216,807</u>	<u>\ 178,974,318</u>

	2016			
	60-90 days	90-180 days	Over 180 days	Total
Trade accounts receivable	\ 96,871,068	\ 3,471,884	\ 17,459,828	\ 117,802,780
Other accounts receivable	242,111	24,944	119,518	386,573
	<u>\ 97,113,179</u>	<u>\ 3,496,828</u>	<u>\ 17,579,346</u>	<u>\ 118,189,353</u>

Changes in allowance for doubtful accounts for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Trade accounts receivable	Other accounts receivable	Trade accounts receivable	Other accounts receivable
January 1	\ 5,294,521	\ 94,216	\ 4,440,343	\ 674,000
Provision	167,942	-	593,182	27,050
Reversal of provision	-	(7,115)	-	(674,000)
Write-off	(2,311,537)	(46,420)	(1,469,356)	-
Collection	-	-	(62,141)	(13,000)
Others	(1,854,938)	(1,909)	1,792,493	80,166
December 31	<u>\ 1,295,988</u>	<u>\ 38,772</u>	<u>\ 5,294,521</u>	<u>\ 94,216</u>

6. Financial assets at FVTPL

Details of financial assets at FVTPL as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Subscription right - Lotte Global Logistics Co., Ltd.	\ -	\ -	\ 6,359,869	\ -
Derivative assets held for trading	2,434,730	-	325,204	-
	<u>\ 2,434,730</u>	<u>\ -</u>	<u>\ 6,685,073</u>	<u>\ -</u>

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7. AFS financial assets

Details of AFS financial assets as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Equity securities:				
Marketable equity securities	\ -	\ 10,390,002	\ -	\ 11,448,352
Non-marketable equity securities	-	240,271,813	-	288,161,363
Bonds:				
Public bonds	46,195	4,579,340	588,275	4,625,535
Monetary stabilization bonds	10,000,000	-	-	-
Bank bonds	90,000,000	-	20,000,000	-
	<u>\ 100,046,195</u>	<u>\ 255,241,155</u>	<u>\ 20,588,275</u>	<u>\ 304,235,250</u>

Details of equity securities as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017						
	Number of shares	Equity ownership (%)	Acquisition costs	Book value	Accumulated unrealized gain (loss)	Accumulated impairment loss	Foreign exchange difference
Marketable equity securities (*1):							
Lotte Food Co., Ltd. (*2)	11,037	0.98	\ 6,302,127	\ 6,103,461	\ (198,666)	\ -	-
Kumho Industrial Co., Ltd.	287,356	0.80	4,999,994	2,732,994	-	(2,267,000)	-
Lotte Corporation (*2)	23,864	0.03	1,408,128	1,553,547	145,419	-	-
			<u>12,710,249</u>	<u>10,390,002</u>	<u>(53,247)</u>	<u>(2,267,000)</u>	-
Non-marketable equity securities:							
Sparx Asset Management Korea Co., Ltd.	65,680	7.76	19,465,366	6,646,366	-	(12,819,000)	-
Weifang Yaxing Group Co., Ltd.	-	10.00	9,628,681	-	-	(9,628,681)	-
ChemCross Inc. Korea Surfactant & Adhesive Industry Cooperative	200,000	1.27	224,522	-	-	(224,522)	-
Lotte Logistics Corp. Lotte (China) Management Co., Ltd.	50	4.30	5,000	5,000	-	-	-
Lotte Aluminum Co., Ltd.	66,308	4.64	3,999,998	25,750,513	21,750,515	-	-
Hanju Corp.	-	15.00	1,336,831	1,336,831	-	-	-
SIN-E P&C Co., Ltd.	136,908	13.19	83,312,560	93,869,601	10,557,041	-	-
Kumho & Company Incorporation	97,920	8.66	6,712,294	10,504,270	3,791,976	-	-
Lotte Accelerator Corporation	127	0.03	9,560	9,560	-	-	-
Lotte Global Logistics Co., Ltd. (*3)	50,000	1.59	5,000,000	5,000,000	-	-	-
Unic Technology Korea Speciality Contractor Financial Cooperative	500,000	9.99	2,500,000	2,500,000	-	-	-
Samsung Engineering (Thailand) Co., Ltd.	3,489,604	14.72	133,718,836	93,552,836	-	(40,166,000)	-
	1,125,000	8.48	834,381	834,381	-	-	-
	56	0.00	50,307	51,142	835	-	-
	11,787	18.96	213,764	211,313	-	-	(2,451)
			<u>267,012,100</u>	<u>240,271,813</u>	<u>36,100,367</u>	<u>(62,838,203)</u>	<u>(2,451)</u>
			<u>\ 279,722,349</u>	<u>\ 250,661,815</u>	<u>\ 36,047,120</u>	<u>\ (65,105,203)</u>	<u>\ (2,451)</u>

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7. AFS financial assets (cont'd)

	2016						
	Number of shares	Equity ownership (%)	Acquisition costs	Book value	Accumulated unrealized gain (loss)	Accumulated impairment loss	Foreign exchange difference
Marketable equity securities (*1):							
Lotte Food Co., Ltd.	13,354	0.98	7,625,134	8,666,746	1,041,612	-	-
Kumho Industrial Co., Ltd.	287,356	0.82	4,999,994	2,781,606	(2,218,388)	-	-
			12,625,128	11,448,352	(1,176,776)	-	-
Non-marketable equity securities:							
Sparx Asset Management Korea Co., Ltd.	65,680	7.76	19,465,366	13,136,366	-	(6,329,000)	-
Weifang Yaxing Group Co., Ltd.	-	10.00	9,628,681	-	-	(9,628,681)	-
ChemCross Inc. Korea Surfactant & Adhesive Industry Cooperative	200,000	1.27	224,522	-	-	(224,522)	-
Lotte Logistics Corp. Lotte (China) Management Co., Ltd.	50	4.30	5,000	5,000	-	-	-
Lotte Aluminum Co., Ltd.	66,308	4.64	3,999,998	17,729,234	13,729,236	-	-
Hanju Corp.	-	15.00	1,336,831	1,336,831	-	-	-
Igis I Corp.	136,908	13.19	83,312,560	88,632,459	5,319,899	-	-
SIN-E P&C Co., Ltd.	97,920	8.66	6,712,294	10,198,956	3,486,662	-	-
Kumho & Company Incorporation	588,696	8.64	29,434,800	25,939,535	(3,495,265)	-	-
Lotte Accelerator Corporation	127	0.03	9,560	9,560	-	-	-
Lotte Global Logistics Co., Ltd.	50,000	1.51	5,000,000	5,000,000	-	-	-
Hyunjin Co., Ltd.	500,000	16.67	2,500,000	2,500,000	-	-	-
Unic Technology Korea Speciality Contractor Financial Cooperative	3,202,360	17.54	122,619,150	122,567,127	(52,023)	-	-
Samsung Engineering (Thailand) Co., Ltd.	175,040	1.80	4,376	4,376	-	-	-
	1,125,000	8.48	834,381	834,381	-	-	-
	56	0.00	50,307	50,679	372	-	-
	11,787	18.96	213,764	216,859	-	-	3,095
			285,351,590	288,161,363	18,988,881	(16,182,203)	3,095
			297,976,718	299,609,715	17,812,105	(16,182,203)	3,095

(*1) The fair values of marketable equity securities are measured at quoted market prices at the end of the reporting period (if unavailable, then on the last day before the end of the reporting period).

(*2) As the investment division of Lotte Food Co., Ltd. has been split and merged with Lotte Corporation, the Group has acquired the shares of Lotte Corporation during the year ended December 31, 2017.

(*3) For the year ended December 31, 2017, the Group acquired additional shares of Lotte Global Logistics Co., Ltd. through the exercise of subscription rights.

The Group measured certain non-marketable equity securities at their acquisition cost. These entities have no historical financial information, for the purpose of estimating their future cash flows, to the extent that their fair values can be reliably measured. Impairment losses are recognized when the decline in the net asset values is significant and it is determined that the recovery of such decline is remote.

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7. AFS financial assets (cont'd)

Changes in equity securities for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017						December 31
	January 1	Acquisition	Disposal	Valuation	Impairment loss	Foreign exchange difference	
Marketable equity securities:							-
Lotte Food Co., Ltd.	8,666,746	-	(1,323,007)	(1,240,278)	-	-	6,103,461
Kumho Industrial Co., Ltd.	2,781,606	-	-	2,218,388	(2,267,000)	-	2,732,994
Lotte Corporation	-	1,408,128	-	145,419	-	-	1,553,547
	<u>11,448,352</u>	<u>1,408,128</u>	<u>(1,323,007)</u>	<u>1,123,529</u>	<u>(2,267,000)</u>	<u>-</u>	<u>10,390,002</u>
Non-marketable equity securities:							
Sparx Asset Management Korea Co., Ltd.	13,136,366	-	-	-	(6,490,000)	-	6,646,366
Weifang Yaxing Group Co., Ltd.	-	-	-	-	-	-	-
ChemCross Inc.	-	-	-	-	-	-	-
Korea Surfactant & Adhesive Industry Cooperative	5,000	-	-	-	-	-	5,000
Lotte Logistics Corp.	17,729,234	-	-	8,021,279	-	-	25,750,513
Lotte (China) Management Co., Ltd.	1,336,831	-	-	-	-	-	1,336,831
Lotte Aluminum Co., Ltd.	88,632,459	-	-	5,237,142	-	-	93,869,601
Hanju Corp.	10,198,956	-	-	305,314	-	-	10,504,270
Igis I Corp.	25,939,535	-	(29,434,800)	3,495,265	-	-	-
SIN-E P&C Co., Ltd.	9,560	-	-	-	-	-	9,560
Kumho & Company Incorporation	5,000,000	-	-	-	-	-	5,000,000
Lotte Accelerator Corporation	2,500,000	-	-	-	-	-	2,500,000
Lotte Global Logistics Co., Ltd.	122,567,127	11,099,686	-	52,023	(40,166,000)	-	93,552,836
Hyunjin Co., Ltd.	4,376	-	(4,376)	-	-	-	-
Unic Technology	834,381	-	-	-	-	-	834,381
Korea Speciality Contractor Financial Cooperative	50,679	-	-	463	-	-	51,142
Samsung Engineering (Thailand) Co., Ltd.	216,859	-	-	-	-	(5,546)	211,313
	<u>288,161,363</u>	<u>11,099,686</u>	<u>(29,439,176)</u>	<u>17,111,486</u>	<u>(46,656,000)</u>	<u>(5,546)</u>	<u>240,271,813</u>
	<u>299,609,715</u>	<u>12,507,814</u>	<u>(30,762,183)</u>	<u>18,235,015</u>	<u>(48,923,000)</u>	<u>(5,546)</u>	<u>250,661,815</u>
	2016						
	January 1	Acquisition	Business combination (Note 46)	Valuation	Impairment loss	Foreign exchange difference	December 31
Marketable equity securities:							
Lotte Food Co., Ltd.	12,672,946	-	-	(4,006,200)	-	-	8,666,746
Kumho Industrial Co., Ltd.	4,252,869	-	-	(1,471,263)	-	-	2,781,606
	<u>16,925,815</u>	<u>-</u>	<u>-</u>	<u>(5,477,463)</u>	<u>-</u>	<u>-</u>	<u>11,448,352</u>
Non-marketable equity securities:							
Sparx Asset Management Korea Co., Ltd.	15,107,122	-	-	4,358,244	(6,329,000)	-	13,136,366
Weifang Yaxing Group Co., Ltd.	-	-	-	-	-	-	-
ChemCross Inc.	-	-	-	-	-	-	-
Korea Surfactant & Adhesive Industry Cooperative	5,000	-	-	-	-	-	5,000
Lotte Logistics Corp.	13,864,539	-	-	3,864,695	-	-	17,729,234
Lotte (China) Management Co., Ltd.	1,336,831	-	-	-	-	-	1,336,831
Lotte Aluminum Co., Ltd.	99,828,522	-	-	(11,196,063)	-	-	88,632,459
Hanju Corp.	9,815,011	-	-	383,945	-	-	10,198,956
Igis I Corp.	26,540,453	-	-	(600,918)	-	-	25,939,535
SIN-E P&C Co., Ltd.	9,560	-	-	-	-	-	9,560
Kumho & Company Incorporation	5,000,000	-	-	-	-	-	5,000,000
Lotte Accelerator Corporation	-	2,500,000	-	-	-	-	2,500,000
Lotte Global Logistics Co., Ltd.	-	122,619,150	-	(52,023)	-	-	122,567,127
Hyunjin Co., Ltd.	-	-	4,376	-	-	-	4,376
Unic Technology	-	-	834,381	-	-	-	834,381
Korea Speciality Contractor Financial Cooperative	-	9,050	41,257	372	-	-	50,679
Samsung Engineering (Thailand) Co., Ltd.	-	-	213,764	-	-	3,095	216,859
	<u>171,507,038</u>	<u>125,128,200</u>	<u>1,093,778</u>	<u>(3,241,748)</u>	<u>(6,329,000)</u>	<u>3,095</u>	<u>288,161,363</u>
	<u>188,432,853</u>	<u>125,128,200</u>	<u>1,093,778</u>	<u>(8,719,211)</u>	<u>(6,329,000)</u>	<u>3,095</u>	<u>299,609,715</u>

A maturity schedule of debt securities among the AFS financial assets as at December 31, 2017 and 2016 is as follows (Korean won in thousands):

	2017	2016
Within a year	100,046,195	20,588,275
1 to 5 years	4,579,340	4,625,535
	<u>104,625,535</u>	<u>25,213,810</u>

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8. Other financial assets

Details of other financial assets as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Accrued income	\ 14,472,488	\ -	\ 4,521,056	\ -
Loans receivable	667,121	2,160,185	562,892	2,982,501
Guarantee deposits	3,667,187	15,257,512	3,360,443	6,501,686
Derivative assets designated as a hedge	700,741	358,123	4,798,482	7,683,920
Derivative assets held for trading	-	2,132,751	-	3,062,733
Other accounts receivable	-	344,850	-	667,873
	\ 19,507,537	\ 20,253,421	\ 13,242,873	\ 20,898,713

9. Inventories

Details of inventories as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		
	Acquisition cost	Valuation allowance	Carrying amount
Merchandise	\ 22,598,861	\ (180,586)	\ 22,418,275
Finished goods	430,937,056	(3,717,135)	427,219,921
Work-in-process	243,537,551	(395,178)	243,142,373
Raw materials	343,892,283	(536,669)	343,355,614
Submaterials	55,636,025	-	55,636,025
Supplies	220,803,027	(7,498,871)	213,304,156
Goods-in-transit	230,913,120	-	230,913,120
	\ 1,548,317,923	\ (12,328,439)	\ 1,535,989,484

	2016		
	Acquisition cost	Valuation allowance	Carrying amount
Merchandise	\ 28,454,531	\ (179,551)	\ 28,274,980
Finished goods	465,383,962	(3,243,083)	462,140,879
Work-in-process	204,430,909	(350,033)	204,080,876
Raw materials	358,558,083	(262,476)	358,295,607
Submaterials	45,998,247	-	45,998,247
Supplies	230,891,651	(8,582,539)	222,309,112
Goods-in-transit	156,057,553	-	156,057,553
	\ 1,489,774,936	\ (12,617,682)	\ 1,477,157,254

The reversal of valuation loss on inventory amounting to \ 289 million and \ 5,331 million, related to the valuation of inventory at net realizable value, were deducted from cost of sales in 2017 and 2016, respectively.

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10. Financial lease receivables

Lease agreements

The Group has entered into finance lease agreements with Doobon Inc. and all lease payments are presented in Korean won. The lease agreements are in connection with manufacturing facilities and their auxiliary facilities, and the lease term is 30 years.

Details of finance lease receivables as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Minimum lease payments	Present value	Minimum lease payments	Present value
Within a year	\ 139,196	\ 138,598	\ 139,196	\ 138,598
1 to 5 years	556,784	548,477	556,784	548,477
Over 5 years	2,483,267	2,339,881	2,622,463	2,465,834
	<u>3,179,247</u>	<u>3,026,956</u>	<u>3,318,443</u>	<u>3,152,909</u>
Less: unrealized interest income	(152,291)	-	(165,534)	-
	<u>\ 3,026,956</u>	<u>\ 3,026,956</u>	<u>\ 3,152,909</u>	<u>\ 3,152,909</u>

Implicit interest rates are determined at the date of the agreement. The average annual implicit interest rate is 0.4248% as at December 31, 2017 and 2016.

Finance lease receivables classified as current and non-current portion as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Current	\ 138,598	\ 138,598
Non-current	2,888,358	3,014,311
	<u>\ 3,026,956</u>	<u>\ 3,152,909</u>

11. Other assets

Details of other assets as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Advance payments	\ 9,171,198	\ -	\ 59,084,879	\ -
Prepaid expenses	26,032,873	7,915,139	27,835,414	5,552,910
Value-added tax receivables	49,025,057	-	43,171,744	-
Other current assets	19,835,725	7,315,096	6,747,077	-
Emission rights	8,486,778	-	-	-
	<u>\ 112,551,631</u>	<u>\ 15,230,235</u>	<u>\ 136,839,114</u>	<u>\ 5,552,910</u>

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12. Investments in associates

Details of investments in associates as at December 31, 2017 and 2016 are as follows:

	Principal business activities	Country of domicile	Equity ownership (%)	
			2017	2016
Lotte Engineering & Construction Co., Ltd.	Constructions	Korea	35.21	35.21
Lotte Asset Development Co., Ltd.	Real estate development	Korea	20.53	20.53
Hyundai Chemical Co., Ltd.	Chemical production	Korea	40.00	40.00
Yeosu Petro Corp.	Facility management	Korea	27.20	27.20
Lotte Fine Chemical Co., Ltd. (*1)	Chemical production	Korea	31.53	31.53

(*1) The percentage represents the substantial ownership considering treasury shares of the entity.

The Group's investments in associates as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Acquisition costs	Book value	Acquisition costs	Book value
Lotte Engineering & Construction Co., Ltd.	\ 243,586,059	\ 667,023,697	\ 243,586,059	\ 621,715,321
Lotte Asset Development Co., Ltd.	41,419,551	27,227,685	41,419,551	17,356,094
Hyundai Chemical Co., Ltd.	192,000,000	276,795,590	192,000,000	205,242,172
Yeosu Petro Corp.	227,800	296,713	227,800	290,433
Lotte Fine Chemical Co., Ltd.	432,700,547	467,619,451	432,700,547	443,510,077
	\ 909,933,957	\ 1,438,963,136	\ 909,933,957	\ 1,288,114,097

Changes in investments in associates for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017					December 31
	January 1	Dividends received	Share of profit	Equity adjustments in equity method	Others (*1)	
Lotte Engineering & Construction Co., Ltd.	\ 621,715,321	\ -	\ 26,742,506	\ 18,056,291	\ 509,579	\ 667,023,697
Lotte Asset Development Co., Ltd.	17,356,094	-	3,240,189	6,517,259	114,143	27,227,685
Hyundai Chemical Co., Ltd.	205,242,172	-	72,062,293	(781,358)	272,483	276,795,590
Yeosu Petro Corp.	290,433	-	6,280	-	-	296,713
Lotte Fine Chemical Co., Ltd.	443,510,077	(2,409,357)	26,691,508	(35,712)	(137,065)	467,619,451
	\ 1,288,114,097	\ (2,409,357)	\ 128,742,776	\ 23,756,480	\ 759,140	\ 1,438,963,136

	2016					December 31
	January 1	Acquisition	Share of profit (loss)	Equity adjustments in equity method	Others (*1)	
Lotte Engineering & Construction Co., Ltd.	\ 630,353,073	\ -	\ (1,054,026)	\ (8,523,199)	\ 939,473	\ 621,715,321
Lotte Asset Development Co., Ltd.	25,327,337	-	(3,133,110)	(4,552,214)	(285,919)	17,356,094
Hyundai Chemical Co., Ltd.	190,192,363	-	15,973,923	(430,970)	(493,144)	205,242,172
Yeosu Petro Corp.	271,399	-	19,034	-	-	290,433
Lotte Fine Chemical Co., Ltd.	-	432,700,547	9,423,597	10,592	1,375,341	443,510,077
	\ 846,144,172	\ 432,700,547	\ 21,229,418	\ (13,495,791)	\ 1,535,751	\ 1,288,114,097

(*1) Others represent changes in retained earnings in equity method arising from a remeasurement gain or loss on the defined benefit pension plans of associates.

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12. Investments in associates (cont'd)

Summarized financial position of associates as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Lotte Engineering & Construction Co., Ltd.	\ 3,540,369,879	\ 1,539,018,204	\ 2,538,743,592	\ 585,273,336	\ 1,955,371,155
Lotte Asset Development Co., Ltd.	165,056,697	342,181,273	267,097,208	101,116,986	139,023,776
Hyundai Chemical Co., Ltd.	1,017,363,775	1,015,312,758	626,772,568	705,531,899	700,372,066
Yeosu Petro Corp.	496,585	1,126,610	72,487	459,852	1,090,856
Lotte Fine Chemical Co., Ltd.	697,028,361	944,276,090	354,565,613	94,032,795	1,192,706,043

	2016				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Lotte Engineering & Construction Co., Ltd.	\ 3,547,538,571	\ 1,569,574,708	\ 2,432,417,158	\ 838,011,365	\ 1,846,684,756
Lotte Asset Development Co., Ltd.	586,129,257	262,205,146	678,252,664	85,064,858	85,016,881
Hyundai Chemical Co., Ltd.	608,804,511	1,020,651,393	461,954,737	652,416,621	515,084,546
Yeosu Petro Corp.	509,192	1,157,805	38,437	560,794	1,067,766
Lotte Fine Chemical Co., Ltd.	569,184,595	961,753,903	202,786,442	216,487,906	1,111,664,150

Summarized financial performance of associates for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017			
	Sales	Operating income	Net income	Total comprehensive income
Lotte Engineering & Construction Co., Ltd.	\ 5,434,256,096	\ 392,391,931	\ 94,386,461	\ 121,617,246
Lotte Asset Development Co., Ltd.	616,377,412	33,300,658	13,354,503	45,654,211
Hyundai Chemical Co., Ltd.	3,373,580,260	266,979,254	186,559,707	185,287,521
Yeosu Petro Corp.	1,241,472	29,495	23,090	23,090
Lotte Fine Chemical Co., Ltd.	1,159,511,374	111,125,438	89,230,835	88,682,893

	2016			
	Sales	Operating income	Net income (loss)	Total comprehensive income (loss)
Lotte Engineering & Construction Co., Ltd.	\ 4,662,554,603	\ 255,419,489	\ 8,350,737	\ (13,186,608)
Lotte Asset Development Co., Ltd.	224,788,444	9,749,522	(16,577,297)	(40,142,492)
Hyundai Chemical Co., Ltd.	570,905,898	56,666,240	41,913,923	39,603,638
Yeosu Petro Corp.	1,211,899	74,891	69,976	69,976
Lotte Fine Chemical Co., Ltd. (*1)	825,142,839	50,989,401	33,320,249	37,715,577

(*1) The summarized financial information of the associate includes only the financial results for the second, third and fourth quarter of 2016 after the acquisition of the equity interest in Lotte Fine Chemical Co., Ltd.

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12. Investments in associates (cont'd)

Details of the reconciliation between net assets of associates and the book value of the investments in associates as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017				
	Net assets (*1)	Share of net assets	Goodwill	Less: unrealized profit on transactions with the Group	Book value
Lotte Engineering & Construction Co., Ltd.	1,925,310,368	677,939,891	7,776,444	(18,692,638)	667,023,697
Lotte Asset Development Co., Ltd.	132,618,453	27,227,685	-	-	27,227,685
Hyundai Chemical Co., Ltd.	700,372,066	280,148,827	-	(3,353,237)	276,795,590
Yeosu Petro Corp.	1,090,856	296,713	-	-	296,713
Lotte Fine Chemical Co., Ltd.	1,189,247,117	466,851,714	814,892	(47,155)	467,619,451
	2016				
	Net assets (*1)	Share of net assets	Goodwill	Less: unrealized profit on transactions with the Group	Book value
Lotte Engineering & Construction Co., Ltd.	1,791,777,691	630,920,392	7,776,444	(16,981,515)	621,715,321
Lotte Asset Development Co., Ltd.	84,536,687	17,356,094	-	-	17,356,094
Hyundai Chemical Co., Ltd.	515,084,546	206,033,818	-	(791,646)	205,242,172
Yeosu Petro Corp.	1,067,766	290,433	-	-	290,433
Lotte Fine Chemical Co., Ltd.	1,108,205,224	442,715,045	814,892	(19,860)	443,510,077

(*1) Represents net assets of associates attributable to controlling interests.

13. Investments in joint ventures

Details of investments in joint ventures as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	Principal business activities	Country of domicile	Equity ownership (%)	
			2017	2016
Seetec Co., Ltd.	Utility	Korea	50.00	50.00
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	Chemical production	Korea	50.00	50.00
Lotte Sanjiang Chemical Co., Ltd.	Chemical production	China	50.00	50.00
Lotte Mitsui Chemical Co., Ltd.	Chemical production	Korea	50.00	50.00
Lotte Ube Synthetic Rubber Sdn. Bhd.	Chemical production	Malaysia	50.00	50.00
Lotte Versalis Elastomers Co., Ltd. (*1)	Chemical production	Korea	50.00 +1 share	50.00 +1 share
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Honam Chemical Co., Ltd.)	Chemical production	China	25.00	25.00
Kor-Uz Gas Chemical Investment Ltd. (*2, 3)	Natural resource Development	Malaysia	49.00	49.00

(*1) Although the equity ownership in the entity exceeds 50%, the Group's investment in the entity was classified as a joint venture arising from a joint arrangement.

(*2) The financial statements for the year ended December 31, 2017 of Uz-Kor Gas Chemical LLC, a joint venture of Kor-Uz Gas Chemical Investment Ltd., were unavailable, and accordingly, the financial statements for the twelve-month period ended November 30, 2017 were referred to using the equity method, and significant transactions occurred during the remaining one month were reviewed and considered in the consolidated financial statements.

(*3) The shares are pledged as security for the borrowings of Uz-Kor Gas Chemical LLC, the Group's related party, in relation to the Surgil project in Uzbekistan.

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13. Investments in joint ventures (cont'd)

The Group's investments in joint ventures as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Acquisition costs	Book value	Acquisition costs	Book value
Seetec Co., Ltd.	\ 105,234,004	\ 148,548,163	\ 105,234,004	\ 149,564,348
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	95,125,421	223,364,859	95,125,421	171,002,778
Lotte Sanjiang Chemical Co., Ltd.	24,700,840	13,410,750	24,700,840	9,734,991
Lotte Mitsui Chemical Co., Ltd.	10,000,000	10,663,408	10,000,000	10,302,431
Lotte Ube Synthetic Rubber Sdn. Bhd.	33,137,835	7,234,463	33,137,835	17,038,821
Lotte Versalis Elastomers Co., Ltd.	150,900,005	144,677,264	96,000,010	93,847,816
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Honam Chemical Co., Ltd.)	12,668,543	-	12,668,543	-
Kor-Uz Gas Chemical Investment Ltd.	379,975,384	397,717,580	379,975,384	396,591,586
	\ 811,742,032	\ 945,616,487	\ 756,842,037	\ 848,082,771

Changes in investments in joint ventures for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017						
	January 1	Acquisition	Dividends received	Share of profit (loss)	Equity adjustments in equity method	Others (*1)	December 31
Seetec Co., Ltd.	\ 149,564,348	\ -	\ (10,000,000)	\ 8,975,242	\ -	\ 8,573	\ 148,548,163
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	171,002,778	-	(17,500,000)	69,956,670	30,459	(125,048)	223,364,859
Lotte Sanjiang Chemical Co., Ltd.	9,734,991	-	-	4,315,362	(639,603)	-	13,410,750
Lotte Mitsui Chemical Co., Ltd.	10,302,431	-	-	208,111	152,866	-	10,663,408
Lotte Ube Synthetic Rubber Sdn. Bhd.	17,038,821	-	-	(5,993,023)	(1,836,361)	(1,974,974)	7,234,463
Lotte Versalis Elastomers Co., Ltd.	93,847,816	54,899,995	-	(3,800,712)	(269,835)	-	144,677,264
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Group Co., Ltd.)	-	-	-	-	-	-	-
Kor-Uz Gas Chemical Investment Ltd.	396,591,586	-	(30,705,875)	82,039,267	(50,207,398)	-	397,717,580
	\ 848,082,771	\ 54,899,995	\ (58,205,875)	\ 155,700,917	\ (52,769,872)	\ (2,091,449)	\ 945,616,487

	2016						
	January 1	Acquisition	Dividends received	Share of profit (loss)	Equity adjustments in equity method	Others (*1)	December 31
Seetec Co., Ltd.	\ 156,703,266	\ -	\ (17,500,000)	\ 10,329,923	\ -	\ 31,159	\ 149,564,348
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	158,910,896	-	(12,000,000)	23,478,828	24,523	588,531	171,002,778
Lotte Sanjiang Chemical Co., Ltd.	15,338,091	-	-	(4,985,143)	(617,957)	-	9,734,991
Lotte Mitsui Chemical Co., Ltd.	9,945,125	-	-	150,630	206,676	-	10,302,431
Lotte Ube Synthetic Rubber Sdn. Bhd.	24,771,054	-	-	(8,059,060)	501,480	(174,653)	17,038,821
Lotte Versalis Elastomers Co., Ltd.	81,324,591	13,400,000	-	(810,198)	(66,577)	-	93,847,816
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Group Co., Ltd.)	-	-	-	-	-	-	-
Kor-Uz Gas Chemical Investment Ltd.	353,381,649	-	-	30,112,731	13,097,206	-	396,591,586
	\ 800,374,672	\ 13,400,000	\ (29,500,000)	\ 50,217,711	\ 13,145,351	\ 445,037	\ 848,082,771

(*1) Others consist mainly of retained earnings adjustments in equity method arising from the remeasurement gain or loss on the defined benefit pension plans of the joint ventures.

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13. Investments in joint ventures (cont'd)

Summarized financial positions of joint ventures as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Seetec Co., Ltd.	70,953,859	273,234,807	40,490,910	3,262,712	300,435,044
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	294,163,017	251,408,298	92,072,707	190,466	453,308,142
Lotte Sanjiang Chemical Co., Ltd.	43,606,164	69,931,629	86,587,706	-	26,950,087
Lotte Mitsui Chemical Co., Ltd.	4,190,717	30,261,963	9,127,331	3,998,534	21,326,815
Lotte Ube Synthetic Rubber Sdn. Bhd.	22,611,061	126,352,525	72,992,926	54,064,939	21,905,721
Lotte Versalis Elastomers Co., Ltd.	55,082,439	702,475,492	89,920,275	374,959,577	292,678,079
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Group Co., Ltd.)	1,716,795	35,306,984	56,819,368	1,492,712	(21,288,301)
Kor-Uz Gas Chemical Investment Ltd.	19,254,770	830,034,570	-	-	849,289,340

	2016				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Seetec Co., Ltd.	67,145,793	289,058,452	39,110,223	6,418,570	310,675,452
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	213,147,932	291,969,214	135,650,126	20,102,639	349,364,381
Lotte Sanjiang Chemical Co., Ltd.	61,384,224	72,858,792	114,773,034	-	19,469,982
Lotte Mitsui Chemical Co., Ltd.	6,300,290	35,952,374	9,565,875	12,081,928	20,604,861
Lotte Ube Synthetic Rubber Sdn. Bhd.	25,081,080	147,211,593	51,721,720	82,330,032	38,240,921
Lotte Versalis Elastomers Co., Ltd.	18,997,603	526,636,854	46,338,825	311,600,000	187,695,632
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Group Co., Ltd.)	23,447,164	40,780,959	80,789,379	1,455,557	(18,016,813)
Kor-Uz Gas Chemical Investment Ltd.	286,685	859,480,970	-	-	859,767,655

Summarized financial performances of joint ventures for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017			
	Sales	Operating income (loss)	Net income (loss)	Total comprehensive income (loss)
Seetec Co., Ltd.	494,510,211	19,328,070	14,343,852	14,360,998
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	628,876,984	169,730,008	139,132,941	138,943,761
Lotte Sanjiang Chemical Co., Ltd.	160,981,163	4,275,690	8,759,312	8,759,312
Lotte Mitsui Chemical Co., Ltd.	12,987,738	338,589	416,222	721,954
Lotte Ube Synthetic Rubber Sdn. Bhd.	79,122,703	(9,949,874)	(12,662,478)	(12,662,478)
Lotte Versalis Elastomers Co., Ltd.	7,004	(5,302,377)	(4,277,873)	(4,277,873)
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Group Co., Ltd.)	38,178,890	(3,879,617)	(4,335,132)	(4,335,132)
Kor-Uz Gas Chemical Investment Ltd.	-	(194,521)	115,226,549	115,226,549

	2016			
	Sales	Operating income (loss)	Net income (loss)	Total comprehensive income (loss)
Seetec Co., Ltd.	467,224,888	18,843,810	17,053,211	17,115,530
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	455,476,579	62,025,194	45,106,518	46,332,626
Lotte Sanjiang Chemical Co., Ltd.	174,480,110	(5,031,643)	(11,816,807)	(13,052,721)
Lotte Mitsui Chemical Co., Ltd.	12,005,496	301,657	301,261	714,612
Lotte Ube Synthetic Rubber Sdn. Bhd.	23,622,551	(14,036,997)	(15,340,783)	(14,337,823)
Lotte Versalis Elastomers Co., Ltd.	-	(1,809,279)	(1,620,395)	(1,620,395)
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Group Co., Ltd.)	119,370,387	(12,450,010)	(13,737,001)	(13,463,353)
Kor-Uz Gas Chemical Investment Ltd.	-	(216,224)	76,861,500	103,590,492

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13. Investments in joint ventures (cont'd)

Details of the reconciliations between net assets of joint ventures and the book value of the investments in joint ventures as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017					
	Net assets	Share of net assets	Goodwill	Less: unrealized profit on transactions with the Group	Unrecognized accumulated loss on valuation of investment under the equity method	Book value
Seetec Co., Ltd.	305,036,450	148,548,163	-	-	-	148,548,163
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	453,308,142	226,654,071	-	(3,289,212)	-	223,364,859
Lotte Sanjiang Chemical Co., Ltd.	26,950,087	13,475,044	-	(64,294)	-	13,410,750
Lotte Mitsui Chemical Co., Ltd.	21,326,815	10,663,408	-	-	-	10,663,408
Lotte Ube Synthetic Rubber Sdn. Bhd.	21,905,721	10,952,860	-	(3,718,397)	-	7,234,463
Lotte Versalis Elastomers Co., Ltd.	292,678,079	146,339,039	-	(1,661,775)	-	144,677,264
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Group Co., Ltd.)	(21,288,301)	(5,322,075)	-	-	5,322,075	-
Kor-Uz Gas Chemical Investment Ltd.	849,289,340	416,151,777	237,685	(18,671,882)	-	397,717,580

	2016					
	Net assets	Share of net assets	Goodwill	Less: unrealized profit on transactions with the Group	Unrecognized accumulated loss on valuation of investment under the equity method	Book value
Seetec Co., Ltd.	310,675,452	149,564,348	-	-	-	149,564,348
Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	349,364,381	174,682,191	-	(3,679,413)	-	171,002,778
Lotte Sanjiang Chemical Co., Ltd.	19,469,982	9,734,991	-	-	-	9,734,991
Lotte Mitsui Chemical Co., Ltd.	20,604,861	10,302,431	-	-	-	10,302,431
Lotte Ube Synthetic Rubber Sdn. Bhd.	38,240,921	19,120,460	-	(2,081,639)	-	17,038,821
Lotte Versalis Elastomers Co., Ltd.	187,695,632	93,847,816	-	-	-	93,847,816
Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Group Co., Ltd.)	(18,016,813)	(4,504,203)	-	(387,838)	4,892,041	-
Kor-Uz Gas Chemical Investment Ltd.	859,767,655	421,286,151	237,685	(24,932,250)	-	396,591,586

14. Joint operation

As at December 31, 2017, the Group has 90% equity interest in LACC, LLC domiciled in the United States. Axiall Corp., which has the remaining 10% ownership interests in LACC, LLC, also has a call option to acquire 40% ownership interests in LACC, LLC from the Group. LACC, LLC is a joint operation of which the primary objective is to provide its jointly controlling parties with outputs, and accordingly, the Group recognizes its share of assets, liabilities, revenue and expenses.

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15. Property, plant and equipment

Details of property, plant and equipment as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017				
	Acquisition costs	Accumulated depreciation	Accumulated impairment loss	Government subsidies	Carrying value
Land	\ 854,257,149	\ -	\ -	\ -	\ 854,257,149
Buildings	676,102,445	(211,639,647)	-	-	464,462,798
Structures	1,449,680,460	(773,758,920)	-	-	675,921,540
Machinery	9,287,623,243	(7,148,357,441)	(128,780,658)	(121,431)	2,010,363,713
Vehicles	12,390,307	(10,625,860)	-	-	1,764,447
Tools and equipment	198,869,113	(161,465,538)	-	-	37,403,575
Fixtures and furniture	88,755,363	(69,997,511)	-	-	18,757,852
Others	452,890,486	(186,449,101)	-	(28,738)	266,412,647
Construction-in-progress	2,386,840,460	-	-	-	2,386,840,460
	\ 15,407,409,026	\ (8,562,294,018)	\ (128,780,658)	\ (150,169)	\ 6,716,184,181

	2016				
	Acquisition costs	Accumulated depreciation	Accumulated impairment loss	Government subsidies	Carrying value
Land	\ 852,716,905	\ -	\ -	\ -	\ 852,716,905
Buildings	680,437,826	(205,511,350)	-	-	474,926,476
Structures	1,219,485,663	(753,457,430)	-	-	466,028,233
Machinery	9,034,572,891	(7,046,318,789)	(131,188,181)	(183,685)	1,856,882,236
Vehicles	12,932,403	(11,366,267)	-	-	1,566,136
Tools and equipment	206,937,304	(156,468,081)	-	-	50,469,223
Fixtures and furniture	81,349,701	(73,186,604)	-	-	8,163,097
Others	384,950,914	(154,925,301)	-	(62,881)	229,962,732
Construction-in-progress	1,605,948,119	-	-	-	1,605,948,119
	\ 14,079,331,726	\ (8,401,233,822)	\ (131,188,181)	\ (246,566)	\ 5,546,663,157

Changes in property, plant and equipment for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017						December 31
	January 1	Acquisition	Disposal	Depreciation	Transfer (*1)	Others (*2)	
Land	\ 852,716,905	\ 389,982	\ (266,894)	\ -	\ 1,547,836	\ (130,680)	\ 854,257,149
Buildings	474,926,476	805,320	(132,067)	(20,156,440)	13,923,952	(4,904,443)	464,462,798
Structures	466,028,233	859,073	(393,460)	(63,420,601)	205,344,530	67,503,765	675,921,540
Machinery	1,856,882,236	26,732,468	(11,621,535)	(420,210,010)	651,822,843	(93,242,289)	2,010,363,713
Vehicles	1,566,136	158,707	(23,249)	(440,552)	647,297	(143,892)	1,764,447
Tools and equipment	50,469,223	422,177	(29,213)	(15,877,072)	5,507,071	(3,088,611)	37,403,575
Furniture	8,163,097	518,289	(6,739)	(5,435,663)	15,770,250	(251,382)	18,757,852
Others	229,962,732	70,060,968	(150,249)	(78,821,936)	58,377,578	(13,016,446)	266,412,647
Construction-in progress	1,605,948,119	1,953,775,832	-	-	(971,612,134)	(201,271,357)	2,386,840,460
	\ 5,546,663,157	\ 2,053,722,816	\ (12,623,406)	\ (604,362,274)	\ (18,670,777)	\ (248,545,335)	\ 6,716,184,181

(*1) Transfers to investment properties and intangible assets

(*2) Effects of foreign exchange differences and changes in provision for asset retirement obligation

	2016							December 31
	January 1	Acquisition	Disposal	Depreciation	Business combination	Impairment loss (*3)	Transfer (*1)	
Land	\ 520,637,602	\ 17,755,352	\ -	\ -	\ 312,100,789	\ -	\ 2,891,826	\ 852,716,905
Buildings	327,447,219	10,356,800	(226,811)	(18,821,841)	155,183,444	-	1,105,864	474,926,476
Structures	415,068,574	887,452	(165,949)	(46,795,845)	85,975,020	-	10,826,256	466,028,233
Machinery	1,978,758,986	3,714,602	(18,883,805)	(399,807,322)	157,796,692	(19,142,620)	156,568,429	1,856,882,236
Vehicles	1,541,881	20,205	(10,565)	(414,590)	296,093	-	104,614	1,566,136
Tools and equipment	42,216,604	1,135,459	(72,968)	(16,622,976)	18,069,508	-	4,969,574	50,469,223
Fixtures and furniture	6,282,412	891,837	(69,659)	(3,574,214)	2,165,427	-	2,303,645	8,163,097
Others	230,684,208	2,733,865	(11,378,583)	(73,877,780)	1,356,039	-	78,252,623	229,962,732
Construction-in-progress	442,214,946	1,373,415,186	-	-	1,752,670	-	(259,663,539)	1,605,948,119
	\ 3,964,852,432	\ 1,410,910,758	\ (30,808,340)	\ (559,914,568)	\ 734,695,662	\ (19,142,620)	\ (2,640,708)	\ 5,546,663,157

(*1) Transfers to investment properties and intangible assets

(*2) Effects of foreign exchange differences

(*3) The Group recognized an impairment loss amounting to \ 19,143 million in 2016 as there was an indication of impairment resulting from the shutdown of certain plants. The assets impaired belong to the polymer business segment and their recoverable amount was estimated based on the fair value.

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16. Investment properties

Details of investment properties as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		
	Acquisition cost	Accumulated depreciation	Carrying value
Land	\ 68,985,745	\ -	\ 68,985,745
Buildings	\ 71,329,382	\ (25,708,318)	\ 45,621,064
	<u>\ 140,315,127</u>	<u>\ (25,708,318)</u>	<u>\ 114,606,809</u>

	2016		
	Acquisition cost	Accumulated depreciation	Carrying value
Land	\ 60,796,795	\ -	\ 60,796,795
Buildings	\ 55,864,212	\ (17,189,443)	\ 38,674,769
	<u>\ 116,661,007</u>	<u>\ (17,189,443)</u>	<u>\ 99,471,564</u>

Changes in investment properties for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017				
	January 1	Acquisition	Depreciation	Transfer	December 31
Land	\ 60,796,795	\ -	\ -	\ 8,188,950	\ 68,985,745
Buildings	\ 38,674,769	\ -	\ (1,587,965)	\ 8,534,260	\ 45,621,064
	<u>\ 99,471,564</u>	<u>\ -</u>	<u>\ (1,587,965)</u>	<u>\ 16,723,210</u>	<u>\ 114,606,809</u>

	2016				
	January 1	Acquisition	Depreciation	Transfer	December 31
Land	\ 46,885,491	\ 13,911,304	\ -	\ -	\ 60,796,795
Buildings	\ 34,413,252	\ 5,224,709	\ (1,311,368)	\ 348,176	\ 38,674,769
	<u>\ 81,298,743</u>	<u>\ 19,136,013</u>	<u>\ (1,311,368)</u>	<u>\ 348,176</u>	<u>\ 99,471,564</u>

There is no significant difference between the fair value and carrying value of investment properties as at December 31, 2017 and 2016.

Details of income and expenses associated with investment properties for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Rental income	\ 9,651,496	\ 7,961,745
Operating expenses	\ (6,188,772)	\ (5,291,431)
	<u>\ 3,462,724</u>	<u>\ 2,670,314</u>

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17. Goodwill

Details of goodwill as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	<u>2017</u>	<u>2016</u>
Acquisition cost	\ 761,274,960	\ 761,274,960
Accumulated impairment loss	(37,478,103)	(37,478,103)
Book value	<u>\ 723,796,857</u>	<u>\ 723,796,857</u>

Changes in book value of goodwill for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	<u>2017</u>	<u>2016</u>
January 1	\ 723,796,857	\ 3,196,152
Business combination	-	720,600,705
December 31	<u>\ 723,796,857</u>	<u>\ 723,796,857</u>

There is no change in accumulated impairment loss of goodwill for the years ended December 31, 2017 and 2016.

The Group annually reviews whether there is an indication that an asset may be impaired and the recoverable amount of the cash-generating unit is determined based on the value-in-use calculation. The calculation of value-in-use uses pre-tax cash flow estimates based on the financial budgets approved by management for the next five years. The calculation of the permanent cash flow for the period exceeding five years is based on the assumption of a certain growth rate (but not exceeding the average growth rate in the industry).

As a result of the impairment test during 2016 and 2017, the Group did not recognize an impairment loss for goodwill. Key assumptions used in value-in-use calculations are as follows:

	<u>2017 (%)</u>	<u>2016 (%)</u>
Sales growth rate (*1)	3.5	7.5
Perpetual growth rate	1.00	1.00
Pre-tax discount rate (*1)	10.85	10.74

(*1) The Group has determined its sales growth rate based on past experience and expectations for future market fluctuations. The discount rate used is the discount rate that reflects the specific risk of the business involved.

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18. Intangible assets

Details of other intangible assets as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017			
	Acquisition costs	Accumulated amortization	Accumulated impairment loss	Book value
Industrial property rights	\ 6,114,749	\ (1,661,230)	\ -	\ 4,453,519
Membership	25,744,250	-	(101,855)	25,642,395
Customer relationship, etc.	1,067,325,000	(130,878,374)	-	936,446,626
Others	55,843,895	(35,609,025)	-	20,234,870
	<u>\ 1,155,027,894</u>	<u>\ (168,148,629)</u>	<u>\ (101,855)</u>	<u>\ 986,777,410</u>

	2016			
	Acquisition costs	Accumulated amortization	Accumulated impairment loss	Book value
Industrial property rights	\ 4,825,550	\ (1,450,617)	\ -	\ 3,374,933
Membership	24,686,726	-	(138,445)	24,548,281
Customer relationship, etc.	1,067,325,000	(56,090,732)	-	1,011,234,268
Others	64,176,749	(34,734,224)	-	29,442,525
	<u>\ 1,161,014,025</u>	<u>\ (92,275,573)</u>	<u>\ (138,445)</u>	<u>\ 1,068,600,007</u>

Changes in intangible assets for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017						
	January 1	Acquisition	Disposal	Transfer (*1)	Amortization (*2)	Others (*3)	December 31
Industrial property rights	\ 3,374,933	\ 1,250,544	\ -	\ 500,000	\ (672,088)	\ 130	\ 4,453,519
Membership	24,548,281	1,392,093	(324,960)	26,981	-	-	25,642,395
Customer relationship, etc.	1,011,234,268	-	-	-	(74,787,642)	-	936,446,626
Others	29,442,525	13,251	(2)	1,420,586	(9,753,264)	(888,226)	20,234,870
	<u>\ 1,068,600,007</u>	<u>\ 2,655,888</u>	<u>\ (324,962)</u>	<u>\ 1,947,567</u>	<u>\ (85,212,994)</u>	<u>\ (888,096)</u>	<u>\ 986,777,410</u>

	2016						
	January 1	Acquisition	Transfer (*1)	Amortization (*2)	Business combination (*4)	Others (*3)	December 31
Industrial property rights	\ 1,233,566	\ 994,138	\ -	\ (466,943)	\ 1,614,247	\ (75)	\ 3,374,933
Membership	13,431,138	4,627,158	-	-	6,489,985	-	24,548,281
Customer relationship, etc.	-	-	-	(56,090,732)	1,067,325,000	-	1,011,234,268
Others	19,777,856	1,260,465	2,292,532	(11,367,320)	17,948,968	(469,976)	29,442,525
	<u>\ 34,442,560</u>	<u>\ 6,881,761</u>	<u>\ 2,292,532</u>	<u>\ (67,924,995)</u>	<u>\ 1,093,378,200</u>	<u>\ (470,051)</u>	<u>\ 1,068,600,007</u>

(*1) Transfers from property, plant and equipment

(*2) The amortization amounting to \ 6,571,648 thousand in 2017 (\ 7,883,417 thousand in 2016) was included in selling and administrative expenses and the remainder was included in cost of sales and other accounts.

(*3) Effects of foreign exchange difference

(*4) Increase resulting from the acquisition of Lotte Advanced Materials Co., Ltd.

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19. Trade accounts payable and other accounts payable

Details of trade and other accounts payable as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Trade accounts payable	\ 1,186,008,323	\ -	\ 911,627,019	\ -
Other accounts payable	233,997,942	-	164,894,937	-
	\ 1,420,006,265	\ -	\ 1,076,521,956	\ -

20. Financial liabilities at FVTPL

Details of financial liabilities at FVTPL as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Derivative instruments held for trading	\ 133,610	\ -	\ -	\ -
Put option - Lotte Global Logistics Co., Ltd.	-	25,238,395	-	-
	\ 133,610	\ 25,238,395	\ -	\ -

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21. Borrowings and bonds payable

Details of borrowings and bonds payable as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Short-term borrowings	\ 703,496,377	\ -	\ 1,414,679,503	\ -
Long-term borrowings	19,193,630	1,415,497,565	131,277,021	545,848,148
Bonds payable	775,927,628	1,288,302,906	199,917,438	1,893,726,329
	\ 1,498,617,635	\ 2,703,800,471	\ 1,745,873,962	\ 2,439,574,477

Details of short-term borrowings as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	Lender	Interest rate (%) as at December 31, 2017	2017	2016
Usance	NongHyup Bank and others	3M LIBOR + 0.15 ~ 0.2	\ 236,564,361	\ 370,569,588
Commercial paper	IBK Securities and others	-	-	300,000,000
Common borrowings	Citibank Korea	1M LIBOR + 1.00	2,472,967	2,779,585
		4.35	6,546,000	-
	Shinhan Bank Industrial & Commercial	-	-	34,043,910
	Bank of China	-	-	370,925
Borrowings in foreign currency	Mizuho Bank	-	-	76,685,368
Trade borrowings	KEB Hana Bank	-	-	2,550,000
Import Loan	Korea Development Bank and others	3M LIBOR + 0.35 ~ 0.38	202,874,767	374,199,191
Factored receivables (*1)	DBS Bank	8M GBP LIBOR + 0.5	56,690,131	49,222,943
	KEB Hana Bank	3.41	1,436,205	698,726
	Woori Bank	1.77	82,744,884	77,213,127
		3M LIBOR + 1.00	6,431,785	10,133,498
		3M LIBOR + 1.00	21,792,299	26,428,397
		-	-	39,222,152
		5.86	641,680	-
		1.77	808,611	-
	Shinhan Bank	1.77	35,057,820	1,222,191
	Kookmin Bank	1.77	39,262,908	49,339,902
	Suhyup Bank	1.77	10,171,959	-
			\ 703,496,377	\ 1,414,679,503

(*1) Factored receivables are recognized as financial liabilities as they do not meet the elimination requirements. The factored receivables are secured by the Group's trade receivables.

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21. Borrowings and bonds payable (cont'd)

Details of long-term borrowings as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

Lender	Interest rate (%)	Maturity	2017		2016	
			Current	Non-current	Current	Non-current
Shinhan Bank	-	March 24, 2017	-	-	14,801,700	-
	-	April 15, 2017	-	-	22,202,550	-
KEB Hana Bank	-	February 25, 2017	-	-	14,801,700	-
	3M LIBOR+1.2	January 27, 2020	-	24,472,010	57,726,630	-
	3M LIBOR+1.2	July 17, 2020	-	33,109,190	-	-
HSBC Bank	-	September 22, 2017	-	-	20,302,800	-
	3M LIBOR+1.3	January 27, 2020	-	46,064,960	-	-
Citibank Korea	3M LIBOR+1.3	March 17, 2020	-	35,988,250	-	-
Korean National Oil Corp. (*1)	1.25	December 31, 2018	1,441,641	-	1,441,641	-
Korea Eximbank	2.37	April 29, 2021	-	100,000,000	-	100,000,000
WELLS FARGO Standard Chartered Bank	1M LIBOR + 1.25	March 24, 2018	642,840	-	-	725,100
Samsung SDI Co., Ltd. (*2)	2.88	March 25, 2019	-	17,109,149	-	19,230,474
Mizuho Bank	2.50	April 28, 2019	-	258,500,000	-	258,500,000
	3M LIBOR+0.8	May 23, 2019	-	27,427,840	-	30,937,600
	3M LIBOR+1.22	December 20, 2019	-	103,925,800	-	117,224,500
	3M LIBOR+1.22	January 17, 2020	-	15,487,087	-	-
	3M LIBOR+1.22	January 23, 2020	-	52,498,600	-	-
DBS Singapore	2.89	March 25, 2018	17,109,149	-	-	19,230,474
	5.50	July 12, 2022	-	10,371,994	-	-
Korea Eximbank and others	6M LIBOR + 1.99	November 19, 2025	-	131,268,579	-	-
	6M LIBOR + 1.1	November 19, 2025	-	128,660,270	-	-
	6M LIBOR + 1.1	November 19, 2025	-	259,928,850	-	-
	6M LIBOR + 1.4	May 19, 2021	-	170,684,986	-	-
			<u>\ 19,193,630</u>	<u>\ 1,415,497,565</u>	<u>\ 131,277,021</u>	<u>\ 545,848,148</u>

(*1) The borrowings have been arranged for the development of overseas natural resources and may not be used for any other purposes. In case the Group does not succeed in the development project, the Group may be fully or partially exempted from the repayment of the principal and interest. The Group has provided three blank checks to Korea National Oil Corporation as collateral for the borrowings.

(*2) See Note 1.2

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21. Borrowings and bonds payable (cont'd)

Details of bonds payable as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017			
	Annual interest rate (%) as at December 31, 2017	Maturity	Current	Non-current
49-2nd unsecured	3.57	September 12, 2018	\ 210,000,000	\ -
50-1st unsecured	-	July 28, 2017	-	-
50-2nd unsecured	3.03	July 28, 2019	-	250,000,000
50-3rd unsecured	3.25	July 28, 2021	-	200,000,000
51-1st unsecured	2.06	October 8, 2018	200,000,000	-
51-2nd unsecured	2.48	October 8, 2022	-	100,000,000
52-1st unsecured	1.82	April 28, 2018	210,000,000	-
52-2nd unsecured	1.93	April 28, 2019	-	340,000,000
52-3rd unsecured	2.14	April 28, 2021	-	150,000,000
52-4th unsecured	2.60	April 28, 2026	-	60,000,000
53-1st unsecured	2.04	July 28, 2020	-	100,000,000
53-2nd unsecured	2.33	July 28, 2022	-	90,000,000
Floating rate USD bond A	3M LIBOR+0.6	September 28, 2018	104,997,200	-
Floating rate USD bond B	3M LIBOR+0.52	December 28, 2018	51,212,920	-
Discount on bonds payable			(282,492)	(1,697,094)
			<u>\ 775,927,628</u>	<u>\ 1,288,302,906</u>

	2016			
	Annual interest rate (%) as at December 31, 2016	Maturity	Current	Non-current
49-2nd unsecured	3.57	September 12, 2018	\ -	\ 210,000,000
50-1st unsecured	2.67	July 28, 2017	200,000,000	-
50-2nd unsecured	3.03	July 28, 2019	-	250,000,000
50-3rd unsecured	3.25	July 28, 2021	-	200,000,000
51-1st unsecured	2.06	October 8, 2018	-	200,000,000
51-2nd unsecured	2.48	October 8, 2022	-	100,000,000
52-1st unsecured	1.82	April 28, 2018	-	210,000,000
52-2nd unsecured	1.93	April 28, 2019	-	340,000,000
52-3rd unsecured	2.14	April 28, 2021	-	150,000,000
52-4th unsecured	2.60	April 28, 2026	-	60,000,000
Floating rate USD bond A	3M LIBOR+0.6	September 28, 2018	-	118,433,000
Floating rate USD bond B	3M LIBOR+0.52	December 28, 2018	-	57,766,300
Discount on bonds payable			(82,562)	(2,472,971)
			<u>\ 199,917,438</u>	<u>\ 1,893,726,329</u>

In relation to the 49th, 50th, 51st, 52nd, 53rd and floating rate USD bonds payable A and B, the Group is to maintain the debt-to-equity ratio below 200%~300% and is given restrictions on pledging and disposing of assets until the principal and interests are repaid.

Floating rate USD bond A and Floating rate USD bond B amount to USD 145,800,000.

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22. Other financial liabilities

	2017		2016	
	Current	Non-current	Current	Non-current
Accrued expenses	\ 136,996,510	\ -	\ 67,156,150	\ -
Other payables	831,903	19,394,867	920,616	9,330,746
Guarantee deposits received	27,723,977	7,200	24,964,616	14,122
Derivative liabilities designated as a hedge	14,928,026	20,617,135	565,190	1,418,705
Finance guarantee liabilities	702,000	3,041,000	744,000	3,795,000
	\ 181,182,416	\ 43,060,202	\ 94,350,572	\ 14,558,573

23. Derivative financial instruments

The Group entered into currency swap contracts for foreign long-term borrowings and bonds payable (see Note 21) as at December 31, 2017 and 2016 to hedge against the risks of changes in the foreign exchange rates and interest rate fluctuations. The fair values of the currency swaps were estimated by valuations provided by the respective financial institutions.

Details of unsettled derivative contracts as at December 31, 2017 are as follows (KRW, USD, CNY and EUR in thousands):

<Current>

Counterparty	Contract date	Maturity date	Swaps sold	Contract exchange rate (Korean won)	Swaps purchased	Fair value
Mizuho Bank	September 21, 2015	September 28, 2018	KRW 115,101,000	\ 1,174.50	USD 98,000	\ (10,163,727)
	December 24, 2015	December 28, 2018	KRW 55,830,400	1,168.00	USD 47,800	(4,739,188)
KEB Hana Bank	October 31, 2017	January 31, 2018	EUR 8,000	1,311.88	KRW 10,495,040	246,187
	November 30, 2017	February 28, 2018	EUR 8,000	1,292.41	KRW 10,339,280	75,596
Citibank Korea Inc.	December 29, 2017	March 29, 2018	EUR 8,000	1,281.00	KRW 10,248,000	(25,111)
	October 13, 2017	January 12, 2018	CNY 10,000	170.69	KRW 1,706,900	71,996
	October 20, 2017	January 19, 2018	CNY 10,000	170.11	KRW 1,701,100	67,085
	October 27, 2017	January 26, 2018	CNY 20,000	168.50	KRW 3,370,000	103,857
	November 3, 2017	February 2, 2018	CNY 10,000	166.80	KRW 1,668,000	35,852
	November 10, 2017	February 9, 2018	CNY 10,000	166.90	KRW 1,669,000	37,335
	November 16, 2017	February 14, 2018	CNY 10,000	165.20	KRW 1,652,000	21,000
	November 24, 2017	February 23, 2018	CNY 10,000	163.70	KRW 1,637,000	7,621
	December 1, 2017	February 28, 2018	CNY 10,000	163.00	KRW 1,630,000	1,455
	December 8, 2017	March 9, 2018	CNY 10,000	163.76	KRW 1,637,600	10,366
December 14, 2017	March 16, 2018	CNY 10,000	162.80	KRW 1,628,000	3,728	
December 14, 2017	March 23, 2018	CNY 10,000	162.80	KRW 1,628,000	3,924	
December 27, 2017	March 29, 2018	CNY 30,000	162.85	KRW 4,885,500	14,739	
						\ (14,227,285)

<Non-current>

Counterparty	Contract date	Maturity date	Swaps sold	Contract exchange rate (Korean won)	Swaps purchased	Fair value
Mizuho Bank	May 19, 2016	May 23, 2019	KRW 30,510,080	\ 1,191.80	USD 25,600	\ (3,052,418)
	December 19, 2016	December 20, 2019	KRW 115,236,000	1,188.00	USD 97,000	(11,375,497)
	January 17, 2017	January 17, 2020	KRW 17,158,085	1,187.00	USD 14,455	(1,607,128)
	January 24, 2017	January 23, 2020	KRW 56,987,000	1,163.00	USD 49,000	(4,223,969)
						\ (20,259,012)

The estimated maximum period of the Group's exposure to risks in cash flow fluctuations relating to the above swaps is 25 months from December 31, 2017.

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23. Derivative financial instruments (cont'd)

Details of unsettled derivative contracts as at December 31, 2016 are as follows (KRW, USD, CNY and EUR in thousands):

<Current>

Counterparty	Contract date	Maturity date	Swaps sold	Contract exchange rate (Korean won)	Swaps purchased	Fair value
Mizuho Bank	October 18, 2016	January 18, 2017	KRW 16,412,207	\ 1,135.40	USD 14,455	\ 1,055,958
	October 26, 2016	January 26, 2017	KRW 55,477,800	1,132.20	USD 49,000	3,735,107
Standard Chartered Bank Korea, Ltd.	October 7, 2016	January 6, 2017	CNY 10,000	164.76	KRW 1,647,600	(84,209)
	October 14, 2016	January 13, 2017	CNY 10,000	166.42	KRW 1,664,200	(66,600)
	October 24, 2016	January 20, 2017	CNY 10,000	166.35	KRW 1,663,500	(66,486)
	October 28, 2016	January 26, 2017	CNY 10,000	167.25	KRW 1,672,500	(56,633)
	November 4, 2016	February 3, 2017	CNY 10,000	167.80	KRW 1,678,000	(50,677)
	November 11, 2016	February 10, 2017	CNY 10,000	169.15	KRW 1,691,500	(35,333)
Citibank Korea Inc.	December 29, 2016	February 28, 2017	EUR 5,500	1,262.99	KRW 6,946,445	7,417
	November 18, 2016	February 17, 2017	CNY 10,000	169.72	KRW 1,697,200	(28,279)
	November 25, 2016	February 24, 2017	CNY 10,000	167.90	KRW 1,679,000	(45,743)
	December 2, 2016	March 3, 2017	CNY 10,000	168.50	KRW 1,685,000	(36,699)
	December 9, 2016	March 10, 2017	CNY 10,000	166.40	KRW 1,664,000	(53,435)
	December 16, 2016	March 17, 2017	CNY 10,000	167.30	KRW 1,673,000	(33,710)
	December 23, 2016	March 24, 2017	CNY 10,000	169.60	KRW 1,696,000	(4,677)
	December 29, 2016	March 31, 2017	CNY 10,000	169.80	KRW 1,698,000	(2,709)
						\ 4,233,292

<Non-current>

Counterparty	Contract date	Maturity date	Swaps sold	Contract exchange rate (Korean won)	Swaps purchased	Fair value
Mizuho Bank	September 21, 2015	September 28, 2018	KRW 115,101,000	\ 1,174.50	USD 98,000	\ 2,984,627
	December 24, 2015	December 28, 2018	KRW 55,830,400	1,168.00	USD 47,800	1,508,406
	May 19, 2016	May 23, 2019	KRW 30,510,080	1,191.80	USD 25,600	357,333
	December 19, 2016	December 20, 2019	KRW 115,236,000	1,188.00	USD 97,000	1,414,849
						\ 6,265,215

Details of accumulated valuation gains or losses as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Fair value	\ (34,486,297)	\ 10,498,507
Accumulated gain (loss) recognized	(34,597,488)	11,639,977
Accumulated other comprehensive gain (loss)	111,191	(1,141,470)

Details of gains or losses arising from the valuation of derivative financial instruments for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Changes in fair value	\ (44,984,804)	\ 6,139,868
Gain (loss) recognized	(46,237,465)	5,360,101
Other comprehensive gain	1,252,661	779,767

24. Pension benefits

Defined contribution pension plan

The Group operates a defined contribution pension plan. Under the defined contribution pension plan, contributions made by the Group are recognized as expenses. For the years ended December 31, 2017 and 2016, the defined contribution pension plan expenses amount to \ 5,043,523 thousand and \ 5,069,526 thousand, respectively.

Defined benefit pension plan

The Group also operates a defined benefit pension plan. Actuarial valuations of defined benefit obligation and plan assets are performed by Lotte Insurance Co., Ltd. Current and past service costs related with the present value of defined benefit obligation are determined using the projected unit credit method.

Details of the net defined benefit liability as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Present value of defined benefit obligation	\ 276,458,189	\ 229,364,749
Fair value of plan assets	(249,948,417)	(206,168,836)
	<u>\ 26,509,772</u>	<u>\ 23,195,913</u>

Changes in the defined benefit obligation for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		
	Present value of defined benefit obligation	Fair value of plan assets	Total
January 1	\ 229,364,749	\ (206,168,836)	\ 23,195,913
Current service cost	35,643,734	-	35,643,734
Interest cost (expected return)	8,207,138	(6,263,148)	1,943,990
Remeasurement loss on net defined benefit plans due to changes in demographical assumptions	1,157,783	-	1,157,783
Remeasurement loss on net defined benefit plans due to changes in financial assumptions	2,754,307	-	2,754,307
Other remeasurement loss on net defined benefit plans	12,813,589	2,638,672	15,452,261
Transfers from affiliates	388,563	(388,563)	-
Employer's contribution	-	(52,303,142)	(52,303,142)
Settled liabilities	(4,314,701)	4,282,175	(32,526)
Benefit paid	(8,754,976)	7,956,410	(798,566)
Effects of foreign exchange difference	(801,997)	298,015	(503,982)
December 31	<u>\ 276,458,189</u>	<u>\ (249,948,417)</u>	<u>\ 26,509,772</u>

24. Pension benefits (cont'd)

	2016		
	Present value of defined benefit obligation	Fair value of plan assets	Total
January 1	\ 152,046,419	\ (121,783,143)	\ 30,263,276
Current service cost	30,263,579	-	30,263,579
Interest cost (expected return)	6,875,861	(4,931,397)	1,944,464
Remeasurement loss on net defined benefit plans due to changes in demographical assumptions	264,681	-	264,681
Remeasurement gain on net defined benefit plans due to changes in financial assumptions	(1,404,322)	-	(1,404,322)
Other remeasurement loss on net defined benefit plans	7,389,136	826,184	8,215,320
Transfers from affiliates	1,040,009	(259,327)	780,682
Employer's contribution	-	(50,477,848)	(50,477,848)
Business combination (see Note 46)	45,157,930	(42,254,908)	2,903,022
Settled liabilities	(5,453,112)	5,453,112	-
Benefit paid	(7,224,402)	7,018,107	(206,295)
Others	5,034	(2,103)	2,931
Effects of foreign exchange difference	403,936	242,487	646,423
December 31	<u>\ 229,364,749</u>	<u>\ (206,168,836)</u>	<u>\ 23,195,913</u>

Plan assets comprise mainly of term deposits.

The principal assumptions used for actuarial valuation as at December 31, 2017 and 2016 are as follows:

	2017 (%)	2016 (%)
Discount rate	1.93 ~ 4.79	1.58 ~ 3.99
Expected rate of salary increase	1.00 ~ 3.50	0.97 ~ 4.77

The sensitivity of present value of the defined benefit obligation due to actuarial as at December 31, 2017 is as follow (Korean won in thousands):

	1%p increase	1%p decrease
Discount rate	\ (22,448,219)	\ 26,615,137
Expected salary increase rate	26,714,521	(22,925,115)

The changes in assumptions provided in the sensitivity analysis above are not necessarily reflective of those in the current market. The present value of the defined benefit obligation above is determined using the projected unit credit method.

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25. Other liabilities

Details of other liabilities as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Advances received	\ 46,004,420	\ -	\ 45,824,536	\ -
Unearned income	5,828,859	3,301,982	6,793,995	3,301,982
Withholdings	22,635,210	-	26,250,696	-
Value-added tax withholdings	6,882,634	-	5,323,751	-
Long-term employee benefits	-	6,565,968	-	4,419,649
Other liabilities	6,431,150	689,271	6,961,086	14,289
Accrued expenses	73,391,304	-	55,759,463	-
	<u>\ 161,173,577</u>	<u>\ 10,557,221</u>	<u>\ 146,913,527</u>	<u>\ 7,735,920</u>

26. Provisions

Details of provisions as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		2016	
	Current	Non-current	Current	Non-current
Greenhouse gas emission liabilities	\ 13,343,258	\ -	\ 18,819,314	\ -
Asset retirement obligation	-	106,218,620	-	5,155,359
Others	29,391	2,173,531	721,215	2,176,939
	<u>\ 13,372,649</u>	<u>\ 108,392,151</u>	<u>\ 19,540,529</u>	<u>\ 7,332,298</u>

Details of changes in provisions for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017				
	January 1	Additional provisions	Utilization	Others (*1)	December 31
Greenhouse gas emission liabilities	\ 18,819,314	\ 13,343,258	\ (18,819,314)	\ -	\ 13,343,258
Asset retirement obligation	5,155,359	104,564,877	-	(3,501,616)	106,218,620
Others	2,898,154	10,605	(695,624)	(10,213)	2,202,922
	<u>\ 26,872,827</u>	<u>\ 117,918,740</u>	<u>\ (19,514,938)</u>	<u>\ (3,511,829)</u>	<u>\ 121,764,800</u>
	2016				
	January 1	Additional provisions	Utilization	Others (*1)	December 31
Greenhouse gas emission liabilities	\ 4,108,572	\ 18,819,314	\ (4,108,572)	\ -	\ 18,819,314
Asset retirement obligation	7,621,449	979,729	(3,592,111)	146,292	5,155,359
Others	7,247,868	31,099	(3,856,670)	(524,143)	2,898,154
	<u>\ 18,977,889</u>	<u>\ 19,830,142</u>	<u>\ (11,557,353)</u>	<u>\ (377,851)</u>	<u>\ 26,872,827</u>

(*1) Effects of foreign exchange difference

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26. Provisions (cont'd)

Greenhouse gas emissions

The Group records a provision for estimated costs for actual emissions in excess of emission rights granted.

As at December 31, 2017, free emission rights and emissions estimated for the years ended December 31, 2016, 2017 and 2018 are as follows (tons):

	2015	2016	2017	Total
Free emission rights	5,707,416	5,627,428	6,753,088	18,087,932
Emissions estimated	6,018,151	6,070,467	6,467,465	18,556,083

There are no emission rights that have been provided as collateral and changes in the emission rights of the Group for the years ended December 31, 2016, 2017 and 2018 are as follows (tons):

	2015	2016	2017
January 1	5,691,653	5,431,456	5,315,619
Allocation adjustment and cancellation	(3,462)	(16,783)	(3,265)
Succession to rights (*1)	149	56,015	146
Early reduction performance	19,076	68,601	1,158,500
Additional allocation	-	88,139	282,088
December 31	<u>5,707,416</u>	<u>5,627,428</u>	<u>6,753,088</u>

(*1) Succession of rights from Lotte Chilsung Beverage Co., Ltd. and Samsung SDI Co.

27. Equity

Details of issued capital as at December 31, 2017 and 2016 are as follows (Korean won in thousands except par value amounts):

Category	Authorized	Issued	Par value	Issued capital
Common stock	100,000,000 shares	34,275,419 shares	\ 5,000	\ 171,377,095

There was no change in the number of shares issued for the years ended December 31, 2017 and 2016.

28. Other paid-in capital

Details of other paid-in capital as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Share premium	\ 22,913,228	\ 22,913,228
Others	857,830,645	455,662,922
	<u>\ 880,743,873</u>	<u>\ 478,576,150</u>

Changes in other paid-in capital for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
January 1	\ 478,576,150	\ 476,522,242
Disposal of treasury shares	197,262,725	-
Changes in ownership interests in subsidiaries	204,904,998	2,053,908
December 31	<u>\ 880,743,873</u>	<u>\ 478,576,150</u>

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29. Retained earnings and dividends

Details of retained earnings as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Legal reserve:		
Earned surplus reserve (*1)	\ 71,828,430	\ 58,351,617
Voluntary reserve:		
Reserve for research and human resources development	36,000,000	57,333,333
Reserve for business expansion	7,486,000,000	6,308,000,000
Unappropriated retained earnings	2,988,285,513	2,063,307,559
	<u>\ 10,582,113,943</u>	<u>\ 8,486,992,509</u>

(*1) In accordance with the *Korean Commercial Code*, earned surplus reserve may be used to reduce a deficit or may be transferred to capital.

Changes in retained earnings for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
January 1	\ 8,486,992,509	\ 6,739,344,146
Net income	2,243,875,143	1,835,812,632
Dividend paid	(134,768,124)	(84,230,078)
Remeasurement loss on defined benefit plans	(14,538,718)	(5,592,528)
Changes in retained earnings in equity method	553,133	1,658,337
December 31	<u>\ 10,582,113,943</u>	<u>\ 8,486,992,509</u>

Details of dividends declared for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands except for dividends per share):

	2017			
	Issued	Shares for dividends	Dividends per share	Total
Common stock	34,275,419 shares	33,692,031 shares	\ 4,000	\ 134,768,124
	2016			
	Issued	Shares for dividends	Dividends per share	Total
Common stock	34,275,419 shares	33,692,031 shares	\ 2,500	\ 84,230,078

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30. Other components of equity

Details of other components of equity as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		
	Before tax	Income tax effect	After tax
Gain on valuation of derivative financial instruments	\ 111,191	\ (30,578)	\ 80,613
Gain on valuation of AFS financial assets	39,063,923	(10,642,997)	28,420,926
Equity adjustment in equity method	41,221,216	(17,855,612)	23,365,604
Foreign currency translation differences of foreign operations	(196,473,890)	-	(196,473,890)
	\ (116,077,560)	\ (28,529,187)	\ (144,606,747)
	2016		
	Before tax	Income tax effect	After tax
Loss on valuation of derivative financial instruments	\ (1,141,470)	\ 276,236	\ (865,234)
Gain on valuation of AFS financial assets	20,828,908	(5,040,596)	15,788,312
Equity adjustment in equity method	70,234,609	(17,855,612)	52,378,997
Foreign currency translation differences of foreign operations	158,864,522	-	158,864,522
	\ 248,786,569	\ (22,619,972)	\ 226,166,597

Changes in other components of equity for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
	January 1	\ 226,166,597
Gain on valuation of derivative financial instruments	1,252,661	779,765
Tax effect	(306,814)	(188,702)
Gain (loss) on valuation of AFS financial assets	18,235,015	(8,719,509)
Tax effect	(5,602,401)	2,110,121
Equity adjustment in equity method	(29,013,393)	(2,207,050)
Difference on foreign currency translation of overseas operation	(355,338,412)	96,884,211
December 31	\ (144,606,747)	\ 226,166,597

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31. Sales

Details of sales for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Sale of goods	\ 15,817,074,455	\ 13,178,201,959
Rendering of service	37,520,224	15,685,090
Commissions	90,098	279,199
Other	19,825,913	29,374,626
	<u>\ 15,874,510,690</u>	<u>\ 13,223,540,874</u>

32. Selling and administrative expenses

Details of selling and administrative expenses for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Salaries	\ 163,202,166	\ 138,095,752
Pension benefits costs	13,358,473	11,611,527
Employee welfare benefits	35,196,791	32,565,296
Travel	12,645,635	10,687,856
Communications	13,542,757	14,454,750
Utilities	2,191,286	102,872
Taxes and dues	8,939,645	19,779,256
Supplies	1,440,983	2,625,399
Printing	538,127	619,183
Rents	18,502,449	16,180,156
Depreciation	10,683,730	9,065,399
Amortization	6,571,648	7,833,417
Repairs and maintenance	22,734,469	16,685,663
Vehicle maintenance	1,439,523	1,393,210
Insurance premium	4,544,119	3,962,278
Commissions and fees	68,678,463	53,935,962
Sales commission	5,964,650	6,697,709
Transportation and warehousing	329,871,991	279,596,290
Entertainment	3,475,875	2,470,070
Sales promotion	4,285,357	3,562,456
Advertising	18,826,239	5,514,450
Training	3,732,990	3,242,913
Compensation for damages	384,392	709,787
Sample	15,757,027	11,205,741
Bad debt expenses	53,079	593,182
Others	4,603,462	5,658,335
Research and development	91,748,183	63,602,150
	<u>\ 862,913,509</u>	<u>\ 722,451,059</u>

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33. Finance income

Details of finance income for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Interest income:		
Loans and receivables	\ 62,645,076	\ 28,683,669
AFS financial assets	113,277	131,207
	<u>62,758,353</u>	<u>28,814,876</u>
Gain on foreign currency transactions	103,220,704	77,733,739
Gain on foreign currency translation	76,087,528	29,435,706
Gain on valuation of financial assets at FVTPL	6,457,141	649,594
Gain on disposal of financial assets at FVTPL	778,495	-
Gain on valuation of derivative financial instruments	700,741	12,258,968
Gain on settlement of derivative financial instruments	3,050,694	6,580,540
Reversal of other bad debt expenses	-	674,000
	<u>\ 253,053,656</u>	<u>\ 156,147,423</u>

Finance income classified by financial instruments for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Loans and receivables	\ 106,658,763	\ 101,131,003
Financial instruments at FVTPL	7,235,636	649,594
AFS financial assets	113,277	131,207
Derivative assets designated as a hedge	3,751,435	18,839,508
Financial liabilities measured at amortized cost	135,294,545	35,396,111
	<u>\ 253,053,656</u>	<u>\ 156,147,423</u>

34. Finance costs

Details of finance costs for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Interest expenses:		
Bonds payable	\ 52,482,464	\ 52,207,298
Other interest expenses	70,123,908	29,153,345
	<u>122,606,373</u>	<u>81,360,643</u>
Less: cost included in qualifying assets	<u>(15,482,513)</u>	<u>(4,846,578)</u>
	107,123,860	76,514,065
Loss on foreign currency transactions	54,952,535	79,554,719
Loss on foreign currency translation	34,074,531	74,757,442
Loss on valuation of financial assets at FVTPL	28,345,993	2,032,866
Loss on disposal of financial assets at FVTPL	21,670	-
Loss on valuation of derivative financial instruments	42,982,149	565,190
Loss on settlement of derivative financial instruments	5,685,585	7,598,904
	<u>\ 273,186,323</u>	<u>\ 241,023,186</u>

Weighted-average interest rates of the borrowing costs capitalized for the years ended December 31, 2017 and 2016 are 2.70% and 2.55%, respectively.

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34. Finance costs (cont'd)

Finance costs classified by financial instruments for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Loans and receivables	\ 53,935,585	\ 39,127,062
Financial instruments at FVTPL	28,367,663	2,032,866
Derivative financial liabilities designated as a hedge	48,667,734	8,164,094
Financial liabilities measured at amortized cost	142,215,341	191,699,164
	<u>\ 273,186,323</u>	<u>\ 241,023,186</u>

35. Other non-operating income and expenses

Details of other non-operating income and expenses for the three-month and the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

Other non-operating income

	2017	2016
Gain on foreign currency transactions	\ 150,802,136	\ 179,547,875
Gain on foreign currency translation	24,839,130	29,043,691
Gain on disposal of property, plant and equipment	1,387,455	401,119
Reversal of bad debt expenses	7,115	-
Dividend income	794,571	690,201
Gain on disposal of AFS financial assets	10,574,887	-
Others	24,862,803	23,210,940
	<u>\ 213,268,097</u>	<u>\ 232,893,826</u>

Other non-operating expenses

	2017	2016
Loss on foreign currency transaction	\ 201,034,640	\ 180,175,038
Loss on foreign currency translation	28,302,725	18,381,339
Loss on disposal of property, plant and equipment	11,072,969	20,281,471
Impairment of property, plant and equipment	-	19,142,620
Loss on disposal of intangible assets	24,961	-
Impairment loss of AFS financial assets	48,923,000	6,329,000
Loss on disposal of AFS financial assets	4,376	-
Other bad debt expenses	-	27,050
Donations and contributions	16,658,344	10,848,383
Others	16,593,025	21,161,128
	<u>\ 322,614,040</u>	<u>\ 276,346,029</u>

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36. Income tax expense

The major components of income tax expense for years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Current income tax payable	\ 744,815,265	\ 565,030,951
Income tax expenses (benefits) directly charged to equity	(17,539,277)	3,729,935
Changes in deferred tax	63,726,935	84,682,561
Effect on deferred tax due to changes in foreign exchange rates	9,106,180	(3,255,266)
	<u>\ 800,109,103</u>	<u>\ 650,188,181</u>

A reconciliation between income before income tax and income tax expense of the Group for the years ended December 31, 2017 and 2016 is as follows (Korean won in thousands):

	2017	2016
Income before income tax expense	\ 3,084,686,041	\ 2,487,373,100
Income tax expense at the effective tax rate	769,193,312	603,219,140
Adjustments:		
Tax credit (special taxes for rural and fishing villages included)	(47,354,777)	(6,440,394)
Changes in unrecognized deferred tax	6,824,812	10,122,112
Additional income taxes for prior years	2,520,177	5,791,880
Surtax on undistributed earnings	46,874,293	46,439,034
Tax rate difference	16,315,342	-
Others	5,735,944	(8,943,591)
Income tax expense	<u>\ 800,109,103</u>	<u>\ 650,188,181</u>
Effective tax rate (income tax expense/income before income tax)	25.94%	26.14%

Changes in temporary differences and deferred tax assets (liabilities) for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		
	January 1	Increase (decrease)	December 31
Pension benefit obligation	\ 208,535,283	\ (18,343,824)	\ 190,191,459
Investments in subsidiaries, associates and joint ventures	(356,192,731)	96,979,000	(259,213,731)
Advanced depreciation provision	(155,756,436)	-	(155,756,436)
Revaluation of property, plant and equipment	(810,422,090)	(2,665,192)	(813,087,282)
Valuation on derivative financial instruments (OCI)	1,141,470	(1,252,661)	(111,191)
Valuation on derivative financial instruments	(159,133)	25,397,528	25,238,395
Valuation on AFS financial asset (OCI)	(17,812,104)	(18,235,015)	(36,047,119)
Reserve for research and human resources development	(40,000,000)	20,000,000	(20,000,000)
Plan assets	(202,525,095)	19,642,609	(182,882,486)
Investment tax allowance	225,088,499	(28,760,824)	196,327,675
Fair value differences due to business combination	(1,051,390,000)	85,214,784	(966,175,216)
Others	189,147,298	(24,191,215)	164,956,083
	<u>(2,010,345,039)</u>	<u>\ 153,785,190</u>	<u>(1,856,559,849)</u>
Unrealizable temporary differences	(14,752,048)		(65,342,485)
Realizable temporary differences	(1,995,592,991)		(1,791,217,364)
Tax rate (*1)	24.33%		30.67%
Deferred tax liabilities	<u>\ (485,596,380)</u>		<u>\ (549,323,315)</u>

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36. Income tax expense (cont'd)

	2016			
	January 1	Increase (decrease)	Business combination (Note 46)	December 31
Pension benefit obligation	\ 132,389,674	\ 31,367,956	\ 44,777,653	\ 208,535,283
Investments in subsidiaries, associates and joint ventures	(378,780,590)	22,587,859	-	(356,192,731)
Advanced depreciation provision	(155,756,436)	-	-	(155,756,436)
Revaluation of property, plant and equipment	(769,896,689)	42,114,313	(82,639,714)	(810,422,090)
Valuation on derivative financial instruments (OCI)	1,921,236	(779,766)	-	1,141,470
Valuation on derivative financial instruments	-	(159,133)	-	(159,133)
Valuation on AFS financial asset (OCI)	(26,531,315)	8,719,509	(298)	(17,812,104)
Reserve for research and human resources development	(61,333,333)	21,333,333	-	(40,000,000)
Plan assets	(121,714,361)	(39,307,839)	(41,502,895)	(202,525,095)
Investment tax allowance	722,497,940	(497,409,441)	-	225,088,499
Capital allowance	(4,342,451)	4,342,451	-	-
Fair value differences due to business combination	-	63,911,088	(1,115,301,088)	(1,051,390,000)
Others	244,362,622	(88,642,038)	33,426,714	189,147,298
	(417,183,703)	<u>(431,921,708)</u>	<u>(1,161,239,628)</u>	(2,010,345,039)
Unrealizable temporary differences	158,506,553			(14,752,048)
Realizable temporary differences	(575,690,256)			(1,995,592,991)
Tax rate (*1)	25.96%			24.33%
Deferred tax liabilities	<u>\ (149,447,578)</u>			<u>\ (485,596,380)</u>

(*1) Deferred tax assets and liabilities are measured at the tax rates that are expected to be applied 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.

Details of temporary differences, not recognized due to uncertainty of its realization, are as follows (Korean won in thousands):

	2017	2016
Investments in subsidiaries, associates and joint ventures	\ 8,940,117	\ (88,038,883)
Other temporary differences and carryover of tax credits	(74,282,602)	73,286,835
	<u>\ (65,342,485)</u>	<u>\ (14,752,048)</u>

Tax effects relating to the components of other comprehensive income and other equity changes recognized directly in equity for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Loss (gain) on valuation of AFS financial assets	\ (5,602,401)	\ 2,110,121
Loss on valuation of derivative financial instruments	(306,813)	(188,703)
Retained earnings adjustment in equity method	(89,532)	(159,147)
Remeasurement loss on defined benefit plans	4,562,883	1,967,664
Gain on disposal of treasury shares	(16,103,414)	-
	<u>\ (17,539,277)</u>	<u>\ 3,729,935</u>

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37. Expenses classified by nature

Expenses classified by nature for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017		
	Selling and administrative expenses	Cost of sales	Total
Changes in inventories	\ -	\ 929,502,835	\ 929,502,835
Raw materials used	-	9,137,871,733	9,137,871,733
Payroll expense	163,202,166	326,207,881	489,410,047
Pension benefits costs	13,358,473	29,272,773	42,631,246
Employee welfare benefits	35,196,791	42,960,928	78,157,719
Depreciation	10,683,730	595,266,509	605,950,239
Amortization	6,571,648	78,641,346	85,212,994
Commission	68,678,463	109,362,645	178,041,108
Transportation and warehousing	329,871,991	6,621,442	336,493,433
Others	235,350,247	826,168,131	1,061,518,378
	\ 862,913,509	\ 12,081,876,223	\ 12,944,789,732

	2016		
	Selling and administrative expenses	Cost of sales	Total
Changes in inventories	\ -	\ 943,086,704	\ 943,086,704
Raw materials used	-	7,166,502,941	7,166,502,941
Payroll expense	138,095,752	327,792,112	465,887,864
Pension benefits costs	11,611,527	25,666,042	37,277,569
Employee welfare benefits	32,565,296	36,492,706	69,058,002
Depreciation	9,065,399	552,160,537	561,225,936
Amortization	7,833,417	60,091,578	67,924,995
Commission	53,935,962	98,777,312	152,713,274
Transportation and warehousing	279,596,290	10,262,129	289,858,419
Others	189,747,416	736,003,817	925,751,233
	\ 722,451,059	\ 9,956,835,878	\ 10,679,286,937

38. Earnings per share

Basic earnings per share, which are computed by dividing net income by the weighted-average number of shares outstanding for the years ended December 31, 2017 and 2016 are as follows (Korean won):

	2017	2016
Net income attributable to owners of the parent (A)	\ 2,243,875,142,823	\ 1,835,812,632,200
Weighted-average number of shares outstanding during the year (B)	34,192,306 shares	33,692,031 shares
Basic earnings per share (C=A/B)	\ 65,625	\ 54,488

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38. Earnings per share (cont'd)

Details of weighted-average number of shares outstanding for the years ended December 31, 2017 and 2016 are as follows:

	2017			
	Period	Days	Number of shares outstanding	Average number of shares outstanding
At January 1	January 1 ~ December 31	365	33,692,031	12,297,591,315
Disposal of treasury shares	February 22 ~ December 31	313	583,388	182,600,444
				<u>12,480,191,759</u>
Weighted-average number of shares outstanding				<u>34,192,306</u>

	2016			
	Period	Days	Number of shares outstanding	Average number of shares outstanding
At January 1	January 1 ~ December 31	366	33,692,031	12,331,283,346
				<u>12,331,283,346</u>
Weighted-average number of shares outstanding				<u>33,692,031</u>

Basic and diluted earnings per share for the years ended December 31, 2017 and 2016 are the same as there is no dilutive potential common share.

39. Objectives and policies of financial risk management

Capital risk management

The primary objective of the Group's capital management is to maintain its ability to continuously provide return to its shareholders and stakeholders and to optimize its capital structure to reduce capital expenses.

As at December 31, 2017 and 2016, debt-to-equity ratios are as follows (Korean won in thousands):

	2017	2016
Total liabilities	\ 7,296,204,039	\ 6,466,016,999
Total equity	<u>12,254,767,061</u>	<u>9,400,817,170</u>
Debt-to-equity ratio	59.54%	68.78%

Significant accounting policies and methods adopted for each category of financial assets and liabilities and equity (including recognition criteria and measurement standards, and recognition criteria for revenue and expenses) are detailed in Note 2.

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39. Financial assets and risk management (cont'd)

Details of the Group's financial instruments by category as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

Financial assets

	2017				Total
	Financial assets at FVTPL	Loans and receivables	AFS financial assets	Derivative financial instruments designated as a hedge	
Cash and cash equivalents	\ -	\ 1,684,979,315	\ -	\ -	\ 1,684,979,315
Short-term financial instruments	-	3,086,656,513	-	-	3,086,656,513
Long-term financial instruments	-	67,512,500	-	-	67,512,500
Trade and other accounts receivable	-	1,667,550,761	-	-	1,667,550,761
Financial assets at FVTPL	2,434,730	-	-	-	2,434,730
AFS financial assets	-	-	355,287,350	-	355,287,350
Other financial assets	2,132,751	36,569,343	-	1,058,864	39,760,958
Finance lease receivables	-	3,026,956	-	-	3,026,956
	<u>\ 4,567,481</u>	<u>\ 6,546,295,388</u>	<u>\ 355,287,350</u>	<u>\ 1,058,864</u>	<u>\ 6,907,209,083</u>

	2016				Total
	Financial assets at FVTPL	Loans and receivables	AFS financial assets	Derivative financial instruments designated as a hedge	
Cash and cash equivalents	\ -	\ 2,202,683,183	\ -	\ -	\ 2,202,683,183
Short-term financial instruments	-	425,756,558	-	-	425,756,558
Long-term financial instruments	-	67,515,500	-	-	67,515,500
Trade and other accounts receivable	-	1,551,920,459	-	-	1,551,920,459
Financial assets at FVTPL	6,685,073	-	-	-	6,685,073
AFS financial assets	-	-	324,823,525	-	324,823,525
Other financial assets	3,062,733	18,596,451	-	12,482,402	34,141,586
Finance lease receivables	-	3,152,909	-	-	3,152,909
	<u>\ 9,747,806</u>	<u>\ 4,269,625,060</u>	<u>\ 324,823,525</u>	<u>\ 12,482,402</u>	<u>\ 4,616,678,793</u>

Financial liabilities

	2017			Total
	Financial liabilities at FVTPL	Financial liabilities measured at amortized cost	Derivative financial instruments designated as a hedge	
Trade accounts and other payables	\ -	\ 1,420,006,265	\ -	\ 1,420,006,265
Financial liabilities at FVTPL	25,372,005	-	-	25,372,005
Borrowings and bond payable	-	4,202,418,106	-	4,202,418,106
Other financial liabilities	-	188,697,457	35,545,161	224,242,618
	<u>\ 25,372,005</u>	<u>\ 5,811,121,828</u>	<u>\ 35,545,161</u>	<u>\ 5,872,038,994</u>

	2016		Total
	Financial liabilities measured at amortized cost	Derivative financial instruments designated as a hedge	
Trade accounts and other payables	\ 1,076,521,956	\ -	\ 1,076,521,956
Borrowings and bond payable	4,185,448,439	-	4,185,448,439
Other financial liabilities	106,925,250	1,983,895	108,909,145
	<u>\ 5,368,895,645</u>	<u>\ 1,983,895</u>	<u>\ 5,370,879,540</u>

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39. Financial assets and risk management (cont'd)

The Group is exposed to various risks related to its financial instruments, such as market risk, credit risk, currency risk and interest rate risk.

Market risk

The Group is mainly exposed to foreign exchange rate fluctuation risk and interest rate risk. To manage such risks, the Group uses a risk management system and derivative financial instruments.

Foreign currency risk

The Group is exposed to foreign exchange rate fluctuation relating to monetary assets and liabilities denominated in foreign currencies. The Group periodically evaluates and manages its exchange exposure risk using its financial management system.

The carrying amounts of the Group's foreign currency-denominated monetary assets and monetary liabilities by functional currency as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017					
	USD		EUR		MYR	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Functional currency:						
KRW	\ 1,039,349,911	\ 1,058,142,976	\ 45,233,389	\ 20,034,053	\ -	\ -
PKR	-	42,017,800	-	6,619	-	-
GBP	11,649	5,436,430	58,515,257	134,642,372	-	-
USD	-	-	-	672,597	787,507,687	19,030,956
CNY	3,684,687	79,020,519	-	-	-	-
	\ 1,043,046,247	\ 1,184,617,725	\ 103,748,646	\ 155,355,641	\ 787,507,687	\ 19,030,956
	2016					
	USD		EUR		MYR	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Functional currency:						
KRW	\ 1,436,328,263	\ 1,344,234,021	\ 53,531,669	\ 30,597,713	\ -	\ -
PKR	-	31,247,511	-	91,617	-	-
GBP	7,241	4,638,533	30,616,692	74,038,596	-	-
USD	-	-	60,983	429,962	111,308,181	12,618,621
CNY	7,806,712	241,600,305	-	-	-	-
	\ 1,444,142,216	\ 1,621,720,370	\ 84,209,344	\ 105,157,888	\ 111,308,181	\ 12,618,621

A sensitivity analysis on the Group's net income before income tax for the period, assuming a 10% increase or decrease in currency exchange rates, as at December 31, 2017 and 2016 is presented in the table below (Korean won in thousands):

	2017		
	USD	EUR	MYR
Functional currency:			
KRW	\ (1,879,307)	\ 2,519,934	-
PKR	(4,201,780)	(662)	-
GBP	(542,478)	(7,612,712)	-
USD	-	(67,260)	76,847,673
CNY	(7,533,583)	-	-
	\ (14,157,148)	\ (5,160,700)	\ 76,847,673
	2016		
	USD	EUR	MYR
Functional currency:			
KRW	\ 9,209,424	\ 2,293,396	-
PKR	(3,124,751)	(9,162)	-
GBP	(463,129)	(4,342,190)	-
USD	-	(36,898)	9,868,956
CNY	(23,379,359)	-	-
	\ (17,757,815)	\ (2,094,854)	\ 9,868,956

39. Financial assets and risk management (cont'd)

The above amounts include hedge effects relating to the currency swap contracts (see Note 23).

Interest rate risk

The Group is exposed to interest rate risk relating to its borrowings with floating interest rates. To manage its interest rate risks, the Group maintains a balance between borrowings with variable interest rate and fixed-interest rate or enters into interest swap contract. Risk management is evaluated periodically to adjust risks to appropriate levels corresponding to floating interest rates, and to apply the optimized risk management strategies.

The Group enters into derivative financial instruments to mitigate the risk of fluctuations in the fair value of fixed interest rate liabilities and the risk of cash flow fluctuations on floating interest rate liabilities due to changes in interest rates. Changes in interest rates could also have an impact on profit or loss since the Group has floating interest rate assets. The sensitivity analysis was performed based on the interest rate risk exposure of the non-derivative financial instruments at the reporting date, and was also performed assuming that the balance at the reporting date is the same for the entire reporting period. As a result of the sensitivity analysis, with all other variables held constant, if the interest rate is 50 BP higher or lower than the current level, the Group's net income before income tax for the period would decrease / increase by \ 8,551,842 thousand in 2017 (\ 6,966,791 thousand in 2016) mainly due to the risk of fluctuations in the interest rate of floating interest rate liabilities.

Other price risk

The Group's equity securities are susceptible to market price risk. The Group holds equity securities for strategic purposes, not for trading purposes, and the Group does not actively trade the equity investments. Investments in equity securities (excluding subsidiaries, associates and joint ventures) of the Group are unlisted, and equity securities subject to changes in price amounted to \ 240,765 million in 2017 (\ 289,703 million in 2016). With all other variables held constant, if the price of equity securities subject to changes in price fluctuate by 10%, the Group's capital will increase / decrease (before deducting tax effect) by \ 24,077 million in 2017 (\ 28,970 million in 2016).

Credit risk

The Group makes transactions with reputable financial institutions to manage credit risk and has policies and procedures for credit enhancement of financial assets. The Group determines credit transaction limits based on the evaluation of the client's credit. The Group continually reviews the credit and the limits of credit of clients to adjust necessary collateral. For delayed collection of financial assets, appropriate actions are taken in accordance with the reason for such delays. Accounts receivable are from a large number of customers, and it is also distributed to a variety of industries and across geographies. Credit rating for trade accounts receivable is continuously evaluated, and if necessary, the Group enters into guarantee insurance contracts. As financial institutions the Group makes transactions with are reputable financial institutions, the credit risk from liquid funds and derivatives are considered limited.

As at December 31, 2017 and 2016, the maximum exposed amounts of credit risk for financial assets maintained by the Group are as follows (CNY, USD, Korean won in thousands):

Description	Currency	2017	2016
Payment guarantee contract (*1)	USD	27,200	37,197
	CNY	679,900	339,950
	KRW	379,975,384	379,975,384

(*1) The maximum exposed amounts of payment guarantee contract represent a limit of payment guarantee, which is the maximum amount payable by the Group in case the debtor claims for the full guaranteed amount.

The carrying amount of financial assets exposed to credit risk, except for payment guarantee, performance guarantee contracts and loan commitments, best represents a limit of payment, so the carrying amount is excluded from the disclosure above.

39. Financial assets and risk management (cont'd)

Liquidity risk

The Group has established an appropriate liquidity risk management framework for the management of the Group's short-, medium- and long-term funding and liquidity management requirements. The Group manages liquidity risk by maintaining adequate reserves, banking facilities and reserve borrowing facilities, by continuously monitoring forecast and actual cash flows, and by matching the maturity profiles of financial assets and liabilities.

The table below analyses the Group's non-derivative financial liabilities into relevant maturity groups based on the remaining period at the end of the reporting period. The table below is based on the earliest maturity date the Group is to pay for the undiscounted cash flows of financial liabilities. The contractual maturity is based on the earliest possible date the Group will be asked to pay back (Korean won in thousands):

	2017			
	Within a year	1-5 years	Over 5 years	Total
Interest-free liabilities	\ 2,106,643,755	\ 22,443,067	\ -	\ 2,129,086,822
Fixed interest rate liabilities	683,679,270	509,658,723	519,857,699	1,713,195,692
Floating interest rate liabilities	815,220,858	1,615,981,143	60,000,000	2,491,202,001
	<u>\ 3,605,543,883</u>	<u>\ 2,148,082,933</u>	<u>\ 579,857,699</u>	<u>\ 6,333,484,515</u>

	2016			
	Within a year	1-5 years	Over 5 years	Total
Interest-free liabilities	\ 1,654,135,033	\ 13,139,868	\ -	\ 1,667,274,901
Fixed interest rate liabilities	1,071,817,000	325,086,500	-	1,396,903,500
Floating interest rate liabilities	674,139,524	1,956,960,948	160,000,000	2,791,100,472
	<u>\ 3,400,091,557</u>	<u>\ 2,295,187,316</u>	<u>\ 160,000,000</u>	<u>\ 5,855,278,873</u>

Amounts included above are the maximum amounts that the Group is obliged to pay for payment guarantee contracts. Based on expectations at the end of the reporting period, the Group assumes that it is more likely than not to pay such guarantees. However, such expectations are subject to change as the possibility of claims by the guaranteed party may change depending on the credit loss on financial receivables.

The following table shows expected maturity of non-derivative financial assets. The following table was prepared based on undiscounted contractual maturity of financial assets, including accrued interest. As the Group manages its liquidity based on net assets and net liabilities, non-derivative financial assets should be considered to understand the Group's liquidity risk management (Korean won in thousands):

	2017			
	Within a year	1-5 years	Over 5 years	Total
Interest-free assets	\ 1,685,690,436	\ 67,857,350	\ 15,257,512	\ 1,768,805,298
Floating interest rate assets	667,121	2,160,185	-	2,827,306
Fixed interest rate assets	4,772,007,698	556,784	2,483,267	4,775,047,749
	<u>\ 6,458,365,255</u>	<u>\ 70,574,319</u>	<u>\ 17,740,779</u>	<u>\ 6,546,680,353</u>

	2016			
	Within a year	1-5 years	Over 5 years	Total
Interest-free assets	\ 1,559,801,958	\ 68,183,373	\ 6,501,686	\ 1,634,487,017
Floating interest rate assets	562,892	2,982,501	-	3,545,393
Fixed interest rate assets	2,628,840,219	556,784	2,622,463	2,632,019,466
	<u>\ 4,189,205,069</u>	<u>\ 71,722,658</u>	<u>\ 9,124,149</u>	<u>\ 4,270,051,876</u>

39. Financial assets and risk management (cont'd)

The following table shows the liquidity analysis of derivatives in detail. Derivatives in the following table were prepared based on undiscounted cash inflows and outflows (Korean won in thousands):

	2017			Total
	Within a year	1-5 years	Over 5 years	
Cash inflows, net	\ 230,754,199	\ 244,913,790	\ 8,398,986	\ 484,066,975
Cash outflows, net	(244,849,572)	(276,588,515)	(11,141,540)	(532,579,627)
	\ (14,095,373)	\ (31,674,725)	\ (2,742,554)	\ (48,512,652)

	2016		Total
	Within a year	More than a year	
Cash inflows, net	\ 111,547,772	\ 332,588,380	\ 444,136,152
Cash outflows, net	(108,306,936)	(326,042,647)	(434,349,583)
	\ 3,240,836	\ 6,545,733	\ 9,786,569

Pledged receivables

Trade receivables sold or factored with recourse that have not been fully derecognized as they have not met the derecognition criteria applicable for financial assets amounted to \ 255,038 million as at December 31, 2017. In relation to these transactions, financial liabilities were recorded as short-term borrowings amounting to \ 255,038 million. Where accounts receivable are not collected by the due date, the Group is obligated by recourse to pay for the uncollected amounts. As the Group retains the risks and compensation on recourse conditions for debtors' default, the receivables are carried at their book values, and cash received from the factored receivables are recognized as short-term borrowings.

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40. Fair value of financial instruments

Details of carrying and fair value of the financial assets and liabilities, as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017			
	Level 1	Level 2	Level 3	Total
Financial assets:				
AFS financial assets (marketable equity securities)	\ 10,390,002	\ -	\ -	\ 10,390,002
AFS financial assets (non-marketable equity securities)	-	-	230,374,728	230,374,728
Financial assets at FVTPL	-	4,567,481	-	4,567,481
Derivative financial assets designated as a hedge	-	1,058,864	-	1,058,864
	<u>\ 10,390,002</u>	<u>\ 5,626,345</u>	<u>\ 230,374,728</u>	<u>\ 246,391,075</u>
Financial liabilities:				
Derivative liabilities at FVTPL	-	133,610	25,238,395	25,372,005
Derivative financial liabilities designated as a hedge	-	35,545,160	-	35,545,160
	<u>\ -</u>	<u>\ 35,678,770</u>	<u>\ 25,238,395</u>	<u>\ 60,917,165</u>
	2016			
	Level 1	Level 2	Level 3	Total
Financial assets:				
AFS financial assets (marketable equity securities)	\ 11,448,352	\ -	\ -	\ 11,448,352
AFS financial assets (non-marketable equity securities)	-	-	278,254,356	278,254,356
Financial assets at FVTPL	-	3,387,937	6,359,869	9,747,806
Derivative financial assets designated as a hedge	-	12,482,402	-	12,482,402
	<u>\ 11,448,352</u>	<u>\ 15,870,339</u>	<u>\ 284,614,225</u>	<u>\ 311,932,916</u>
Financial liabilities:				
Derivative financial liabilities designated as a hedge	-	1,983,895	-	1,983,895
	<u>\ -</u>	<u>\ 1,983,895</u>	<u>\ -</u>	<u>\ 1,983,895</u>

The Group management considers that the carrying amount of loans and receivables (financial assets) and financial liabilities measured at amortized cost as at December 31, 2017 and 2016 approximates their respective fair value.

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40. Fair value of financial instruments (cont'd)

Details of financial assets and liabilities, which are subsequently measured at fair value in principal, but are not measured at fair value as fair value cannot be measured reliably as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	Description	2017	2016
AFS financial assets (*1)	Non-marketable equity securities	9,897,086	9,907,007
	Bank bonds	90,000,000	20,000,000
	Monetary stabilization bonds	10,000,000	-
	Public bonds	4,625,535	5,213,810

(*1) They are measured at cost method as it is difficult to obtain financial information for the purpose of fair value measurement or the fair value by other appropriate methods cannot be measured reliably.

Changes in level 3 financial assets for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017					
	January 1	Acquisition	Disposal	Valuation	Impairment	December 31
AFS financial assets:						
Non-marketable equity securities	278,254,356	11,099,686	(29,434,800)	17,111,486	(46,656,000)	230,374,728
	2016					
	January 1	Acquisition	Business combination	Valuation	Impairment	December 31
AFS financial assets:						
Non-marketable equity securities	165,155,647	122,628,200	41,556	(3,242,047)	(6,329,000)	278,254,356

Details of valuation techniques and inputs applied on measurement of financial instruments categorized as level 2 and 3 are as follows:

- Currency forwards and interest rate swaps

Fair value of the Group's currency forward is based on quoted currency forward rates and the terms of foreign currency forward contracts match the terms of the expected maturities as at the end of the reporting period. The Group estimates quoted currency forward rates, using interpolation on market currency forward rates, when there are no quoted currency forward rates for identical terms as at the end of the reporting period. The Group uses an appropriate discount rate in order to estimate fair value of currency forwards using yield curves calculated by market rates as at the end of reporting period.

Discount rates and forward rates used to measure fair value of interest rate swaps are determined based on yield curves derived from quoted interest rates as at the end of the reporting period. Fair values are determined by using the discounted cash flows method using an appropriate discount rate.

The Group categorizes currency forwards and interest rate swaps within level 2 as inputs to measure fair value of the Group's currency forward are market observable.

- Non-marketable equity securities

The Group measures non-marketable equity securities at fair value, using discounted cash flow models. The measurement utilizes assumptions, such as sales growth rate, pretax operating margin, average cost of capital and others, which are not observable. The weighted-average cost of capital used to discount future cash flow is calculated by using the capital asset pricing model. The Group categorizes non-marketable equity securities within level 3 as the assumptions are significant to the entire measurement.

The Group recognizes transfers between different levels of fair value hierarchy at the time the transfer event occurred or when circumstances have changed. There have been no changes in level 2 and 3 fair value hierarchy as at the end of the reporting period.

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40. Fair value of financial instruments (cont'd)

Significant unobservable inputs used in the fair value measurement categorized within level 2 and 3 of the fair value hierarchy with a quantitative sensitivity analysis as at December 31, 2017 and 2016 are as follows (Korean won in millions):

	Fair value	Valuation method	Non-observable input variable	Range (weighted average)	Sensitivity of the input to fair value
Non-marketable equity securities	\ 230,375	Discounted cash flow	Perpetual growth rate Weighted-average cost of capital Sales growth rate (upcoming 5 years) Pre-tax operating income rate (upcoming 5 years)	0.00%~1.00% 6.42%~7.49% (6.81%) 1.5%~6.32% (3.77%) 8.9%~79.3% (45.23%)	If perpetual growth rate, sales growth rate and pre-tax operating income rate increase and weighted-average cost of capital decreases, fair value of non-marketable equity securities shall increase.
Put option	\ (25,238)	Black-Scholes model	Expected volatility	19.69%	If the expected volatility increases or the risk-free interest rate decreases, the fair value of the subscription right will increase.
Currency forward and interest swap	\ (30,052)	Discounted cash flow	Risk-free interest rate N/A	2.37% N/A	N/A

Effects of significant unobservable inputs used in the fair value measurement categorized within level 3 of the fair value on net income and other comprehensive income for the year ended December 31, 2017 are as follows (Korean won in thousands):

	Non-observable input variable	Change of input variable	Favorable change	Unfavorable change
AFS financial assets (Non-marketable equity securities)	Perpetual growth rate	±1.00%p	\ 24,313,710	\ (22,270,653)
	Weighted-average cost of capital	±1.00%p	36,908,563	(25,038,861)

The Group's accounting and finance department performs fair value measurement of level 2 and level 3 for the purpose of financial reporting and uses the valuation results from independent valuers. The result of such fair value measurement is reported directly to the chief financial officer.

- The sales growth rate and pretax operating margin applied to the fair value measurement of non-marketable equity securities are estimated based on mid- and long term financial business plans performance, forecast on future market, business environment.
- The weighted-average cost of capital used in the fair value measurement is estimated from the weighted average of the cost of equity derived from capital asset pricing model with beta (β) based on similar entities reflecting a sound capital structure and the cost of debt after tax.

41. Related-party transactions

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

	Related party
Subsidiaries	Lotte Chemical Titan Holding Berhad and other 19 companies, Lotte Chemical Trading (Shanghai) Corp., Lotte Chemical Engineering Plastics (Jiaxing) Co., Ltd., Lotte Chemical (Jiaxing) Corp., Sambark LFT Co., Ltd., Dacc Aerospace Co., Ltd., Lotte Chemical Alabama Corp., Lotte Chemical Engineering Plastics (Hefei) Co., Ltd., KP Chemtech Corp., Lotte Chemical Pakistan Limited, Lotte Chemical UK Limited, Lotte Chemical Poland Sp. zo.o., Lotte Chemical USA Corp. and other 2 companies, Lotte Chemical Engineering Plastics (Shenyang) Co., Ltd., Lotte Advanced Materials Co., Ltd. and its subsidiaries
Associates	Lotte Engineering & Construction Co., Ltd., Lotte Asset Development Co., Ltd., Hyundai Chemical Co., Ltd., Yeosu Petro Corp., Lotte Fine Chemical Co., Ltd.
Joint ventures	Seetec Co., Ltd., Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.), Lotte Sanjiang Chemical Co., Ltd., Lotte Mitsui Chemical Co., Ltd., Lotte Ube Synthetic Rubber Sdn. Bhd., Lotte Versalis Elastomers Co., Ltd., Kor-Uz Gas Chemical Investment Ltd., Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Honam Chemical Co., Ltd.)
Others	Hotel Lotte Co., Ltd. and others (*1)

(*1) Includes subsidiaries and associates of Hotel Lotte Co., Ltd.

Transactions and outstanding balances between the Group and other related parties are eliminated in consolidation and are not presented in the accompanying notes.

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41. Related-party transactions (cont'd)

Significant transactions with related parties for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

		Sales and others	
		2017	2016
	Related party		
Associates	Lotte Engineering & Construction Co., Ltd.	330,838	662,438
	Yeosu Petro Corp.	190	15
	Hyundai Chemical Co., Ltd.	7,265,898	628,662
	Lotte Fine Chemical Co., Ltd.	789,468	17,999
Joint ventures	Kor-Uz Gas Chemical Investment Ltd.	49,464	86,885
	Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Honam Chemical Co., Ltd.)	117,359,483	73,714,656
	Seetec Co., Ltd.	49,734,606	37,806,381
	Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	249,903,103	219,042,713
	Lotte Mitsui Chemical Co., Ltd.	6,170,324	6,879,640
	Lotte Sanjiang Chemical Co., Ltd.	136,755	106,298
	Lotte Versalis Elastomers Co., Ltd.	39,110,430	3,651,966
	Lotte Ube Synthetic Rubber Sdn. Bhd.	61,583,205	29,576,348
Other related party	Lotte Logistics Corp.	6,384	-
	Lotte Aluminum Co., Ltd.	33,334,486	24,131,437
	Uz-Kor Gas Chemical LLC	22,584,012	20,107,693
Others	Hotel Lotte Co., Ltd., and others	15,787,279	11,720,495
		<u>604,145,925</u>	<u>428,133,626</u>
		Purchases and others	
	Related party		
Associates	Lotte Engineering & Construction Co., Ltd.	209,914,584	260,105,225
	Yeosu Petro Corp.	196,460	160,308
	Hyundai Chemical Co., Ltd.	1,201,712,872	191,822,770
	Lotte Asset Development Co., Ltd.	1,998,108	416,716
	Lotte Fine Chemical Co., Ltd.	12,299,702	4,872,649
Joint ventures	Seetec Co., Ltd.	229,082,424	221,921,447
	Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	74,778,484	56,938,700
	Lotte Mitsui Chemical Co., Ltd.	5,710,155	5,344,680
	Lotte Sanjiang Chemical Co., Ltd.	74,101,897	81,269,786
Other related party	Lotte Logistics Corp.	25,134,429	18,840,619
	Lotte Aluminum Co., Ltd.	1,144,604	1,029,312
	Uz-Kor Gas Chemical LLC	244,805,978	248,183,337
Others	Hotel Lotte Co., Ltd., and others	216,689,835	160,743,561
		<u>2,297,569,532</u>	<u>1,251,649,110</u>

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41. Related-party transactions (cont'd)

Significant outstanding balances with related parties as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

		Receivables and others	
Related party		2017	2016
Associates	Lotte Engineering & Construction Co., Ltd.	10,247	49,865
	Yeosu Petro Corp.	7,067	9,277
	Hyundai Chemical Co., Ltd.	-	12,346
	Lotte Fine Chemical Co., Ltd.	25,592	142
Joint ventures	Kor-Uz Gas Chemical Investment Ltd.	-	3,675
	Weifang Lexing Chemical Co., Ltd. (formerly, Weifang Yaxing Honam Chemical Co., Ltd.)	7,165,523	6,698,595
	Seetec Co., Ltd.	5,875,560	4,547,978
	Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	16,558,686	15,424,096
	Lotte Mitsui Chemical Co., Ltd.	528,790	648,910
	Lotte Sanjiang Chemical Co., Ltd.	136,755	106,298
	Lotte Versalis Elastomers Co., Ltd.	10,681,797	2,259,438
	Lotte Ube Synthetic Rubber Sdn. Bhd.	6,625,155	7,326,763
Other related party	Lotte Aluminum Co., Ltd.	2,481,802	1,671,557
	Uz-Kor Gas Chemical LLC	8,096,569	2,806,054
Others	Hotel Lotte Co., Ltd., and others	27,632,130	17,775,667
		<u>85,825,673</u>	<u>59,340,661</u>
		Payables and others	
Related party		2017	2016
Associates	Lotte Engineering & Construction Co., Ltd.	131,291,483	8,796,784
	Yeosu Petro Corp.	16,080	15,292
	Hyundai Chemical Co., Ltd.	179,719,337	80,827,453
	Lotte Asset Development Co., Ltd.	183,160	114,597
Joint ventures	Lotte Fine Chemical Co., Ltd.	2,765,087	2,529,332
	Seetec Co., Ltd.	26,425,919	24,270,407
	Lotte MCC Co., Ltd. (formerly, Lotte MRC Co., Ltd.)	3,730,595	3,635,098
	Lotte Mitsui Chemical Co., Ltd.	19,500	102,115
	Lotte Sanjiang Chemical Co., Ltd.	9,841,823	8,665,841
Other related party	Lotte Versalis Elastomers Co., Ltd.	420,000	430,000
	Lotte Logistics Corp.	1,870,209	1,384,441
	Lotte Aluminum Co., Ltd.	3,078,690	260,031
	Uz-Kor Gas Chemical LLC	40,409,468	42,463,644
Others	Hotel Lotte Co., Ltd., and others	298,895,001	82,673,803
		<u>698,666,352</u>	<u>256,168,838</u>

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41. Related-party transactions (cont'd)

Equity transactions with related parties for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	Related party	Transactions	2017	2016
Additional investment	Lotte Versalis Elastomers Co., Ltd. (joint venture)	Cash	\ 54,899,995	\ 13,400,000
	Lotte Accelerator Corporation (others)	Cash	-	2,500,000
Newly acquired	Lotte Food Co., Ltd. (others) (*1)	Equity securities	1,408,128	-
	Igis I Corp.(others) (*2)	Cash	-	122,619,150
	Lotte Global Logistics Co., Ltd. (others)	Equity securities	11,099,686	-
Dividend income	Lotte MCC Co., Ltd. (formerly, Lottte MRC Co., Ltd.) (joint venture)	Cash	17,500,000	12,000,000
	Lotte Fine Chemical Co., Ltd. (associate)	Cash	2,409,357	-
	Kor-Uz Gas Chemical Investment Ltd. (joint venture)	Cash	30,705,875	-
	Seetec Co., Ltd. (joint venture)	Cash	10,000,000	17,500,000
	Lotte Food Co., Ltd. (others)	Cash	80,124	63,832
	Lotte Logistics Corp. (others)	Cash	33,154	93,494
	Sparx Asset Management Korea Co., Ltd. (others)	Cash	4,926	34,942
	Hotel Lotte Co., Ltd. (others)	Cash	17,387,272	10,867,045
	Lotte Property & Development (others)	Cash	42,875,272	26,797,045
	Lotte Holdings Co. Ltd.(others)	Cash	12,744,000	7,965,000

(*1) As the investment division of Lotte Food Co., Ltd. has been split and merged with Lotte Corporation, the Group has acquired the shares of Lotte Corporation during the year ended December 31, 2017.

(*2) Acquired Lotte Global Logistics Co., Ltd. from Igis I Corp.

Compensation for key management of the Group for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Short-term salaries	\ 32,123,704	\ 25,617,242
Pension benefits costs	3,731,928	3,431,298
	\ 35,855,632	\ 29,048,540

See Note 44 for details of payment guarantees provided as at December 31, 2017.

42. Cash and cash equivalents

Details of cash and cash equivalents as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Cash on hand	\ 232,674	\ 261,283
Bank deposits	1,684,979,315	2,202,683,182
	\ 1,685,211,989	\ 2,202,944,465

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43. Non-cash transactions

Significant non-cash transactions of investing and financing activities that are not included in the consolidated statements of cash flows for the years ended December 31, 2017 and 2016 are as follows (Korean won in thousands):

	2017	2016
Transfer to current portion of long-term loans receivable	-	3,279,167
Transfer of short-term loans receivable to long-term loans receivable	-	11,429,167
Transfer to current portion of non-current derivative financial liabilities	5,293,687	-
Transfer to current portion of non-current AFS financial assets	46,195	588,275
Transfer of advance payments to investments in associates	-	46,500,000
Transfer of investments in associates to other accounts receivable	-	32,491,665
Transfer of construction-in-progress to related property, plant and equipment	971,612,134	259,663,539
Transfer of property, plant and equipment to investment properties	16,723,210	348,176
Transfer to current portion of long-term prepaid expenses	713,200	757,200
Transfer to current portion of long-term accounts payable	2,298,451	5,205,293
Changes in accounts payable related to acquisition of property, plant and equipment	31,325,622	(177,236,773)
Changes in provision for asset retirement obligation related to acquisition of property, plant and equipment	2,500,000	-
Changes in provision for asset retirement obligation related to property, plant and equipment	94,286,459	-
Write-offs of accounts receivable	2,311,537	1,469,356
Transfer to current portion of bonds payable and long-term borrowings	804,818,994	153,020,861
Transfer of short-term borrowings and current portion of long-term borrowings to long-term borrowings	213,779,495	-
Transfer of financial assets at FVTPL to AFS financial assets	6,359,869	-
Transfer to current portion of long-term other accounts receivable	5,241,880	361,594
Transfer to current portion of other financial liabilities	5,666,000	-
Changes in borrowings due to business combination	-	258,500,000
Changes in advance payments of business combination	-	232,650,000
Transfer of short-term financial instruments to AFS financial assets	80,000,000	25,000,000

Changes in liabilities due to financing activities including changes in cash flows and non-cash transactions of the Group for the years ended December 31, 2017 are as follows (Korean won in thousands):

	2017					
	January 1	Financing activities	Foreign exchange difference	Fair value differences	Others (*1)	December 31
Short-term borrowings	\ 1,414,679,503	\ (575,881,345)	\ (27,681,806)	-	\ (107,619,975)	\ 703,496,377
Long-term borrowings	677,125,169	776,176,842	(127,593,710)	-	108,982,894	1,434,691,195
Bonds payable	2,093,643,767	(10,553,740)	(19,989,180)	-	1,129,687	2,064,230,534
Derivative liabilities (assets) designated as a hedge	(10,498,507)	1,321,168	-	42,281,408	1,382,227	34,486,296
	\ 4,174,949,932	\ 191,062,925	\ (175,264,696)	\ 42,281,408	\ 3,874,833	\ 4,236,904,402

	2016						
	January 1	Business combination	Financing activities	Foreign exchange difference	Fair value differences	Others (*1)	December 31,
Short-term borrowings	\ 444,775,582	\ 217,011,633	\ 642,148,167	\ 42,620,536	-	\ 68,123,585	\ 1,414,679,503
Long-term borrowings	448,546,186	6,595,687	52,691,841	(22,724,341)	-	192,015,796	677,125,169
Bonds payable	1,518,797,886	-	568,400,400	5,321,700	-	1,123,781	2,093,643,767
Derivative liabilities (assets) designated as a hedge	(4,358,639)	-	(1,018,364)	-	(11,693,778)	6,572,274	(10,498,507)
	\ 2,407,761,015	\ 223,607,320	\ 1,262,222,044	\ 25,217,895	\ (11,693,778)	\ 267,835,436	\ 4,174,949,932

(*1) Including the effect of account reclassifications, transfers to current portions and interest accruals

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44. Payment guarantee

Payment guarantees provided by the Company to its associates and joint ventures as at December 31, 2017 are as follows (USD, CNY and Korean won in thousands):

Guarantee	Foreign currency	Korean won	Description	
Lotte Sanjiang Chemical Co., Ltd.	CNY	534,900 \	87,536,385	Guarantee for comprehensive limit
	CNY	145,000	23,729,250	Guarantee for comprehensive limit
Lotte Ube Synthetic Rubber Sdn. Bhd.	USD	27,200	29,142,080	Payment guarantee of borrowings
		\	140,407,715	

DACC Aerospace Co., Ltd., which is a subsidiary of the Group, provided a payment guarantee for the borrowings of Human Composite Co., Ltd. from Woori Bank amounting to \ 1,119 million.

As at December 31, 2017, Lotte Chemical Titan Holding Berhad, a subsidiary of the Company, provides a payment guarantee amounting to \ 6,245 million for Lotte Ube Synthetic Rubber Sdn. Bhd.'s loan from the Bank of Tokyo-Mitsubishi UFJ (Malaysia) Berhad.

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45. Commitments and contingencies

The Group has entered into various agreements with financial institutions and others as at December 31, 2017 and details are as follows (Korean won, USD and MYR in thousands):

	Financial institution	Description	Contract amount
The Company	KEB Hana Bank	Bank overdrafts	KRW 10,000,000
	(Comprehensive limit of \ 265 billion, excluding \ 10 billion in overdrafts and \ 30 billion in account receivable loan)	Local letter of credit	KRW 10,000,000
		Usance and at sight	USD 190,000
		Stand by letter of credit	USD 20,000
		OA	USD 10,000
		Account receivable loan and win-win payment loan	KRW 30,000,000
	Woori Bank	Bank overdrafts	KRW 2,000,000
	(Comprehensive limit, \ 135 billion)	Usance and at sight	USD 110,000
	NongHyup Bank	Trade financing	USD 90,000
		Win-win payment loan	KRW 10,000,000
	Shinhan Bank	Usance	USD 100,000
	Standard Chartered Bank	Bank overdrafts	KRW 10,000,000
		Trade financing and purchase card	USD 100,000
	The Korea Development Bank	Usance and Import Loan	USD 150,000
	Kookmin Bank	Usance	USD 50,000
	Suhyup Bank	Trade financing	USD 30,000
	Mizuho Bank	Trade financing	USD 100,000
	Citibank	Usance and Import Loan	USD 50,000
	SMBC	Usance and stand-by letter of credit	USD 50,000
	JP Morgan	Trade financing and Import Loan	USD 50,000
	Credit Agricole	Usance and stand-by letter of credit	USD 80,000
	Deutsche Bank	Trade financing	USD 50,000
	BNP Paribas	Trade financing	USD 100,000
	ANZ	Trade financing	USD 50,000
	HSBC	Trade financing	USD 50,000
	Bank of China	Trade financing	USD 100,000
	Industrial Bank of Korea	Usance	USD 50,000
DBS	Trade financing	USD 80,000	
Lotte Card Co., Ltd.	Purchase card	KRW 300,000,000	
Lotte Chemical Titan Holding Berhad and its subsidiaries	Malayan Banking Berhad	Trade financing	MYR 570,000
		Bank overdrafts	MYR 26,000
	HSBC Bank	Trade financing	MYR 290,000
		General fund loan	USD 10,000
	Standard Chartered Bank	Trade financing	MYR 515,000
	Deutsche Bank	Trade financing	MYR 195,000
	Bank Islam Malaysia	Trade financing	MYR 150,000
JP Morgan	Trade financing	MYR 165,000	
Lotte Advanced Material Co., Ltd.	Kookmin Bank	General fund loan	KRW 30,000,000
		Trade financing	USD 10,000
		Trade financing	USD 40,000
		Trade financing	KRW 10,000,000
	KEB Hana Bank	Bank overdrafts	KRW 10,000,000
		Trade financing	USD 22,000
		Trade financing	USD 33,000
		General fund loan	KRW 10,000,000
	Woori Bank	Payment guarantee	USD 3,000
		Trade financing	USD 56,000
		Win-win partner loan	KRW 1,000,000
	Shinhan Bank	Trade financing	USD 40,000
		Credit account receivable system	KRW 20,000,000
	Suhyup Bank	Trade financing	USD 10,000
		Trade financing	USD 10,000
	DBS	Trade financing	USD 30,000
Lotte Card Co., Ltd.	Purchase card	KRW 30,000,000	

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45. Commitments and contingencies (cont'd)

	Financial institution	Description	Contract amount	
Other subsidiaries	Standard Chartered Bank (China) Limited	General facility borrowings	CNY	200,000
	Citibank (China) Co., Ltd.	General facility borrowings	CNY	100,000
	National Bank of Pakistan	Payment guarantee	PKR	391,250
		Local letter of credit	PKR	10,000
	Standard Chartered Bank	Payment guarantee	PKR	1,299,995
		MCB Bank Limited	Payment guarantee	PKR
	Askari Bank Limited	Local letter of credit	PKR	81,894
		Payment guarantee	PKR	200,000
	Citibank	Local letter of credit	KRW	550,561
	KEB Hana Bank	Account receivable loan	KRW	500,000

Technical license agreements

The Company entered into technical license agreements with Asahi Kasei Corporation and other overseas entities to receive technical know-how used in the production of dimethyl carbonates and ethylene vinyl acetate copolymers. Licensing fees (including manufacturing costs) incurred for the years ended December 31, 2017 and 2016 amounted to \ 403,175 thousand and \ 112,026 thousand, respectively.

In accordance with the technical license agreement entered into on December 13, 2006 between KP Chemical Corp., a subsidiary acquired by the Group in 2012, and UOP Co., Ltd, a US entity, for the payment of royalties for the MX Sorbex plant, the Company is obligated to notify UOP Co., Ltd. of its total output for the year on every January 30 of the following year for the purpose of calculating fees on amounts in excess of the royalties paid.

Supply agreement

For the stable purchasing of Naphtha and M-X (Mixed Xylene), the Company entered into a contract with Hyundai Chemical Co., Ltd. for a guaranteed supply over 20 years from 2016 to 2036.

Pending lawsuits

Four lawsuits with claims amounting to \ 25,056 million in relation to damage compensations are pending as at December 31, 2017. The Group is involved in various lawsuits and the ultimate outcome cannot be reasonably estimated as at the end of the reporting period.

Assets provided as collateral

Assets provided as collateral for the Group as at December 31, 2017 are as follows (USD and Korean won in thousands):

Entity	Asset	Book value	Details	Related amount (limit)	Financial institution
The Company	Kor-Uz Gas Chemical Investment Ltd. (Investments in associates)	\ 397,717,580	Borrowings of Uz-Kor Gas Chemical LLC	USD 2,074,029 (USD 2,508,900)	ING Bank N.V., etc.

Blank checks and promissory notes

The Group provided three blank checks as collateral to the Korea National Oil Corporation in connection to borrowings for the development of overseas natural resources (see Note 21), and one blank promissory note in connection with petroleum import tariffs.

45. Commitments and contingencies (cont'd)

Commitments and contingencies

As at December 31, 2017, the Company has a fund contribution agreement amounting to \ 185,000 million for Lotte Versalis Elastomers Co., Ltd.'s borrowings of \ 370,000 million. The amount is equivalent to the Company's share of Lotte Versalis Elastomers Co., Ltd. which is 50% plus one additional share.

The Company also has a fund contribution agreement amounting to \ 286,000 million for Hyundai Chemical Co., Ltd.'s borrowings of \ 715,000 million. The amount is equivalent to the Company's share of Hyundai Chemical Co., Ltd. which is 40%.

LLH Ltd. has a put option to sell its shares of Lotte Global Logistics Co., Ltd. to eight Lotte affiliates including the Company, and has the right to sell its shares on the same terms as those of Lotte affiliates when Lotte affiliates intend to sell their shares to a third party. In addition, eight Lotte affiliates including the Company have the right to preferentially purchase the shares of Lotte Global Logistics Co., Ltd., which is owned by LLH Ltd. The Group assesses the put option at fair value (see Note 20).

Others

Non-cancellable operating leases of the Group as at December 31, 2017 and 2016 are as follows (Korean won in thousands):

	Amounts
2018	\ 14,871,003
2019	13,797,311
2020	10,891,863
2021	10,842,152
2022 and afterwards	13,831,138
	<u>\ 64,233,467</u>

46. Business combination

The Company acquired 100% equity interest in Lotte Advanced Material Co., Ltd. At \ 2,585,000 million on April 29, 2016 and is deemed to have acquired the interest on April 1, 2016. Purchase considerations consist of the following (Korean won in millions):

	Amounts
Cash and cash equivalents	\ 2,326,500
Long-term borrowings and bonds payable (*1)	258,500
	<u>2,585,000</u>

(*1) The Company acquired 90% equity interest in Lotte Advanced Material Co., Ltd. and holds a call option over the remaining 10% owned by Samsung SDI Co. where Samsung SDI Co. holds a put option over the stock. Accordingly, the Company is deemed to have acquired the remaining equity interest and accounts for the equity interest as long-term borrowings.

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46. Business combination (cont'd)

The fair value of the identifiable assets and liabilities acquired or assumed by the Group at the acquisition date, the non-controlling interest and the goodwill at the acquisition date are as follows (Korean won in millions):

	Amounts	
1. Fair value of identifiable net assets		
Assets		
Current assets		668,198
Cash and cash equivalents	191,677	
Short-term financial instruments	2,665	
Trade accounts and other accounts receivable	274,800	
Inventories	175,008	
Other financial assets	949	
Other current assets	22,456	
Deferred tax assets	643	
Non-current assets		1,846,289
Non-current AFS financial assets	1,091	
Long-term financial instruments	217	
Property, plant and equipment	734,696	
Intangible assets	1,093,378	
Other non-current financial assets	4,090	
Other non-current assets	2,122	
Deferred tax assets	10,695	
Assets acquired		2,514,487
Liabilities		
Current liabilities		(377,825)
Trade payables and other accounts payable	(178,876)	
Borrowings	(138,414)	
Other financial liabilities	(20,835)	
Other current liabilities	(19,954)	
Income tax payables	(19,746)	
Non-current liabilities		(270,822)
Borrowings	(6,066)	
Net defined benefit liability	(2,903)	
Non-current provisions	(19)	
Other non-current financial liabilities	(11)	
Deferred tax liabilities	(261,823)	
Liabilities assumed		(648,647)
Fair value of identifiable net assets		1,865,840
2. Non-controlling interests		(1,441)
3. Goodwill		720,601
		2,585,000

46. Business combination (cont'd)

The total sales and net income of Lotte Advanced Material Co., Ltd. included in the consolidated statement of profit or loss and other comprehensive income of the Group for the year ended December 31, 2016, are \ 1,950.8 billion and \ 181 billion, respectively. If there was an acquisition transaction on February 1, 2016, the Group's total sales and net income for the year would have been \ 13,651.8 billion and \ 1,882 billion.

During the year ended December 31, 2016, the Group paid \ 11,149 million for acquisition tax and legal fees related to the business combination, which was recognized as selling, general and administrative expenses in the consolidated statement of profit or loss and other comprehensive income.