DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES

Consolidated Financial Statements and Independent Auditors' Report

As of and For the Years Ended December 31, 2016 and 2015

Doosan Infracore Co., Ltd.

Contents

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Independent Auditors' Report

English Translation of Independent Auditors' Report Originally Issued in Korean on March 23, 2017.

To the Shareholders and the Board of Directors of
Doosan Infracore Co., Ltd.:

Report on the Consolidated Financial Statements

We have audited the accompanying consolidated financial statements of Doosan Infracore Co., Ltd. and subsidiaries (the "Company"), which comprise the consolidated statements of financial position as of December 31, 2016 and 2015, respectively, and the related consolidated statements of income, consolidated statements of comprehensive income, consolidated statements of changes in shareholders' equity and consolidated statements of cash flows, all expressed in Korean won, for the years ended December 31, 2016 and 2015, respectively, 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 ("K-IFRS") and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an audit opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with Korean Standards on Auditing ("KSAs"). 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 financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the 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 financial statements.

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

Deloitte.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2016 and 2015, respectively, and its financial performance and its cash flows for the years ended December 31, 2016 and 2015, respectively, in accordance with K-IFRS.

Deloitte Anjin LLC

March 23, 2017

Notice to Readers

This report is effective as of March 23, 2017, the auditors' report date. Certain subsequent events or circumstances may have occurred between the auditors' report date and the time the auditors' report is read. Such events or circumstances could significantly affect the accompanying consolidated financial statements and may result in modification to the auditors' report.

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
(the "Company")

CONSOLIDATED FINANCIAL STATEMENTS
AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015

The accompanying consolidated financial statements, including all footnote disclosures, were prepared by, and are the responsibility of, Doosan Infracore Co., Ltd.

Sohn, Dong-youn
Chief Executive Officer
DOOSAN INFRACORE CO., LTD.

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
AS OF DECEMBER 31, 2016 AND 2015
(In Korean won)

ASSETS	Notes	December 31, 2016	December 31, 2015
CURRENT ASSETS:			
Cash and cash equivalents	2,4,5,10	₩538,577,771,079	₩560,002,522,384
Short-term financial instruments	2,4,5,10	148,025,668,394	381,899,640,621
Short-term investment securities	2,4,6,10	3,030,992,836	440,994,129
Trade and other receivables, less allowance for doubtful accounts	2,3,4,7,10,33,35	1,030,593,672,444	1,231,866,238,328
Derivative assets	2,4,9,10	6,219,743,447	8,330,967,001
Inventories	2,8	1,177,009,110,959	1,555,734,717,186
Other current assets		146,113,591,597	137,746,050,506
Total Current Assets		3,049,570,550,756	3,876,021,130,155
NON-CURRENT ASSETS:			
Long-term financial instruments	2,4,5,10	2,011,500,000	57,352,345,687
Long-term investment securities	2,4,6,10	148,120,965,082	97,862,349,930
Long-term trade and other non-current receivables, less allowance for doubtful accounts	2,3,4,7,10,35	7,015,864,222	2,637,222,111
Non-current derivative assets	2,4,9,10	-	158,889,290
Investments in joint ventures and associates	2,11,33,35	29,030,018,221	1,253,566,504
Property, plant and equipment, net	2,3,12,34	1,823,100,285,900	2,254,064,431,753
Intangible assets, net	2,3,13	4,440,698,436,635	4,423,689,090,861
Investment property, net	2,14	51,375,818,001	30,274,383,748
Deferred income tax assets	2,3,30	365,928,831,884	512,528,822,533
Other non-current assets	10	109,956,369,825	127,330,583,318
Total Non-current Assets		6,977,238,089,770	7,507,151,685,735
TOTAL ASSETS		₩10,026,808,640,526	₩11,383,172,815,890

(Continued)

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION (CONTINUED)
AS OF DECEMBER 31, 2016 AND 2015
(In Korean won)

LIABILITIES AND EQUITY	Notes	December 31, 2016	December 31, 2015
CURRENT LIABILITIES:			
Trade and other payables	4,10,15,35	₩1,041,875,892,086	₩1,063,584,860,464
Short-term borrowings	2,4,10,16,33,34	952,163,757,440	1,256,764,551,718
Current portion of bonds	4,10,16,33	764,734,004,459	809,000,378,306
Current portion of long-term borrowings	2,4,10,16,33,34	540,098,382,122	319,795,461,873
Income taxes payable	2,30	13,098,873,730	29,363,333,520
Derivative liabilities	2,4,9,10	1,542,154,578	25,487,152,056
Provisions	2,3,18	147,784,958,483	141,116,152,593
Other current liabilities	10	191,895,701,579	316,043,588,801
Total Current Liabilities		3,653,193,724,477	3,961,155,479,331
NON-CURRENT LIABILITIES:			
Other non-current payables	4,10,15	1,253,774,857	5,829,000,498
Bonds	4,10,16,33	714,649,461,884	1,115,328,426,402
Long-term borrowings	2,4,10,16,33,34	1,451,538,091,287	2,520,852,010,753
Retirement benefit obligation	2,17	510,101,486,646	554,544,988,746
Deferred income tax liabilities	2,3,30	78,243,717,573	4,709,378,917
Non-current provisions	2,3,18	25,167,184,042	20,141,775,364
Other non-current liabilities	2,10	144,284,457,632	97,655,447,499
Total Non-current Liabilities		2,925,238,173,921	4,319,061,028,179
Total Liabilities		6,578,431,898,398	8,280,216,507,510
EQUITY:			
Capital stock	1,19	1,037,276,570,000	1,037,276,570,000
Capital surplus	19	249,488,144,851	245,301,050,451
Capital securities	20	508,259,603,649	508,259,603,649
Other equity items	21	(42,440,546,020)	(37,401,620,359)
Accumulated other comprehensive loss	6,9,11,12,22	(270,371,100,895)	(207,670,131,707)
Retained earnings	23	578,245,971,895	475,597,665,117
Equity attributable to owners of the Parent		2,060,458,643,480	2,021,363,137,151
Non-controlling interests		1,387,918,098,648	1,081,593,171,229
Total Equity		3,448,376,742,128	3,102,956,308,380
TOTAL LIABILITIES AND EQUITY		₩10,026,808,640,526	₩11,383,172,815,890

(Concluded)

See accompanying notes to consolidated financial statements.

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME
FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015
(In Korean won)

	Notes	2016	2015
SALES	2,24,25,35	₩5,729,550,204,080	₩5,964,894,252,082
COST OF SALES	2,8,12,13,17,26,35	(4,404,458,833,345)	(4,747,330,597,428)
GROSS PROFIT		1,325,091,370,735	1,217,563,654,654
Selling and administrative expenses	7,12,13,14,17,26,27	(834,273,183,329)	(1,312,650,811,241)
OPERATING INCOME (LOSS)		490,818,187,406	(95,087,156,587)
Finance income	9,10,28	176,163,146,947	228,063,028,905
Finance expense	9,10,28	(427,649,808,272)	(581,523,642,412)
Other non-operating income	29	56,182,312,441	51,656,942,990
Other non-operating expense	7,29	(213,312,054,726)	(346,186,010,646)
Share of loss on joint ventures and associates	2,11	(151,702,916)	(37,976,950,860)
LOSS BEFORE INCOME TAX EXPENSE (BENEFIT)		82,050,080,880	(781,053,788,610)
INCOME TAX EXPENSE	2,30	(162,639,901,346)	(161,078,346,983)
INCOME FROM CONTINUING OPERATIONS		(80,589,820,466)	(942,132,135,593)
INCOME FROM DISCONTINUED OPERATIONS	38	196,574,676,248	82,626,934,146
NET INCOME (LOSS)		₩115,984,855,782	₩(859,505,201,447)
Attributable to:			
Owners of the Parent		₩63,180,866,208	₩(819,103,157,094)
Non-controlling interests		₩52,803,989,574	₩(40,402,044,353)
EARNINGS (LOSS) PER SHARE:	2,31		
From continuing and discontinued operations			
Basic		₩214	₩(4,037)
Diluted		₩214	₩(4,037)
From continuing operations			
Basic		₩(734)	₩(4,435)
Diluted		₩(734)	₩(4,435)

See accompanying notes to consolidated financial statements.

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015
(In Korean won)

	2016	2015
NET INCOME (LOSS)	₩115,984,855,782	₩(859,505,201,447)
OTHER COMPREHENSIVE INCOME (LOSS):		
Items not reclassified subsequently to profit or loss:		
Remeasurements of net defined benefit liabilities	1,076,069,895	24,546,108,446
Revaluation of property, plant and equipment	(29,875,400,000)	64,093,137,674
Items reclassified subsequently to profit or loss:		
Gain (loss) on valuation of available-for-sale financial assets	7,509,623,052	(64,590,463)
Decrease in equity of associates	-	(1,357,603,433)
Change in retained earnings of equity method investment securities	(54,238,168)	-
Gain (loss) on foreign operations translation	28,106,613,754	(65,721,554,954)
Gain (loss) on valuation of cash flow hedge derivatives	18,149,753,211	(4,836,294,196)
Total other comprehensive incomes	24,912,421,744	16,659,203,074
TOTAL COMPREHENSIVE INCOME (LOSS)	₩140,897,277,526	₩(842,845,998,373)
Owners of the Parent	₩46,187,327,828	₩(758,289,528,030)
Non-controlling interests	₩94,709,949,698	₩(84,556,470,343)

See accompanying notes to consolidated financial statements.

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015
(In Korean won)

	Capital stock	Capital surplus	Capital securities	Other equity items	Accumulated other comprehensive income (loss)	Retained earnings	Non-controlling interests	Total
Balance at January 1, 2015	₩1,037,276,570,000	₩240,200,109,681	₩508,259,603,649	₩(31,315,390,978)	₩(251,078,990,355)	₩1,295,796,676,795	₩489,149,680,389	₩3,288,288,259,181
Total comprehensive loss:								
Net loss	-	-	-	-	-	(819,103,157,094)	(40,402,044,353)	(859,505,201,447)
Remeasurements of net defined benefit liabilities	-	-	-	-	-	17,263,551,594	7,282,556,852	24,546,108,446
Revaluation and disposal of property, plant and equipment	-	-	-	-	62,942,852,084	141,218,822	1,009,066,768	64,093,137,674
Loss on valuation of available-for-sale financial assets	-	-	-	-	(64,590,463)	-	-	(64,590,463)
Increase in equity of associates	-	-	-	-	(1,357,603,433)	-	-	(1,357,603,433)
Loss on translation of foreign operations	-	-	-	-	(12,835,398,096)	-	(52,886,156,858)	(65,721,554,954)
Gain (loss) on valuation of derivatives	-	-	-	-	(5,276,401,444)	-	440,107,248	(4,836,294,196)
Subtotal	-	-	-	-	43,408,858,648	(801,698,386,678)	(84,556,470,343)	(842,845,998,373)
Capital transactions with shareholders:								
Extinguishment of share options	-	5,100,940,770	-	(5,100,940,770)	-	-	-	-
Share-based payment	-	-	-	427,603,345	-	-	-	427,603,345
Capital increase with consideration in subsidiaries	-	-	-	(635,082,842)	-	-	692,687,749,766	692,052,666,924
Dividends	-	-	-	-	-	(18,500,625,000)	-	(18,500,625,000)
Consideration in subsidiaries' dividends	-	-	-		-	-	(16,465,597,697)	(16,465,597,697)
Business transfer among consolidated entities	-	-	-	(777,809,114)	-	-	777,809,114	-
Subtotal	-	5,100,940,770	-	(6,086,229,381)	-	(18,500,625,000)	676,999,961,183	657,514,047,572
Balance at December 31, 2015	₩1,037,276,570,000	₩245,301,050,451	₩508,259,603,649	₩(37,401,620,359)	₩(207,670,131,707)	₩475,597,665,117	₩1,081,593,171,229	₩3,102,956,308,380

(Continued)

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY (CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015
(In Korean won)

	Capital stock	Capital surplus	Capital securities	Other equity items	Accumulated other comprehensive income (loss)	Retained earnings	Non-controlling interests	Total
Balance at January 1, 2016	₩1,037,276,570,000	₩245,301,050,451	₩508,259,603,649	₩(37,401,620,359)	₩(207,670,131,707)	₩475,597,665,117	₩1,081,593,171,229	₩3,102,956,308,380
Total comprehensive loss:								
Net income	-	-	-	-	-	63,180,866,208	52,803,989,574	115,984,855,782
Remeasurements of net defined benefit liabilities	-	-	-	-	-	(344,604,900)	1,420,674,795	1,076,069,895
Revaluation and disposal of property, plant and equipment	-	-	-	-	(88,030,246,138)	58,154,846,138	-	(29,875,400,000)
Gain on valuation of available-for-sale financial assets	-	-	-	-	7,509,623,052	-	-	7,509,623,052
Change in retained earnings of equity method investment securities	-	-	-	-	-	(54,238,168)	-	(54,238,168)
Gain(loss) on translation of foreign operations	-	-	-	-	(11,646,759,548)	-	39,753,373,302	28,106,613,754
Gain on valuation of derivatives	-	-	-	-	17,417,841,184	-	731,912,027	18,149,753,211
Subtotal	-	-	-	-	(74,749,541,450)	120,936,869,278	94,709,949,698	140,897,277,526
Capital transactions with shareholders:								
Acquisition of treasury stock	-	-	-	(2,030,605)	-	-	-	(2,030,605)
Extinguishment of share options	-	4,187,094,400	-	(4,187,094,400)	-	-	-	-
Share-based payment	-	-	-	134,592,399	-	-	-	134,592,399
Dividends	-	-	-	-	-	(18,288,562,500)	-	(18,288,562,500)
Capital increase with consideration of subsidiaries	-	-	-	22,118,381,131	-	-	(23,277,026,187)	(1,158,645,056)
Acquisition of investment in subsidiaries	-	-	-	(4,521,363,632)	-	-	(120,501,975,875)	(125,023,339,507)
Disposal of investment in subsidiaries	-	-	-	(18,581,410,554)	12,048,572,262	-	355,393,979,783	348,861,141,491
Subtotal	-	4,187,094,400	-	(5,038,925,661)	12,048,572,262	(18,288,562,500)	211,614,977,721	204,523,156,222
Balance at December 31, 2016	₩1,037,276,570,000	₩249,488,144,851	₩508,259,603,649	₩(42,440,546,020)	₩(270,371,100,895)	₩578,245,971,895	₩1,387,918,098,648	₩3,448,376,742,128

(Concluded)

See accompanying notes to consolidated financial statements.

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015
(In Korean won)

	Notes	2016	2015
CASH FLOWS FROM OPERATING ACTIVITIES:	36		
Cash generated from operations:		₩789,358,064,082	₩537,606,913,703
Net income (loss)		115,984,855,782	(859,505,201,447)
Adjustments		653,349,944,296	1,196,995,297,739
Changes in operating assets and liabilities		20,023,264,004	200,116,817,411
Interest received		13,406,879,435	24,239,583,149
Interest paid		(227,942,883,719)	(284,772,938,769)
Dividends received		5,400,000	2,116,931,945
Income tax paid		(61,834,959,484)	(42,505,652,567)
Net Cash Provided by Operating Activities		512,992,500,314	236,684,837,461
CASH FLOWS FROM INVESTING ACTIVITIES:			
Cash inflows from investing activities			
Disposal of short-term financial instruments		179,351,302,468	157,047,303,659
Disposal of short-term investment securities		-	52,600,000,000
Decrease in loans		-	3,434,710,010
Disposal of long-term financial instruments		55,340,845,687	10,000,000
Disposal of property, plant and equipment		50,396,713,962	8,692,770,840
Disposal of intangible assets		1,305,963,518	-
Disposal of investment properties		-	-
Disposal of investment in joint ventures and associates		-	3,269,774,270
Disposal of interests in subsidiaries		-	126,667,468,493
Proceeds from transfer of operations		929,419,723,186	-
Subtotal		1,215,814,548,821	351,722,027,272
Cash outflows for investing activities:			
Acquisition of short-term investment securities		-	45,600,000,000
Increase in long-term financial assets		-	55,340,845,687
Acquisition of long-term investment securities		40,066,219,698	3,364,805,929
Acquisition of investment in joint ventures		27,936,825,000	1,108,000,000
Acquisition of property, plant and equipment		173,943,691,398	214,829,568,249
Acquisition of intangible assets		64,233,909,078	69,816,975,379
Acquisition of investment properties		-	3,659,709,610
Net cash flows in business combinations		-	54,940,467,860
Subtotal		(306,180,645,174)	(448,660,372,714)
Net Cash Provided by (Used in) Investing Activities		₩909,633,903,647	₩(96,938,345,442)

(Continued)

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS (CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015
(In Korean won)

	2016	2015
CASH FLOWS FROM FINANCING ACTIVITIES:		
Cash inflows from financing activities:		
Increase in borrowings	₩-	₩206,066,008,395
Issuance of bonds	467,186,644,080	-
Capital increase by issuing new shares of subsidiaries	-	692,052,666,924
Change in equity of subsidiaries	242,528,119,780	-
Subtotal	709,714,763,860	898,118,675,319
Cash outflows for financing activities:		
Repayment of borrowings	1,096,762,547,569	706,064,126,138
Repayment of bonds	922,859,192,122	75,081,604,560
Dividends	18,288,562,500	18,500,625,000
Consideration in subsidiaries' dividends	-	16,465,597,697
Increase of subsidiary	1,158,645,055	-
Acquisition of subsidiary equity	125,023,339,507	-
Acquisition of treasury stock	2,030,605	-
Subtotal	(2,164,094,317,358)	(816,111,953,395)
Net Cash Provided by (Used in) Financing Activities	(1,454,379,553,498)	82,006,721,924
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	10,328,398,232	(24,703,459,016)
NET INCREASE(DECREASE) IN CASH AND CASH EQUIVALENTS	(21,424,751,305)	197,049,754,927
CASH AND CASH EQUIVALENTS AT THE BEGINNING OF YEAR	560,002,522,384	362,952,767,457
CASH AND CASH EQUIVALENTS AT THE END OF YEAR	₩538,577,771,079	₩560,002,522,384

(Concluded)

See accompanying notes to consolidated financial statements.

DOOSAN INFRACORE CO., LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015

1. ORGANIZATION AND DESCRIPTION OF THE BUSINESS:

(1) Parent company

Doosan Infracore Co., Ltd. ("DI" or the "Parent") was incorporated on October 23, 2000, through a spin-off from Daewoo Heavy Industries Ltd. ("DHI") under the corporate restructuring agreement dated January 20, 2000, between DHI and its creditors, approved by DHI's shareholders on June 27, 2000. DI operates and manages DHI's manufacturing, selling and construction businesses of industrial machinery and equipment.

In connection with the spin-off, effective September 30, 2000, DHI transferred to DI certain assets and liabilities amounting to ₩2,494 billion and ₩2,806 billion, respectively.

DI was listed on the stock market of Korean Exchange on February 2, 2001, and changed its name to Doosan Infracore Co., Ltd. from Daewoo Heavy Industries & Machinery Ltd. on April 29, 2005. DI's common stock as of December 31, 2016, amounts to ₩1,037,277 million, of which 36.40% is owned by Doosan Heavy Industries and Construction Co., Ltd.

(2) Consolidated Subsidiaries

1) DI's consolidated subsidiaries as of December 31, 2016 and 2015, are as follows:

			Proportion of ownership interests held by DI and immediate parents (%) (Note 1)		Proportion of ownership interests held by non-controlling interests (%) (Note 1)		
Subsidiaries	Type of business	Location	2016	2015	2016	2015	Financial closing date
Doosan Infracore China Co., Ltd.	Manufacturing and Sales	China	80.00	80.00	20.00	20.00	December 31
Doosan Infracore (China) Investment Co., Ltd.	Holdings	China	100.00	100.00	0.00	0.00	December 31
Doosan Infracore North America LLC.	Other Service	USA	100.00	100.00	0.00	0.00	December 31
Doosan Infracore Japan Corp.	Purchases	Japan	100.00	100.00	0.00	0.00	December 31
Doosan (China) Financial Leasing Corp.	Finance	China	100.00	100.00	7.80	7.80	December 31
Doosan Bobcat Chile S.A.	Sales	Chile	100.00	100.00	0.00	0.00	December 31
Doosan Infracore (Shandong) Co., Ltd.	Manufacturing and Sales	China	100.00	100.00	13.00	13.00	December 31
Doosan Infracore Norway AS.	Manufacturing and Sales	Norway	100.00	100.00	0.00	0.00	December 31
Doosan Infracore South America Industria E Comercio De Maquinas De Construcao LTDA.	Sales	Brazil	99.99	99.99	0.01	0.01	December 31
Doosan Infracore Bobcat Ireland Ltd.	Other Service	Ireland	100.00	100.00	0.00	0.00	December 31
Doosan Infracore Construction Equipment India Private Ltd.	Sales	India	100.00	100.00	0.00	0.00	March 31
Doosan Bobcat Co., Ltd. (*Note 2)	Holdings	Korea	59.33	75.50	40.67	24.50	December 31
Doosan International South East Asia Pte. Ltd.	Holdings	Singapore	100.00	100.00	40.67	24.50	December 31
Doosan Infracore Bobcat Korea Co., Ltd.	Sales	Korea	100.00	100.00	40.67	24.50	December 31
Doosan Bobcat Chile Compact SpA	Sales	Chile	100.00	100.00	40.67	24.50	December 31

Subsidiaries	Type of business	Location	Proportion of ownership interests held by DI and immediate parents (%) (Note 1) 2016	2015	Proportion of ownership interests held by non-controlling interests (%) (Note 1) 2016	2015	Financial closing date
Doosan Infracore India Private Ltd.	Manufacturing and Sales	India	100.00	100.00	40.67	24.50	March 31
Bobcat Corp.	Sales	Japan	100.00	100.00	40.67	24.50	December 31
Doosan International Mexico S.A. de C.V.	Other Service	Mexico	100.00	100.00	40.67	24.50	December 31
Doosan Infracore Suzhou Co., Ltd. (Note 3)	Manufacturing and Sales	China	100.00	100.00	40.67	24.50	December 31
Clark Equipment Co. (Note 4)	Manufacturing and Sales	USA	100.00	88.41	40.67	33.25	December 31
Bobcat Equipment Ltd.	Sales	Canada	100.00	100.00	40.67	33.25	December 31
Doosan International Australia Pty Ltd.	Sales	Australia	100.00	100.00	40.67	33.25	December 31
Doosan Holdings Europe Ltd. (Note 5)	Holding	Ireland	100.00	78.27	40.67	40.91	December 31
Doosan Infracore Europe S.A.	Sales	Belgium	100.00	100.00	40.67	40.91	December 31
Bobcat Bensheim GmbH.	Sales	Germany	100.00	100.00	40.67	40.91	December 31
Doosan Holdings France S.A.S.	Holdings	France	100.00	100.00	40.67	40.91	December 31
Doosan Techno Holding Co., Ltd. (Ireland)	Management	Ireland	100.00	100.00	40.67	40.91	December 31
Doosan Benelux SA.	Sales	Belgium	100.00	100.00	40.67	40.91	December 31
Doosan International Customization Center Europe B.V. (Note 6)	Sales	Netherlands	100.00	100.00	0.00	0.00	December 31
Doosan International Italia S.r.L.	Sales	Italy	100.00	100.00	40.67	40.91	December 31
CJSC Doosan International Russia	Sales	Russia	100.00	100.00	40.67	40.91	December 31
Doosan International UK Ltd.	Sales	England	100.00	100.00	40.67	40.91	December 31
Doosan International South Africa Ltd.	Sales	South Africa	100.00	100.00	40.67	40.91	December 31
Doosan Bobcat EMEA s.r.o. (Note 7)	Manufacturing	Czech	100.00	100.00	40.67	40.91	December 31
Doosan Bobcat Engineering s.r.o.	Research and development	Czech	100.00	100.00	40.67	40.91	December 31
Doosan Trading Ltd.	Shared service	Ireland	100.00	100.00	40.67	40.91	December 31
Bobcat Lyon SAS	Sales	France	100.00	100.00	40.67	40.91	December 31
Bobcat France S.A.	Manufacturing	France	100.00	100.00	40.67	40.91	December 31
Geith International Ltd.	Sales	Ireland	100.00	100.00	40.67	40.91	December 31
Doosan International Luxemburg	Management	Luxemburg	100.00	100.00	40.67	40.91	December 31

(Note 1) The proportion of ownership interests held by DI and immediate parents represents the aggregation of proportion of ownership interests directly held by DI and immediate parents in the subject entities. However, the proportion of ownership interests held by non-controlling interests represents that of ownership interests held by non-controlling interests that do not belong to the DI’s ownership interests, directly and indirectly. Accordingly, the proportion of ownership interests held by non-controlling interests shown in the above table would differ from those subtracting the proportion of ownership interests held by DI and immediate parents from the whole of the ownership interests in the subject entity.

(Note 2) For the year ended December 31, 2015, its name was changed from Doosan Infracore Bobcat Holdings Co., Ltd. to Doosan Bobcat Inc.

(Note 3) For the year ended December 31, 2016, Doosan Infracore Portable Power (Shanghai) Co., Ltd. and Doosan International China Co., Ltd. were merged into Doosan Infracore Suzhou Co., Ltd.

(Note 4) For the year ended December 31, 2016, Doosan Infracore International, Inc. was merged into Clark Equipment Co.

(Note 5) For the year ended December 31, 2016, Doosan Holdings International Ltd. was merged into Doosan Holdings Europe Ltd.

(Note 6) For the year ended December 31, 2016, its name was changed from Doosan International Portable Power of Netherlands BV to Doosan lnfracore Customization Center Europe B.V.

(Note 7) For the year ended December 31, 2016, its name was changed from Doosan Bobcat Manufacturing s.r.o. to Doosan Bobcat EMEA s.r.o

2) Condensed financial information of DI’s significant consolidated subsidiaries as of and for the year ended December 31, 2016, is as follows (in millions of Korean won):

Subsidiaries	Asset	Liability	Sales	Net income	Total comprehensive income (loss)
Doosan Infracore China Co., Ltd.	₩949,785	₩751,338	₩409,715	₩10,308	₩(10,287)
Doosan Infracore (China) Investment Co., Ltd.	224,612	6,200	8,730	9,464	3,105
Doosan Infracore North America LLC	119,069	50,894	217	4,729	4,729
Doosan Infracore Bobcat Ireland Ltd.	485,982	485,850	-	44	(489)
Doosan (China) Financial Leasing Corp.	621,839	449,170	61,603	921	10,520
Doosan lnfracore Customization Center Europe B.V.	71,541	70,924	126,334	434	9,662
Doosan Bobcat Inc. and subsidiaries	6,326,067	2,974,229	3,949,929	180,331	124,782

3) As of December 31, 2016, non-controlling interests in subsidiary having material impact on DI are as follows (in millions of Korean won):

Subsidiaries	Net income allocated to non-controlling interests	Non-controlling interests	Dividends allocated to non-controlling interests
Doosan Infracore China Co., Ltd	₩2,062	₩39,127	₩-
Doosan Bobcat Inc. and subsidiaries	52,933	1,363,766	-

(3) Changes in the scope of consolidation

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

Subsidiary	Change	Description
Doosan Infracore International, Inc.	Excluded	Merged with another subsidiary
Doosan Infracore Machine Tools Yantai Co., Ltd.	Excluded	Disposal of operations
Doosan Infracore Germany GmbH.	Excluded	Disposal of operations
Doosan Infracore America Corp..	Excluded	Disposal of operations
Doosan Infracore North America LLC	Included	Newly established
Doosan Infracore Portable Power (Shanghai) Co., Ltd.	Excluded	Merged with another subsidiary
Doosan International China Co., Ltd.	Excluded	Merged with another subsidiary
Doosan Holdings International Ltd.	Excluded	Merged with another subsidiary
Doosan International Manufacturing China Co., Ltd.	Excluded	Liquidation
GB-DIBH PF Equity 1	Included, Excluded	(*1)

(*1) As a result of the acquisition, the Company has been included in the consolidation due to the fact that it has the ability to substantially benefit from the gain on the investment trust and is excluded from the scope of consolidation in November 2016.

Changes in the scope of consolidation for the year ended December 31, 2015, are as follows:

Subsidiary	Change	Description
Doosan Infracore Bobcat Korea Co., Ltd.	Included	Newly established
Doosan Infracore Construction Equipment India Private Ltd.	Included	Newly established
Doosan Bobcat Chile Compact SpA	Included	Newly established
Montabert	Excluded	Decrease in ownership interest
Doosan (China) Financial Leasing Corp.	Included	Change in ownership interest

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

DI and its subsidiaries (the "Company") maintain their official accounting records in Korean won and prepare consolidated financial statements in conformity with Korean statutory requirements and Korean International Financial Reporting Standards ("K-IFRS"), in the Korean language (Hangul).

(1) Basis of Preparation

The Company has adopted the K-IFRS for the annual period beginning on or after January 1, 2011.

The significant accounting policies under K-IFRS followed by the Company in the preparation of its consolidated financial statements are summarized below, and these accounting policies have been applied consistently to the consolidated financial statements for the current period and the accompanying comparative period.

The accompanying consolidated financial statements have been prepared on the historical cost basis, except for certain non-current assets and financial instruments that are measured at fair values, as explained in the accounting policies below. Historical cost is based on the fair values of the consideration given.

1) Changes in accounting policies by newly adopted standards and interpretations for the current year are as follows:

Amendments to K-IFRS 1110 – Consolidated Financial Statements, K-IFRS 1112 Disclosure of Interests in Other Entities and K-IFRS 1028 Investment in Associates and Joint Ventures

The amendments clarify that in applying the equity method of accounting to an associate or a joint venture that is an investment entity, an investor may retain the fair value measurements that the associate or joint venture used for its subsidiaries. The application of these amendments has no significant impact on the disclosure in the Company's consolidated financial statements.

Amendments to K-IFRS 1111 – Joint Arrangements

The amendments to K-IFRS 1111 provide guidance on how to account for the acquisition of a joint operation that constitutes a business, as defined in K-IFRS 1103. A joint operator is also required to disclose the relevant information required by K-IFRS 1103 and other standards for business combinations. The application of these amendments has no significant impact on the disclosure in the Company's consolidated financial statements.

Amendments to K-IFRS 1001 – Presentation of Financial Statements

The amendments to K-IFRS 1001 clarify the concept of applying materiality in practice and restrict an entity reducing the understandability of its financial statements by obscuring material information with immaterial information or by aggregating material items that have different natures or functions. The application of these amendments has no significant impact on the disclosure in the Company's consolidated financial statements.

Amendments to K-IFRS 1016 – Property, Plant and Equipment

The amendments to K-IFRS 1016 prohibit the Company from using a revenue-based depreciation method for items of property, plant and equipment. The application of these amendments has no significant impact on the disclosure in the Company's consolidated financial statements.

Amendments to K-IFRS 1038 – Intangible Assets

The amendments to K-IFRS 1038 do not allow presumption that revenue is an appropriate basis for the amortization of intangible assets; the presumption can only be limited when the intangible asset is expressed as a measure of revenue or when it can be demonstrated that revenue and consumption of the economic benefits of the intangible asset are highly correlated. The application of these amendments has no significant impact on the disclosure in the Company's consolidated financial statements.

Amendments to K-IFRS 1016 – Property, Plant and Equipment and K-IFRS 1041 Agriculture: Bearer Plants

This amendment mainly concerns that the plant for production should be treated as property, plant and equipment. The application of these amendments has no significant impact on the disclosure in the Company's consolidated financial statements.

Annual Improvements to K-IFRS 2012-2014 cycle

The annual improvements include amendments to a number of K-IFRSs. The amendments introduce specific guidance in K-IFRS 1105 Non-current Assets Held for Sale and Discontinued Operations when an entity reclassifies an asset (or disposal group) from held for sale to held for distribution to owners (or vice versa), such a change is considered as a continuation of the original plan of disposal, and not as a change to a plan of sale. Other amendments in the annual improvements include K-IFRS 1107 Financial Instruments: Disclosures, K-IFRS 1019 Employee Benefits and K-IFRS 1034 Interim Financial Reporting. The application of these amendments has no significant impact on the disclosure in the Company's consolidated financial statements.

2) The Company has not applied the following new or revised K-IFRSs that have been issued, but are not yet effective:

Amendments to K-IFRS 1109 – Financial Instruments

The amendments to K-IFRS 1109 contain the requirements for the classification and measurement of financial assets and financial liabilities based on a business model whose objective is achieved both by collecting contractual cash flows and selling financial assets and based on the contractual terms that give rise on specified dates to cash flows, impairment methodology based on the expected credit losses, broadened types of instruments that qualify as hedging instruments, the types of risk components of non-financial items that are eligible for hedge accounting and the change in the hedge effectiveness test. The amendments are effective for annual periods beginning on or after January 1, 2018.

Based on an analysis of the Company's financial instruments as of December 31, 2016, on the basis of the facts and circumstances that exist at that date, the Company has performed a preliminary assessment of the impact of the K-IFRS 1109 on the Company's consolidated financial statements as follows:

① Classification and measurement of financial assets

With respect to the classification and measurement, K-IFRS 1109 requires more strict criteria, compared to K-IFRS 1039, for classifying as carried at amortized cost or fair value through other comprehensive income financial assets. At the date of initial application of K-IFRS 1109, as a result, the Company anticipates higher volatility in profit or loss due to the classification of some financial assets to 'financial assets at fair value through profit or loss ("FVTPL")' under K-IFRS 1109.

As of December 31, 2016, the Company's financial assets consist mainly of loans and receivables amounting to ₩1,244,270 million, held-to-maturity financial assets amounting to ₩2,662 million and available-for-sale ("AFS") financial assets amounting to ₩148,490 million.

Based on the preliminary assessment of the impact of applying K-IFRS 1109 to loans, receivables and held-to-maturity financial assets as of December 31, 2016, cash flows will consist of the principal and interest accrued on the remaining balance of the principal on a contractually specified date. As they will be measured at amortized cost, they will not have a material impact on the consolidated financial statements. If applied to available-for-sale equity instruments, the majority of them will be classified as financial assets measured at fair value with value changes recognized in other comprehensive income. Thus, they will not have a material impact on the consolidated financial statements.

② Classification and measurement of financial liabilities

As of December 31, 2016, all financial liabilities amounting to ₩5,491,397 million except for ₩1,542 million ₩5,492,939 million from that are within the scope of K-IFRS 1109 are designated as amortized cost. According to the preliminary assessment of potential impact of K-IFRS 1109, the Company does not anticipate that the application of the classification and measurement under K-IFRS 1109 to have a significant impact on the Company's consolidated financial statements.

③ Impairment: Financial assets and contract assets

The new impairment requirements in K-IFRS 1109 are based on an impairment model and replace the K-IFRS 1039 incurred loss model. The expected credit loss model applies to debt instruments recorded at amortized cost or at fair value through other comprehensive income, plus lease receivables, contract assets, loan commitment and financial guarantee contracts. The amount of expected credit loss recognized as a loss allowance is updated at each reporting date to reflect changes in credit risk since initial recognition.

As of December 31, 2016, the Company's debt instruments recorded at amortized cost amounting to ₩1,574,977 million and its allowance for credit loss amounting to ₩537,367 million are recorded.

The Company has measured a loss allowance for account receivables with significant financial elements in the amount equivalent to the expected credit loss impairment and performed a preliminary assessment of the impact by using a simple method where credit risk is not counted if it is low as of the end of the reporting date. According to the assessment, as of December 31, 2016, the Company's loss allowance has been expected to increase by ₩1,095 million from ₩537,367 million to ₩538,462 million.

Amendments to K-IFRS 1115 – Revenue from Contracts with Customers

The core principle under K-IFRS 1115 is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The amendments introduce a five-step approach to revenue recognition and measurement: 1) Identify the contract with a customer, 2) Identify the performance obligations in the contract, 3) Determine the transaction price, 4) Allocate the transaction price to the performance obligations in the contract and 5) Recognize revenue when (or as) the entity satisfies a performance obligation. This standard will supersede K-IFRS 1011 - Construction Contracts, K-IFRS 1018- Revenue, K-IFRS 2113 - Customer Loyalty Programs, K-IFRS 2115-Agreements for the Construction of Real Estate, K-IFRS 2118 - Transfers of Assets from Customers and K-IFRS 2031-Revenue-Barter Transactions Involving Advertising Services. The amendments are effective for annual periods beginning on or after January 1, 2018.

Based on an analysis of the Company's revenue from contracts with customers as of December 31, 2016, on the basis of the facts and circumstances that exist at that date, the Company has performed a preliminary assessment of the impact of the K-IFRS 1115 to the Company's consolidated financial statements as follows:

① Sales-related warranties

With regard to the sales-related warranties, the Company is still in the process of allocating transaction price to each remaining performance obligation in the sales-related warranty contract, and it is not practicable to provide a reasonable financial estimate of the effect until the Company's management completes the detailed review. Meanwhile, As of December 31, 2016, the Company's warranty provision for product quality amounting to ₩138,855 million is recorded.

② Sale with return ticket

In applying K-IFRS 1115, the Group estimates the variable cost using the expected value method which is supposed to better estimate gains the Group is entitled to. Once the return period has elapsed, the Group will recognize revenue only to the extent that it is highly likely that revenue that has already been recognized will not be reversed. Consideration received or receivable that the Group does not expect to have a right to will be recorded as return liabilities.

The Group has not carried out a detailed review of the financial impact of variable costing. Based on the preliminary assessment, however, the Group expects assets and liabilities in relation to return provisions to increase by 2,574 million, respectively, as a result of the adoption of K-IFRS 1115.

Amendments to K-IFRS 1102—Share-based Payment

The amendments include: 1) when measuring the fair value of share-based payment, the effects of vesting and non-vesting conditions on the measurement of cash-settled share-based payment should be consistent with the measurement of equity-settled share-based payment, 2) Share-based payment transaction in which the Company settles the share-based payment arrangement net by withholding a specified portion of the equity instruments per statutory tax withholding requirements would be classified as equity-settled in its entirety, if otherwise would be classified as equity-settled without the net settlement feature, and 3) when a cash-settled share-based payment changes to an equity-settled share-based payment because of modifications of the terms and conditions, the original liability recognized is derecognized and the equity-settled share-based payment is recognized at the modification date fair value. Any difference between the carrying amount of the liability at the modification date and the amount recognized in equity at the same date would be recognized in profit and loss immediately. The amendments are effective for annual periods beginning on or after January 1, 2018.

Amendments to K-IFRS 1007—Statement of Cash Flows

The amendments require that changes in liabilities arising from financial activities are disclosed. The amendments are effective for annual periods beginning on or after January 1, 2017.

Amendments to K-IFRS 1012—Income Taxes

The amendments clarify that unrealized losses on fixed-rate debt instruments measured at fair value and measured at cost for tax purposes give rise to a deductible temporary difference regardless of whether the holder expects to recover the carrying amount of the debt instrument by sale or by use and that the estimate of probable future taxable profit may include the recovery of some of assets for more than their carrying amount. When the Company assesses whether there will be sufficient taxable profit, the Company should compare the deductible temporary differences with future taxable profit that excludes tax deductions resulting from the reversal of those deductible temporary differences. The amendments are effective for annual periods beginning on or after January 1, 2017

The application of these amendments has no significant impact on the disclosure in the Company’s consolidated financial statements.

(2) Consolidation

The consolidated financial statements incorporate the financial statements of the Parent and entities controlled by the Parent (or its subsidiaries).

1) Subsidiaries

Subsidiaries generally include those companies over which the Company exercises control. Control over an entity is presumed to exist when the Company owns, directly or indirectly through subsidiaries, more than 50% of the voting rights of the entity; the Company has the power to govern the operating and financial policies of the entity through agreement; or the Company has the power to appoint or remove the majority of the members of the board of the entity. It is required to consider the existence and the effect of potential voting rights currently exercisable or convertible when assessing whether the Company has control over another entity.

Subsidiaries are fully consolidated from the date when control is transferred to the Company and deconsolidated from the date when control ceases to exist.

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 acquisition-date fair values of the assets transferred by the Company, liabilities incurred by the Company to the former owners of the acquiree and the equity interests issued by the Company in exchange for control of the acquiree. When the consideration transferred by the Company 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. Non-controlling interests 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.

Goodwill is measured as the excess of the sum of: a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree and c) the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed. If, after reassessment, the net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of: a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree and c) the fair value of the acquirer's previously held interest in the acquiree (if any), the excess is recognized immediately in income or loss as a bargain purchase gain.

All intragroup transactions, balances, income and expenses are eliminated in full on consolidation. When necessary, adjustments are made to the financial statements of subsidiaries to make their accounting policies in line with those used by the Company.

Transactions with non-controlling interests are considered as those with owners of the Company. The difference between the consideration for the acquisition of interests from non-controlling interests and the proportionate share of carrying amount of subsidiary's net assets is accounted for as equity transactions. Changes in the Company's ownership interests in subsidiaries that do not result in the Company losing control over the subsidiaries are accounted for as equity transactions. When the Company loses control of a subsidiary, the income or loss on disposal is calculated as the difference between the aggregate of the fair value of the consideration received and the fair value of any retained interest and the previous carrying amount.

2) Investments in joint ventures and associates

An associate is an entity over which the Company has significant influence, and which is neither a subsidiary nor an investment in a joint venture, and the Company generally holds, directly or indirectly through subsidiaries, more than 20 % of the voting power of the entity. A joint venture is a contractual arrangement whereby the Company and other parties undertake an economic activity that is subject to joint control.

These investments are initially recognized at cost and accounted for using the equity method.
The carrying amount of the investments contains goodwill arising from the acquisition and is presented at that amount, less accumulated impairment losses.

After acquisition, the Company's share of the income or loss and other comprehensive income of the associates and jointly controlled entities are recognized as income or loss and other comprehensive income and the Company's share of the changes in retained earnings of the associates and joint ventures are recognized as retained earnings. When the Company's share of losses in associates and joint ventures exceeds the Company's interest in those entities (which includes any long-term interests that, in substance, form part of the Company's net investment in the associate), the Company discontinues recognizing its share of further losses. Additional losses are recognized only to the extent that the Company has incurred legal or constructive obligations or made payments on behalf of the associates and joint ventures.

Unrealized gains from transactions between the Company and its associates and joint ventures are eliminated up to the interests in those entities. Unrealized losses are also eliminated, unless evidence of impairment in assets transferred is provided.

When necessary, the Company may revise associates' and joint ventures' financial statements, to apply consistent accounting policies of the Company, prior to applying the equity method of accounting for its investments in the associates and joint ventures.

For overseas investees whose financial statements are prepared in foreign currencies, the equity method of accounting is applied after assets and liabilities are translated in accordance with the accounting treatments for the translation of the financial statements of overseas' subsidiaries for consolidated financial statements. The Company's proportionate share of the difference between assets, net of liabilities, and equity after translating into Korean won is accounted for as increase (decrease) in equity of associates" and included in accumulated other comprehensive income (loss).

(3) Foreign currency translation

1) Functional currency and presentation currency

The Company’s financial statements are presented in the currency of the primary economic environment in which it operates (its functional currency). The functional currency of DI and the presentation currency for the consolidated financial statements of the Company is Korean won.

2) Foreign currency transaction and translation of balance

Transactions in currencies other than the entity’s functional currency are recognized at the rates of exchange prevailing at the dates of the transactions. Foreign currency gain (loss) from settlements of foreign currency transactions or translation of monetary items denominated in foreign currencies are recognized in income or loss whereas the gain (loss) from qualified cash flow hedge and net investment hedge for foreign operations is deferred as an equity item.

3) Translation of foreign operations

For the purpose of presenting consolidated financial statements, the assets and liabilities of the Company’s foreign operations having functional currencies different from the Company are translated in presentation currency of the Company using 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 fluctuated 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 other comprehensive income and accumulated in equity (attributed to non-controlling interests as appropriate). Exchange differences from the net investment in the foreign operation and borrowings and other foreign currency instruments designated as hedging instrument for the net investment in the foreign operation are recognized in other comprehensive income. On disposal of a foreign operation resulting in loss of control, all of the accumulated exchange differences in respect of that operation are reclassified to income 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.

(4) Cash and cash equivalents

Cash and cash equivalents include cash on hand; demand deposits; and short-term, highly liquid investments with maturities (or date of redemption) of three months or less upon acquisition. Bank overdraft is classified as short-term borrowings in the consolidated statements of financial position.

(5) Financial assets

1) Classification of financial assets

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

a) Financial assets at FVTPL

Financial assets are classified as at FVTPL when the financial asset is a contingent consideration that may be paid by an acquirer as part of business combination to which K-IFRS 1103 applies. A financial asset is classified as held-for-trading financial asset if it has been acquired principally for the purpose of selling or repurchasing in near term. All derivative assets, including an embedded derivative separated from the host contract and accounted for as derivative, are classified as held for trading financial assets, unless they are designated as effective hedging instruments. These categories of assets are classified as current assets or non-current assets depending on the timing of settlement.

b) Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Loans and receivables with maturities of more than 12 months from the end of the reporting period are classified as non-current assets. Otherwise, they are classified as current assets.

c) AFS financial assets

AFS financial assets are non-derivative financial assets that are designated as AFS or are not classified as loans and receivables, held-to-maturity investments or financial assets at FVTPL. AFS financial assets are classified as non-current assets, unless management has intention to sell them within 12 months.

d) Held-to-maturity investments

Held-to-maturity investments are non-derivative financial instruments with fixed or determinable payments and fixed maturity that the Company has the positive intention and ability to hold to maturity. Held-to-maturity investments, with maturities of more than 12 months from the end of the reporting period, are classified as non-current assets. Otherwise, they are classified as current assets.

2) Recognition and measurement

All financial assets are recognized on the trade date when the purchase or sale of a financial asset is under a contract and are initially measured at fair value, plus transaction costs, except for financial assets at FVTPL, which are initially measured at fair value and related transaction costs are recognized in income or loss.

Financial assets at FVTPL and AFS financial assets are subsequently measured at fair value. Loans and receivables and held-to-maturity investments are measured at amortized cost using the effective interest method. Gains or losses arising from changes in fair value of financial assets at FVTPL are recognized in the other non-operating income and expense line item in the consolidated statements of income. Dividends on financial assets at FVTPL are recognized in the finance income when the Company's right to receive the dividends is established.

Changes in fair value of monetary and non-monetary financial assets that are classified as AFS financial assets are recognized in other comprehensive income. When the investment is disposed of or is determined to be impaired, the cumulative gain or loss previously accumulated in equity is reclassified into other non-operating income and expense in the consolidated statement of income.

Interest from AFS financial assets calculated using the effective interest method is recognized in finance income in the consolidated statement of income. Dividends on AFS equity instruments are recognized in the finance income when the Company's right to receive the dividends is established.

3) Impairment of financial assets

a) Financial assets measured at amortized cost

The Company assesses, at the end of each reporting period, whether there is any objective evidence that a financial asset is impaired. Financial assets are considered to be impaired when there is objective evidence that, as a result of one or more events that occurred after the initial recognition of the financial asset, the estimated future cash flows of the investment have been affected. Impairment loss is the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the financial asset's original effective interest rate at initial recognition. The carrying amount of the financial asset is reduced by the impairment loss and the amount of the loss is recognized in income or loss. The Company measures impairment loss based on the fair value of financial assets from observable market data.

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 and recognized in income or loss.

b) AFS financial assets

The Company assesses at the end of each reporting period whether there is any objective evidence that a financial asset, or a group of financial assets, is impaired. For equity investments classified as AFS financial assets, a significant or prolonged decline in the fair value of the security below its cost is considered to be objective evidence of impairment. If there is an objective evidence of impairment on AFS financial assets, the cumulative loss that has been recognized in other comprehensive income, less any impairment loss previously recognized in income or loss, is reclassified from equity to income or loss. Impairment losses recognized in income or loss for an investment in an equity instrument classified as AFS financial assets are not reversed through income or loss. Meanwhile, if, in a subsequent period, the fair value of a debt instrument classified as AFS financial assets increases and the increase can be objectively related to an event occurring after the impairment loss was recognized in income or loss, the impairment loss is reversed through income or loss.

4) Derecognition of financial assets

The Company 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.

5) Offsetting financial assets and financial liabilities

Financial assets and financial liabilities are offset as a net amount in the consolidated statements of financial position when the Company has a legally enforceable right to set off the recognized amounts of the assets and liabilities and intends to settle them on a net basis or realize the assets and the liabilities simultaneously.

(6) Financial liabilities and equity instruments

1) Classification as debt and equity instruments

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 Company are recognized as the proceeds are received, net of direct issue costs.

When the Company reacquires its own shares, those shares are deducted from equity. No gain or loss is recognized in income or loss on the purchase, sale, issue or cancellation of an entity's own equity instruments.

3) Compound instruments

The component parts of compound instruments (convertible bonds) issued by the Company are classified separately as financial liabilities and equity in accordance with the substance of the contractual arrangement. Conversion option over an entity's own equity is accounted for as equity only when it will be settled by the entity delivering (or receiving) a fixed number of its own equity instruments and receiving (or delivering) a fixed amount of cash or another financial asset.

At the date of issue, the fair value of the liability component is estimated using the prevailing market interest rate for a similar non-convertible instrument. This amount is recorded as a liability on an amortized cost basis using the effective interest method, until extinguished upon conversion or at the instrument's maturity date. Conversion option classified as equity is reclassified to share premium when the option is exercised.

The equity component is determined by deducting the amount of the liability component from the fair value of the compound instrument as a whole. This is recognized and included in equity, net of income tax effects, and is not subsequently remeasured.

Transaction costs related to issuance of convertible bonds are allocated between the liability and equity components in proportion to relative fair value. Transaction costs allocated to equity are recognized directly in equity. Transaction costs allocated to liability are included in book value of liability and amortized using effective interest method.

4) Financial liabilities

Financial liabilities are recognized when the Company 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 that are directly attributable to acquisition of financial assets at FVTPL are recognized immediately in income or loss.

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

5) Financial assets at FVTPL

Financial liabilities are classified as at FVTPL when the financial liability is a contingent consideration that may be paid by an acquirer as part of a business combination to which K-IFRS 1103 applies, it is held for trading or it is designated as at FVTPL.

A financial liability is classified as held for trading if:

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

A financial liability other than a financial liability held for trading or contingent consideration that may be paid by an acquirer as part of a business combination may be designated as 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 financial liabilities, or both, which is managed, and its performance is evaluated on a fair value basis, in accordance with the Company’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 K-IFRS 1039 permits the entire combined contract (asset or liability) to be designated as at FVTPL.

Financial assets at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in income or loss. The net gain or loss recognized in income or loss incorporates any interest paid on the financial liability and is included in the ‘other gains and losses’ line item in the consolidated statement of comprehensive income.

6) Other financial liabilities

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs.

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

The effective interest method is a method of calculating the amortized cost of a financial liability and allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial liability, or (when appropriate) a shorter period, to the net carrying amount on initial recognition. When calculating the estimated future cash payments or receipts, certain factors, such as commission income and expense, points, transaction costs and premiums and discounts, are factored into the calculation.

7) 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 incurred because a specified debtor fails to make payments when due in accordance with the terms of a debt instrument.

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

- the amount of the obligation under the contract, as determined in accordance with K-IFRS 1037 Provisions, Contingent Liabilities and Contingent Assets, and
- the amount initially recognized, less cumulative amortization recognized in accordance with the K-IFRS 1018 Revenue

8) Derecognition of financial liabilities

The Company derecognizes financial liabilities when, and only when, the Company’s obligations are discharged, canceled or expired. The difference between the consideration paid and the book value of financial liabilities derecognized is recognized in income or loss.

(7) Trade receivables

Trade receivables are amounts owed by customer for products and services provided in the ordinary course of business. Receivables expected to be collected within one year are classified as current assets. Otherwise, they are classified as non-current assets. Trade receivables are initially measured at fair value and are presented net of allowance for doubtful accounts, estimated on an individual basis based on past bad debt experience.

(8) Inventories

Inventories are stated at the lower of cost or net realizable value. Cost of inventories includes fixed and variable manufacturing overhead costs that are systematically allocated to inventories by appropriate methods based on each category of inventory. The cost of inventories is determined using the specific identification method for materials in transit and the gross average method for all other inventories. During the year, perpetual inventory systems are used to value inventories, which are adjusted to physical inventory counts performed at the end of the year. The Company periodically reviews changes in net realizable value of inventories (current replacement cost for raw materials) due to damage, obsolescence, decline in selling prices and others and recognizes loss on inventory valuation. Loss on inventory valuation is charged to cost of sales when it is ordinary and to other non-operating expense when it is extraordinary. When the circumstances that previously caused inventories to be written down below cost no longer exist and the new market value of inventories subsequently recovers, the valuation loss is reversed to the extent of the original valuation loss and the reversal is deducted from cost of sales.

(9) Property, plant and equipment

Property, plant and equipment are stated at cost, less subsequent accumulated depreciation and accumulated impairment losses. When useful life of each part of an item of property, plant and equipment is different compared to that of the item, the part is recognized separately. The cost of an item of property, plant and equipment is directly attributable to its purchase or construction, including the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

Subsequent costs incurred to replace a part of previously recognized item of property, plant and equipment are added to the carrying amount of an asset, or recognized as a separate asset, if it is probable that future economic benefits associated with the assets will flow into the Company and the cost of the asset can be measured reliably. The carrying amount of what was replaced is derecognized. Routine maintenance and repairs are expensed as incurred.
The Company does not depreciate land. Depreciation expense for property, plant and equipment other than land is computed using the straight-line method, which reflects most closely the pattern in which the asset’s economic benefits are expected to be consumed by the Company over the estimated useful lives of the assets as follows:

	Estimated useful life (years)
Buildings	20–40
Structures	10–20
Machinery	3–15
Vehicles	3–10
Tools	3–10
Office equipment	3–14

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

The Company reviews the depreciation method, 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 an accounting estimate.

When the carrying amount of property, plant and equipment is higher than the recoverable amount, the carrying amount is adjusted to the recoverable amount and the difference is recognized as an impairment loss. Meanwhile, when the recoverable amount subsequently exceeds the carrying amount of the impaired asset, the excess is recorded as a reversal of impairment loss to the extent that the reversed asset does not exceed the carrying amount before previous impairment, as adjusted by depreciation. Upon the derecognition of a property, plant and equipment, the difference between the net disposal proceed and carrying amount of the item is recognized in other non-operating income (expense).

(10) Intangible assets

Intangible assets are initially measured at cost and are carried at cost, less accumulated amortization and accumulated impairment losses. Subsequent expenditure on an intangible asset is capitalized only when it is probable that the expected future economic benefits that are attributable to the asset will increase.

Intangible assets other than goodwill and intangibles with indefinite useful lives are amortized using the straight-line method with no residual value, with amortization beginning when the asset is available for use. However, useful lives of membership and other intangible assets with similar nature are determined to be indefinite as there is no foreseeable limit to the period over which the assets are expected to generate net cash inflows for the Company and they are not amortized, but tested for impairment once a year.

The estimated useful lives of the assets are as follows:

	Estimated useful life (years)
Industrial rights	5–10
Development costs	4–12
Other intangible assets	3–7

Goodwill is measured as the excess of the sum of: a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree and c) the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed and is classified as an intangible asset. Goodwill is tested for impairment annually and carried at cost as established at the date of acquisition of the business, less accumulated impairment losses, if any. Impairment loss recognized for goodwill is not reversed. For the purpose of impairment testing, goodwill is allocated to each of the Company's cash-generating units (or groups of cash-generating units) that is expected to benefit from the synergies of the combination.

Expenditures relating to development activities are capitalized when the result of the development is for the development of new products or substantial improvement of functions of existing products, there is technical and commercial feasibility of completing the development and the Company has the ability to measure reliably the expenditure attributable to the development. Capitalized development costs include expenditure on materials, salaries, wages and other employment-related costs of personnel directly engaged in generating assets and related overhead cost that is systematically allocated. Capitalized development costs are presented at the acquisition cost, less accumulated amortization and accumulated impairment losses. Capitalized development costs are amortized using the straight-line method over the estimated useful life and amortization expenses are included in cost of goods manufactured and amortization in selling and administrative expenses.

The expenditure on research and development, which does not meet conditions noted above, is recognized as an expense when it is incurred.

The estimated useful life and amortization method for intangible assets with finite useful lives are reviewed at the end of each reporting period, and for the assets that have been assessed as having indefinite useful life, that assessment is revisited each period, with the effect of any changes in estimate being accounted for as a change in accounting estimate.

(11) 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, the book value of investment property is presented at cost, less accumulated depreciation and accumulated impairment. While land is not depreciated, all other investment property is depreciated using the straight-line method over 40 years.

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 being accounted for as a change in accounting estimate.

(12) Borrowing costs

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

(13) Impairment of non-financial assets

Assets with indefinite useful lives, such as goodwill, are not amortized, but tested for impairment annually. Assets that are amortized or depreciated are tested for impairment to determine whether events and circumstances indicating those assets have suffered impairment exist. Impairment loss is the excess of the carrying amount over recoverable amount. Recoverable amount is the higher of fair value, less costs to sell, or value in use. When it is not possible to estimate the recoverable amount of an individual asset, the Company estimates the recoverable amount of the cash-generating unit to which the asset belongs. When 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. Except for goodwill, all non-financial assets that have incurred impairment are tested for reversal of impairment at the end of each reporting period.

(14) Borrowings

Borrowings are measured initially at fair value, net of transaction costs, and subsequently at amortized cost using the effective interest method, with interest expense being recognized on an effective yield basis. The difference between the amount received and the redemption amount is amortized using the effective interest method and recognized in income or loss. Borrowings are classified as non-current liabilities when the Company has an unconditional right to defer settlement of the liability for at least 12 months after the end of the reporting period. Otherwise, borrowings are classified as current liabilities.

(15) Retirement benefit obligation

The Company operates a defined benefit pension plan. In general, the Company funds its benefit obligation, calculated based on periodic actuarial estimates, through insurance companies that manage the Company's funds.

Defined benefit plans are postemployment benefit plans other than defined contribution plans. Generally under defined benefit plan, amounts to be paid as retirement benefits are determined by reference to a formula usually based on employees' earnings, years of service, ages and other. The retirement benefit obligation recognized in the consolidated statements of financial position represents the present value of the defined benefit obligation, less fair value of plan assets and adjustment for unrecognized past service cost. Defined benefit obligations are calculated by an actuary using the projected unit credit method.

The present value of the defined benefit obligation is denominated in the same currency in which the benefits are expected to be paid, and calculated at the discount rate that is the yield at the reporting date on high-quality corporate bonds that have maturity dates approximating the terms of the Company's obligation. Actuarial gain or loss from changes in actuarial assumptions or differences between actuarial assumptions and actual results is recognized in other comprehensive income, which is immediately recognized as retained earnings. Meanwhile, past service cost is directly recognized in profit or loss in the period of a plan amendment.

Contributions to defined contribution plans are recognized as an expense when employees have rendered service that entitles them to the contributions.

(16) Provisions

Provisions are recognized when the Company has a present obligation (legal or constructive) as a result of a past event, it is probable that the Company will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. A provision is measured using the present value of the cash flows estimated to settle the present obligation when the effect of the time value of money is material. 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. The increase in provision due to passage of time is recognized as interest expense. If the existence of an obligation to transfer economic benefit is no longer probable, the related provision is reversed during the period. 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. In the consolidated statements of income, a net amount is presented, being the anticipated cost of the obligation, less the reimbursement.

(17) Derivative financial instruments

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 generally recognized as income or loss when it is incurred.

However, 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 relating to the ineffective portion is recognized immediately in income or loss.

(18) Dividend

Dividend payable is recognized as liability when declaration of the dividend is approved at the shareholders` meeting.

(19) Share-based payment arrangement

The Company recognizes share options granted to employees at the fair value at the grant date. The fair value determined at the grant date of the share option is expensed on a straight-line basis over the vesting period. The Company determines fair value of share options using the Black-Scholes model.

(20) Revenue recognition

Revenue is measured at the fair value of the consideration received or receivable for the sale of goods and rendering of services arising in the course of the ordinary activities of the Company. Revenue is reduced for value-added tax, estimated customer returns, rebates and trade discounts and is presented after eliminating intercompany transactions. The Company recognizes revenue when the amount of revenue can be measured reliably and it is probable that the economic benefits associated with the transaction will flow to the Company, and when transaction meets the revenue recognition criteria specified by activity. When measuring revenue, the Company reliably estimates on contingencies related to sales based on historical data, such as customer type, transaction type and trading terms.

1) Sale of goods

Revenue from the sale of goods is recognized when the Company has transferred to the buyer the significant risks and rewards of ownership of the goods. Revenue is recognized on initial delivery of the goods, net of expected discounts and returns estimated based on historical data. The Company estimates and recognizes provision for warranty and sales return arising from sale of goods.

2) Other revenue

Interest income from a financial asset is recognized when it is probable that the economic benefits will flow to the Company and the amount of income can be measured reliably. Interest income is recognized using the effective interest method. Revenues arising from dividends are recognized when the right to receive the dividend payment is established. Rental income is recognized on a straight-line basis. Royalty revenue is recognized on an accrual basis in accordance with the substance of the relevant agreement.

(21) Government grants

For the purpose of acquisition of certain assets, government grants related to assets are accounted for as a deduction from related assets on the date that the related assets are received.

If a government grant that will be received is not subject to specific conditions attached to it, government grants related to primary operating activity are recognized in operating income; otherwise, those are recognized in other non-operating income. Meanwhile, expense related to the government grants is to be offset first and then recognized in current income.

(22) Income tax and deferred tax

Income tax expense is composed of current tax and deferred tax. Current tax and deferred tax are recognized in income or loss, except when they relate to items that are recognized in other comprehensive income or directly in equity, in which case the current tax and deferred tax are also recognized in other comprehensive income or directly in equity.

Income tax (current tax) expense is the sum of corporate tax for each fiscal year and tax added to corporate tax under corporate income tax law and other law. Additional income taxes or tax refunds for the prior periods are included in income tax expense for the current period when recognized. The Company's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period. 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 assets and liabilities are not recognized if the temporary difference arises 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.

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 is realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries, joint ventures and associates, except where the Company 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 it is probable that there will be sufficient taxable income against which the benefits of the 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 to the extent it is no longer probable that sufficient taxable income will be available to allow all or part of the asset to be recovered.

(23) Earnings per share

Basic earnings per common share are computed by dividing net income attributable to owners of the Company by the weighted-average number of common shares outstanding during the period. Diluted earnings per common share are computed by dividing diluted net income attributable to the owners of the Company, which is adjusted by adding back the after-tax amount of expenses related to dilutive potential ordinary shares, by weighted-average number of common shares and dilutive potential ordinary shares outstanding during the period. Antidilutive potential ordinary shares are disregarded in the calculation of diluted earnings per share.

(24) 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. Non-current assets (and disposal groups) classified as held for sale are measured at the lower of their previous carrying amount or fair value, less costs to sell and are no longer depreciated or amortized. If the fair value, less costs to sell, of the non-current assets held for sale (and disposal groups) decreases, impairment loss is recognized immediately in income or loss. A gain should be recognized for any subsequent increase in fair value, less costs to sell, of an asset, but not in excess of the cumulative impairment loss recognized.

(25) Segment report

Operating segments are reported on the same basis as financial information is reported to management. The management of the Company decides how to allocate resources to segments and assess their performance.

(26) Accounting Treatment related to the Emission Rights Cap and Trade Scheme

The Company classifies the emission rights as intangible assets. Emission right allowances that the government allocated free of charge are measured at ₩0, and emission right allowances purchased are measured at cost, which the Company paid to purchase the allowances. If emission rights that the government allocated free of charge are sufficient to settle the emission right allowances allotted for vintage year, the emission liabilities are measured at ₩0. However, for the emission liabilities that exceed the allowances allocated free of charge, the shortfall is measured at the best estimate at the end of the reporting period.

(27) Approval of financial statements

The consolidated financial statements as of and for the year ended December 31, 2016, were approved by the board of directors on February 15, 2017, and will be approved finally at the shareholder’s meeting on March 31, 2017.

3. SIGNIFICANT ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTIES:

The estimates and underlying assumptions are reviewed on an ongoing basis. The estimates and underlying assumptions are based on historical experiences and other factors, including expectation on possible future events. Actual results may differ from those estimates. The following are critical assumptions and key sources of estimation uncertainty at the end of reporting period that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year:

(1) Warranty provision

The Company provides warranty for product when related revenue is recognized. At the end of each reporting period, provisions are recorded for the best estimated costs to fulfill current and future warranty obligations. The Company continuously introduces new products using advanced complex technology, and accordingly, these estimates may change in future period due to additional provisions required under local legislation and practice.

(2) Impairment of goodwill

The Company performs test for goodwill impairment testing annually. Recoverable amount of cash-generating units is based on calculation of value in use. The value-in-use calculation requires accounting estimates.

(3) Allowance for doubtful accounts of receivables

In order to calculate the impairment of receivables, the management of the Company estimates an expected bad debt considering the aging of receivables, past experience of bad debt write offs and economic and industrial factors.

(4) Measurement of property, plant and equipment and intangible assets

If the Company acquires property, plant and equipment or intangible assets from business combination, it is required to estimate the fair value of these assets at the acquisition date. It is also required to estimate useful lives for depreciation and amortization. For these estimation processes, the management’s judgment shall take an important role.

4. FINANCIAL RISK MANAGEMENT:

The Company is exposed to various financial risks, such as market (foreign currency, interest rate and price), credit and liquidity, related to the operations of the Company. The purpose of risk management policy that is approved by foreign currency risk management committee and board of directors is to minimize potential risks that could have adverse effect on financial performance.

The foreign currency risk management committee and the board of directors provide documented policies on overall risk management, as well as specific risk management, such as foreign currency risk and interest rate risk. Financial risk management activities, such as identification, evaluation and management of financial risks at the Company level, are performed by treasury and international finance department in accordance with the aforementioned documented risk management policies. In addition, the Company enters into derivative contracts to hedge against certain risks.

(1) Market risk

1) Foreign currency risk

The Company is exposed to foreign currency risk as it makes international transactions in foreign currencies. Foreign currency risk arises from forecast transactions, recognized assets and liabilities and net investments in foreign operations.

Foreign currency risk is managed by the Company's policy on foreign currencies. The Company's basis for foreign currency management is to reduce income/loss volatility. The Company reduces exposure to foreign currency risk by matching the inflow and the outflow of foreign currencies (natural hedge), and manages foreign currency risk by using currency derivatives, such as currency forwards, for the remaining exposures.

The book value of the Company's monetary assets and liabilities denominated in foreign currencies and exposed to foreign currency risk as of December 31, 2016 and 2015, is as follows (in millions of Korean won):

	December 31, 2016					December 31, 2015				
	USD	EUR	CNY	Others (*)	Total	USD	EUR	CNY	Others (*)	Total
Assets	₩1,045,285	₩176,899	₩71,660	₩89,743	₩1,383,587	₩1,184,171	₩124,801	₩2,210	₩37,845	₩1,349,027
Liabilities	(2,050,565)	(304,242)	(9,296)	(74,810)	(2,438,913)	(2,373,082)	(260,704)	(12,364)	(66,522)	(2,712,672)
Net assets (liabilities)	₩(1,005,280)	₩(127,343)	₩62,364	₩ 14,933	₩(1,055,326)	₩(1,188,911)	₩(135,903)	₩(10,154)	₩(28,677)	₩(1,363,645)

(*) Others are assets and liabilities denominated in foreign currencies other than USD, EUR and CNY.

A sensitivity analysis on the Company's net income before income tax expense, assuming a 10% increase and decrease in functional currency exchange rates of the respective entity holding the assets and liabilities, for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Year ended December 31, 2016		Year ended December 31, 2015	
	10% increase in foreign currency rates	10% decrease in foreign currency rates	10% increase in foreign currency rates	10% decrease in foreign currency rates
Net income (loss) before income tax expense	₩(105,533)	₩105,533	₩(136,365)	₩136,365

2) Interest rate risk

The Company's interest rate risk is related to borrowings and bank deposits with floating interest rates and the related interest income and expense are exposed to interest rate risk. The Company is exposed to interest rate risk mainly due to its borrowing with floating interest rates. Borrowings and bank deposits with fixed interest rates do not have influence on net income and equity due to the changes in market interest rates.

To manage the Company's interest rate risk in advance, the Company tries to minimize external borrowings using internal funds, reduce borrowings with high interest rates, improve the structure of long-term and short-term borrowings, maintain the appropriate balance between borrowings with floating interest rate and fixed interest rate and regularly monitor domestic and international interest rate changes with action plans.

The book value of the Company's financial assets and liabilities with floating interest rates exposed to interest rate risk as of December 31, 2016 and 2015, is as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Financial liabilities	₩2,474,877	₩3,280,199

A sensitivity analysis on the Company's net income (loss) before income tax expense, assuming a 100bp increase and 100bp decrease in interest rate, but other factors being unchanged, for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Year ended December 31, 2016		Year ended December 31, 2015	
	100bp increase	100bp decrease	100bp increase	100bp decrease
Net income (loss) before income tax expense	₩(24,749)	₩24,749	₩(32,802)	₩32,802

3) Price risk

The Company is exposed to equity price risks, such as fair value or future cash flow changes, arising from its listed equity investments among AFS equity investments. The Company periodically measures the risk that the fair value or future cash flows of equity investments may fluctuate due to the changes in market prices. Important investments in the Company's portfolio are individually managed and acquisition and disposal are approved by the management of the Company.

(2) Credit risk

The credit risk refers to risk of financial losses to the Company when the counterparty defaults on the obligations of the contract and arises from the Company's normal transaction and investing activity. To manage credit risk, the Company evaluates the creditworthiness of each customer or counterparty considering the financial status, past experience and other factors. The Company establishes credit limit for each customer and counterparty.

Credit risk arises from cash and cash equivalents, derivatives and deposit in banks and financial institutions, as well as the Company's receivables and firm commitment.

The purpose of credit risk management is to maintain an efficient management of credit risk, provide prompt support for decision-making and minimize loss through safety measures for receivables. When default is expected for the receivables that have indication of impairment or are past due as of December 31, 2016, the Company evaluates the risk and an allowance is recognized in the consolidated statement of financial position.

1) Exposure to credit risk

The maximum exposure amount of credit risk of financial assets as of December 31, 2016 and 2015, is as follows (in millions of Korean won):

		December 31, 2016	December 31, 2015
Cash and cash equivalents		₩538,578	₩560,003
Loans and receivables	Current and non-current financial instrument	150,037	439,252
	Trade and other receivables	1,030,594	1,231,866
	Non-current trade and other receivables	7,016	2,637
Derivative assets		6,220	8,490
Held-to-maturity investments		2,662	3,548
Total		₩1,735,107	₩2,245,796

2) Aging analysis of the Company's receivables as of December 31, 2016 and 2015, is as follows (in millions of Korean won):

	December 31, 2016						
	Individually assessed receivables	Receivables assessed for impairment on a collective basis					
		Within due	0–three months	Three–six months	Six–twelve months	More than 12 months	Total
Trade receivables	₩439,217	₩579,622	₩90,836	₩13,857	₩25,123	₩192,423	₩1,341,078
Other receivables	39,913	66,737	23,181	15,812	2,096	61,427	209,166
Accrued income	-	8,804	-	-	-	-	8,804
Short-term loans	15,798	103	-	-	-	-	15,901
Long-term trade receivables	-	4,842	-	-	-	-	4,842
Long-term other receivables	7,417	2,493	-	-	-	-	9,910
Total	₩502,345	₩662,601	₩114,017	₩29,669	₩27,219	₩253,850	₩1,589,701

	December 31, 2015						
	Individually assessed receivables	Receivables assessed for impairment on a collective basis					
		Within due	0–three months	Three–six months	Six–twelve months	More than 12 months	Total
Trade receivables	₩443,268	₩733,346	₩93,347	₩44,212	₩31,978	₩276,948	₩1,623,099
Other receivables	50,875	31,680	25,608	136	5,065	47,612	160,976
Accrued income	-	6,649	-	-	-	-	6,649
Short-term loans	16,274	210	-	-	-	-	16,484
Long-term trade receivables	-	2,504	-	-	-	-	2,504
Long-term other receivables	5,911	26	-	-	-	-	5,937
Long-term loans	-	107	-	-	-	-	107
Total	₩516,328	₩774,522	₩118,955	₩44,348	₩37,043	₩324,560	₩1,815,756

An allowance is recognized by applying appropriate allowance rate for receivables that can be assessed to be impaired individually due to insolvency, bankruptcy and others. Groups of financial assets that are not individually significant and have similar credit risk characteristics are assessed for impairment on a collective basis based on aging analysis and the Company's past experience of receivables collection.

AFS financial assets, held-to-maturity financial assets, deposit in financial institution and derivative instruments are individually assessed for impairment.

(3) Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting its financial liability obligations related to financing for its operation. The Company forecasts cash flows from operating, investing and financing activities through a cash flow budget for three months and 12 months. Through these forecasts, the Company maintains the required liquidity volume and manages liquidity risk in advance.

The Company's major non-derivative liabilities matured as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

		December 31, 2016				
		Nominal cash flows according to contract (*)				
	Book value	Total	Less than 1 year	1 year-2 years	2-5 years	More than 5 years
Financial liabilities	₩5,491,397	₩6,101,216	₩3,658,590	₩659,283	₩1,776,724	₩6,619

		December 31, 2015				
		Nominal cash flows according to contract (*)				
	Book value	Total	Less than 1 year	1 year-2 years	2-5 years	More than 5 years
Financial liabilities	₩7,138,375	₩8,104,880	₩3,992,108	₩1,291,973	₩1,012,055	₩1,808,744

(*) Maturity analysis mentioned above is based on undiscounted cash flows per the contracts that differs from the financial liability recognized in the consolidated statement of financial position, and the above amounts also include guarantee amounts.

(4) Capital risk

The Company performs capital risk management to protect its ability to continuously provide income to shareholders and parties in interest and to maintain optimum capital structure to reduce capital expenses.

The Company manages its capital structure through dividend payments to shareholders, return of capital to shareholders and issues of new shares and sales of its assets for debt reduction. Debt-to-equity ratio, calculated as total liabilities divided by equity, is used as an index to manage the Company's capital similar-to-overall industry practice.

Debt-to-equity ratios as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Debt	₩6,578,432	₩8,280,217
Equity	3,448,377	3,102,956
Debt-to-equity ratio	190.77%	266.85%

5. RESTRICTED FINANCIAL ASSETS:

Details of restricted deposits as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015	Description
Cash and cash equivalents	₩-	₩10,537	Security for tender and others
Short-term financial instruments	109,056	291,209	Pledged for borrowings and others
Long-term financial instruments	2,012	2,012	Checking account deposit and others
Total	₩111,068	₩303,758	

6. INVESTMENT SECURITIES:

(1) Investment securities as of December 31, 2016 and 2015, are summarized as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Current:		
AFS financial assets	₩441	₩441
Held-to-maturity financial assets	2,590	-
Sub total	₩3,031	₩441
Non-current:		
AFS financial assets	₩148,049	₩94,314
Held-to-maturity financial assets	72	3,548
Sub total	₩148,121	₩97,862

(2) AFS financial assets

1) AFS financial assets as of December 31, 2016 and 2015, are summarized as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Current:		
Investments in non-listed company	₩441	₩441
Non-current:		
Investments in non-listed company	₩236	₩637
Beneficiary certificates	145,254	92,574
Investments in funds	2,559	1,103
Sub total	₩148,049	₩94,314

2) The changes in gain (loss) on valuation of AFS financial assets for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016			
	January 1, 2016	Valuation	Reclassification from equity to profit or loss	December 31, 2016
Beneficiary certificates	₩(949)	₩10,818	₩-	₩9,869
Tax effect	87	(3,308)	-	(3,221)
Total	₩(862)	₩7,510	₩-	₩6,648

	Year ended December 31, 2015			
	January 1, 2015	Valuation	Reclassification from equity to profit or loss	December 31, 2015
Beneficiary certificates	₩(1,347)	₩398	₩-	₩(949)
Tax effect	550	(463)	-	87
Total	₩(797)	₩(65)	₩-	₩(862)

(3) Held-to-maturity financial assets

Held-to-maturity financial assets as of December 31, 2016 and 2015, are summarized as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Current:		
Other debt securities	₩2,590	₩-
Sub total	₩2,590	₩-
Non-current:		
Government bonds and public bonds	₩72	₩48
Other debt securities	-	3,500
Sub total	₩72	₩3,548

7. TRADE AND OTHER RECEIVABLES:

(1) Trade and other receivables as of December 31, 2016 and 2015, consist of the following (in millions of Korean won):

	December 31, 2016		
	Gross (*)	Allowance for doubtful accounts	Book value
Trade receivables	₩1,328,086	₩(427,410)	₩900,676
Other receivables	209,166	(88,155)	121,011
Accrued income	8,804	-	8,804
Short-term loans	15,901	(15,798)	103
Total	₩1,561,957	₩(531,363)	₩1,030,594
Long-term trade receivables	₩4,842	₩-	₩4,842
Long-term other receivables	8,178	(6,004)	2,174
Total	₩13,020	₩(6,004)	₩7,016

	December 31, 2015		
	Gross (*)	Allowance for doubtful accounts	Book value
Trade receivables	₩1,612,063	₩(482,431)	₩1,129,632
Other receivables	160,976	(65,601)	95,375
Accrued income	6,649	-	6,649
Short-term loans	16,484	(16,274)	210
Total	₩1,796,172	₩(564,306)	₩1,231,866
Long-term trade receivables	₩2,504	₩-	₩2,504
Long-term other receivables	3,901	(3,875)	26
Long-term loans	107	-	107
Total	₩6,512	₩(3,875)	₩2,637

(*) If transferred trade receivables do not meet the derecognition criteria, the Company continues to recognize the trade receivables and also recognize a collateralized borrowing for the proceeds received (see Note 16).

(2) The changes in allowance for doubtful accounts for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016				
	January 1, 2016	Increase	Disposal of operations	Other	December 31, 2016
Trade receivables	₩482,431	₩(8,363)	₩(12,399)	₩(34,259)	₩427,410
Other receivables	65,601	2,689	(174)	20,039	88,155
Accrued income	16,274	-	-	(476)	15,798
Short-term loans	3,875	-	-	2,129	6,004
Total	₩568,181	₩5,674	₩(12,573)	₩(12,567)	₩537,367

	Year ended December 31, 2015			
	January 1, 2015	Increase	Other	December 31, 2015
Trade receivables	₩159,044	₩155,465	₩167,922	₩482,431
Other receivables	37,558	28,010	33	65,601
Accrued income	16,122	-	152	16,274
Short-term loans	-	3,875	-	3,875
Total	₩212,724	₩187,350	₩168,107	₩568,181

Receivables past due are assessed as impaired. An allowance for doubtful accounts is individually recognized for receivables that can be assessed individually for impairment. An allowance for doubtful account is recognized based on aging analysis and the Company's past collection experience for the group of receivables that are not individually significant and have similar characteristics. Provision for doubtful accounts is included in selling and administrative expenses and other non-operating expenses in the consolidated statement of income.

8. INVENTORIES:

Inventories as of December 31, 2016 and 2015, are summarized as follows (in millions of Korean won):

	December 31, 2016			December 31, 2015		
	Acquisition cost	Valuation allowance	Book value	Acquisition cost	Valuation allowance	Book value
Merchandise	₩276,920	₩(30,849)	₩246,071	₩481,645	₩(30,975)	₩450,670
Finished goods	414,830	(27,220)	387,610	530,355	(44,317)	486,038
Semifinished goods	30,467	(2)	30,465	38,482	-	38,482
Work in progress	36,524	(4)	36,520	85,667	(2,750)	82,917
Raw materials	340,479	(18,181)	322,298	415,357	(37,907)	377,450
Supplies	1,679	(247)	1,432	2,097	(288)	1,809
Materials in transit	152,613	-	152,613	118,369	-	118,369
Total	₩1,253,512	₩(76,503)	₩1,177,009	₩1,671,972	₩(116,237)	₩1,555,735

Cost of inventory charged to cost of sales amounted to ₩4,159,361 million and ₩4,480,437 million for the years ended December 31, 2016 and 2015, respectively. Loss on inventory valuation added to cost of sales amounted to ₩34,202 million and ₩13,632 million for the years ended December 31, 2016 and 2015, respectively.

9. DERIVATIVES:

(1) Details of the Company's derivative contracts are as follows:

Purpose	Derivative instruments	Contract description
Cash flow hedge	Foreign currency forwards	A contract to avoid cash flow risk arising from forecasted sales in foreign currencies
Trading purpose	Foreign currency forwards	Foreign currency forwards to hedge future cash flows

(2) Details of gain and loss on valuation of derivatives as of December 31, 2016 and 2015, are as follows (in thousands of foreign currencies and millions of Korean won):

December 31, 2016

	Buy		Sell				
	Currency	Amount	Currency	Amount	Assets (liabilities)	Gains	Accumulated other comprehensive income (loss)
Foreign currency forwards	KRW	196,229	USD	163,000	₩(641)	₩-	₩(641)
	KRW	48,022	EUR	36,000	2,152	-	2,152
	USD	140,000	EUR	131,281	1,785	827	-
	EUR	29,367	GBP	24,911	355	-	340
	USD	26,474	CZK	645,252	1,027	-	795
Total					₩4,678	₩827	₩2,646

December 31, 2015

	Buy		Sell				
	Currency	Amount	Currency	Amount	Assets (liabilities)	Gains (losses)	Accumulated other comprehensive income (loss)
Foreign currency forwards	KRW	585,464	USD	515,000	₩(19,144)	₩-	₩(19,144)
	KRW	110,138	EUR	87,000	(2,017)	-	(2,017)
	KRW	47,075	GBP	27,000	58	-	58
	KRW	48,772	CNY	276,000	47	-	47
	USD	150,000	EUR	137,260	1,006	(3,212)	-
	USD	32,300	BRL	114,378	1,833	2,142	-
	CZK	481,293	EUR	17,770	77	-	41
	EUR	34,045	GBP	24,583	1,037	-	661
	USD	18,599	CZK	458,335	106	-	121
Total					₩(16,997)	₩(1,070)	₩(20,233)

Derivative instruments classified as financial assets at FVTPL are classified as current assets or current liabilities. Derivatives that are designated as hedging instruments are classified as non-current assets (liabilities) when their maturities exceed 12 months from the end of the reporting period. Otherwise, they are classified as current assets (liabilities).

There is no gain or loss relating to the ineffective portion that shall be recognized in income or loss in applying cash flow hedge.

10. FINANCIAL INSTRUMENTS:

(1) Categories of financial instruments as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016						
	Financial assets at FVTPL - assets	Loans and receivables	AFS financial assets	Held-to-maturity investments	Derivatives designated as hedging instruments	Book value	Fair value
Short-term financial instruments	₩-	₩148,026	₩-	₩-	₩-	₩148,026	₩148,026
Short-term investment securities	-	-	441	2,590	-	3,031	3,031
Trade and other receivables	-	1,030,594	-	-	-	1,030,594	1,030,594
Derivative assets	1,784	-	-	-	4,436	6,220	6,220
Long-term financial instruments	-	2,012	-	-	-	2,012	2,012
Long-term investment securities	-	-	148,049	72	-	148,121	148,121
Long-term trade and other receivables	-	7,016	-	-	-	7,016	7,016
Other non-current assets	-	56,622	-	-	-	56,622	56,622
Total	₩1,784	₩1,244,270	₩148,490	₩2,662	₩4,436	₩1,401,642	₩1,401,642

	December 31, 2016				
	Financial liabilities at FVTPL - liabilities	Financial liabilities at amortized cost	Derivatives designated as hedging instruments	Book value	Fair value
Trade and other payables	₩-	₩1,041,876	₩-	₩1,041,876	₩1,041,876
Borrowings and bonds	-	4,423,184	-	4,423,184	4,423,184
Derivative liabilities	-	-	1,542	1,542	1,542
Other current liabilities	-	23,101	-	23,101	23,101
Other non-current payables	-	1,254	-	1,254	1,254
Financial guarantee liabilities	-	1,982	-	1,982	1,982
Total	₩-	₩5,491,397	₩1,542	₩5,492,939	₩5,492,939

	December 31, 2015						
	Financial assets at FVTPL - assets	Loans and receivables	AFS financial assets	Held-to-maturity investments	Derivatives designated as hedging instruments	Book value	Fair value
Short-term financial instruments	₩-	₩381,900	₩-	₩-	₩-	₩381,900	₩381,900
Short-term investment securities	-	-	441	-	-	441	441
Trade and other receivables	-	1,231,866	-	-	-	1,231,866	1,231,866
Derivative assets	3,298	-	-	-	5,192	8,490	8,490
Long-term financial instruments	-	57,352	-	-	-	57,352	57,352
Long-term investment securities	-	-	94,314	3,548	-	97,862	97,862
Long-term trade and other receivables	-	2,637	-	-	-	2,637	2,637
Other non-current assets	-	71,589	-	-	-	71,589	71,589
Total	₩3,298	₩1,745,344	₩94,755	₩3,548	₩5,192	₩1,852,137	₩1,852,137

	December 31, 2015				
	Financial liabilities at FVTPL – liabilities	Financial liabilities at amortized cost	Derivatives designated as hedging instruments	Book value	Fair value
Trade and other payables	₩-	₩1,063,585	₩-	₩1,063,585	₩1,063,585
Borrowings and bonds	-	6,021,741	-	6,021,741	6,021,741
Derivative liabilities	459	-	25,028	25,487	25,487
Other current liabilities	-	43,200	-	43,200	43,200
Other non-current payables	-	5,829	-	5,829	5,829
Financial guarantee liabilities	-	4,020	-	4,020	4,020
Total	₩459	₩7,138,375	₩25,028	₩7,163,862	₩7,163,862

(2) Fair value measurements of financial instruments by fair value hierarchy level as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016			
Type	Level 1	Level 2	Level 3	Total
Financial Assets:				
Financial assets at FVTPL	₩-	₩1,784	₩-	₩1,784
AFS financial assets	45,082	-	100,172	145,254
Derivatives designated as hedging instruments	-	4,436	-	4,436
Total	₩45,082	₩6,220	₩100,172	₩151,474
Financial Liabilities:				
Derivatives designated as hedging instruments	-	(1,542)	-	(1,542)

Type	December 31, 2015 Level 1	Level 2	Level 3	Total
Financial Assets:				
Financial assets at FVTPL	₩-	₩3,298	₩-	₩3,298
AFS financial assets	2,232	-	90,343	92,575
Derivatives designated as hedging instruments	-	5,192	-	5,192
Total	₩2,232	₩8,490	₩90,343	₩101,065
Financial Liabilities:				
Financial liabilities at FVTPL	₩-	₩(459)	₩-	₩(459)
Derivatives designated as hedging instruments	-	(25,028)	-	(25,028)
Total	₩-	₩(25,487)	₩-	₩(25,487)

Level 1: Unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2: Inputs other than quoted prices that are observable for the asset or liability either directly or indirectly.

Level 3: Inputs that are not based on observable market data (unobservable inputs).

Some of financial instruments that are not included in the above table are not measured at fair value, but are recorded at book value that approximates fair value.

As of December 31, 2016, for fair value measurement in Level 3 of the hierarchy, the Company selects an option-pricing model as valuation technique that uses significant unobservable inputs, such as volatility of interest rate and stock price.

In addition, the Company recorded other comprehensive loss of ₩5,919 million for the years ended December 31, 2016, through the fair vale measurement on financial instruments designated as Level 3.

(3) Net finance income (loss) by each category of financial instruments for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Year ended December 31, 2016						
	Interest income (expense)	Dividend income	Loss on valuation	Impairment gains	Loss on disposal	Others	Other comprehensive loss (*)
Financial Assets:							
Cash and cash equivalents	₩7,028	₩-	₩-	₩-	₩-	₩-	₩-
Financial assets at FVTPL	-	-	-	-	-	-	-
Loans and receivables	4,908	-	-	5,694	(8,913)	-	-
AFS financial assets	-	5	(497)	-	-	-	10,818
Held-to-maturity investments	134	-	(910)	-	-	-	-
Total	₩12,070	₩5	₩(1,407)	₩5,694	₩(8,913)	₩-	₩10,818
Financial Liabilities:							
Financial liabilities at FVTPL	₩-	₩-	₩-	₩-	₩-	₩-	₩-
Financial liabilities at amortized cost	(230,540)	-	-	-	(5,769)	(6,032)	-
Total	₩(230,540)	₩-	₩-	₩-	₩(5,769)	₩(6,032)	₩-

	Year ended December 31, 2015						
	Interest income (expense)	Dividend income	Gain(loss) on valuation	Impairment losses	Loss on disposal	Others	Other comprehensive gain (*)
Financial Assets:							
Cash and cash equivalents	₩12,930	₩-	₩-	₩-	₩-	₩-	₩-
Financial assets at FVTPL	-	-	-	-	-	-	-
Loans and receivables	9,481	-	-	(184,591)	(7,510)	-	-
AFS financial assets	-	1,737	-	-	-	-	(2,940)
Held-to-maturity investments	803	-	-	-	-	-	-
Total	₩23,214	₩1,737	₩-	₩(184,591)	₩(7,510)	₩-	₩(2,940)
Financial Liabilities:							
Financial liabilities at FVTPL	₩-	₩-	₩-	₩-	₩-	₩-	₩-
Financial liabilities at amortized cost	(283,948)	-	-	-	(1,588)	(15,591)	-
Total	₩(283,948)	₩-	₩-	₩-	₩(1,588)	₩(15,591)	₩-

(*)The amounts are not adjusted for deferred income tax effect.

Among the financial instruments above, the effective portion of the gain or loss on a derivative designated as a cash flow hedge is reported in other comprehensive income (loss), and accordingly, the income (loss) of ₩22,879 million and ₩(7,223) million for the years ended December 31, 2016 and 2015, respectively, is recognized as other comprehensive income (loss). Refer to Note 9.

In addition, except when the financial instruments are entered into a derivative contract, exchange differences that arose from foreign currency transaction and translation have mostly resulted from loans and receivables and financial liabilities measured at amortized cost.

11. INVESTMENTS IN JOINT VENTURES AND ASSOCIATES:

(1) Investments in joint ventures and associates as of December 31, 2016, are summarized as follows:

Company	Type of business	Location	Financial closing date
- Investments in associates:			
Doosan Cuvex Co., Ltd. (*1)	Operation of resort and golf club	Republic of Korea	December 31
- Investments in joint ventures			
Doosan PSI LLC	Manufacturing	USA	December 31
Doosan Infracore Liaoning Machinery Sales Co., Ltd. (*2)	sales	China	December 31

(*1) For the year ended December 31, 2016, the Company acquired 19.87% of ownership interest in Doosan Cuvex Co., Ltd. for ₩27,582 million. Although the Company's ownership interest in the investee is less than 20%, the investee is classified as an associate considering the Company's influence on the matters such as appointment of CEO of the investee and others based on the joint agreement

(*2) For the year ended December 31, 2016, the Company acquired 43% of ownership interest in Doosan Infracore Liaoning Machinery sales Co., Ltd. for ₩355 million.

(2) Investments in joint ventures and associates as of December 31, 2016 and 2015, are summarized as follows (in millions of Korean won):

Company	Percentage of ownership (%)	Acquisition cost		Book value		Proportionate share of net assets	
		December 31, 2016	December 31, 2015	December 31, 2016	December 31, 2015	December 31, 2016	December 31, 2015
-Investments in associates							
Doosan Cuvex Co., Ltd.	19.87	₩27,582	₩-	₩27,707	₩-	₩27,707	₩-
- Investments in joint ventures							
Doosan PSI LLC	50.00	₩1,108	₩1,108	₩1,189	₩1,254	₩1,189	₩1,254
Doosan Infracore Liaoning Machinery Sales Co., Ltd.	43.00	355	-	134	-	134	-
Subtotal		₩1,463	₩1,108	₩1,323	₩1,254	₩1,323	₩1,254
		₩29,045	₩1,108	₩29,030	₩1,254	₩29,030	

Total						₩1,254

As of December 31, 2016, the Company discontinued the use of equity method on investees in liquidation process amounting to ₩0.

(3) Changes in investment in joint ventures and associates for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016					
Company	January 1, 2016	Acquisition	Share of profit (loss)	Decrease in equity of associates	Other	December 31, 2016
Doosan Cuvex Co., Ltd.	₩-	₩27,582	₩179	₩-	₩(54)	₩27,707
Doosan PSI LLC	1,254	-	(99)	-	34	1,189
Doosan Infracore Liaoning Machinery Sales Co., Ltd.	-	355	(232)	-	11	134
Total	₩1,254	₩27,937	₩(152)	₩-	₩(9)	₩29,030

	Year ended December 31, 2015					
Company	January 1, 2015	Acquisition	Share of profit (loss)	Increase in equity of associates	Other	December 31, 2015
Doosan (China) Financial Leasing Corp.(*1)	₩96,996	₩-	₩(19,137)	₩-	₩(77,859)	₩-
Doosan Capital Co., Ltd.(*2)	24,451	-	(18,919)	(2,262)	(3,270)	-
Doosan PSI LLC	-	1,108	79	-	67	1,254
Total	₩121,447	₩ 1,108	₩(37,977)	₩(2,262)	₩(81,062)	₩1,254

(*1) The investee has been included in subsidiaries as the Company acquired control over the investee during the year 2015.
(*2) Investment in the investee was disposed of during 2015.

(4) The condensed financial information of the investees as of and for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	As of and for the year ended December 31, 2016				As of and for the year ended December 31, 2015			
Company	Total assets	Total liabilities	Sales	Net income (loss)	Total assets	Total liabilities	Sales	Net income
Doosan Cuvex Co., Ltd.	₩219,043	₩79,613	₩27,242	₩173	₩-	₩-	₩-	₩-
Doosan PSI LLC	8,306	5,928	2,482	(199)	3,860	1,353	4,855	158
Doosan Infracore Liaoning Machinery Sales Co., Ltd.	869	242	3,348	(415)	₩-	₩-	₩-	₩-

12. PROPERTY, PLANT AND EQUIPMENT:

(1) Changes in property, plant and equipment for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016								
	Land	Buildings	Structures	Machinery	Vehicles	Tools	Equipment	Construction in progress	Total
January 1, 2016	₩1,079,002	₩492,054	₩56,784	₩455,309	₩2,340	₩62,425	₩17,048	₩89,103	₩2,254,065
Acquisition	1,424	13,636	403	15,005	1,219	18,102	2,196	121,959	173,944
Disposal	(23,445)	(11,124)	(929)	(3,800)	(345)	(900)	(242)	(3,108)	(43,893)
Depreciation	-	(19,357)	(4,160)	(95,108)	(947)	(21,959)	(5,947)	-	(147,478)
Impairment losses (gains)	-	(21)	(1,554)	377	(78)	84	-	-	(1,192)
Disposal of operations	(273,829)	(78,399)	(11,869)	(28,900)	(256)	(6,448)	(3,054)	(320)	(403,075)
Others	(7,494)	34,651	(188)	96,658	509	656	(125)	(133,938)	(9,271)
December 31, 2016	₩775,658	₩431,440	₩38,487	₩439,541	₩2,442	₩51,960	₩9,876	₩73,696	₩1,823,100
Acquisition cost	₩550,157	₩710,179	₩85,531	₩1,087,093	₩14,878	₩230,160	₩84,167	₩73,696	₩2,835,861
Accumulated depreciation	-	(207,617)	(40,483)	(610,333)	(11,629)	(163,170)	(71,610)	-	(1,104,842)
Accumulated impairment losses	(1,715)	(66,722)	(6,561)	(33,497)	(807)	(15,030)	(2,681)	-	(127,013)
Accumulated gain on revaluation	227,216	-	-	-	-	-	-	-	227,216
Government subsidy	-	(4,400)	-	(3,722)	-	-	-	-	(8,122)

	Year ended December 31, 2015								
	Land	Buildings	Structures	Machinery	Vehicles	Tools	Equipment	Construction in progress	Total
January 1, 2015	₩948,365	₩563,996	₩67,340	₩511,029	₩5,219	₩84,606	₩24,884	₩77,133	₩2,282,572
Acquisition	53,411	1,639	1,046	17,945	1,148	23,268	5,050	111,323	214,830
Net changes from revaluation	85,613	-	-	-	-	-	-	-	85,613
Disposal	-	(83)	(1,649)	(5,974)	(1,218)	(1,384)	(501)	-	(10,809)
Depreciation	-	(25,011)	(5,497)	(100,070)	(1,778)	(29,087)	(10,594)	-	(172,037)
Impairment losses (gains)	610	(57,159)	(5,174)	(38,326)	(970)	(14,912)	(1,454)	-	(117,385)
Others	(8,997)	8,672	718	70,705	(61)	(66)	(337)	(99,353)	(28,719)
December 31, 2015	₩1,079,002	₩492,054	₩56,784	₩455,309	₩2,340	₩62,425	₩17,048	₩89,103	₩2,254,065
Acquisition cost	₩774,381	₩783,065	₩113,758	₩1,135,384	₩17,923	₩242,190	₩123,581	₩89,103	₩3,279,385
Accumulated depreciation	-	(226,589)	(51,844)	(645,126)	(14,642)	(165,403)	(104,749)	-	(1,208,353)
Accumulated impairment losses	(1,716)	(59,889)	(5,130)	(30,709)	(941)	(14,362)	(1,784)	-	(114,531)
Accumulated gain on revaluation	306,337	-	-	-	-	-	-	-	306,337
Government subsidy	-	(4,533)	-	(4,240)	-	-	-	-	(8,773)

The Company recognized the land subsequently measured at revaluation amount, and if the land were stated at cost, the land would amount to ₩550,157 million as of December 31, 2016. As of December 31, 2016, the Company's land, buildings and machinery are partially pledged as collateral for loans from Korea Development Bank ("KDB"). Refer to Note 34.

(2) The revaluation model applied to land is as follows:

For the year ended December 31, 2013, the Company initially remeasured all land assets using fair value at the date of the revaluation. As of December 31, 2015, the fair value of land assets is determined from an appraisal that is undertaken by independently qualified valuators, KYUNGIL APPRAISAL CO., LTD. ("KYUNGIL") and others on October 31, 2015.
At the end of the current period, the fair value was not considered to differ from the fair value at December 31, 2015.
KYUNGIL and others are member of Korea Association of Property Appraisers and comprise certified professionals who have a significant amount of industry experience.

Fair value of land assets is determined by reference to Officially Assessed Reference Land Price ("OARLP"), announced by Ministry of Land, Transport and Maritime Affairs, and recent market transactions of similar, recently sold parcels nearby the subject land in order to derive an indication of the most probable sales price (or value) of the subject land.

(3) Fair value measurements of land assets by fair value hierarchy level as of December 31, 2016, are as follows (in millions of Korean won):

Type	Level 1	Level 2	Level 3	Total
Land	₩-	₩-	₩775,658	₩775,658

(4) Valuation methodologies and inputs used for fair value measurements of land assets are as follows:

Valuation methodology	Significant inputs that are not based on observable market data (unobservable inputs)	Correlation between unobservable inputs and fair value arguments
OARLP	Fluctuation rate of land price and others	Fair value increases (decreases) if rate of land price increases (decreases)
OARLP of similar parcels nearby the subject land, reflating corrections necessary for differences between the subject and the comparable	Parcel conditions and others	Fair value increases (decrease) if corrections of parcel conditions and others increase (decrease)
	Land conditions affecting the sales price and others	Fair value increases (decreases) if correction of land conditions affecting the sales price increases (decreases)

(5) The effect of applying revaluation model for the year ended December 31, 2015, is as follows (in millions of Korean won):

January 1, 2015	Acquisition	Revaluation increase	Reversal of impairment loss	Revaluation decrease	Others	December 31, 2015
₩948,365	₩53,411	₩85,613	₩798	₩(188)	₩(8,997)	₩1,079,002

(6) Borrowing costs added to the cost of property, plant and equipment for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Borrowing costs added to the cost of property, plant and equipment	₩1,836	₩1,091
Interest rate (%)	4.47%	4.49%

(7) Classification of depreciation expense for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Cost of sales	₩118,143	₩136,234
Selling and administrative	10,886	15,851
Research and development cost and others	18,449	19,952
Total	₩147,478	₩172,037

13. INTANGIBLE ASSETS:

(1) Changes in intangible assets for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016				
	Goodwill	Industrial rights	Development costs	Others	Total
January 1, 2016	₩2,893,033	₩1,155,232	₩284,210	₩91,214	₩4,423,689
Acquisition	-	4	43,649	20,581	64,234
Disposal	-	(4)	-	(1,064)	(1,068)
Amortization	-	(15,250)	(62,164)	(32,156)	(109,570)
Impairment	-	-	(27,842)	(2,237)	(30,079)
Disposal of operations	-	(856)	(4,038)	(4,463)	(9,357)
Others	55,101	19,144	2,620	25,984	102,849
December 31, 2016	₩2,948,134	₩1,158,270	₩236,435	₩97,859	₩4,440,698
Acquisition cost	₩2,985,662	₩1,319,074	₩685,267	₩390,629	₩5,380,632
Accumulated amortization	(37,528)	(160,804)	(448,832)	(292,770)	(939,934)

	Year ended December 31, 2015				
	Goodwill	Industrial rights	Development costs	Others	Total
January 1, 2015	₩3,041,206	₩1,143,219	₩332,433	₩115,715	₩4,632,573
Acquisition	-	1,768	55,407	12,643	69,818
Disposal	-	208	-	20,643	20,851
Amortization	-	(15,231)	(70,999)	(37,731)	(123,961)
Impairment	(37,671)	-	(42,965)	(20,877)	(101,513)
Others	(110,502)	25,268	10,334	821	(74,079)
December 31, 2015	₩2,893,033	₩1,155,232	₩284,210	₩91,214	₩4,423,689
Acquisition cost	₩2,928,829	₩1,295,134	₩638,087	₩347,794	₩5,209,844
Accumulated amortization	(35,796)	(139,902)	(353,877)	(256,580)	(786,155)

The carrying amount of goodwill and others with indefinite useful lives in other intangible assets item is ₩4,097,736 million and ₩4,027,573 million as of December 31, 2016 and 2015, respectively.

(2) Borrowing costs added to the cost of intangible assets for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Borrowing costs added to the cost of intangible assets	₩2,136	₩1,592
Interest rate (%)	4.47%	4.49%

(3) Classification of amortization expense for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Cost of sales	₩63,168	₩69,003
Selling and administrative	46,002	54,499
Research and development cost and others	400	459
Total	₩109,570	₩123,961

(4) Expenditure on research and development recognized as expenses amounted to ₩145,434 million and ₩191,570 million for the years ended December 31, 2016 and 2015, respectively.

(5) Impairment test of goodwill and other intangible assets

Goodwill and other intangible assets with indefinite useful lives allocated to the Company's segment as of December 31, 2016, are as follows (in millions of Korean won):

	Doosan Bobcat Inc. and subsidiaries	Doosan Infracore Norway AS	Total
Goodwill	₩2,945,209	₩2,925	₩2,948,134

The Company uses cash flow projections based on financial budgets approved by the directors covering five-year periods for a value-in-use calculation. The financial budgets are determined based on historical result and expectation of market growth. The assumptions for a value-in-use calculation as of December 2016, are as follows:

	Doosan Bobcat Inc. and subsidiaries	Doosan Infracore Norway AS
Growth rate	2.0%	2.0%
Discount rate	9.4%	9.0%

Cash flows beyond that five-year periods have been extrapolated using the fifth-year cash flow. The growth rate does not exceed long-term average growth rate of market, and the discount rates used reflect relevant risks specific to the cash-generating units.

The result of the recoverable amount is calculated by the use value calculation method.
The total book value of each cash-generating unit did not exceed the recoverable amount. Accordingly, we have not recognized an impairment loss for the year ended December 31, 2016.

14. INVESTMENT PROPERTIES:

Changes in investment properties for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016		
	Land	Building	Total
January 1, 2016	₩26,200	₩4,074	₩30,274
Transfer	20,547	-	20,547
Depreciation	-	(248)	(248)
Others	803	-	803
December 31, 2016	₩47,550	₩3,826	₩51,376
Acquisition cost	₩47,550	₩9,180	₩56,730
Accumulated depreciation	-	(4,278)	(4,278)
Accumulated impairment losses	-	(1,076)	(1,076)

	Year ended December 31, 2015		
	Land	Building	Total
January 1, 2015	₩23,052	₩4,322	₩27,374
Acquisition	3,660	-	3,660
Depreciation	-	(248)	(248)
Others	(512)	-	(512)
December 31, 2015	₩26,200	₩4,074	₩30,274
Acquisition cost	₩26,200	₩9,180	₩35,380
Accumulated depreciation	-	(4,030)	(4,030)
Accumulated impairment losses	-	(1,076)	(1,076)

The fair values of investment properties are ₩46,111 million and ₩24,088 million as of December 31, 2016 and 2015, respectively. The recognized amount of rental income from investment property for the years ended December 31, 2016 and 2015, is ₩747 million and ₩942 million, respectively.

15. TRADE AND OTHER PAYABLES:

Trade and other payables as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Current:		
Trade payables	₩585,758	₩556,004
Other payables	237,227	295,696
Accrued expenses	218,891	211,885
Total	₩1,041,876	₩1,063,585
Non-current:		
Other payables	₩1,254	₩5,829

16. BORROWINGS AND BONDS:

(1) Bonds as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

Type	Annual interest rate (%)	December 31, 2016	December 31, 2015
Public bonds	2.38–5.27	₩1,272,434	₩1,827,788
Private bonds	1.77-4.76	215,000	100,000
Subtotal		1,487,434	1,927,788
Less: discount on bonds		(8,051)	(3,459)
Less: current portion of bonds		(764,734)	(809,000)
Long-term bonds		₩714,649	₩1,115,329

(2) Long-term and short-term borrowings as of December 31, 2016 and 2015, are as follows (in thousands of foreign currencies and millions of Korean won):

1) Short-term borrowings

Type	Lender	Annual interest rate (%)	December 31, 2016	December 31, 2015
Short-term borrowings in Korean won	Korea Exim Bank and others	3.30–5.86	₩483,027	₩534,000
Short-term borrowings in foreign currencies	KDB and others	2.61–9.06	294,014	534,180
Usance	Woori Bank and others	0.72–2.00	81,219	103,787
Transferred receivables (*)	KEB Hana Bank and others	-	93,904	84,798
Total			₩952,164	₩1,256,765

(*) Financial liabilities related to transferred trade receivables that do not meet the derecognition criteria amounted to ₩93,904 million and ₩84,798 million as of December 31, 2016 and 2015, respectively. Trade receivables are pledged as collateral for these liabilities.

2) Long-term borrowings

Type	Lender	Annual interest rate (%)	December 31, 2016	December 31, 2015
Borrowings in Korean won	KDB	3.90–4.98	55,000	156,667
	Core Value 1st Co., Ltd. and two others	-	-	100,000
	Woori Bank	-	-	40,000
	Boosan Bank	-	-	4,000
	Subtotal		55,000	300,667
Borrowings in foreign currencies	AKA Bank	6M Euribor+0.45	EUR 740	EUR 1,444
	KDB	3M LIBOR+2.80	USD 19,000	USD 50,000
	Kookmin Bank	-	-	USD 25,000
	KEB Hana Bank	-	-	USD 33,600
	Shinhan Bank	-	-	USD 35,000
	Korea Exim Bank	3M LIBOR+2.76	USD 147,000	USD 175,000
	Korea Exim Bank	6M LIBOR+4.30	USD 30,000	USD 40,000
	Korea Exim Bank	3M LIBOR+4.30	USD 400,000	USD 400,000
	JP Morgan and three others	3M LIBOR+3.50	USD 947,500	USD 1,180,500
	Innovasjon Norge	3.15	NOK 24,383	NOK 29,033
	Bank of New York	8.00	USD 4,250	USD 4,250
	Doosan Heavy Industries America Holdings Inc.	-	-	USD 18,000
	KEB Hana Bank	-	-	CNY 80,000
	Shell Brasil Petroleo Ltda	-	-	BRL 1,250
	Standard Chartered Bank	-	-	CNY 117,917
	Minsheng Financial Leasing Co., Ltd.	5.46-5.70	CNY 106,703	CNY 371,141
	Ping An Bank	5.94	CNY 2,822	CNY 39,230
	Everbright Financial Leasing Co., Ltd.	5.23	CNY 6,965	CNY 95,598
	Cinda Financial Leasing Co., Ltd.	5.22-5.70	CNY 138,408	CNY 366,949
	Industrial and Commercial Bank of China	4.75	CNY 40,034	CNY 54,567
	China Development Bank Leasing Co., Ltd.	6.18	CNY 5,572	CNY 12,606
	KDB		-	USD 16,000
	Woori Bank		-	CNY 40,000
	KDB		-	CNY 150,000
	International Far Eastern Leasing Co., Ltd.		-	CNY 55,556
	Jungcheolgun Financial	4.57	CNY 180,000	-

Type	Lender	Annual interest rate (%)	December 31, 2016	December 31, 2015
	Leasing Co., Ltd.			
			EUR 740	EUR 1,444
			USD 1,547,750	USD 1,977,350
			CNY 480,504	CNY 1,383,564
			NOK 24,383	NOK 29,033
	Subtotal		BRL -	BRL 1,250
Korean won equivalent			₩2,013,087	₩2,869,894
Less: present value of discount			(21,451)	(29,247)
Subtotal			1,991,636	2,840,647
Less: current portion			(540,098)	(319,795)
Total			₩1,451,538	₩2,520,852

17. RETIREMENT BENEFIT OBLIGATION:

(1) Details of retirement benefit obligation as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Present value of defined benefit obligation	₩1,056,809	₩1,077,547
Fair value of plan assets (*)	(546,708)	(523,002)
Total	₩510,101	₩554,545

(*) As of December 31, 2016, fair value of plan assets includes a portion of ₩156 million (₩303 million as of December 31, 2015) transferred to the National Pension Fund.

(2) Expenses recognized in income and loss for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Current service cost	₩35,813	₩53,361
Past service cost and gain on settlements	(2,137)	(1,066)
Net interest cost	23,845	25,991
Total	₩57,521	₩78,286

(3) Details of total expenses recognized in consolidated statements of income for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Cost of sales	₩23,300	₩31,799
Selling and administrative expenses	27,927	35,504
Research and development cost	6,294	10,983
Total	₩57,521	₩78,286

The Company recognized ₩11,612 million and ₩8,412 million of service cost relating to its defined contribution plan in the consolidated statements of income for the years ended December 31, 2016 and 2015, respectively.

(4) Changes in defined benefit obligation for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Beginning balance	₩1,077,547	₩1,163,528
Current service cost	35,813	53,361
Past service cost and gain on settlements	(2,137)	(1,066)
Transfer in	1,012	3,603
Transfer out	(2,058)	(5,677)
Business combinations and business transfer	(74,650)	(5,661)
Interest cost	38,273	42,361
Remeasurements of defined benefit liabilities		
-Actuarial gain arising from changes in demographic assumptions	(1,692)	(18,009)
- Actuarial loss (gain) arising from changes in financial assumptions	26,926	(58,613)
- Others	(5,531)	11,684
Plan participants' contributions	2,496	2,486
Benefit payment	(57,802)	(163,477)
Foreign currency translation	18,612	53,027
Ending balance	₩1,056,809	₩1,077,547

(5) Changes in plan assets for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Beginning balance	₩523,002	₩546,473
Expected return on plan assets	14,428	16,370
Transfer in	516	1,765
Transfer out	(751)	(2,553)
Business combinations and business transfer	(43,989)	(1,098)
Remeasurements of plan assets	21,579	(23,996)
Plan participants' contributions	2,496	2,486
Contributions by employer directly to plan assets	77,632	67,594
Benefit payment	(55,046)	(107,777)
Foreign currency translation	6,841	23,738
Ending balance	₩546,708	₩523,002

Actual gain on plan assets is recognized as ₩36,007 million and ₩(7,626) million for the years ended December 31, 2016 and 2015, respectively. The Company plans to contribute ₩56,689 million for the defined benefit plans in 2017.

(6) Assumptions used on actuarial valuation as of December 31, 2016 and 2015, are as follows:

	Year ended December 31, 2016	Year ended December 31, 2015
Discount rate for defined benefit obligations	2.42%–4.10%	3.00%–3.84%
Expected rate of salary increase	3.20%–4.80%	2.80%–3.85%

(7) Details of plan assets as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Equity instruments	₩164,260	₩260,528
Debt instruments	268,895	138,444
Others	113,553	124,030
Total	₩546,708	₩523,002

Expected return on plan assets is determined based on the consideration that is applicable for assets being held by the Company in accordance with its investment policy. Expected return on debt instruments is determined based on the consideration of interest rates at which interest is paid for debt instruments as of December 31, 2016. Expected return on equity instruments and others is determined based on the consideration of historical data on actual return from relevant markets.

(8) Sensitivity analysis as of December 31, 2016 and 2015, showing how the defined benefit obligation would have been affected by changes in the relevant actuarial assumption is as follows (in millions of Korean won):

	2016		2015	
	Amount	Rate	Amount	Rate
Discount rate:				
1% increase	₩(111,510)	(10.55%)	₩(39,619)	(3.68%)
1% decrease	141,410	13.38%	43,193	4.01%
Salary increase rate:				
1% increase	₩17,071	1.62%	₩15,156	1.41%
1% decrease	(15,657)	(1.48%)	(11,860)	(1.10%)

(9) Maturity of the defined benefit obligation as of December 31, 2016, is as follows (in millions of Korean won):

	0–one year	One year–two years	Two–five years	Five–ten years	Total
Payment	₩64,616	₩74,573	₩202,581	₩343,864	₩685,634

18. PROVISIONS:

Changes in provisions for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016							
	January 1, 2016	Increase	Decrease	Disposal of operations	Others	December 31, 2016	Deduction : Current	Non-current
Provision for product warranties	₩144,048	₩82,212	₩(71,862)	₩(6,563)	₩(8,980)	₩138,855	₩(113,688)	₩25,167
Provision for returned goods	2,080	1,140	(859)	-	-	2,361	(2,361)	-
Others	15,130	27,400	(10,432)	-	(362)	31,736	(31,736)	-
Total	₩161,258	₩110,752	₩(83,153)	₩(6,563)	₩(9,342)	₩172,952	₩(147,785)	₩25,167

	Year ended December 31, 2015						
	January 1, 2015	Increase	Decrease	Others	December 31, 2015	Deduction : Current	Non-current
Provision for product warranties	₩137,466	₩64,581	₩(62,404)	₩4,405	₩144,048	₩(123,906)	₩20,142
Provision for returned goods	1,197	1,513	(630)	-	2,080	(2,080)	-
Others	41,402	5,179	(24,818)	(6,633)	15,130	(15,130)	-
Total	₩180,065	₩71,273	₩(87,852)	₩(2,228)	₩161,258	₩(141,116)	₩20,142

The Company estimates expenditure required to settle the Company's obligation for product warranty, refund, related after-sales service and other based on warranty period, historical claim rate and other. The Company recognizes provisions for other liabilities amounting to ₩37,213 million related to pending litigations.

19. CAPITAL STOCK AND CAPITAL SURPLUS:

Changes in capital stock and capital surplus for the year ended December 31, 2016, are as follows (in millions of Korean won):

	Number of shares	Capital stock	Share premium	Other capital surplus
Beginning balance	207,455,314	₩1,037,277	₩228,729	₩16,572
Extinguishment of share options	-	-	-	4,187
Ending balance	207,455,314	₩1,037,277	₩228,729	₩20,759

DI's number of shares authorized is 400,000,000 shares with a par value of ₩5,000 per share. The number of shares issued by DI is 207,455,314 as of December 31, 2016 and 2015. The number of shares with limited voting rights under the Commercial Act in the Republic of Korea as of December 31, 2016 and 2015, is 505 and nil, respectively.

20. CAPITAL SECURITIES:

Details of capital securities as of December 31, 2016, are as follows:

	Description
Issue price (Korean won equivalent)	$500,000,000 ₩(556,650 million)
Maturity date	30 years and automatic revolving
Dividend condition	- Amount: 3.25% at par value, resets every five years - According to a "Step-up" clause, 5% will be added up after five years and 2% will be added up after seven years additionally. - Distribution: semiannually in arrears; optional deferral of distributions is available
Others	- DI can call the capital securities at five years and semiannually afterwards - Investor can put the capital securities to Core Partners Limited, a special-purpose entity ("SPE"), if DI does not exercise its call option

If investors exercise their put option and Core Partners Limited, a SPE, acquires the capital securities after five years since issue date, the SPE has the right to put the capital securities back to DI (the "Stock Exchange Right") under which the SPE can exchange the capital securities with a par value of $15.4 for a share of DI's common stock.

The capital securities are classified as equity as of December 31, 2016, as they do not contain a contractual financial obligation for DI to settle in cash, and the Stock Exchange Right confers at issue date a right to receive a fixed number of DI's common stock.

21. OTHER EQUITY ITEMS:

(1) Other equity items as of December 31, 2016 and 2015, are summarized as follows (in millions of Korean won):

Description	December 31, 2016	December 31, 2015
Treasury stock	₩(2)	₩-
Loss on disposal of treasury stock	(7,909)	(7,909)
Share options	4,097	8,149
Other capital adjustments	(38,627)	(37,642)
Total	₩(42,441)	₩(37,402)

(2) Share-based payment

The Company granted share options to its directors. Share options are settled based on board of directors' decision by issuance of new shares, treasury shares or cash settlement. These share options carry a two-year service vesting condition, subsequent to the resolution at the shareholders' meeting. Number of granted options as of December 31, 2016, is as follows (in millions of Korean won, except for share data).

	Date of grant	Number of granted options	Exercisable period	Exercisable price	Expected fair value at the date of grant
2nd grant	2006.03.17	-	2009.03.17–2016.03.16	₩15,900	₩7,881
3rd grant	2007.03.16	39,300	2010.03.16–2017.03.15	20,100	8,143
4th grant	2008.03.21	41,400	2011.03.21–2018.03.20	28,700	15,709
5th grant	2009.03.27	12,050	2012.03.27–2019.03.26	15,600	7,674
6th grant	2010.03.26	35,670	2013.03.26–2020.03.25	19,400	10,543
7th grant	2011.03.25	19,500	2015.03.25–2021.03.24	30,700	16,800
8th grant	2012.03.30	52,500	2016.03.30–2022.03.29	22,300	11,951
9th grant	2013.03.29	55,800	2016.03.29–2023.03.28	15,700	8,477
10th grant	2015.03.21	191,100	2017.03.21–2024.03.20	13,600	6,436
Total		447,320			

Changes in share option for the year ended December 31, 2016, are as follows:

1) Number of common shares to be issued:

	January 1, 2016	Granted	Exercised	Forfeited	December 31, 2016
2nd grant	26,900	-	-	(26,900)	-
3rd grant	46,400	-	-	(7,100)	39,300
4th grant	66,700	-	-	(25,300)	41,400
5th grant	37,150	-	-	(25,100)	12,050
6th grant	90,070	-	-	(54,400)	35,670
7th grant	50,500	-	-	(31,000)	19,500
8th grant	116,200	-	-	(63,700)	52,500
9th grant	229,400	-	-	(173,600)	55,800
10th grant	191,100	-	-	-	191,100
Total	854,420	-	-	(407,100)	447,320

2) Valuation amount (in millions of Korean won):

	January 1, 2016	Exercised	Change	December 31, 2016
2nd grant	₩212	₩-	₩(212)	₩-
3rd grant	378	-	(58)	320
4th grant	1,048	-	(397)	651
5th grant	285	-	(192)	93
6th grant	950	-	(574)	376
7th grant	848	-	(521)	327
8th grant	1,388	-	(761)	627
9th grant	1,945	-	(1,472)	473
10th grant	1,095	-	135	1,230
Total	₩8,149	₩-	₩(4,052)	₩4,097

Expense recognized related to the share option granted amounted to ₩135 million and ₩428 million for the years ended December 31, 2016 and 2015, respectively. There is no cost to recognize after this period.

The Company calculated expenses applying fair value approach. Assumptions used in determining fair value of share options are as follows:

	Risk-free interest rate (*)	Expected exercisable period	Expected volatility	Expected dividend yield ratio
2nd grant	5.13%	5 years	55.97%	0.90%
3rd grant	4.81%	5 years	47.08%	1.23%
4th grant	5.19%	6.5 years	47.94%	1.47%
5th grant	4.74%	6.5 years	59.76%	1.67%
6th grant	4.53%	6.5 years	58.82%	1.34%
7th grant	4.19%	6.5 years	58.01%	1.07%
8th grant	3.80%	6.5 years	57.96%	0.44%
9th grant	2.57%	6.5 years	54.12%	0.21%
10th grant	3.27%	6.5 years	42.29%	0.00%

(*) Risk-free interest rate is based on 5- and 10-year treasury bond yield rate.

22. ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS):

Changes in accumulated other comprehensive income (loss) for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016					
	Unrealized gain (loss) on AFS securities	Increase in equity of associates	Gain (loss) on translation of foreign operation	Unrealized gain(loss) on valuation of derivatives	Gain (loss) on revaluation of property, plant and equipment	Total
Beginning balance	₩(862)	₩59	₩(419,111)	₩(15,139)	₩227,383	₩(207,670)
Increase	7,510	-	3,423	15,799	-	26,732
Decrease	-	-	-	-	(89,433)	(89,433)
Ending balance	₩6,648	₩59	₩(415,688)	₩660	₩137,950	₩(270,371)

	Year ended December 31, 2015					
	Unrealized loss on AFS securities	Increase (decrease) in equity of associates	Loss on translation of foreign operation	Unrealized loss on valuation of derivatives	Gain on revaluation of property, plant and equipment	Total
Beginning balance	₩(797)	₩1,416	₩(406,276)	₩(9,862)	₩164,440	₩(251,079)
Increase	-	-	-	-	62,943	62,943
Decrease	(65)	(1,357)	(12,835)	(5,277)	-	(19,534)
Ending balance	₩(862)	₩59	₩(419,111)	₩(15,139)	₩227,383	₩(207,670)

Tax effects directly recognized in accumulated other comprehensive income (loss) as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016		
Description	Before tax	Deferred tax assets (liabilities)	After tax
Unrealized gain (loss) on AFS securities	₩9,869	₩(3,221)	₩6,648
Increase (decrease) in equity of associates	78	(20)	58
Loss on translation of foreign operation	(415,193)	(495)	(415,688)
Unrealized gain (loss) on valuation of derivatives	2,642	(1,981)	661
Gain on revaluation of property, plant and equipment	225,501	(87,551)	137,950
Total	₩(177,103)	₩(93,268)	₩(270,371)

Description	December 31, 2015 Before tax	Deferred tax assets (liabilities)	After tax
Unrealized gain (loss) on AFS securities	₩(949)	87	(862)
Increase (decrease) in equity of associates	78	(19)	59
Loss on translation of foreign operation	(418,590)	(521)	(419,111)
Unrealized gain (loss) on valuation of derivatives	(20,234)	5,095	(15,139)
Gain on revaluation of property, plant and equipment	303,519	(76,136)	227,383
Total	₩(136,176)	₩(71,494)	₩(207,670)

23. RETAINED EARNINGS:

(1) Retained earnings as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Retained earnings before appropriations (deficit before disposal)	₩578,246	₩(181,069)
Technology development reserve	-	456,667
Facilities investment reserve	-	200,000
Total	₩578,246	₩475,598

(2) Changes in retained earnings for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Beginning balance	₩475,598	₩1,295,797
Net income (loss) for the year	63,181	(819,103)
Actuarial gains (losses) recognized in retained earnings and others	(345)	17,264
Revaluation and disposal of property, plant and equipment	58,155	141
Dividends	(18,289)	(18,501)
Change in retained earnings of equity method investment securities	(54)	-
Ending balance	₩578,246	₩475,598

24. SEGMENT INFORMATION:

The Company's operating segments are as follows:

Business segment	Main products
Engines ("EG")	Engine of the commercial cars and buses; engine parts
Construction Equipment ("CE")	Crawler excavator, excavator parts and portable power
Construction Equipment ("Bobcat")	Compact (Skid Steer Loader, Compact Track Loader, Mini Excavator), Heavy Excavator, and Portable Power

As of December 31, 2016, the Company has completed the transfer of the machine tool business, and its profit and loss has been classified as discontinued operations.

(1) The information for each business segment as of and for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Year ended December 31, 2016			
	Sales	Intersegment transaction	Net	Operating income
EG	₩833,996	₩(335,297)	₩498,699	₩58,781
CE	3,174,928	(1,823,210)	1,351,718	18,031
Bobcat	3,949,929	(70,796)	3,879,133	414,006
Subtotal	7,958,853	(2,229,303)	5,729,550	490,818
Elimination	(2,229,303)	2,229,303	-	-
Total	₩5,729,550	₩-	₩5,729,550	₩490,818

	Year ended December 31, 2015			
	Sales	Intersegment transaction	Net	Operating income (loss)
EG	₩893,187	₩(314,994)	₩578,193	₩2,361
CE	3,145,982	(1,750,732)	1,395,250	(486,023)
Bobcat	4,040,767	(49,316)	3,991,451	388,575
Subtotal	8,079,936	(2,115,042)	5,964,894	(95,087)
Elimination	(2,115,042)	2,115,042	-	-
Total	₩5,964,894	₩-	₩5,964,894	₩(95,087)

(2) Total assets of business segment as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
EG	₩864,249	₩903,697
CE	3,325,790	3,729,985
Bobcat	6,326,067	6,364,931
MT	-	873,775
Other	(489,297)	(489,215)
Total	₩10,026,809	₩11,383,173

(3) Total liabilities of business segment as of December 31, 2016 and 2015, are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
EG	₩804,322	₩834,450
CE	2,668,376	3,218,003
Bobcat	2,974,229	3,239,472
MT	-	158,256
Other	131,505	830,036
Total	₩6,578,432	₩8,280,217

(4) The sale information by geographical segment for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Revenue	
	Year ended December 31, 2016	Year ended December 31, 2015
Asia Pacific and Emerging Market	₩1,595,834	₩1,760,830
China	461,811	367,782
Europe and Middle East and Africa	1,064,315	1,025,227
North America and Oceania	2,607,590	2,811,055
Total	₩5,729,550	₩5,964,894

25. SALES:

Details of sales for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Sales of goods		
-Manufactured products	₩5,182,047	₩5,320,875
-Merchandise	419,186	522,392
Others	128,317	121,627
Total	₩5,729,550	₩5,964,894

26. EXPENSES BY NATURE:

Expenses classified by nature for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Purchases of inventories	₩2,686,531	₩2,760,470
Changes in inventories	39,270	115,386
Employee benefits	722,453	963,289
Depreciation and amortization	251,138	278,887

27. SELLING AND ADMINISTRATIVE EXPENSES:

Selling and administrative expenses for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Salaries	₩212,986	₩249,098
Retirement benefits (*1)	29,009	186,022
Other employee benefits	51,111	63,018
Printing	1,204	3,374
Freight and custody	2,113	2,365
Communications	8,561	9,064
Utilities	4,973	4,784
Maintenance	2,372	5,754
Insurance	15,326	17,881
Depreciation	10,907	14,436
Amortization	46,002	48,738
Research and development	145,434	191,570
Advertising	38,618	59,846
Sales commission	54,997	52,589
Taxes and dues	9,884	12,396
Travel	31,419	37,504
Sundry	132,442	137,817
Entertainment	3,822	4,402
Education and training	5,675	8,179
Bad debt expenses	(8,363)	152,762
Others	35,781	51,052
Total	₩834,273	₩1,312,651

(*1) Voluntary separation program is included.

28. FINANCE INCOME AND EXPENSES:

Finance income and expenses for the years ended December 31, 2016 and 2015, are summarized as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Finance income:		
Interest income	₩12,070	₩23,214
Dividend income	5	1,737
Gain on foreign currency transaction	82,192	103,209
Gain on foreign currency translation	63,859	74,911
Gain on derivative transaction	16,609	21,031
Gain on valuation of derivatives	827	2,195
Gain on bond repayment	41	-
Income on financial guarantee	560	1,766
Subtotal	176,163	228,063
Finance expenses:		
Interest expenses	(230,540)	(283,948)
Loss on foreign currency transaction	(91,032)	(69,101)
Loss on foreign currency translation	(85,609)	(205,220)
Loss on derivative transaction	(6,308)	-
Loss on valuation of firm commitments	-	(3,265)
Expense on financial guarantee	(6,592)	(17,357)
Loss on bond repayment	(5,143)	-
Loss on debt repayment	(667)	(1,588)
Other finance expenses	(1,759)	(1,045)
Subtotal	(427,650)	(581,524)
Net finance expense	₩(251,487)	₩(353,461)

29. OTHER NON-OPERATING INCOME AND EXPENSES:

(1) Other non-operating income and expenses for the years ended December 31, 2016 and 2015, consist of the following (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Other non-operating income:		
Rental income	₩55	₩58
Gain on disposal of property, plant and equipment	14,306	1,039
Gain on disposal of intangible assets	293	-
Gain on disposal of other non-current assets	-	29,718
Reversal of impairment loss of property, plant and equipment	871	139
Others	40,657	20,703
Subtotal	56,182	51,657
Other non-operating expenses:		
Loss on disposal of trade receivables	(8,913)	(7,510)
Other bad debt expenses	(2,679)	(31,829)
Loss on disposal of property, plant and equipment	(7,739)	(3,018)
Loss on disposal of intangible assets	(55)	-
Impairment loss of property, plant and equipment	(2,063)	(116,448)
Impairment loss of intangible assets	(30,079)	(101,513)
Loss on disposal of short-term investment securities	(497)	-
Loss on disposal of long-term investment securities	(910)	-
Donations	(3,441)	(13,322)
Others	(156,936)	(72,546)
Subtotal	(213,312)	(346,186)
Total	₩(157,130)	₩(294,529)

30. INCOME TAX EXPENSE:

(1) Components of income tax expense for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Current tax	₩(22,430)	₩26,156
Deferred tax	196,309	146,512
Total income tax expense	173,879	172,668
Changes in deferred tax directly charged to equity	(11,239)	(11,590)
Income tax expense	₩162,640	₩161,078

(2) The Company offsets deferred tax assets and deferred tax liabilities if the Company has a legally enforceable right to set off current tax assets against current tax liabilities and the deferred tax assets and the deferred tax liabilities relate to income taxes levied by the same taxation authority. Changes in deferred tax assets and liabilities for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31, 2016		
	January 1, 2016	Change	December 31, 2016
Advances from government	₩1,721	₩(184)	₩1,537
Allowance for doubtful accounts	84,649	3,909	88,558
Provision for product warranties	25,783	691	26,474
Retirement benefit obligation	134,171	13,057	147,228
Investment in associates	(14,004)	14,624	620
Provision for temporary depreciation	(6,161)	2,427	(3,734)
Reserve for research and development	(55,660)	28,233	(27,427)
Gain on revaluation of land	(176,631)	56,672	(119,959)
Derivative assets (liabilities)	5,095	(5,461)	(366)
Net loss carryforwards	27,987	(22,476)	5,511
Others	480,869	(311,626)	169,243
Total	₩507,819	₩(220,134)	₩287,685

	Year ended December 31, 2015		
	January 1, 2015	Change	December 31, 2015
Advances from government	₩2,464	₩(743)	₩1,721
Allowance for doubtful accounts	16,034	68,615	84,649
Provision for product warranties	33,976	(8,193)	25,783
Retirement benefit obligation	138,268	(4,097)	134,171
Investment in associates	11,332	(25,336)	(14,004)
Provision for temporary depreciation	(6,161)	-	(6,161)
Reserve for research and development	(81,474)	25,814	(55,660)
Gain on revaluation of land	(156,092)	(20,539)	(176,631)
Derivative assets	3,148	1,947	5,095
Net loss carryforwards	25,736	2,251	27,987
Others	667,100	(186,231)	480,869
Total	₩654,331	₩(146,512)	₩507,819

(3) Temporary differences that have not been recognized as deferred tax assets as of December 31, 2016 and 2015, are as follows (in millions Korean won):

	December 31, 2016	December 31, 2015
Net loss carryforwards	₩1,462,379	₩1,348,083
Temporary differences	1,324,887	256,516
Tax credit carryforwards	23,928	910,669

The probability of deferred tax assets being realized depends on the Company's ability to generate taxable income in future years, the economic situation and industry forecast. The Company periodically reviews such matters.

(4) Temporary differences from investments in subsidiaries, joint ventures and associates that are not recognized as deferred tax assets are as follows (in millions of Korean won):

	December 31, 2016	December 31, 2015
Subsidiaries and other	₩(495,638)	₩213,105

(5) A reconciliation of income tax expense (benefit) and accounting income (loss) before income tax expense for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Year ended December 31, 2016	Year ended December 31, 2015
Loss before income tax expense	₩82,050	₩(781,054)
Income tax expense (benefit) at statutory income tax rate	184,882	(222,848)
Adjustment:		
Non-temporary difference	(35,920)	(68,631)
Effect of change in recognition of deferred income tax	38,110	438,527
Tax credits	(14,906)	(4,366)
Additional income tax and tax refund for prior periods	1,232	4,467
Other	(10,758)	13,929
Income tax expense (benefit)	₩162,640	₩161,078
Average effective tax rate	(*)	(*)

(*) Average effective tax rate for the years ended December 31, 2016 and 2015, was not calculated due to the effect of change in recognition of deferred income tax.

The Company's tax rate varies from 15% to 39% according to tax authorities.

31. EARNINGS PER SHARE:

Earnings per share for the years ended December 31, 2016 and 2015, are computed as follows (in millions of Korean won, except for share data).

(1) Basic earnings per share

Basic earnings per share are computed by dividing net income attributable to owners of the Company by the weighted-average number of common shares outstanding during the period, excluding treasury shares.

	Year Ended December 31, 2016		Year Ended December 31, 2015	
	Continuing and discontinued operations	Continuing operations	Continuing and discontinued operations	Continuing operations
Net income (loss) available to common share	₩44,323	₩(152,252)	₩(837,490)	₩(920,117)
Weighted-average number of common shares outstanding (*1)	207,454,997	207,454,997	207,455,314	207,455,314
Basic net income (loss) per share (in Korean won)	₩214	₩(734)	₩(4,037)	₩(4,435)

(*1) The weighted-average number of common shares outstanding used in basic earnings per share calculation is as follows:

	Year Ended December 31, 2016
Beginning outstanding shares	207,455,314
Effect of share option exercised	(317)
Weighted-average number of common shares outstanding	207,454,997

(2) Diluted earnings per share

The Company does not compute diluted earnings per common share for the years ended December 31, 2016 and 2015, because there is no item related to dilution. Diluted earnings per share are equal to earnings per share for the years ended December 31, 2016 and 2015.

Share options that are excluded from the diluted earnings per share calculation as they have an antidilutive effect during 2016 and 2015 are as follows:

	Year Ended December 31, 2016	Year Ended December 31, 2015
Share options	447,320	854,420

32. DIVIDEND:

For the year ended December 31, 2016, DI paid dividends amounting to ₩18,289 million for holders of capital securities.

33. COMMITMENTS AND CONTINGENCIES:

(1) The Company is involved in lawsuits as a defendant with a total claims exposure of ₩93,488 million as of December 31, 2016. Currently, the ultimate outcome of these lawsuits cannot be determined.

(2) As of December 31, 2016, the Company has entered into bank overdraft agreements amounting to ₩3,240,218 million with various financial institutions.

(3) Financial covenant

For the year ended December 31, 2016, DI issued 28th foreign currency-denominated bonds for USD 300,000 thousand. In addition, the issued 28th foreign currency-denominated bond has an early redemption clause when and if the Parent's guarantor, KDB, becomes privatized, and the funds required for such redemption will be provided by KDB to the Parent. In addition, DI pledged 11,178,538 shares of Doosan Bobcat Co., Ltd. as collateral for these bonds. If the price falls below par, the difference will be made up by means of additional shares or deposits.

(4) As of December 31, 2016, DI, a shareholder of DICC, entered into an agreement with unrelated financial investors under which DI and the unrelated financial investors, as they mutually agree, may collectively dispose of all shares of DICC, belonging to each of them, to a third party. Upon exercise of the agreement by the unrelated financial investors, DI has a right to sell its shares of DICC pursuant to the agreement or, otherwise, repurchase the shares held by the unrelated financial investors.

(5) The financial liabilities related to the transferred receivables that DI continues to recognize because DI retains substantially all of the risks and rewards of ownership as of December 31, 2016, amounting to ₩93,904 million.

(6) As of December 31, 2016, guarantees provided by the Company for third parties are as follows (in thousands of foreign currencies and millions of Korean won):

Provider	Provided for	Guarantee	Korean won equivalent
Doosan Infracore Co., Ltd.	Daewoo Construction	EUR 780	₩988
	Daewoo International	EUR 402	509
Doosan Infracore China Co., Ltd.	End User	CNY 597,816	103,578
Doosan Infracore (Shandong) Co., Ltd.	End User	CNY 320	55
Clark Equipment Co. and others	End User	USD 90,770	109,696
Doosan Holdings Europe Ltd. and others	End User	USD 1,175	1,419
Total			₩216,245

As of December 31, 2016, the Company entered into agreements with Korea Development Bank for the guarantees of 28th foreign currency-denominated bond, totaling USD 300,000 thousand, and Korea Exim Bank for the guarantees of 27th bond, totaling ₩115,000 million. The Company entered into agreements with various banks for the guarantees of letters of credit and usance bills related to the Company's exports and imports, totaling USD 157 thousand, and entered into contracts with Seoul Guarantee Insurance Company and Machinery Financial Cooperative for the guarantees related to contracts and warranties totaling ₩26,937 million.

(7) Operating lease

As of December 31, 2016, future minimum lease payments relating to operating leases that can't be canceled are as follows (in millions of Korean won):

	Amount
Less than 1 year	₩16,438
1 year-5 years	27,469
More than 5 years	6,412
Total	₩50,319

34. PLEDGED ASSETS:

(1) DI's assets pledged as collateral for long-term and short-term borrowings as of December 31, 2016, are as follows (in thousands of foreign currencies and millions of Korean won):

Institution	Asset	Borrowings	Collateralized value
KDB	Land, buildings and machinery (*)	KRW 150,000	KRW 771,112
		USD 19,000	USD 95,026
		EUR 10,618	DM 84,000

(*) The Company's rights to property and inventory insurance benefits are pledged as collateral to KDB.

The Company has provided whole shares of Doosan Infracore North America LLC and Doosan Infracore Norway AS as collateral to Korea Exim Bank for borrowings amounting to USD 147,000 thousand. In addition, the Company has provided 5,004,125 shares of Doosan Bobcat Co., Ltd. as collateral to Standard Chartered Bank for borrowings amounting to ₩100,000 million.

(2) The Company has provided 62,495 shares of Clark Equipment Co. and 38,446 shares of Doosan Holdings Europe Ltd. and 110,071,219 shares of Doosan Infracore South East Asia Pte. Ltd., as well as secured by certain tangible and intangible assets of Doosan Infracore International, Inc. and subsidiaries and Doosan Holdings Europe Ltd. and subsidiaries and Doosan Infracore South East Asia Pte. Ltd. and subsidiaries as collateral to JPMorgan and other three parties for borrowings amounting to USD 947,500 thousand.

35. RELATED-PARTY TRANSACTIONS:

Related-party disclosures for the years ended December 31, 2016 and 2015, are as follows:

(1) Nature of relationship

Relationship with the Company	Company name
Ultimate controlling party	Doosan Corp.,
Next most-senior parent	Doosan Heavy Industries and Construction Co., Ltd.
Associates and joint ventures	Doosan Cuvex Co., Ltd., Doosan PSI LLC, Doosan Infracore Liaoning Machinery Sales Co., Ltd.
Other related parties	Doosan Engine Co., Ltd., Doosan Construction & Engineering Co., Ltd., Doota Mall Corporation, Oricom Inc., Doosan Bears Inc., Doosan Heavy Industries America Holdings Inc., Doosan Power Systems Pension Scheme, Neoplux Co, Ltd.(*) and others

(*) Although the company is not applicable to related parties defined in K-IFRS 1024 Paragraph 9, a group of large-size affiliates designated by the Korea Fair Trade Commission are classified as related parties according to the resolution by the Securities & Futures Commission in accordance with substantial relationship defined in IFRS 1024 Paragraph 10.

(2) Significant transactions

Significant transactions for the years ended December 31, 2016 and 2015, with related parties are as follows (in millions of Korean won):

	Year ended December 31, 2016					
	Sales	Other income	Disposals of property, plant and equipment and intangible assets	Purchases	Other expenses	Acquisition of property, plant and equipment and intangible assets
Ultimate controlling party	₩52,063	₩191	₩23,614	₩48,990	₩68,392	₩7,990
Next most-senior parent	1,211	3	-	-	-	-
Associates and joint ventures	-	-	-	-	761	-
Other related parties	2,100	178	4	-	62,733	34,909
Total	₩55,374	₩372	₩23,618	₩48,990	₩131,886	₩42,899

	Year ended December 31, 2015				
	Sales	Other income	Purchases	Other expenses	Acquisition of property, plant and equipment and intangible assets
Ultimate controlling party	₩35,474	₩190	₩64,291	₩77,593	₩51,557
Next most-senior parent	2,943	1	-	12	-
Associates and joint ventures	-	2,900	-	-	-
Other related parties	3,692	469	-	81,357	21,748
Total	₩42,109	₩3,560	₩64,291	₩158,962	₩73,305

(3) As of December 31, 2016 and 2015, related significant balances are as follows (in millions of Korean won):

	Year ended December 31, 2016				
	Trade receivables	Other receivables	Trade payables	Other payables	Borrowings
Ultimate controlling party	₩4,116	₩689	₩5,113	₩35,254	₩-
Next most-senior parent	142	72	-	2,148	-
Associates and joint ventures	-	3,798	-	2	-
Other related parties	-	35,518	-	13,633	-
Total	₩4,258	₩40,077	₩5,113	₩51,037	₩-

	Year ended December 31, 2015				
	Trade receivables	Other receivables	Trade payables	Other payables	Borrowings
Ultimate controlling party	₩3,490	₩689	₩3,168	₩37,425	₩-
Next most-senior parent	62	191	-	1,325	-
Other related parties	577	41,110	-	17,243	21,096
Total	₩4,129	₩41,990	₩3,168	₩55,993	₩21,096

(4) Fund transactions and equity contribution transactions for the years ended December 31, 2016 and 2015, with related parties are as follows (in millions of Korean won):

	Year ended December 31, 2016							
	Loans		Borrowings		Investment		Dividends	
	Lending	Collection	Borrowing	Repayment	Capital increase(*1)	Investment	Income	Payment
Next most-senior parent	₩-	₩-	₩-	₩-	₩-	₩-	₩1,844	₩-
Associates	-	-	-	-	-	355	-	-
Joint ventures	-	-	-	21,096	616,876	139,582	-	-

(*1) For the year ended December 31, 2016, Doosan Engine Co., Ltd. contributed its shares of Clark Equipment Co. and Doosan Holdings Europe Ltd., which were assessed at ₩617,289 million to DBI in exchange for DBI's shares, which were assessed at ₩616,876 million and ₩413 million of cash.

	Year ended December 31, 2015							
	Loans		Borrowings		Investment		Dividends	
	Lending	Collection	Borrowing	Repayment	Capital increase	Investment	Income	Payment
Next most-senior parent	₩-	₩-	₩-	₩-	₩-	₩-	₩2,149	₩-
Associates	105,926	-	-	-	-	1,108	-	-
Joint ventures	-	-	-	69,038	134,831	-	-	-

(5) As of December 31, 2016, guarantees by the Company for related parties and guarantees by related parties for the Company are ₩0.

(6) The parent defines key management personnel, including registered officer and non-registered officer (including outside director), who have the authority and responsibility for planning, operation and control and are in charge of business or division unit. Compensation to key management personnel of the Company for the years ended December 31, 2016 and 2015, is as follows (in millions of Korean won):

	Year ended December 31,	
Description	2016	2015
Employee benefits	₩11,562	₩21,654
Retirement benefits	932	4,914
Share-based payment	135	428
Total	₩12,629	₩26,996

36. CONSOLIDATED STATEMENTS OF CASH FLOWS:

(1) The adjustments and changes in operating assets and liabilities in the consolidated statement of cash flows for the years ended December 31, 2016 and 2015, are as follows (in millions of Korean won):

	Year ended December 31,	
	2016	2015
Adjustments:		
Income tax expense	₩235,358	₩195,440
Finance income	(68,476)	(105,973)
Finance expense	300,625	504,245
Retirement benefits(DB)	57,521	78,286
Depreciation	147,725	172,285
Amortization	109,570	123,961
Gain on disposal of property, plant and equipment	(14,313)	(1,093)
Gain on disposal of intangible assets	(293)	-
Gain on disposal of other non-current assets	-	(29,718)
Loss on disposal of property, plant and equipment	7,810	3,210
Loss on disposal of intangible assets	55	-
Reversal of loss on disposal of property, plant and equipment	(871)	(139)
Impairment loss on property, plant and equipment	2,063	116,448
Impairment loss on intangible assets	30,079	101,513
Loss on disposal of short-term investment securities	497	-
Loss on disposal of long-term investment securities	910	122
Share of loss on equity-accounted investees	152	37,977
Gain on disposal of operations	(255,231)	-
Other	100,169	431

	Year ended December 31,	
	2016	2015
Total	₩ 653,350	₩1,196,995
Changes in operating assets and liabilities:		
Decrease in trade receivables	₩81,203	₩217,289
Decrease (increase) in other receivables	(3,411)	174,409
Decrease in derivative assets	26,708	1,529
Decrease (increase) in inventories	33,287	(138,020)
Increase in other current assets	(2,014)	(6,080)
Decrease (increase) in other non-current assets	(16,424)	49,762
Increase (decrease) in trade payables	165,313	(118,687)
Increase (decrease) in other payables	(142,929)	36,057
Decrease in derivative liabilities	(23,945)	(535)
Increase in provisions	17,768	53,781
Increase (decrease) in other current liabilities	(36,900)	35,156
Payment of severance benefits(DB)	(57,802)	(163,477)
Transfer out	(811)	(1,286)
Decrease (increase) in plan assets	(25,082)	37,697
Increase in other non-current liabilities	5,062	22,522
Total	₩20,023	₩200,117

(2) Significant non-cash transactions for the years ended December 31, 2016 and 2015, are ₩0.

37. BUSINESS COMBINATION:

(1) The details of the business combination during the previous period are as follows. (in thousands of local currency):

	Details
Acquired company	Doosan (China) Financial Leasing Corp.
Principal activity	Finance
Date of acquisition	July 17, 2015
Ownership after acquiring	100%
Purchase price	CNY 901,961

Doosan (China) Financial Leasing Corp. was acquired by Doosan Infracore (China) Investment Co., Ltd. and Doosan Infracore China Co., Ltd. so as to support China business by developing competitive financial instrument and to operate systemic risk management.

(2) Fair value of consideration transferred in business combinations for the year ended December 31, 2015, is as follows (in thousands of local currency):

	Doosan (China) Financial Leasing Corp.
Cash	CNY 460,000
Fair value of acquired company's equity investment at acquisition date	441,961
Total consideration transferred in business	CNY 901,961

(3) Fair values of assets and liabilities at acquisition date from business combinations are as follows (in millions of Korean won):

	Doosan (China) Financial Leasing Corp.
Fair value of assets acquired:	
Current assets	₩574,766
Non-current assets	122,065
Subtotal	696,831
Fair value of liabilities acquired:	
Current liabilities	47,488
Non-current liabilities	483,450
Subtotal	530,938
Fair value of net assets acquired	₩165,893

(4) Net cash flows in business combinations for the year ended December 31, 2015, are as follows (in millions of Korean won):

	Doosan (China) Financial Leasing Corp.
Purchase price	₩83,301
Fair value of the identifiable net assets acquired	(28,361)
Goodwill	₩54,940

Included in revenue for the previous year is ₩40,153 million in respect of Doosan (China) Financial Leasing Corp. Profit for the year is ₩10,669 attributable to the additional business generated by Doosan (China) Financial Leasing Corp.

Had these business combinations been effected on January 1, 2015, the revenue of the Company from continuing operations would have been ₩7,230,202 million, and the profit (loss) for the year from continuing operations would have been ₩(865,876) million. The directors consider these 'pro forma' numbers to represent an approximate measure of the performance of the combined group on an annualized basis and to provide a reference point for comparison in future periods.

38. DISCONTINUED OPERATIONS:

(1) Disposal of Machine Tools business and related management rights

The Company disposed of Machine Tools business and related management rights on April 29, 2016. The Company expects that the disposal will help to increase revenue and improve profitability by establishing a suitable decision-making process for each business segment and enhancing competitiveness resulting from efficient allocation of management resources.

(2) The carrying amounts of assets and liabilities as of the date of transfer are as follows. (in millions of Korean won)

	December 31, 2016						
	Asset book value			Liabilities book value			
	Current assets	Non-current assets	Total	Current liabilities	Non-current liabilities	Total	Net book value
MT business	₩586,510	₩427,903	₩1,014,413	₩325,201	₩34,212	₩359,413	₩655,000

(3) Calculation of gain on transfer of current business is as follows (in millions of Korean won):

	Year ended December 31, 2016			
	Transfer cost	(-)Net book value	(-)Sale cost	Business transfer profit
MT business	₩1,023,721	₩655,000	₩113,490	₩255,231

(4) Net cash flows from discontinued operations are as follows (in millions of Korean won):

	Year ended December 31, 2016			
	Transfer price received in cash	(-)Transferred cash assets	(-)Sale cost	Total
MT business	₩1,023,721	₩72,864	₩21,437	₩929,420

(5) Income from discontinued operations

Details of income from discontinued operations included in the consolidated statements of income for the years ended December 31, 2016 and 2015, are as follows. Gains or losses that resulted from discontinued operations in the previous period have been restated to include discontinued operations in the current period. (in millions of Korean won):

Discontinued operating profit

	Years ended December 31	
	2016	2015
Sales	₩313,348	₩1,248,091
Cost of goods	(241,571)	(920,383)
Selling and administrative cost	(48,909)	(205,180)
Operating income	22,868	122,528
Other non-operating expense	(8,807)	(5,539)
Income before income tax expense	14,061	116,989
Income tax expense	(5,944)	(34,362)
Subtotal	8,117	82,627
Gain from disposal of discontinued operations	255,231	-
Income tax expense related to disposal of discontinued operations	(66,773)	-
Income from discontinued operations	₩196,575	₩82,627

Cash flows from discontinued operations

	Years ended December 31	
	2016	2015
Cash flows from operating activities	₩2,209	₩36,432
Cash flows from investing activities	923,928	(16,546)
Cash flows from financing activities	(30,714)	29,791
Net cash flow	₩895,423	₩49,677