

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

1. General Information

1.1 The Parent Company

Doosan Corporation (“the Parent Company”) in accordance with Korean IFRS 1110 *Consolidated Financial Statements* was incorporated on December 18, 1933, under the name of Sohwa-Kirin Beer, Ltd. The Parent Company has changed its name to Dongyang Beer, Ltd. in February 1948, to OB Beer, Ltd. in February 1996, and to Doosan Corporation on September 1, 1998.

In June 1973, the Parent Company listed its stock on the Korea Exchange. After several capital increases, the Parent Company’s share capital as at December 31, 2016 is ₩134,838 million, including ₩26,984 million of preferred shares.

The Parent Company’s ordinary shareholders as at December 31, 2016, are as follows:

	Number of ordinary shares owned	Percentage of ownership (%)
Related parties	9,369,395	46.37
Treasury shares	5,276,455	26.11
Others	5,561,038	27.52
Total	<u>20,206,888</u>	<u>100</u>

Meanwhile, 48.3% of preferred shares are owned by the related parties including the largest shareholder, and 51.7% of preferred shares are owned by others entities and individual shareholders.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

1.2 Consolidated subsidiaries

Details of consolidated subsidiaries as at December 31, 2016 and 2015, are as follows:

Subsidiary	Type of business	Location	Ownership interest held by the Group (%) ¹		Ownership interest held by non-controlling interests (%) ¹		Closing date
			2016	2015	2016	2015	
Oricom Inc.	Advertising	Korea	65.5	66.9	34.5	33.1	December 31
HanComm. Inc.	Advertising	Korea	100.0	100.0	34.5	33.1	December 31
Doosan Bears, Inc.	Sports	Korea	100.0	100.0	-	-	December 31
Doosan Feed & Livestock Co., Ltd.	Manufacturing and sales	Korea	100.0	100.0	-	-	December 31
Doosan Tower Co., Ltd. ⁴	Real estate	Korea	100.0	100.0	-	-	December 31
DIP Holdings Co., Ltd.	Holding company	Korea	100.0	100.0	-	-	December 31
DLI Corporation	Training	Korea	100.0	-	-	-	December 31
DRA Inc.	Software development	Korea	100.0	100.0	-	-	December 31
Doosan Mecatec Co., Ltd.	Manufacturing	Korea	100.0	-	-	-	December 31
DAE Inc.	Research and development	Korea	100.0	-	-	-	December 31
Doosan Electro-Materials Singapore Pte Ltd.	Wholesale and retail	Singapore	100.0	100.0	-	-	December 31
Doosan Hongkong Ltd.	Wholesale and retail	China	100.0	100.0	-	-	December 31
Doosan Electro-Materials (Shen Zhen) Limited.	Wholesale and retail	China	100.0	100.0	-	-	December 31
Doosan Shanghai Chemical Materials Co., Ltd.	Wholesale and retail	China	100.0	100.0	-	-	December 31
Doosan Electro-Materials (Changshu) Co., Ltd.	Manufacturing	China	100.0	100.0	-	-	December 31
Doosan Second Real Estate Securitization Specialty Ltd. ²	Specialized in securitization	Korea	2	2	-	-	December 31
Doosan Information and Communications America, LLC	IT service	USA	100.0	100.0	-	-	December 31
Doosan Information and Communications China, Co., Ltd.	IT service	China	100.0	100.0	-	-	December 31
Doosan Mottrol (Jiangyin) Co., Ltd.	Manufacturing	China	100.0	100.0	-	-	December 31
Doosan Information & Communications Europe	IT service	UK	100.0	100.0	-	-	December 31
Doosan Industrial Vehicle Europe N.A.	Wholesale and retail	Belgium	100.0	100.0	-	-	December 31
Doosan Industrial Vehicle U.K. Ltd.	Wholesale and retail	UK	100.0	100.0	-	-	December 31

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Subsidiary	Type of business	Location	Ownership interest held by the Group (%) ¹		Ownership interest held by non-controlling interests (%) ¹		Closing date
			2016	2015	2016	2015	
Doosan Logistics Europe GmbH	Manufacturing	Germany	100.0	100.0	-	-	December 31
Doosan Industrial Vehicle America Corp.	Wholesale and retail	USA	100.0	100.0	-	-	December 31
Doosan Industrial Vehicle Yantai Co., Ltd.	Manufacturing	China	100.0	100.0	-	-	December 31
Genesis Forklift Trucks Limited	Wholesale and retail	UK	100.0	100.0	-	-	December 31
Rushlift Holdings Ltd.	Holding company	UK	100.0	100.0	-	-	December 31
Doosan Materials Handling UK Ltd.	Holding company	UK	100.0	100.0	-	-	December 31
Rushlift Ltd.	Wholesale, retail and lease	UK	100.0	100.0	-	-	December 31
Doosan Electro-Materials America, LLC	Marketing	USA	100.0	100.0	-	-	December 31
Doosan Electro-Materials Luxembourg Sarl	Holding company	Luxembourg	100.0	100.0	-	-	December 31
Circuit Foil Luxembourg	Manufacturing	Luxembourg	100.0	100.0	-	-	December 31
Circuit Foil Asia Pacific (Zhangjiagang)	Manufacturing	China	100.0	100.0	-	-	December 31
Circuit Foil Asia Pacific (Hong Kong)	Wholesale and retail	Hong Kong	100.0	100.0	-	-	December 31
Circuit Foil Trading Inc.	Wholesale and retail	USA	100.0	100.0	-	-	December 31
Doosan Fuel Cell America, Inc.	Manufacturing	USA	100.0	100.0	-	-	December 31
Sunny Russell 8 th Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	December 31
Doosan Heavy Industries & Construction Co., Ltd. ("DHC") ³	Other engine and turbine manufacture	Korea	37.8	40.3	62.2	59.7	December 31
DOOSAN Asset Management Company Co., Ltd	Real estate development	Korea	100.0	100.0	62.2	59.7	December 31
Doosan Heavy Industries Vietnam Co., Ltd.	Other engine and turbine manufacture	Vietnam	100.0	100.0	64.1	61.7	December 31
HF Controls Corp.	Manufacturing	USA	100.0	100.0	62.2	59.7	December 31
HF Controls Corp.	Manufacturing	Korea	100.0	100.0	62.2	59.7	December 31
PT. Doosan Heavy Industries Indonesia	Manufacturing	Indonesia	55	55	79.2	77.8	December 31
Doosan Heavy Industries Japan Corp.	Wholesale and retail	Japan	100.0	100.0	62.2	59.7	December 31
S.C. Doosan IMGB S.A.	Manufacturing	Romania	99.9	99.8	62.3	59.8	December 31

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Subsidiary	Type of business	Location	Ownership interest held by the Group (%) ¹		Ownership interest held by non-controlling interests (%) ¹		Closing date
			2016	2015	2016	2015	
Doosan Enpure Ltd.	Engineering and service	UK	100.0	100.0	62.2	59.7	December 31
Doosan Construction Site Solutions Vietnam Co., Ltd.	Retail	Vietnam	100.0	100.0	62.2	59.7	December 31
Doosan Power Systems India Private Ltd.	Engineering and service	India	100.0	100.0	62.2	59.7	March 31
Doosan Heavy Industries Muscat LLC	Manufacturing	Oman	70	70	73.6	71.8	December 31
Doosan Power Systems Arabia	Manufacturing	Saudi Arabia	51	51	80.7	79.4	December 31
Azul Torre Construction Corporation ³	Manufacturing	Philippine	40	-	84.9	-	December 31
Doosan Heavy Industries America Holdings LLC	Holding company	USA	100.0	100.0	62.2	59.7	December 31
Doosan Hydro Technology LLC	Manufacturing	USA	100.0	100.0	62.2	59.7	December 31
Doosan Engineering & Services LLC	Engineering and service	USA	100.0	100.0	62.2	59.7	December 31
Doosan Heavy Industries America LLC	Wholesale and retail	USA	100.0	100.0	62.2	59.7	December 31
Doosan ATS America, LLC	Engineering and service	USA	100.0	100.0	62.2	59.7	December 31
Doosan Power Service America, LLC	Engineering and service	USA	100.0	-	62.2	59.7	December 31
Doosan GridTech Inc.	Software and system engineering	USA	100.0	-	62.2	-	December 31
Doosan GridTech LLC	Software and system engineering	USA	100.0	-	62.2	-	December 31
Doosan GridTech CA LLC	Software and system engineering	USA	100.0	-	62.2	-	December 31
Doosan Skoda Power s.r.o	Manufacturing	Czech	100.0	100.0	62.2	59.7	December 31
Skoda Power Private Ltd.	Engineering	India	100.0	100.0	62.2	59.7	March 31
Doosan Power Systems Pension Trustee Company Ltd.	Specialized service	UK	100.0	100.0	62.2	59.7	December 31
Doosan Power Systems Overseas Investments Ltd.	Holding company	UK	100.0	100.0	62.2	59.7	December 31
Doosan Babcock Ltd.	Engineering and service	UK	100.0	100.0	62.2	59.7	December 31
Doosan Power Systems Holdings Ltd.	Holding company	UK	100.0	100.0	62.2	59.7	December 31
Doosan Power Systems Europe Limited GmbH	Engineering and service	Germany	100.0	100.0	62.2	59.7	December 31
Doosan Power Systems Americas LLC	Engineering and service,	USA	100.0	100.0	62.2	59.7	December 31

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Subsidiary	Type of business	Location	Ownership interest held by the Group (%) ¹		Ownership interest held by non-controlling interests (%) ¹		Closing date
			2016	2015	2016	2015	
Doosan Lentjes UK Limited	Specialized service	UK	100.0	100.0	62.6	60.1	December 31
Doosan Lentjes GmbH	Engineering and service	Germany	99	99	62.6	60.1	December 31
Doosan Power Systems S.A.	Holding company	Luxembourg	100.0	100.0	62.2	59.7	December 31
Doosan Babcock Energy Technologies (Shanghai) Ltd.	Engineering and service	China	100.0	100.0	62.2	59.7	December 31
Doosan Babcock Energy Services (Overseas) Ltd.	Engineering and service	UK	100.0	100.0	62.2	59.7	December 31
Doosan Babcock Energy Polska Sp z o.o.	Engineering and service	Poland	98.9	98.9	62.6	60.1	December 31
Doosan Babcock Energy Germany GmbH	Engineering and service	Germany	100.0	100.0	62.2	59.7	December 31
Doosan Lentjes Czech s.r.o	Specialized service	Czech	100.0	100.0	62.6	60.1	December 31
AE & E Lentjes Belgie N.V.	Dormant corporation	Belgium	100.0	100.0	62.6	60.1	December 31
Doosan Power Systems (Scotland) Ltd. Partnership	Real estate	UK	100.0	100.0	62.2	59.7	December 31
Doosan Babcock General Maintenance Services LLC ³	Specialized service	UAE	49	49	81.5	80.2	December 31
Doosan Babcock WLL Qatar ³	Specialized service	Qatar	49	49	81.5	80.2	December 31
KDPP 1st Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	December 31
KDPP 2nd Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	December 31
KDPP 3rd Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	December 31
Happy Tomorrow 20th Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	December 31
Happy Tomorrow 25th Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	December 31
Happy Tomorrow 27th Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	December 31
Doosan Cuvex Co., Ltd.	Leisure	Korea	100.0	100.0	53.1	67.7	December 31
Doosan Infracore Co., Ltd. ("DI") ³	Manufacturing, sales	Korea	36.4	36.4	86.3	85.3	December 31
Doosan Infracore China Co., Ltd.	Manufacturing, sales	China	80	80	89	88.3	December 31
Doosan Infracore (China) Investment Co., Ltd.	Holding company	China	100.0	100.0	86.3	85.3	December 31
Doosan Infracore (Shandong) Co., Ltd.	Manufacturing, sales	China	100.0	100.0	88	87.2	December 31
Doosan Infracore North America LLC	Other service	USA	100.0	-	86.3	-	December 31

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Subsidiary	Type of business	Location	Ownership interest held by the Group (%) ¹		Ownership interest held by non-controlling interests (%) ¹		Closing date
			2016	2015	2016	2015	
Doosan Infracore Japan Corp.	Purchases	Japan	100.0	100.0	86.3	85.3	December 31
Doosan (China) Financial Leasing Corp.	Lease	China	100.0	100.0	87.3	86.5	December 31
Doosan Bobcat Chile S.A.	Sales	Chile	100.0	100.0	86.3	85.3	December 31
Doosan Infracore Norway AS.	Manufacturing, sales	Norway	100.0	100.0	86.3	85.3	December 31
Doosan Infracore South America Industrial E Comercio De Maquinas De Construc�o LTDA	Manufacturing, sales	Brazil	100.0	100.0	86.3	85.3	December 31
Doosan Infracore Bobcat Ireland Ltd.	Other service	Ireland	100.0	100.0	86.3	85.3	December 31
Doosan Infracore Construction Equipment India Private Ltd.	Manufacturing, sales	India	100.0	100.0	86.3	85.3	March 31
Doosan Bobcat Inc.	Holding company	Korea	69.9	75.5	90.1	88.9	December 31
Doosan International South East Asia Pte. Ltd.	Sales	Singapore	100.0	100.0	90.1	88.9	December 31
Doosan Infracore Bobcat Korea Co., Ltd.	Manufacturing and sales	Korea	100.0	100.0	90.1	88.9	December 31
Doosan Bobcat Chile Compact SpA	Manufacturing and sales	Chile	100.0	100.0	90.1	88.9	December 31
Doosan Infracore India Private Ltd.	Manufacturing, sales	India	100.0	100.0	90.1	88.9	March 31
Bobcat Corp.	Sales	Japan	100.0	100.0	90.1	88.9	December 31
Doosan International Mexico S.A. de C.V.	Sales	Mexico	100.0	100.0	90.1	88.9	December 31
Doosan Infracore Suzhou Co., Ltd.	Manufacturing, sales	China	100.0	100.0	90.1	88.9	December 31
Clark Equipment Co.	Manufacturing, sales	USA	100.0	100.0	90.1	88.2	December 31
Bobcat Equipment Ltd.	Sales	Canada	100.0	100.0	90.1	88.2	December 31
Doosan International Australia Pty Ltd.	Sales	Australia	100.0	100.0	90.1	88.2	December 31
Doosan Holdings Europe Ltd.	Holdings	Ireland	100.0	100.0	90.1	87.6	December 31
Doosan Infracore Europe S.A.	Manufacturing, sales	Belgium	100.0	100.0	90.1	87.6	December 31
Bobcat Bensheim GmbH.	Sales	Germany	100.0	100.0	90.1	87.6	December 31
Doosan Holdings France S.A.S.	Holdings	France	100.0	100.0	90.1	87.6	December 31
Doosan Techno Holding Co., Ltd.(Ireland)	Copyrights management	Ireland	100.0	100.0	90.1	87.6	December 31
Doosan Benelux SA.	Sales	Belgium	100.0	100.0	90.1	87.6	December

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Subsidiary	Type of business	Location	Ownership interest held by the Group (%) ¹		Ownership interest held by non-controlling interests (%) ¹		Closing date
			2016	2015	2016	2015	
Doosan Infracore Customization Center Europe B.V. ⁵	Sales	Netherland	100.0	100.0	86.3	85.3	31 December
Doosan International Italia S.r.L.	Sales	Italy	100.0	100.0	90.1	87.6	31 December
CJSC Doosan International Russia	Sales	Russia	100.0	100.0	90.1	87.6	31 December
Doosan International UK Ltd.	Sales	UK	100.0	100.0	90.1	87.6	31 December
Doosan International South Africa Ltd.	Sales	South Africa	100.0	100.0	90.1	87.6	31 December
Doosan Bobcat EMEA s.r.o ⁶	Manufacturing	Czech	100.0	100.0	90.1	87.6	31 December
Doosan Bobcat Engineering s.r.o.	Research and development	Czech	100.0	100.0	90.1	87.6	31 December
Doosan Trading Ltd.	Shared service	Ireland	100.0	100.0	90.1	87.6	31 December
Bobcat Lyon SAS	Sales	France	100.0	100.0	90.1	87.6	31 December
Bobcat France S.A.	Manufacturing, sales	France	100.0	100.0	90.1	87.6	31 December
Geith International Ltd.	Manufacturing, sales	Ireland	100.0	100.0	90.1	87.6	31 December
Doosan International Luxembourg	Intellectual property rights management	Luxembourg	100.0	100.0	90.1	87.6	31 December
Doosan Engineering & Construction Co., Ltd. ("DEC")	Construction	Korea	80.4	80	69.6	67.7	31 December
Doosan Heavy Industries Vietnam Haiphong	Manufacturing	Vietnam	100.0	100.0	69.6	67.7	31 December
PINETREE CITY 1st Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	31 December
The DSWAY 1st Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	31 December
Doosan E&C 2nd Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	31 December
Yongin samga project First Co., Ltd. ²	Specialized in securitization	Korea	-	-	-	-	31 December
DM Best 2nd Co.,Ltd. ²	Specialized in securitization	Korea	-	-	-	-	31 December
DM Best 3rd Co., Ltd ²	Specialized in securitization	Korea	-	-	-	-	31 December
DM Best 4th Co.,Ltd. ²	Specialized in securitization	Korea	-	-	-	-	31 December
Doosan Engine Co., Ltd. ("DE") ³	Internal combustion engine manufacture	Korea	42.7	42.7	83.9	82.8	31 December

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Subsidiary	Type of business	Location	Ownership interest held by the Group (%) ¹		Ownership interest held by non-controlling interests (%) ¹		Closing date
			2016	2015	2016	2015	
Doosan Marine Industry(Dalian) Co., Ltd	Manufacture of marine engine parts	China	100.0	100.0	83.9	82.8	December 31
Doosan Engine PNG Co., Ltd.	Diesel power plant	Papua new guinea	100.0	100.0	83.9	82.8	December 31
Treasury shares trust	Acquisition of Treasury Shares	Korea	100.0	100.0	-	-	December 31

¹ The ownership interests held by the Parent Company and its consolidated subsidiaries represent the aggregated total of ownership interests directly held by each entity within the Group. The ownership interests held by non-controlling interests represent the proportion of ownership interests that are not attributable, directly or indirectly, to the entities within the Group and it may differ from the aggregated total, less the effective ownership interest held by the Group.

² Although the Group does not own the interest in the special-purpose company, in consideration of terms in the agreement of establishment, the Group concluded that it has control over the entity to substantially obtain all profits from the entity and to control business activities of the entity.

³ Although the Group owns less than 50% of voting right in obtaining control, but the Group concluded that the Group has de facto control over the subsidiaries.

⁴ For the year ended December 31, 2016, its name was changed from Doosan Tower Co., Ltd. to Doosan Tower Mall Co., Ltd.

⁵ For the year ended December 31, 2016, its name was changed from Doosan International Portable Power of Netherlands BV to Doosan Infracore Customization Center Europe B.V.

⁶ For the year ended December 31, 2016, its name was changed from Doosan Bobcat Manufacturing s.r.o. to Doosan Bobcat EM EA s.r.o.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

1.3 Changes in Scope for Consolidation

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

Subsidiary	Change	Description
DLI Corporation	Newly included	Newly established
Doosan Mecatec Co., Ltd.	Newly included	Newly established
DAE Inc.	Newly included	Newly established
Sunny Russell 8 th Co., Ltd.	Newly included	Newly established
Doosan DST Co., Ltd.	Excluded	Disposal of shares
Doosan First Real Estate Securitization Specialty Ltd.	Excluded	Liquidation
Doosan Advertising (Beijing) Co., Ltd.	Excluded	Liquidation
Doosan Power Service America, LLC	Newly included	Newly established
Azul Torre Construction Corporation	Newly included	Newly established
Doosan GridTech Inc.	Newly included	Newly acquired
Doosan GridTech LLC	Newly included	Newly acquired
Doosan GridTech CA LLC	Newly included	Newly established
KDPP 2nd Co., Ltd.	Newly included	Newly established
KDPP 3rd Co., Ltd.	Newly included	Newly established
Happy Tomorrow 25th Co., Ltd.	Newly included	Newly established
Happy Tomorrow 27th Co., Ltd.	Newly included	Newly established
Doosan Infracore North America LLC	Newly included	Newly established
Doosan Infracore International, Inc.	Excluded	Merger ¹
Doosan Infracore Machine Tools Yantai Co., Ltd.	Excluded	Disposal of business
Doosan Infracore Germany GmbH.	Excluded	Disposal of business
Doosan Infracore America Corp.	Excluded	Disposal of business
Doosan Infracore Portable Power (Shanghai) Co., Ltd.	Excluded	Merger ³
Doosan International China Co., Ltd.	Excluded	Merger ³
Doosan International Manufacturing China Co., Ltd.	Excluded	Merger ³
Doosan Holdings International Ltd.	Excluded	Merger ³
GB_DIBH Private Equity Investment Trust No.1.	Newly included	²
GB_DIBH Private Equity Investment Trust No.1.	Excluded	²
Yongin samga project First Co., Ltd.	Newly included	Newly established
DM Best 2nd Co., Ltd.	Newly included	Newly established
DM Best 3rd Co., Ltd.	Newly included	Newly established
DM Best 4th Co., Ltd.	Newly included	Newly established
SD 1st Co., Ltd.	Excluded	The settlement of repayment
DS Changwon 1st LLC	Excluded	The settlement of repayment
DS-Bliss 1st Co., Ltd.	Excluded	The settlement of repayment
Doosan Cuvex 1st Securitization Specialty LLC	Excluded	The settlement of repayment
SD 5th Co., Ltd.	Excluded	The settlement of repayment
DS Public 1st Co., Ltd.	Excluded	The settlement of repayment
DS Public 2nd Co., Ltd.	Excluded	The settlement of repayment

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

¹ On June 30, 2016, Clark Equipment Co, Inc. was merged into Doosan Infracore International.

² The entity was included in the scope of consolidation as the Group is determined to obtain profit of investment trust and is considered to have a significant influence over the entity. However, it is excluded from scope of consolidation as it was sold during IPO process of Doosan Bobcat.

³ During the year ended December 31, 2016, Doosan Infracore Portable Power (Shanghai) Co., Ltd., Doosan International China Co., Ltd. and Doosan International Manufacturing China Co., Ltd. were merged into Doosan Infracore Suzhou Co., Ltd. And, Doosan Holdings International Ltd. was merged into Doosan Holdings Europe Ltd.

1.4 Summarized Financial Information

Summarized financial information for consolidated subsidiaries as at and for the periods ended December 31, 2016 and 2015, is as follows:

(in millions of Korean won)

	2016					
	Assets		Liabilities		Sales	
					Profit (loss) for the period	
					Total comprehensive income (loss)	
Oricom Inc.	₩	142,177	₩	76,226	₩	98,149
HanComm. Inc.		53,065		40,090		64,634
Doosan Mecatec Co., Ltd.		291,205		170,362		124,034
Doosan Feed & Livestock Co., Ltd.		87,426		55,472		84,670
Doosan Tower Co., Ltd.		598,313		481,806		73,392
DIP Holdings Co., Ltd.		433,800		8,289		30,545
Doosan Industrial Vehicle America Corp.		65,066		34,065		122,296
Doosan Industrial Vehicle U.K. Ltd.		67,522		67,566		31,913
Doosan Industrial Vehicle Europe N.A.		33,623		19,101		65,951
Doosan Industrial Vehicle Yantai Co., Ltd.		40,061		29,004		41,892
Rushlift Ltd.		87,961		70,622		52,473
Doosan Bears, Inc.		74,167		71,921		51,900
Doosan Mottrol (Jiangyin) Co., Ltd.		42,930		25,632		64,734
Doosan Electro-Materials (Changshu) Co., Ltd.		126,160		124,158		130,028
Doosan Electro-Materials Luxembourg Sarl		65,674		36,782		-
Doosan Fuel Cell America, Inc.		258,673		204,901		196,957

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)

	2016				
	Assets	Liabilities	Sales	Profit (loss) for the period	Total comprehen sive income (loss)
Circuit Foil Luxembourg	131,704	50,541	121,647	29,068	26,321
DHC	11,793,868	7,440,724	4,741,575	(169,409)	(168,128)
Doosan Heavy Industries Vietnam Co., Ltd.	516,090	455,022	263,323	(8,553)	(8,553)
HF Controls Corp.	24,296	9,347	14,167	334	334
Doosan Heavy Industries Japan Corp.	26,496	23,458	2,497	150	150
S.C. Doosan IMGB S.A.	141,736	101,666	86,136	(2,335)	(2,335)
Doosan Construction Site Solutions Vietnam Co., Ltd.	10,564	110	709	(1,833)	(1,833)
Doosan Power Systems India Private Ltd.	467,389	365,088	249,454	1,223	1,508
Doosan Heavy Industries Muscat LLC	22,090	22,136	31,552	(409)	(409)
Doosan Heavy Industries America Holdings LLC	207,432	38,770	2,060	6,529	6,529
Doosan Hydro Technology LLC	34,704	63,572	28,517	(4,595)	(4,595)
Doosan Heavy Industries America LLC	16,248	10,242	3,464	403	403
Doosan Skoda Power s.r.o	611,326	150,003	376,168	66,719	64,873
Doosan Power Systems Overseas Investments Ltd.	75,586	88,747	-	(2,865)	(2,865)
Doosan Babcock Ltd.	1,044,213	410,554	611,507	(24,578)	(86,361)
Doosan Power Systems Europe Limited GmbH	185,553	130,467	-	(2,042)	(2,042)
Doosan Lentjes GmbH	71,833	58,151	32,988	(26,810)	(29,488)
Doosan Power Systems S.A.	1,319,255	791,265	-	176,281	176,281
Doosan Babcock Energy Polska Sp z.o.o.	17,959	9,312	29,159	(2,419)	(2,540)
Doosan Power Systems (Scotland) Ltd. Partnership	32,174	1,735	-	1,878	1,878
Doosan Cuvex Co., Ltd.	219,043	79,613	27,242	173	(100)
Doosan Infracore China Co., Ltd.	4,846,201	3,042,101	2,204,890	(56,312)	(65,148)
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	621,839	449,170	61,603	921	10,520

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)

	2016				
	Assets	Liabilities	Sales	Profit (loss) for the period	Total comprehensive income (loss)
Leasing Corp.					
Doosan Infracore 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
DEC	3,066,850	1,941,638	1,274,566	(371,528)	(359,310)
Doosan Heavy Industries Vietnam Haiphong	59,063	23,032	59,599	4,959	4,959
Doosan E&C 2nd Co., Ltd.	81,927	82,605	5,689	310	310
PINETREE CITY 1st Co., Ltd.	60,360	60,371	3,688	(500)	(500)
The DSWAY 1st Co., Ltd.	20,478	20,583	1,488	139	139
Yongin samga project First Co., Ltd.	12,347	12,347	-	-	-
DM Best 2nd Co., Ltd.	96,548	96,558	7,106	-	-
DM Best 3rd Co., Ltd.	80,009	80,009	2,535	-	-
DM Best 4th Co., Ltd.	40,008	40,008	2,753	-	-
DE	1,363,691	810,978	804,680	(27,125)	14,141
Doosan Marine Industry(Dalian) Co., Ltd	24,944	14,818	13,542	679	390
Doosan Engine PNG Co., Ltd.	1,980	10,708	-	(8,233)	(8,421)

1.5 Summarized Cash Flows Information

Summarized cash flows information of intermediate controlling companies for the year ended December 31, 2016, is as follows

(in millions of Korean won)

	DHC and subsidiaries	DI and subsidiaries	DEC and subsidiaries	DE and subsidiaries
Cash flows from operating activities	₩ 653,630	₩ 512,993	₩ (100,498)	₩ 4,542
Cash flows from investing activities	(922,878)	909,634	537,365	41,426
Cash flows from financing activities	(198,029)	(1,454,380)	(465,268)	(18,651)
Effects of exchange rate changes on foreign currency cash and cash equivalents	(49,861)	10,328	86	22
Net increase (decrease) in cash and cash equivalent	(517,138)	(21,425)	(28,315)	27,339
Cash and cash equivalents as at January 1	1,198,395	560,003	108,204	45,482
Cash and cash equivalents as at December 31	681,257	538,578	79,889	72,821

Above financial information is based on consolidated financial information of intermediate

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

controlling companies. However, financial information of DHC and its subsidiaries exclude financial information of DI, DEC, DE and their subsidiaries.

1.6 Non-controlling Interests

The ownership interests held by non-controlling interests and details of financial position, financial performance and dividends attributable to non-controlling interests by each of the major subsidiaries material to the Group, are as follows:

(in millions of Korean won)

	Ownership interest held by non-controlling interests (%)	Cumulative non-controlling interests	2016	
			Profit (loss) for the period attributable to non-controlling interests	Dividends paid to non-controlling interests ¹
DHC and its subsidiaries	62.2%	₩ 1,608,648	6,177	(66,165)
DI and its subsidiaries	86.3%	2,896,172	46,298	(18,289)
DEC and its subsidiaries	69.6%	583,612	(128,735)	(26,000)
DE and its subsidiaries	83.9%	406,070	(67,797)	-

¹ Oricom Inc. and DST, in addition to the above subsidiaries, paid dividends of ₩30,177 million that are attributable to non-controlling interests.

Above financial information attributable to non-controlling interests is based on consolidated financial information of intermediate controlling company. However, financial information of DHC and its subsidiaries exclude financial information of DI, DEC, DE and their subsidiaries.

2. Significant Accounting Policies

Doosan Corporation (the Parent Company) and its subsidiaries (collectively referred to as the "Group") maintains its accounting records in Korean won and prepares statutory financial statements in the Korean language (Hangul) in accordance with International Financial Reporting Standards as adopted by the Republic of Korea (Korean IFRS). The accompanying consolidated financial statements have been condensed, restructured and translated into English from the Korean language financial statements.

2.1 Basis of Preparation

The consolidated financial statements of the Group have been prepared in accordance with Korean IFRS. These are the standards, subsequent amendments and related interpretations issued by the International Accounting Standards Board (IASB) that have been adopted by the Republic of Korea.

The significant accounting policies under Korean IFRS followed by the Group in the preparation of its consolidated financial statements are summarized below, and these

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

accounting policies, except for the effects of the changes in accounting policies that are described below, 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 revalued amounts or fair values. Historical cost is generally based on the fair value of the consideration given.

(a) New and amended standards adopted by the Group

The Group has applied the following standards and amendments for the first time for their annual reporting period commencing January 1, 2016. The adoption of these amendments did not have any impact on the current period or any prior period and is not likely to affect future periods.

- Disclosure Initiative – Amendments to Korean IFRS 1001 Presentation of Financial Statements

Korean IFRS 1001 *Presentation of Financial Statements* clarifies that materiality applies to the exclusion or inclusion or aggregation of the disclosures in the notes. The amendment clarifies that the share of OCI arising from equity-accounted should be presented in total for items which will and will not be reclassified to profit or loss. Additional amendments are made in relation to a particular order of the notes and other.

- Amendments to Korean IFRS 1011 Construction Contract, Korean IFRS 1037 Provisions, Contingent Liabilities and Contingent Assets and Interpretation 2115 Arrangements for Property Construction

These standards and interpretation clarify the accounting information disclosure requirement for construction contracts. The accounting estimates and potential risk information of the construction contracts should be disclosed in detail by either individual construction or operating segment.

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

Korean IFRS 1041 *Agriculture* now distinguishes between bearer plants and other biological asset. Bearer plants must be accounted for as Korean IFRS 1016 *Property, Plant and Equipment*.

- Clarification of Acceptable methods of Depreciation and Amortization – Amendments to Korean IFRS 1016 Property, Plant and Equipment, and Korean IFRS 1038 Intangible assets

Amendments to Korean IFRS 1016 *Property, Plant and Equipment* clarify that a revenue-based method should not be used to calculate the depreciation of items of property, plant and equipment. Korean IFRS 1038 *Intangible assets* now includes a rebuttable presumption

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

that the amortization of intangible assets based on revenue is inappropriate. This presumption can be overcome if either; the intangible asset is expressed as a measure of revenue, or it can be shown that revenue and the consumption of economic benefits generated by the asset are highly correlated.

- *Investment entities: Applying the Consolidation Exception* – Amendments to Korean IFRS 1110 *Consolidated Financial Statements*, Korean IFRS 1028 *Investments in Associates and Joint Ventures*, and Korean IFRS 1112 *Disclosures of Interests in Other Entities*

- Amendments made to Korean IFRS 1110 *Consolidated Financial Statements* clarify that the exception from preparing consolidated financial statement is also available to intermediate parent entities which are subsidiaries of investment entities. If an investment entity has a subsidiary that is an investment entity and whose activities are providing services that related to the investment entity's investment activities, the investment entity measures the subsidiary at fair value through profit or loss.
- Amendments made to Korean IFRS 1028 *Investments in Associates and Joint Ventures* clarify that entities which are not investment entities but have an interest in an associate which is an investment entity have a policy choice when applying the equity method of accounting.
- Amendments made to Korean IFRS 1112 *Disclosures of Interests in Other Entities* clarify that an investment entity which does not prepare consolidated financial statements should present disclosures relating to investment entities required by Korean IFRS 1112.

- *Accounting for Acquisitions of Interests in Joint Operations* – Amendments to Korean IFRS 1111 *Joint Arrangements*

Amendments to Korean IFRS 1111 *Joint Arrangements* clarify the accounting for the acquisition of an interest in a joint operation where the activities of the operation constitute a business. An investor requires to apply the principles of business combination accounting when the investor acquires an interest in a joint operation that constitutes a business.

- Annual Improvements to Korean IFRS 2012-2014 *Cycle*

Annual Improvements to Korean IFRS 2012-2014 *Cycle* consist of the following amendments.

- Korean IFRS 1105 *Non-current Assets Held for Sale and Discontinued Operation* – clarifies when an asset (or disposal group) is reclassified from 'held for sale' to 'held for distribution' or vice versa, this does not have to be accounted for as such.
- Korean IFRS 1107 *Financial Instruments: Disclosures* – clarifies the specific guidance for transferred financial assets to help management determine whether the terms of a servicing arrangement constitute 'continuing involvement', and also clarifies that the

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

additional disclosures relating to the amendments in 2012 '*Offsetting of Financial Assets and Financial Liabilities*' only need to be included in interim reports if required by Korean IFRS 1034 *Interim Financial Reporting*.

- Korean IFRS 1019 *Employee Benefits* clarifies that when determining the discount rate for post-employment benefit obligations, it is the currency in which the liabilities are denominated that is important, and not the country where they arise.
- Korean IFRS 1034 *Interim Financial Reporting* clarifies what is meant by the reference in the standard to '*information disclosed elsewhere in the interim financial report*'; and also amended requirements for a cross-reference from the interim financial statements to the location of that information.

(b) New standards and interpretations not yet adopted by the Group

Certain new accounting standards and interpretations that have been published that are not mandatory for annual reporting period commencing January 1, 2016 and have not been early adopted by the Group are set out below.

- Amendments to Korean IFRS1007 Statement of Cash Flows

Amendments to Korean IFRS 1007 *Statement of Cash flows* require to provide disclosures that enable users of financial statements to evaluate changes in liabilities arising from financing activities, including both changes arising from cash flows and non-cash flows. This amendment will be effective for annual periods beginning on or after January 1, 2017, with early adoption permitted. The Group does not expect the amendments to have a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1012 Income Tax

Amendments to Korean IFRS 1012 clarify how to account for deferred tax assets related to debt instruments measured at fair value. Amendments also clarify the requirements on recognition of deferred tax assets for unrealized losses, to address diversity in practice. This amendment will be effective for annual periods beginning on or after January 1, 2017, with early adoption permitted. The Group does not expect the amendments to have a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1102 Share-based Payment

Amendments to Korean IFRS 1102 clarifies accounting for a modification to the terms and conditions of a share-based payment that changes the classification of the transaction from cash-settled to equity-settled. And also, clarifies that the measurement approach should treat the terms and conditions of a cash-settled award in the same way as for an equity-settled award. This amendment will be effective for annual periods beginning on or after January 1, 2018, with early adoption permitted. The Group does not expect the amendments to have a significant impact on the consolidated financial statements.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

- Korean IFRS 1109 *Financial Instruments*

The new standard for financial instruments issued on September 25, 2015 are effective for annual periods beginning on or after January 1, 2018 with early application permitted. This standard will replace Korean IFRS 1039 *Financial Instruments: Recognition and Measurement*. The Group will apply the standards for annual periods beginning on or after January 1, 2018.

The standard requires retrospective application with some exceptions. For example, an entity is not required to restate prior period in relation to classification and measurement (including impairment) of financial instruments. The standard requires prospective application of its hedge accounting requirements for all hedging relationships except the accounting for time value of options and other exceptions.

Korean IFRS 1109 *Financial Instruments* requires all financial assets to be classified and measured on the basis of the entity's business model for managing financial assets and the contractual cash flow characteristics of the financial assets. A new impairment model, an expected credit loss model, is introduced and any subsequent changes in expected credit losses will be recognized in profit or loss. Also, hedge accounting rules amended to extend the hedging relationship, which consists only of eligible hedging instruments and hedged items, qualifies for hedge accounting.

An effective implementation of Korean IFRS 1109 requires preparation processes including financial impact assessment, accounting policy establishment, accounting system development and the system stabilization. The impact on the Group's financial statements due to the application of the standard is dependent on judgements made in applying the standard, financial instruments held by the Group and macroeconomic variables.

With the implementation of Korean IFRS 1109, the Group neither prepared for internal management process nor began to adjust accounting system for financial instruments reporting. Also, the Group did not analyze the financial effects of applying the standard.

(a) *Classification and Measurement of Financial Assets*

When implementing Korean IFRS 1109, the classification of financial assets will be driven by the Group's business model for managing the financial assets and contractual terms of cash flow. The following table shows the classification of financial assets measured subsequently at amortized cost, at fair value through other comprehensive income and at fair value through profit or loss. If a hybrid contract contains a host that is a financial asset, the classification of the hybrid contract shall be determined for the entire contract without separating the embedded derivative.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

<i>Business model for the contractual cash flows characteristics</i>	Solely represent payments of principal and interest	All other
<i>Hold the financial asset for the collection of the contractual cash flows</i>	Measured at amortized cost ¹	
<i>Hold the financial asset for the collection of the contractual cash flows and trading</i>	Recognized at fair value through other comprehensive income ¹	Recognized at fair value through profit or loss ²
<i>Hold for trading</i>	Recognized at fair value through profit or loss	

¹ A designation at fair value through profit or loss is allowed only if such designation mitigates an accounting mismatch (irrevocable).

² Equity investments not held for trading can be recorded in other comprehensive income (irrevocable).

With the implementation of Korean IFRS 1109, the criteria to classify the financial assets at amortized cost or at fair value through other comprehensive income are more strictly applied than the criteria applied with Korean IFRS 1039. Accordingly, the financial assets at fair value through profit or loss may increase by implementing Korean IFRS 1109 and may result an extended fluctuation in profit or loss.

As at December 31, 2016, the Group owns loan and trade receivables of ₩ 6,541,905 million, financial assets held-to-maturity of ₩ 6,215 million, financial assets available-for-sales of ₩ 525,398 million and financial assets at fair value thorough profit or loss of ₩ 65,022 million.

According to Korean IFRS 1109, a debt instrument is measured at amortized cost if: a) the objective of the business model is to hold the financial asset for the collection of the contractual cash flows, and b) the contractual cash flows under the instrument solely represent payments of principal and interest. As at December 31, 2016, the Group measured loan and trade receivables of ₩ 6,541,905 million and financial assets held-to-maturity of ₩ 6,215 million at amortized costs.

According to Korean IFRS 1109, a debt instrument is measured at fair value through other comprehensive income if the objective of the business model is achieved both by collecting contractual cash flows and selling financial assets; and the contractual cash flows represents solely payments of principal and interest on a specific date under contract terms. As at December 31, 2016, the Group holds debt instruments of ₩ 525,398 million classified as financial assets available-for-sale.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

According to Korean IFRS 1109, equity instruments that are not held for trading, the Group can make an irrevocable election at initial recognition to classify the instruments as assets measured at fair value through other comprehensive income, which all subsequent changes in fair value being recognized in other comprehensive income and not recycled to profit or loss. As at December 31, 2016, the Group holds equity instruments of ₩ 525,398 million classified as financial assets available-for-sale.

According to Korean IFRS 1109, debt instruments those contractual cash flows do not represent solely payments of principal and interest and held for trading, and equity instruments that are not designated as instruments measured at fair value through other comprehensive income are measured at fair value through profit or loss. As at December 2016, the Group holds debt instruments classified as financial assets at fair value through profit or loss that amount to ₩ 65,022 million.

(b) Impairment: Financial Assets and Contract Assets

Korean IFRS 1109 sets out a new forward looking 'expected loss' impairment model which replaces the incurred loss model under Korean IFRS 1039 that impaired assets if there is an objective evidence and applies to:

- Financial assets measured at amortized cost
- Debt investments measured at fair value through other comprehensive income, and
- Certain loan commitments and financial guaranteed contracts.

Under Korean IFRS 1109 'expected loss' model, a credit event (or impairment 'trigger') no longer has to occur before credit losses are recognized. The Group will always recognize (at a minimum) 12-month expected credit losses in profit or loss. Lifetime expected losses will be recognized on assets for which there is a significant increase in credit risk after initial recognition.

Stage ¹	Loss allowance
1 No significant increase in credit risk after initial recognition ²	12-month expected credit losses (expected credit losses that result from those default events on the financial instrument that are possible within 12 months after the reporting date)
2 Significant increase in credit risk after initial recognition	Lifetime expected credit losses (expected credit losses that result from all possible default events over the life of the financial instrument)
3 Credit-impaired	

¹ A loss allowance for lifetime expected credit losses is required for a financial instrument if the credit risk on that financial instrument has increased significantly since initial recognition.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

It is also required for contract assets or trade receivables that are not, according to Korean IFRS 1115 *Revenue from Contracts with Customers*, considered to contain a significant financing component. Additionally, the Group can elect an accounting policy of recognizing lifetime expected credit losses for all contract assets and/or all trade receivables, including those that contain a significant financing component.

² If the financial instrument has low credit risk at the end of the reporting period, the Group may assume that the credit risk has not increased significantly since initial recognition.

Under Korean IFRS 1109, the asset that is credit-impaired at initial recognition would recognize all changes in lifetime expected credit losses since the initial recognition as a loss allowance with any changes recognized in profit or loss.

As at December 31, 2016, the Group owns debt investment carries at amortized cost of ₩ 6,548,120 million (loan and trade receivables of ₩ 6,541,905 million, financial asset held-to-maturity of ₩ 6,215 million), debt investments carried at fair value through other comprehensive income, which classified as financial assets available-for-sales, of ₩ 525,398 million. And, the Group recognized loss allowance of ₩ 2,515,819 million for these assets.

- Korean IFRS 1115 *Revenue from Contracts with Customers*

The Group will apply Korean IFRS 1115 *Revenue from Contracts with Customers* issued on November 6, 2015 for annual reporting periods beginning on or after January 1, 2018. Earlier adoption is permitted under Korean IFRS. This standard replaces Korean IFRS 1018 *Revenue*, Korean IFRS 1011 *Construction Contracts*, Interpretation 2031 *Revenue-Barter Transactions Involving Advertising Services*, Interpretation 2113 *Customer Loyalty Programs*, Interpretation 2115 *Agreements for the Construction of Real Estate* and Interpretation 2118 *Transfers of assets from customers*. The Group must apply Korean IFRS 1115 *Revenue from Contracts with Customers* within annual reporting periods beginning on or after January 1, 2018.

The new standard is based on the principle that revenue is recognized when control of a good or service transfers to a customer so the notion of control replaces the existing notion of risks and rewards. A new five-step process must be applied before revenue from contract with customer can be recognized:

- Identify contracts with customers
- Identify the separate performance obligation
- Determine the transaction price of the contract
- Allocate the transaction price to each of the separate performance obligations, and
- Recognize the revenue as each performance obligation is satisfied.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

As at December 31, 2016, the Group is preparing for internal management process and begins to adjust accounting system in relation to implementation of Korean IFRS 1115. The Group plans to analyze the financial effects of applying the standard and disclose the result of the analysis in the notes on the financial statements as at September 30, 2017.

2.2 Basis of Consolidation

The consolidated financial statements incorporate the financial statements of the Parent Company and entities (including structured entities) controlled by the Parent Company (and its subsidiaries). Control is achieved where the Group 1) has the power over the investee, 2) is exposed, or has rights, to variable returns from its involvement with the investee and 3) has the ability to use its power to affect its returns. The Group reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of controls listed above.

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

- the size of the Group's holding of voting rights relative to the size and dispersion of other remaining holders
- potential voting rights held by the Group, other holders or other parties
- rights arising from other contractual arrangements
- any additional facts and circumstances that indicate that the Group currently has, or does not have, the ability to direct the relevant activities at the time that decisions need to be made, including voting patterns at previous shareholders' meetings

Income and expenses of subsidiaries acquired or disposed of during the year are included in the consolidated statements of comprehensive income from the date the Group gains control until the date when the Group ceases to control the subsidiary. Profit or loss and each component of other comprehensive income are attributed to the owners of the Parent Company and to the non-controlling interests. Total comprehensive income of subsidiaries is attributed to the owners of the Parent Company and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

When necessary, adjustments are made to the consolidated financial statements of subsidiaries to bring their accounting policies in line with the Group's accounting policies.

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

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

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

When the Group loses control of a subsidiary, a gain or loss on disposal is calculated as the difference between (i) the aggregate of the fair value of the consideration received and the fair value of any retained interest and (ii) the previous book amount of the assets (including goodwill) and liabilities of the subsidiary and any non-controlling interests. When assets of the subsidiary are carried at revalued amounts or fair values and the related cumulative gain or loss has been recognized in other comprehensive income and accumulated in equity, the amounts previously recognized in other comprehensive income and accumulated in equity are accounted for as if the Parent Company had directly disposed of the relevant assets (i.e., reclassified to profit or loss or transferred directly to retained earnings). The fair value of any investment retained in the former subsidiary at the date when control is lost is recognized as the fair value on initial recognition for subsequent accounting under Korean IFRS 1039 *Financial Instruments: Recognition and Measurement*, or, when applicable, the cost on initial recognition of an investment in an associate or a joint venture.

2.3 Business Combination

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

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

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

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

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 profit or loss as a bargain purchase gain.

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. The choice of measurement basis is made on a transaction-by-transaction basis. Other types of non-controlling interests are measured at fair value or, when applicable, on the basis specified in another Korean IFRS.

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

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

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

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period (see above), or additional assets or liabilities are recognized, to reflect new information obtained about facts and circumstances that existed at the acquisition date that, if known, would have affected the amounts recognized at that date.

2.4 Investments in joint ventures and associates

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

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

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

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

Upon disposal of an associate or a joint venture that results in the Group losing significant influence over that associate or joint venture, any retained investment is measured at fair value at that date and the fair value is regarded as its fair value on initial recognition as a financial asset in accordance with Korean IFRS 1039. The difference between the previous book amount of the associate or joint venture attributable to the retained interest and its fair value is included in the determination of the gain or loss on disposal of the associate or joint venture. In addition, the Group accounts for all amounts previously recognized in other comprehensive income in relation to that associate or joint venture on the same basis the Group would be required if that associate or joint venture had directly disposed of the related

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

assets or liabilities. Therefore, if a gain or loss previously recognized in other comprehensive income by that associate or joint venture would be reclassified to profit or loss on the disposal of the related assets or liabilities, the Group reclassifies the gain or loss from equity to profit or loss (as reclassification adjustment) when it loses significant influence over that associate or joint venture.

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

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

The Group continues to use the equity method when an investment in an associate becomes an investment in a joint venture or an investment in a joint venture becomes an investment in an associate. There is no remeasurement to fair value upon such changes in ownership interests.

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

2.5 Interests in joint operations

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

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

- its assets, including its share of any assets held jointly

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

- its liabilities, including its share of any liabilities incurred jointly
- its revenue from the sale of its share of the output arising from the joint operation
- its share of the revenue from the sale of the output by the joint operation
- its expenses, including its share of any expenses incurred jointly

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

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

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

2.6 Goodwill

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

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

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

On disposal of the relevant CGU, the attributable amount of goodwill is included in the determination of the profit or loss on disposal. The Group's policy for goodwill arising on the acquisition of an associate is described in Note 2.5.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

2.7 Non-current assets held for sale

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

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

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

After the disposal takes place, the Group accounts for any retained interest in the associate or joint venture in accordance with Korean IFRS 1039, unless the retained interest continues to be an associate or a joint venture, in which case the Group uses the equity method.

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

2.8 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 Group. Revenue is reduced for value-added tax, estimated customer returns, rebates and trade discounts and is presented after eliminating intercompany transactions. The Group 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 Group and when transaction meets the revenue recognition criteria specified by activity.

(a) Sale of goods

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

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(b) Rendering of services

Revenue from a contract to provide services is recognized by reference to the stage of completion of the contract. Depending on the nature of the transaction, the Group determines the stage of completion by reference to surveys of work performed, services performed to date as a percentage of total services to be performed or the proportion that costs incurred to date bear to the estimated total costs of the transaction, as applicable.

(c) Dividend income and interest income

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

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

(d) Rental income

The Group's policy for recognition of revenue from operating leases is described in Note 2.10.

2.9 Construction contracts

Where the outcome of a construction contract can be estimated reliably, revenue and costs are recognized by reference to the stage of completion of the contract activity at the end of the reporting period, measured based on the proportion of contract costs incurred for work performed to date relative to the estimated total contract costs, except where this would not be representative of the stage of completion. Variations in contract work, claims and incentive payments are included to the extent that the amount can be measured reliably and its receipt is considered probable.

Where the outcome of a construction contract cannot be estimated reliably, contract revenue is recognized to the extent of contract costs incurred that it is probable will be recoverable. Contract costs are recognized as expenses in the period in which they are incurred.

When it is probable that total contract costs will exceed total contract revenue, the expected loss is recognized as an expense immediately.

When contract costs incurred to date plus recognized profits less recognized losses exceed progress billing, the surplus is shown as amounts due from customers for contract work. For contracts where progress billings exceed contract costs incurred to date plus recognized profits less recognized losses, the surplus is shown as the amounts due to customers for contract work. Amounts received before the related work is performed are included in the consolidated statements of financial position, as a liability, as advances received. Amounts

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

billed for work performed but not yet paid by the customer are included in the consolidated statements of financial position under trade and other receivables.

2.10 Leases

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

(a) The Group as lessor

Amounts due from lessees under finance leases are recognized as receivables at the amount of the Group's net investment in the leases. Finance lease income is allocated to accounting periods, so as to reflect a constant periodic rate of return on the Group's net investment outstanding in respect to the leases.

Rental income from operating leases is recognized on a straight-line basis over the term of the relevant lease. Initial direct costs incurred in negotiating and arranging an operating lease are added to the book amount of the leased asset and recognized on a straight-line basis over the lease term.

(b) The Group as lessee

Assets held under finance leases are initially recognized as assets of the Group at their fair value at the inception of the lease or, if lower, at the present value of the minimum lease payments. The corresponding liability to the lessor is included in the consolidated statements of financial position as a finance lease obligation.

Lease payments are apportioned between finance expenses and reduction of the lease obligation so as to achieve a constant rate of interest on the remaining balance of the liability. Finance expenses are recognized immediately in profit or loss, unless they are directly attributable to qualifying assets, in which case they are capitalized in accordance with the Group's general policy on borrowing costs (see Note 2.12). Contingent rentals are recognized as expenses in the periods in which they are incurred.

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

2.11 Foreign currencies

The individual financial statements of each group entity are presented in the currency of the primary economic environment in which the entity operates (its functional currency). For the purpose of the consolidated financial statements, the results and financial position of

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

each group entity are expressed in Korean Won, which is the functional currency of the entity and the presentation currency for the consolidated financial statements.

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

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

- exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings.
- exchange differences on transactions entered into in order to hedge certain foreign currency risks (see Note 2-(25) below for hedging accounting policies).
- exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur (therefore, forming part of the net investment in the foreign operation), which are recognized initially in other comprehensive income and reclassified from equity to profit or loss on disposal or partial disposal of the net investment.

For the purpose of presenting consolidated financial statements, the assets and liabilities of the Group's foreign operations are expressed in Korean won 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).

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

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

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

Goodwill and fair value adjustments arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the closing rate. Exchange differences arising are recognized in other comprehensive income.

2.12 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 or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale.

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

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

2.13 Post-employment benefit costs and termination benefits

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

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

The post-employment benefit obligation recognized in the consolidated statements of

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

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

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

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

2.14 Share-based payment arrangements

Equity-settled share-based payments to employees are measured at the fair value of the equity instruments at the grant date.

The fair value determined at the grant date of the equity-settled share-based payments is expensed on a straight-line basis over the vesting period, based on the Group's estimate of equity instruments that will eventually vest. At the end of each reporting period, the Group revises its estimate of the number of equity instruments expected to vest. The impact of the revision of the original estimates, if any, is recognized in profit or loss such that the cumulative expense reflects the revised estimate, with a corresponding adjustment in other component of equity.

2.15 Current and Deferred Tax

Income tax expense represents the sum of the tax currently payable and deferred tax.

(a) Current tax

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

(b) Deferred tax

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

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

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

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

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

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

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

For the purpose of measuring deferred tax liabilities and deferred tax assets for investment properties that are measured using the fair value model, the book amounts of such properties are presumed to be recovered entirely through sale, unless the presumption is rebutted. The presumption is rebutted when the investment property is depreciable and is held within a business model, whose objective is to consume substantially all of the economic benefits embodied in the investment properties over time, rather than through sale.

(c) Current and deferred tax for the year

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

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

a business combination, the tax effect is included in the accounting for the business combination.

2.16 Government grants

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

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

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

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

2.17 Property, Plant and Equipment

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

Subsequent costs are recognized in book amount of an asset or as a separate asset, if it is probable that future economic benefits associated with the assets will flow into the Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

The Group does not depreciate land. Depreciation expense is computed using the straight-line method, based on the estimated useful lives of the assets as follows:

	Useful lives
Buildings	4 - 50 years
Structures	2 - 40

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Machinery	2 - 20
Others	2 - 20

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

The Group 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.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected to arise from the continued use of the asset. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the book amount of the asset) is included in profit or loss for the period in which the property is derecognized.

2.18 Investment properties

Investment properties are properties held to earn rentals and/or for capital appreciation (including property under construction for such purposes). Investment properties are measured initially at cost, including transaction costs. Subsequent to initial recognition, investment properties are stated at fair value, with any gains or losses arising on fair value fluctuation recognized in profit or loss.

Subsequent costs are recognized in book amount of an asset or as a separate asset, if it is probable that future economic benefits associated with the assets will flow into the Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

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

2.19 Intangible Assets

(a) Intangible assets acquired separately

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

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

impairment losses.

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

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

Expenditure arising from development (or from the development phase of an internal project) is recognized as an intangible asset, if, and only if, the development project is designed to produce new or substantially improved products, and the Group can demonstrate the technical and economical feasibility and measure reliably the resources attributable to the intangible asset during its development.

Subsequent to initial recognition, internally generated intangible assets are reported at cost, less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

(c) Intangible assets acquired in a business combination

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

(d) Derecognition of intangible assets

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

(e) Depreciation of intangible assets

Intangible assets (membership) with indefinite useful lives are not amortized. Intangible assets other than not amortized intangible assets are using the straight-line method, based on the estimated useful lives of the assets as follows:

	Useful lives
Development costs	4 - 12 years
Industrial rights	5 - 10
Other intangible assets	2 - 20

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

2.20 Impairment of tangible and intangible assets other than goodwill

At the end of each reporting period, the Group reviews the book amount of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). When it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the CGU to which the asset belongs.

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

Recoverable amount is the higher of fair value, less costs to sell and value in use. If the recoverable amount of an asset (or a CGU) is estimated to be less than its book amount, the book amount of the asset (or the CGU) is reduced to its recoverable amount and the reduced amount is recognized in profit or loss.

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

2.21 Inventories

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

When inventories are sold, the book amount of those inventories is recognized as an expense (cost of sales) in the period in which the related revenue is recognized. The amount of any write-down of inventories to net realizable value and all losses of inventories is recognized as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realizable value, is recognized as a reduction in the amount of inventories recognized as an expense in the period in which the reversal occurs.

2.22 Provisions

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

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

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

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

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

2.23 Financial instruments

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

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

(a) Effective interest method

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

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

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(b) Financial assets at FVTPL

Financial assets are classified as at FVTPL when the financial asset is either held for trading or it is designated as at FVTPL. A financial asset is classified as held for trading, if it has been acquired principally for the purpose of selling it in the near term; or on initial recognition it is part of a portfolio of identified financial instruments that the Group manages together and has a recent actual pattern of short-term profit-taking; or it is a derivative that is not designated and effective as a hedging instrument. Financial assets at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss.

(c) Held-to-maturity investments

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

(d) AFS financial assets

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

They are subsequently measured at fair value at the end of each reporting period. Changes in the book amount of AFS monetary financial assets are recognized in profit or loss. Other changes in the book amount of AFS financial assets are recognized in other comprehensive income (as investments revaluation reserve). When the investment is disposed of, or is determined to be impaired, the cumulative gain or loss previously accumulated in other comprehensive income is reclassified to profit or loss.

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

AFS equity investments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured and derivatives that are linked to and must be settled by delivery of such unquoted equity investments are measured at cost, less any identified impairment losses at the end of each reporting period.

(e) Loans and receivables

No-derivative financial assets that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables.' Loans and receivables are measured at amortized cost using the effective interest method, less any impairment. Interest income is recognized by applying the effective interest rate, except for short-term receivables when the effect of discounting is immaterial.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(f) Impairment of financial assets

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

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

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

For financial assets carried at amortized cost, the amount of the impairment loss recognized is the difference between the asset's book amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

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

When an AFS financial asset is considered to be impaired, cumulative gains or losses previously recognized in other comprehensive income are reclassified to profit or loss for the period.

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

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

(g) Derecognition of financial assets

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

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

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

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

2.24 Financial liabilities and equity instruments

(a) Classification as debt or equity

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

(b) Equity instruments

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

Repurchase of the Group's own equity instruments is recognized and deducted directly in equity. No gain or loss is recognized in profit or loss on the purchase, sale, issue or cancellation of the Group's own equity instruments.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(c) Compound instruments

The component parts of compound instruments (convertible bonds) issued by the Group are classified separately as financial liabilities and equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and equity instrument. Conversion option that will be settled by the exchange of a fixed amount of cash or another financial asset for a fixed number of the Group's own equity instruments is an equity instrument.

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.

The conversion option classified as equity 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. In addition, the conversion option classified as equity will remain in equity until the conversion option is exercised, in which case, the balance recognized in equity will be transferred to share premium. No gain or loss is recognized in profit or loss upon conversion or expiration of the conversion option.

(d) Financial liabilities

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

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

(e) Financial liabilities at FVTPL

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

Financial liabilities at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any interest paid on the financial liability and is included in the 'Other non-operating income and expense' line item in the consolidated statements of profit or loss.

(f) Other financial liabilities

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

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

(g) Financial guarantee contracts

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

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

- the amount of the obligation under the contract, as determined in accordance with Korean IFRS 1037 and
- the amount initially recognized less, cumulative amortization recognized in accordance with the Korean IFRS 1018 *Revenue*

(h) Derecognition of financial liabilities

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

2.25 Derivative financial instruments

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

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

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

(a) Embedded derivatives

Derivatives embedded in non-derivative host contracts are treated as separate derivatives when they meet the definition of a derivative, their risks and characteristics are not closely related to those of the host contracts and the contracts are not measured at FVTPL.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(b) Hedge accounting

The Group designates certain hedging instruments, which include derivatives, embedded derivatives and non-derivatives in respect to foreign currency risk, as either fair value hedges, cash flow hedges or hedges of net investments in foreign operations.

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

(c) Fair value hedges

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

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

(d) Cash flow hedges

The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in other comprehensive income. The gain or loss relating to the ineffective portion is recognized immediately in profit or loss, and is included in the 'Finance income and cost' line item.

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

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

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

recognized immediately in profit or loss.

2.26 Fair value

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

In addition, for financial reporting purposes, fair value measurements are categorized into Levels 1, 2 or 3, based on the degree to which the inputs to the fair value measurements are observable and the significance of the inputs to the fair value measurement in its entirety, which are described in Note 10.

2.27 Approval of Issuance of the Financial Statements

The consolidated financial statements 2016 were approved for issue by the Board of Directors on February 28, 2017 and are subject to change with the approval of shareholders at their Annual General Meeting.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

3. Critical Accounting Estimates and Assumptions

In the application of the Group accounting policies, which are described in Note 2, management is required to make judgments, estimates and assumptions about the book amounts of assets and liabilities that are not readily apparent from other sources. The estimates and underlying assumptions are reviewed on an ongoing basis. Actual results may differ from these estimates.

Revisions to accounting estimates are recognized in the period in which the estimate is revised, if the revision affects only that period. The revisions are recognized in the period of revision and future periods, if the revision affects both current and future periods.

(a) Revenue recognition

Revenue from a contract to provide services is recognized by reference to the stage of completion of the contract. The stage of completion of the contract is determined as reasonable estimation and is subject to change as related factors change.

(b) Impairment of goodwill

Determining whether goodwill is impaired requires an estimation of the value in use of the CGUs to which goodwill has been allocated. The value in use calculation requires to estimate the future cash flows expected to arise from the CGU and a suitable discount rate in order to calculate present value.

(c) Defined benefit obligation

The Group's defined benefit obligation is determined based on the actuarial valuation carried out at the end of each annual reporting period. Actuarial assumptions are the Group's best estimates of the variables, such as discount rates, rates of expected future salary increases and mortality rates.

(d) Provision

Provisions for the expected cost of warranty obligations are recognized at the best estimate of the expenditure required to settle the Group's current and future obligations. Provisions are determined by the estimate based on past experience.

(e) Revaluation model on land and fair value model on investment properties

As stated in Notes 12 and 14, the Group uses valuation methods, including inputs that are not based on observable market data to assess revalued amount of land classified as property, plant and equipment and fair value of investment property. The Group's management believes that valuation technique and assumptions that are used for fair value model on investment properties are fair.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

(f) Deferred tax

Recognition and measurement of deferred tax assets and liabilities require the management's judgment, in particular, whether to recognize if the scope of deferred tax assets is affected by management's judgment and assumption in the future.

(g) Useful lives of property, plant and equipment and intangible assets

It is required to estimate useful lives for depreciation and amortization.

(h) Scope of consolidation

The Parent Company's ownership interest on DHC as at December 31, 2016 is 30.8%, and DHC owns 36.4% and 42.7% of ownership interest on DI and DEC, respectively. Ownership interests other than aforementioned shares are owned by a large number of investors who own less than 1% of ownership. The management of the Group has assessed whether the group has de facto control over the aforementioned subsidiaries on every reporting period since the effective date of Korean IFRS 1110 (January 1, 2013) and concluded the Group exercises control over the investee based on the size of the Group holding of voting rights relative to the size and dispersion of remaining holders.

4. Financial Risk Management

The Group is exposed to various financial risks, such as market (foreign currency risk and interest rate risk), credit and liquidity, relating to the operations of the Group. The purpose of risk management policy is to minimize potential risks, which could have adverse effect on financial performance.

Financial risk management activities are performed by the Treasury and International Finance department in accordance with the aforementioned documented risk management policies. In addition, the Group enters into derivative contracts to hedge against certain risks.

4.1 Market risk

(a) Foreign currency risk

The Group's exposure to the risk of changes in foreign exchange rates relates primary to the Group's international operating activities. The Group's objectives of foreign currency risk management is to minimize uncertainty and volatility arising from fluctuations in foreign currency. Foreign currency risk is managed in accordance with to the Group's policy on foreign currency, and currency trading for speculative purpose is prohibited.

The Groups 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 exposure

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

The book amount of the Group's monetary assets and liabilities denominated in foreign currencies, which represents the maximum exposure to foreign currency risk as at December 31, 2016 and 2015, is as follows:

<i>(in millions of Korean won)</i>	2016					
	USD	EUR	JPY	GBP	Others ¹	Total
Assets	₩ 2,181,652	₩ 281,066	₩ 8,413	₩ 85,847	₩ 585,299	₩ 3,142,277
Liabilities	(3,415,978)	(565,406)	(66,577)	(47,198)	(156,684)	(4,251,843)
Net assets (liabilities)	<u>₩ (1,234,326)</u>	<u>₩ (284,340)</u>	<u>₩ (58,164)</u>	<u>₩ 38,649</u>	<u>₩ 428,615</u>	<u>₩ (1,109,566)</u>

<i>(in millions of Korean won)</i>	2015					
	USD	EUR	JPY	GBP	Others ¹	Total
Assets	₩ 2,085,790	₩ 263,532	₩ 4,601	₩ 70,286	₩ 263,494	₩ 2,687,703
Liabilities	(3,472,351)	(588,912)	(86,960)	(46,996)	(134,773)	(4,329,992)
Net assets (liabilities)	<u>₩ (1,386,561)</u>	<u>₩ (325,380)</u>	<u>₩ (82,359)</u>	<u>₩ 23,290</u>	<u>₩ 128,721</u>	<u>₩ (1,642,289)</u>

¹ Others are assets and liabilities denominated in foreign currencies other than USD, EUR, JPY and GBP.

Net loss on foreign currency translation recognized in profit or loss for the periods ended December 31, 2016 and 2015, is ₩ 55,732 million and ₩ 192,426 million, respectively.

The table below summarizes the impact of increases/decreases of currency exchange rates on profit before income tax expense for the period. The analysis is based on the assumption that the currency exchange rates has increased/decreased by 10% with all other variables held constant.

<i>(in millions of Korean won)</i>	Impact on profit before income tax expense	
	2016	2015
Increase	₩ (110,957)	₩ (164,229)
Decrease	110,957	164,229

The above sensitivity analysis is based on monetary assets and liabilities denominated in foreign currencies other than the Group's functional currency as at December 31, 2016 and 2015.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(b) Interest rate risk

The Group's interest rate risk is related to borrowings and bank deposits with floating interest rates, and related interest income and expense are exposed to interest rate risk. The Group is exposed to interest rate risk mainly due to its borrowing with floating interest rates. The purpose of interest rate risk management is to minimize uncertainty and financial expense arising from interest rate fluctuation.

To manage its interest rate risk, the Group minimizes external borrowings using internal funds and reduces borrowings with high interest rates and maintains an appropriate balance between borrowings with floating interest rate and fixed-interest rate and short-term and long-term borrowings. The Group manages its interest rate risk preemptively through regular monitoring and adjustments to the changing domestic and overseas markets conditions and nature of its interest rates.

The book amount of the Group's financial assets and liabilities with floating interest rates exposed to interest rate risk as at December 31, 2016 and 2015, is as follows:

<i>(in millions of Korean won)</i>	2016		2015	
Financial assets	₩	714,887	₩	902,969
Financial liabilities		(5,192,831)		(6,333,357)
Net liabilities	₩	<u>(4,477,944)</u>	₩	<u>(5,430,388)</u>

The table below summarizes the impact of increases/decreases of interest rates on profit before income tax expense. The analysis is based on the assumption that the interest rates has increased/decreased by 100 basis point with all other variables held constant.

<i>(in millions of Korean won)</i>	Impact on profit before income tax expense			
	2016		2015	
Increase	₩	(44,779)	₩	(54,304)
Decrease		44,779		54,304

(c) Price risk

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

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

4.2 Credit risk

The credit risk refers to risk of financial losses to the Group when the counterparty defaults on the obligations of the contract. The credit risk arises from AFS financial assets, which are not equity securities, deposits in financial institution, financial derivatives and guarantee limit, as well as from the Group's normal transaction and investing activity. To manage credit risk, the Group evaluates the creditworthiness of each customer or counterparty considering the financial status, past experience and other factors. The Group establishes credit limit for each customer and counterparty.

The Group evaluates the credit worthiness using opened financial information and information provided by credit-rating institution when the Group contracts with new customers. The Group decides credit transaction limit, and is provided with collateral and guarantee based on evaluation.

Also, the Group reevaluates customers' credit worthiness periodically, reassesses credit transaction limit and readjust level of collateral. The Group reports the present condition of delayed collection and collection measures periodically of financial assets which has delayed collection and takes measures by causes of delay.

The book amount of the Group's financial assets and liabilities, which represents the maximum exposure to credit risk as at December 31, 2016 and 2015, is as follows:

<i>(in millions of Korean won)</i>	2016	2015
Loans and receivables		
Cash and cash equivalents	₩ 2,016,275	₩ 2,332,606
Financial instruments	248,931	556,659
Trade and other receivables	3,946,134	4,635,536
Guarantee deposits provided	330,565	258,508
Held-to-maturity financial assets	6,215	9,960
Available for sale financial assets (excluding equity securities)	225,664	2,860
Derivative assets	105,855	90,091
	<u>₩ 6,879,639</u>	<u>₩ 7,886,220</u>

Apart from the above financial assets, the maximum exposure to credit risk of financial guarantee contract is the maximum amount to be paid if the guarantee will be charged (see Note 33).

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

The aging analysis of trade and other receivables as at December 31, 2016 and 2015, is as follows:

(in millions of Korean won)	2016						
	Receivables assessed for impairment on a collective basis						Total
	Individually assessed receivables	Within due	Less than 3 months	Between 3 and 6 months	Between 6 and 12 months	Over 12 months	
Trade receivables	₩ 2,530,578	₩ 986,529	₩ 153,118	₩ 22,406	₩ 41,216	₩ 219,483	₩ 3,953,330
Other receivables and loans	2,200,028	62,587	27,490	15,813	2,070	66,463	2,374,451
Accrued income	120,407	28,602	-	-	-	-	149,009
	<u>₩ 4,851,013</u>	<u>₩ 1,077,718</u>	<u>₩ 180,608</u>	<u>₩ 38,219</u>	<u>₩ 43,286</u>	<u>₩ 285,946</u>	<u>₩ 6,476,790</u>

(in millions of Korean won)	2015						
	Receivables assessed for impairment on a collective basis						Total
	Individually assessed receivables	Within due	Less than 3 months	Between 3 and 6 months	Between 6 and 12 months	Over 12 months	
Trade receivables	₩ 2,853,500	₩ 1,245,653	₩ 155,022	₩ 67,179	₩ 68,725	₩ 293,506	₩ 4,683,585
Other receivables and loans	2,118,576	100,537	28,147	491	5,482	52,634	2,305,867
Accrued income	134,842	14,649	-	-	-	-	149,491
	<u>₩ 5,106,918</u>	<u>₩ 1,360,839</u>	<u>₩ 183,169</u>	<u>₩ 67,670</u>	<u>₩ 74,207</u>	<u>₩ 346,140</u>	<u>₩ 7,138,943</u>

The Group has recognized the provision for impairment of ₩2,515,819 million for the above trade and other receivables as at December 31, 2016 (2015: ₩ 2,489,720 million).

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

AFS financial assets, held-to-maturity financial assets, deposits in financial institutions and derivative instruments are individually assessed to be impaired.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

4.3 Liquidity risk

Liquidity risk is the risk that the Group is unable to meet its payment obligations arising from financial liabilities as they fall due.

The Group regularly establishes funding plan in order to manage liquidity risk. Ongoing analysis and review on the budget and actual cash outflow to correspond maturity structure of financial assets and financial liabilities have been made.

Maturity analysis of financial liabilities except for derivatives as at December 31, 2016 and 2015, is as follows:

<i>(in millions of Korean won)</i>	2016					
	Book amount	Nominal cash flows according to contract				
		Total	Less than 1 year	Between 1 and 2 years	Between 2 and 5 years	Over 5 years
Financial liabilities	₩ 16,739,160	₩ 16,807,282	₩ 11,237,403	₩ 2,620,351	₩ 2,905,269	₩ 44,259
Interest on financial liabilities	-	664,113	310,421	174,731	177,990	971
	<u>₩ 16,739,160</u>	<u>₩ 17,471,395</u>	<u>₩ 11,547,824</u>	<u>₩ 2,795,082</u>	<u>₩ 3,083,259</u>	<u>₩ 45,230</u>

<i>(in millions of Korean won)</i>	2015					
	Book amount	Nominal cash flows according to contract				
		Total	Less than 1 year	Between 1 and 2 years	Between 2 and 5 years	Over 5 years
Financial liabilities	₩ 18,397,848	₩ 18,447,939	₩ 11,347,582	₩ 2,625,728	₩ 2,623,055	₩ 1,851,574
Interest on financial liabilities	-	955,989	377,693	207,287	337,429	33,580
	<u>₩ 18,397,848</u>	<u>₩ 19,403,928</u>	<u>₩ 11,725,275</u>	<u>₩ 2,833,015</u>	<u>₩ 2,960,484</u>	<u>₩ 1,885,154</u>

The above-mentioned maturity analysis is based on undiscounted cash flow according to the contract, which is different from non-derivative liabilities in the consolidated statements of financial position.

Apart from the above non-derivative liabilities, as at December 31, 2016, financial guarantee contract liabilities of the Group are explained in Note 33.

4.4 Capital risk

The Group performs capital risk management to maintain its ability to continuously provide profits to shareholders and parties in interest, and to maintain optimum capital structure to reduce capital expenses.

Consistent with others in the industry, the Group monitors capital on the basis of debt-to-equity ratio. Debt-to-equity ratio calculated as total liabilities divided by equity is used as an index to

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

manage the Group's capital similar to overall industry practice.

Debt-to-equity ratios as at December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>		2016		2015
Total liabilities	₩	20,763,947	₩	23,162,785
Total equity		7,900,858		8,393,526
Debt-to-equity ratio		262.81%		275.96%

5. Restricted Financial Assets

Details of restricted financial assets as at December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>		2016		2015	Description
Cash and cash equivalents	₩	10,335	₩	16,813	Collateral for advance payments and others
Short-term financial instruments		166,121		357,627	Government R&D ¹ , establish the right of pledge and advances from construction contracts ² , shared growth fund, collaterals for borrowings and others
Long-term financial instruments		2,310		2,207	Bank transaction deposits, establish the right of pledge, deposits provided for business and others
Guarantee deposits provided		22,020		584	Reserves for repayments related to asset backed loans
	₩	<u>200,786</u>	₩	<u>377,231</u>	

¹ It can be used only for the purpose for implementing the national policy research and development specific issues.

² It can be used only for performance of construction.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

6. Short-term and Long-term Investment Securities

Details of short and long-term investment securities as at December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>			2016	2015
Short-term investment securities	Available-for-sale financial assets	Equity securities and others	₩ 235,217	₩ 441
	Held-to-maturity financial assets	Other debt securities and others	6,142	-
			<u>241,359</u>	<u>441</u>
Long-term investment securities	Available-for-sale financial assets	Equity securities and others	290,181	573,809
	Held-to-maturity financial assets	Other debt securities and others	73	9,960
			<u>290,254</u>	<u>583,769</u>
			<u>₩ 531,613</u>	<u>₩ 584,210</u>

Investment securities are measured at cost or fair value depending on the presence or absence of market prices in an active market.

Details of available-for-sale financial assets and held-to-maturity financial assets as at December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>			2016	2015
Available-for-sale financial assets	Marketable equity securities	Infinitt Healthcare Co., Ltd. and others	₩ 939	₩ 381,475
	Non-marketable equity securities	Korea Defense Industry Association and others	298,795	189,915
	Beneficiary certificates	Gold Spoon JY 2 nd and others	225,598	2,790
	Debt securities	Government and public bonds	66	70
			<u>525,398</u>	<u>574,250</u>
Held-to-maturity financial assets	Debt securities	Government and public bonds	72	-
	Other debt securities	Others	6,143	9,960
			<u>6,215</u>	<u>9,960</u>
			<u>₩ 531,613</u>	<u>₩ 584,210</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Changes in the fair value of available-for-sale financial assets for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016			
	Beginning balance	Valuation	Disposals and others	Ending balance
Marketable equity securities	₩ 301,511	₩ 5,907	₩ (304,443)	₩ 2,975
Non-marketable equity securities	7,727	(27,019)	4,369	(14,923)
Tax effect	(75,898)	3	72,716	(3,179)
Consolidation adjustments	(22,343)	25,489	(2,123)	1,023
	<u>₩ 210,997</u>	<u>₩ 4,380</u>	<u>₩ (229,481)</u>	<u>₩ (14,104)</u>

<i>(in millions of Korean won)</i>	2015			
	Beginning balance	Valuation	Disposals and others	Ending balance
Marketable equity securities	₩ 115,914	₩ 185,597	₩ -	₩ 301,511
Non-marketable equity securities	9,858	60	(2,191)	7,727
Tax effect	(30,947)	(45,059)	108	(75,898)
Consolidation adjustments	(13,218)	860	(9,985)	(22,343)
	<u>₩ 81,607</u>	<u>₩ 141,458</u>	<u>₩ (12,068)</u>	<u>₩ 210,997</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

7. Trade and Other Receivables

Trade and other receivables as at December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016				2015			
	Gross amount	Present value discounts	Provision for impairment	Book amount	Gross amount	Present value discounts	Provision for impairment	Book amount
Current								
Trade receivables	₩ 3,944,180	₩ (12,992)	₩ (1,522,646)	₩ 2,408,542	₩ 4,677,458	₩ (11,036)	₩ (1,830,994)	₩ 2,835,428
Non-trade receivables	536,466	-	(170,337)	366,129	613,172	-	(151,778)	461,394
Accrued revenues	149,009	-	(31,449)	117,560	149,491	-	(30,239)	119,252
Short-term loans	256,138	-	(137,386)	118,752	308,362	-	(125,088)	183,274
	<u>4,885,793</u>	<u>(12,992)</u>	<u>(1,861,818)</u>	<u>3,010,983</u>	<u>5,748,483</u>	<u>(11,036)</u>	<u>(2,138,099)</u>	<u>3,599,348</u>
Non-current								
Trade receivables	9,150	-	(258)	8,892	6,127	-	(258)	5,869
Non-trade receivables	9,945	(1,732)	(6,039)	2,174	6,723	(2,480)	(3,910)	333
Long-term loans	1,571,902	(113)	(647,704)	924,085	1,377,610	(171)	(347,453)	1,029,986
	<u>₩ 1,590,997</u>	<u>₩ (1,845)</u>	<u>₩ (654,001)</u>	<u>₩ 935,151</u>	<u>₩ 1,390,460</u>	<u>₩ (2,651)</u>	<u>₩ (351,621)</u>	<u>₩ 1,036,188</u>

Movements in the provision for impairment of trade and other receivables for the year ended December 31, 2016, are as follows:

(in millions of Korean won)	Provision for impaired receivables during the					Ending balance
	Beginning balance	year (reversal)	Write-off	Others ¹		
Current						
Trade receivables	₩ 1,830,994	₩ 22,067	₩ (171,072)	₩ (159,343)	₩ 1,522,646	
Non-trade receivables	151,778	26,490	(27,998)	20,067	170,337	
Accrued revenues	30,239	1,519	(309)	-	31,449	
Short-term loans	125,088	958	(449)	11,788	137,385	
Non-current						
Trade receivables	258	-	-	-	258	
Non-trade receivables	3,910	-	-	2,129	6,039	

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Long-term loans	347,453	165,427	-	134,824	647,704
	₩ 2,489,720	₩ 216,461	₩ (199,828)	₩ 9,465	₩ 2,515,818

¹ Changes from reclassification between current and non-current asset, business combination, exchange differences and others.

Provision for impaired receivables and unused amounts reversed have been included in the consolidated statement of profit or loss within 'selling and administrative expenses'. And provision for other receivables and unused amounts reversed have been included in 'non-operating income or expenses'.

8. Inventories

Inventories as at December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016			2015		
	Acquisition cost	Valuation allowance	Book amount	Acquisition cost	Valuation allowance	Book amount
Merchandise	₩ 377,802	₩ (35,264)	₩ 342,538	₩ 543,914	₩ (36,340)	₩ 507,574
Finished goods	491,541	(40,548)	450,993	608,314	(54,357)	553,957
Work in progress	463,507	(38,811)	424,696	653,364	(26,457)	626,907
Raw materials	685,150	(50,934)	634,216	841,413	(66,935)	774,478
Materials in transit	220,023	-	220,023	217,445	-	217,445
Supplies	31,263	(247)	31,016	30,858	(288)	30,570
Land	41,099	-	41,099	41,099	-	41,099
Others	1,189	(3)	1,186	288	-	288
	₩ 2,311,574	₩ (165,807)	₩ 2,145,767	₩ 2,936,695	₩ (184,377)	₩ 2,752,318

During the year ended December 31, 2016, the Group reversed ₩18,570 million of a previous inventory write-down (Loss on inventory valuation during 2015: ₩5,947 million).

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

9. Derivatives

Details of valuation of derivative financial instruments as at December 31, 2016 and 2015, are as follows:

(in thousands of foreign currencies and millions of Korean won)

2016							
Buy		Sell				Accumulated other comprehensive income ¹	Firm commitment assets (liabilities)
Currency	Amount	Currency	Amount	Assets (liabilities)	Gains (losses)		
Currency forward contracts							
KRW	5,711,269	USD	4,997,016	₩ (294,548)	₩ (164,267)	₩ (19,467)	₩ 166,551
KRW	145,877	EUR	111,036	3,847	1,165	3,318	567
KRW	211,493	JPY	19,279,568	1,163	(5,724)	(635)	(2,049)
USD	2,400,231	KRW	2,750,577	116,432	57,413	44,853	(16,191)
EUR	312,270	KRW	411,561	(10,119)	(4,265)	(3,121)	3,907
JPY	25,268,718	KRW	304,509	(28,043)	(216)	(2,882)	(348)
GBP and others		EUR and others		5,003	(9,237)	(9,287)	3,705
Interest rate swap							
KRW 5,000, 3.15% and others		KRW 5,000, MOR 3M+1.60% and others		(110)	(104)	-	-
Foreign currency long-term borrowings ²							
USD	8,500	KRW	9,673	260	260	-	3,268
Embedded derivatives and others				131	447	131	-
Put back options ³				-	(160)	-	-
Commodity forward contracts				(1,643)	-	(2,709)	-
				(207,627)	(124,688)	10,201	159,410
Consolidation adjustments				-	-	30,094	-
Tax effect				-	-	(2,831)	-
				₩ (207,627)	₩ (124,688)	₩ 37,464	₩ 159,410

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in thousands of foreign currencies and millions of Korean won)

2015							
Buy		Sell				Accumulated other comprehensive income ¹	Firm commitment assets (liabilities)
Currency	Amount	Currency	Amount	Assets (liabilities)	Gains (losses)		
Currency forward contracts							
KRW	6,695,349	USD	5,980,087	₩ (308,889)	₩ (256,150)	₩ (32,327)	₩ 135,560
KRW	243,056	EUR	188,144	(222)	1,130	1,502	(499)
KRW	264,367	JPY	24,465,534	6,288	(7,848)	60	(3,885)
USD	2,307,415	KRW	2,603,838	82,276	78,393	43,787	(19,061)
EUR	415,594	KRW	557,771	(16,071)	(5,301)	(4,998)	5,112
JPY	29,201,574	KRW	337,724	(35,143)	2,295	(8,735)	(19)
GBP and others		EUR and others		3,885	(20,542)	(5,951)	(687)
Interest rate swap							
KRW 5,000, 3.15% and others		KRW 5,000, MOR 3M+1.60% and others		(19)	(21)	-	-
Foreign currency long-term borrowings ²							
KRW	210,710	USD	200,000	-	-	-	23,690
Embedded derivatives and others				(447)	39,412	-	-
Put back options ³				(6,800)	(6,955)	-	-
Commodity forward contracts				(72)	-	1,173	-
				(275,214)	(175,587)	(5,489)	140,211
Consolidation adjustments				-	-	44,131	-
Tax effect				-	-	1,454	-
				₩ (275,214)	₩ (175,587)	₩ 40,096	₩ 140,211

¹ Accumulated other comprehensive income before tax effect.

² The Group designated its foreign currency long-term borrowings as hedging instruments to hedge the changes in the fair value of firm commitment.

³ DEC, a subsidiary, participated in SOC projects and other infrastructure projects, including Shinbundang Line, Shinbundang extension Line, Daegu 4th beltway, Masan Sewer Pipeline BTL, Suwon-Gwangmyeong Road, Gwanggyo Power Center, etc. as a construction investor. To invite financial investors, DEC entered into a put option contract (₩36,600 million). DEC classified the contract as financial derivatives and recognized the fluctuation of option value as loss on valuation of derivatives and derivatives liabilities.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

10. Financial Instruments by Category

Categorizations of financial assets and liabilities as at December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016													
	Financial assets at fair value			Available-for- sale financial assets		Held-to- maturity financial assets		Derivative for hedging		Book amount		Fair value		
	through profit or loss		Loans and receivables											
Cash and cash equivalents	₩	-	₩	2,016,275	₩	-	₩	-	₩	-	₩	2,016,275	₩	2,016,275
Long and short-term financial instruments		-		248,931		-		-		-		248,931		248,931
Long and short-term investment securities		-		-		525,398		6,215		-		531,613		531,613
Trade and other receivables		-		3,946,134		-		-		-		3,946,134		3,946,134
Derivative assets		65,022		-		-		-		40,833		105,855		105,855
Deposits provided		-		330,565		-		-		-		330,565		330,565
	₩	65,022	₩	6,541,905	₩	525,398	₩	6,215	₩	40,833	₩	7,179,373	₩	7,179,373

(in millions of Korean won)	2016					
	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Derivative for hedging	Financial guarantee contracts	Book amount	Fair value
Trade and other payables	₩ -	₩ 4,522,451	₩ -	₩ 20,002	₩ 4,542,453	₩ 4,542,453
Borrowings, bonds and securitized debts	-	12,216,709	-	-	12,216,709	12,216,709
Derivative liabilities	44,243	-	269,238	-	313,481	313,481
	₩ 44,243	₩ 16,739,160	₩ 269,238	₩ 20,002	₩ 17,072,643	₩ 17,072,643

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of
Korean won)

(in millions of Korean won)	2015													
	Financial assets at fair value through profit or loss				Available-for-sale financial assets		Held-to-maturity financial assets		Derivative for hedging		Book amount		Fair value	
Cash and cash equivalents	₩	-	₩	2,332,606	₩	-	₩	-	₩	-	₩	2,332,606	₩	2,332,606
Long and short-term financial instruments		-		556,659		-		-		-		556,659		556,659
Long and short-term investment securities		-		-		574,250		9,960		-		584,210		584,210
Trade and other receivables		-		4,635,536		-		-		-		4,635,536		4,635,536
Derivative assets		36,793		-		-		-		53,298		90,091		90,091
Deposits provided		-		258,508		-		-		-		258,508		258,508
	₩	36,793	₩	7,783,309	₩	574,250	₩	9,960	₩	53,298	₩	8,457,610	₩	8,457,610

(in millions of
Korean won)

(in millions of Korean won)		2015											
		Financial liabilities at fair value through profit or loss		Financial liabilities at amortized cost		Derivative for hedging		Financial guarantee contracts		Book amount		Fair value	
Trade and other payables		₩	-	₩	4,191,308	₩	-	₩	22,701	₩	4,214,009	₩	4,214,009
Borrowings, bonds and securitized debts			-		14,206,540		-		-		14,206,540		14,206,540
Derivative liabilities			36,570		-		328,736		-		365,306		365,306
		₩	36,570	₩	18,397,848	₩	328,736	₩	22,701	₩	18,785,855	₩	18,785,855

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Fair value hierarchy classifications of the financial instruments as at December 31, 2016 and 2015, are as follows:

(in millions of Korean won)

	2016			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at fair value through profit or loss	₩ -	₩ 65,022	₩ -	₩ 65,022
Available-for-sale financial assets	90,822	341	137,373	228,536
Derivative for hedging	-	40,833	-	40,833
	<u>90,822</u>	<u>106,196</u>	<u>137,373</u>	<u>334,391</u>
Financial liabilities:				
Financial liabilities at fair value through profit or loss	₩ -	₩ (44,243)	₩ -	₩ (44,243)
Derivative for hedging	-	(269,238)	-	(269,238)
	<u>-</u>	<u>(313,481)</u>	<u>-</u>	<u>(313,481)</u>
	<u>₩ 90,822</u>	<u>₩ (207,285)</u>	<u>₩ 137,373</u>	<u>₩ 20,910</u>

(in millions of Korean won)

	2015			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at fair value through profit or loss	₩ -	₩ 36,793	₩ -	₩ 36,793
Available-for-sale financial assets	383,707	-	126,448	510,155
Derivative for hedging	-	53,298	-	53,298
	<u>383,707</u>	<u>90,091</u>	<u>126,448</u>	<u>600,246</u>
Financial liabilities:				
Financial liabilities at fair value through profit or loss	₩ -	₩ (36,570)	₩ -	₩ (36,570)
Derivative for hedging	-	(328,736)	-	(328,736)
	<u>-</u>	<u>(365,306)</u>	<u>-</u>	<u>(365,306)</u>
	<u>₩ 383,707</u>	<u>₩ (275,215)</u>	<u>₩ 126,448</u>	<u>₩ 234,940</u>

The above table does not include information on financial assets and liabilities, which are not measured at fair value because there are no material differences between the fair values and the book amounts.

Definition for each fair value hierarchy levels of the above financial instruments, are as follows:

- 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

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

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

The fair value of financial instruments traded in active markets is based on quoted market prices at the dates of the consolidated statements of financial position. These instruments are included in level 1. Instruments included in level 1 comprise primarily listed equity investments classified as trading securities or available-for-sale securities.

The fair value of financial instruments that are not traded in an active market (for example, over-the-counter derivatives) is determined by using valuation techniques. These valuation techniques maximize the use of observable market data where it is available and rely as little as possible on entity-specific estimates. If all significant inputs required for fair value of an instrument are observable, the instrument is included in level 2.

If one or more of the significant inputs is not based on observable market data, the instrument is included in level 3.

Valuation techniques and the inputs used in fair value measurements of derivative (level 2), are as follows:

Valuation technique	Observable inputs	Explanation of input parameters
Discounted cash flow method	Forward exchange rate	It is based on forward exchange rate, disclosed on the market that remaining period is the same until maturity of forward contracts. If the forward exchange rate is not disclosed on the market, it is calculated by using interpolation method.
	Discount rate	It is determined by using yield curve that is disclosed at the end of the reporting period.

Valuation techniques and the inputs used in fair value measurements of available-for-sale financial assets (level 3), are as follows:

Available-for-sale financial assets	Valuation technique	Discount rate	Changes of inputs and others
Sangju-Youngcheon expressway Co, Ltd. and others	Past transaction model and others	-	Amount of recent capital increase
Daegu South Circulation Road Corporation and others	Dividend discount model and others	7.00% -14.00%	Expected dividend cash flows for each financial period
Korea Housing Guarantee Co., Ltd.	Discounted cash flow model	10.00%	Cash flow projections
Others	Net asset value assessment and others	-	Fair value of net assets and others

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

Changes in book amount of available-for-sale financial assets that are measured at fair value (level 3) for the periods ended December 31, 2016 and 2015, are as follows:

				Total comprehensive income (loss)			Other comprehensive income	Other ¹	Ending balance
	Beginning balance	Acquisition	Disposal	Loss for the period					
(in millions of Korean won)									
2016	₩ 126,448	₩ 10,437	₩ -	₩ (8,407)	₩ 2,145	₩ 6,750	₩ 137,373		
2015	130,721	7,141	(11,553)	-	60	79	126,448		

¹ Changes from business combination, exchange differences and others.

Comprehensive income on each category of financial instruments for the periods ended December 31, 2016 and 2015, are as follows:

	2016						
	Profit (loss) for the period						
	Interest	Dividends	Financial guarantee	Impairment and reversal		Disposal	Other comprehensive income ¹
				Impairment loss	Other impairment		
Financial assets:							
Loans and receivables	₩ 45,485	₩ -	₩ -	₩ (216,461)	₩ -	₩ (13,662)	₩ -
Available-for-sale financial assets	4,633	2,655	-	-	(30,362)	244,273	(278,257)
Held-to-maturity investments	466	-	-	-	(2,158)	-	-
	₩ 50,584	₩ 2,655	₩ -	₩ (216,461)	₩ (32,520)	₩ 230,611	₩ (278,257)
Financial liabilities:							
Financial liabilities at amortized cost	₩ (581,150)	₩ -	₩ (6,226)	₩ -	₩ -	₩ (10,570)	₩ -

¹ Amounts before tax effect.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

(in millions of Korean won)

(in millions of Korean won)		2015													
		Profit (loss) for the period													
						Impairment and reversal				Other comprehensive income ¹					
						Impairment loss	Other impairment								
		Interest	Dividends	Financial guarantee						Disposal					
Financial assets:															
Loans and receivables		₩	47,732	₩	-	₩	-	₩	(559,035)	₩	-	₩	(14,859)	₩	-
Available-for-sale financial assets			943		3,089		-		-		(709)		18,667		183,466
Held-to-maturity investments			687		-		-		-		(68)		-		-
		₩	49,362	₩	3,089	₩	-	₩	(559,035)	₩	(777)	₩	3,808	₩	183,466
Financial liabilities:															
Financial liabilities at amortized cost		₩	(695,217)	₩	-	₩	(20,104)	₩	-	₩	-	₩	(1,587)	₩	-

¹ Amounts before tax effect.

Apart from the above financial instruments, comprehensive income on derivative financial instruments for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of Korean won)

	2016			2015		
	Profit (loss) for the period		Other comprehensive income ¹	Profit (loss) for the period		Other comprehensive income ¹
	Valuation	Disposal		Valuation	Disposal	
Derivative financial instruments for trading	₩ 17,016	₩ (7,482)	₩ -	₩ 64,757	₩ 8,858	₩ -
Derivative financial instruments for fair value hedges	(120,718)	6,848	-	(232,199)	(18,466)	-
Derivative financial instruments for cash flows hedges	(20,985)	61,727	15,690	(8,145)	28,982	71,611
	<u>₩ (124,687)</u>	<u>₩ 61,093</u>	<u>₩ 15,690</u>	<u>₩ (175,587)</u>	<u>₩ 19,374</u>	<u>₩ 71,611</u>

¹ Amounts before tax effect.

Gain (loss) on foreign currency translations and transactions are mostly occurred in financial assets classified as loans and receivables and financial liabilities measured in amortized cost.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

Financial assets and financial liabilities subject to an enforceable master netting arrangement or similar agreement as at December 31, 2016 and 2015 are as follows:

(in millions of Korean won)	2016						2015					
					Net amounts presented in the						Net amounts presented in the	
	Gross financial instruments		Gross financial instruments set off		statement of financial position		Gross financial instruments		Gross financial instruments set off		statement of financial position	
Financial assets:												
Trade receivables	₩	16,815	₩	(11,851)	₩	4,964	₩	14,642	₩	(6,728)	₩	7,914
Other receivables		144		(14)		130		1,306		(230)		1,076
Long-term investment securities		40,000		(40,000)		-		-		-		-
Derivative assets		141,875		(54,685)		87,190		110,893		(46,598)		64,295
		198,834		(106,550)		92,284		126,841		(53,556)		73,285
Financial liabilities:												
Trade payables		(50,775)		4,435		(46,340)		32,319		(4,883)		27,436
Other payables		(58,940)		7,430		(51,510)		14,195		(2,075)		12,120
Securitized debts		(40,000)		40,000		-		-		-		-
Derivative liabilities		(315,692)		54,685		(261,007)		312,164		(46,598)		265,566
	₩	(465,407)	₩	106,550	₩	(358,857)	₩	358,678	₩	(53,556)	₩	305,122

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

11. Investments in Associates and Joint Ventures

Details of investments in associates and joint ventures as at December 31, 2016 and 2015, are as follows:

(in millions of Korean won)

(in millions of Korean won)

			Acquisition cost		Book amount	
	Location	Percentage of ownership (%)	2016	2015	2016	2015
Associates						
Guang Dong Xingpu Steel Center	China	21.05	₩ 1,853	₩ 1,853	₩ 1,323	₩ 4,080
Tamra Offshore Wind Power Co., Ltd	Korea	36.00	11,880	9,864	9,675	9,617
Dalian Samyoung Doosan Metal Product Co., Ltd (“DSDMP”) ¹	China	10.80	2,675	2,675	3,043	3,453
Shinbundang Railroad Co., Ltd. ²	Korea	29.03	50,088	62,552	14,770	26,770
Kyunggi Railroad Co., Ltd ^{1,2}	Korea	7.35	7,067	7,067	1,893	5,277
Neo Trans Co., Ltd	Korea	42.86	43	43	18,991	15,429
New Seoul Railroad Co., Ltd. ²	Korea	25.05	8,794	1,373	7,837	611
KIAMCO ⁴	Korea	31.41	23,149	-	23,149	-
Doosan Eco Biznet ⁵	Korea	13.13	53	53	-	219
Others ⁶	-	-	4,822	4,644	5,379	4,504
			110,424	90,124	86,060	69,960
Joint ventures						
Sichuan Kelun-Doosan Biotechnology Company Limited	China	50.00	2,526	2,526	2,937	2,902
Haman Industrial Complex ^{2,3}	Korea	80.00	3,600	3,600	-	-
Doosan PSI LLC	USA	50.00	1,108	1,108	1,189	1,254
Doosan Infracore Liaoning Machinery Sales Co., Ltd ⁷	China	43.00	355	-	134	-
			7,589	7,234	4,260	4,156
			₩ 118,013	₩ 97,358	₩ 90,320	₩ 74,116

¹ The investee is classified as an associate as it can exercise its voting right in the Board of Directors of the investee companies.

² Shares are pledged as collateral for Project Financing.

³ Although the Group's equity interest in the investee is more than 50%, the investee is classified as a joint venture considering the agreement between the shareholders.

⁴ During the year ended December 31, 2016, it is reclassified from available for sale financial assets to investment in associate as the ownership interest increased.

⁵ During the year ended December 31, 2016, the equity method of accounting has been suspended as ownership interest decreased.

⁶ During the year ended December 31, 2016, the Group acquired 26.8% of equity interests in One O One Global Co., Ltd. (acquisition cost: ₩178 million).

⁷ During the year ended December 31, 2016, it is classified as an associate after acquisition of shares.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

Meanwhile, associates in the process of liquidation are no longer under the use of equity method and are excluded from the list above.

Changes in the investments in associates and joint ventures for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of Korean won)

		2016						
		Beginning balance	Acquisition (disposal)	Dividends	Share of profit (loss) of associates and joint ventures	Share of other comprehensive income of associates and joint ventures	Other ¹	Ending balance
Associates								
Guang Dong Xingpu Steel Center	₩	4,080	₩ -	₩ (2,319)	₩ (248)	₩ (190)	₩ -	₩ 1,323
Tamra Offshore Wind Power Co., Ltd.		9,617	2,016	-	(1,948)	(10)	-	9,675
DSDMP		3,453	-	-	(311)	(99)	-	3,043
Shinbundang Railroad Co., Ltd.		26,770	-	-	(12,000)	-	-	14,770
Kyunggi Railroad Co., Ltd.		5,277	-	-	(3,384)	-	-	1,893
Neo Trans Co., Ltd.		15,429	-	-	3,562	-	-	18,991
New Seoul Railroad Co., Ltd.		611	7,421	-	(195)	-	-	7,837
KIAMCO		-	23,149	-	-	-	-	23,149
Doosan Eco Biznet		219	-	-	(167)	-	(52)	-
Others		4,504	178	-	699	(2)	-	5,379
		<u>69,960</u>	<u>32,764</u>	<u>(2,319)</u>	<u>(13,992)</u>	<u>(301)</u>	<u>(52)</u>	<u>86,060</u>
Joint ventures								
Sichuan Kelun-Doosan Biotechnology Company Limited		2,902	-	(1,056)	1,182	(91)	-	2,937
Doosan PSI LLC		1,254	-	-	(100)	-	35	1,189
Doosan Infracore Liaoning Machinery Sales Co., Ltd		-	355	-	(231)	-	10	134
		<u>4,156</u>	<u>355</u>	<u>(1,056)</u>	<u>851</u>	<u>(91)</u>	<u>45</u>	<u>4,260</u>
	₩	<u>74,116</u>	₩ <u>33,119</u>	₩ <u>(3,375)</u>	₩ <u>(13,141)</u>	₩ <u>(392)</u>	₩ <u>(7)</u>	₩ <u>90,320</u>

¹ Changes from business combination, exchange differences and others.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of
Korean won)

	2015						
	Beginning balance	Acquisition (disposal)	Dividends	Share of profit (loss) of associates and joint ventures	Share of other comprehen sive income of associates and joint ventures	Other ¹	Ending balance
Associates							
Guang Dong Xingpu Steel Center	₩ 4,015	₩ -	₩ -	₩ 27	₩ 38	₩ -	₩ 4,080
Doosan Eco Biznet	313	-	-	(94)	-	-	219
Doosan Capital	48,903	(6,613)	-	(42,390)	100	-	-
Tamra Offshore Wind Power Co., Ltd.	9,673	-	-	(56)	-	-	9,617
DCFL	96,995	-	-	(19,137)	-	(77,858)	-
DSDMP	3,647	-	-	(230)	36	-	3,453
Shinbundang Railroad Co., Ltd.	46,538	-	-	(19,768)	-	-	26,770
Kyunggi Railroad Co., Ltd.	5,737	-	-	(460)	-	-	5,277
Neo Trans Co., Ltd.	13,335	-	-	2,094	-	-	15,429
New Seoul Railroad Co., Ltd.	727	-	-	(116)	-	-	611
Others	1,259	-	(45)	2,627	177	486	4,504
	<u>231,142</u>	<u>(6,613)</u>	<u>(45)</u>	<u>(77,503)</u>	<u>351</u>	<u>(77,372)</u>	<u>69,960</u>
Joint ventures							
Sichuan Kelun-Doosan Biotechnology Company Limited	2,930	-	(988)	924	36	-	2,902
Haman Industrial Complex	1,190	-	-	(1,190)	-	-	-
Doosan PSI LLC	-	1,108	-	80	-	66	1,254
	<u>4,120</u>	<u>1,108</u>	<u>(988)</u>	<u>(186)</u>	<u>36</u>	<u>66</u>	<u>4,156</u>
	<u>₩235,262</u>	<u>₩ (5,505)</u>	<u>₩ (1,033)</u>	<u>₩ (77,689)</u>	<u>₩ 387</u>	<u>₩ (77,306)</u>	<u>₩ 74,116</u>

¹ Changes from business combination, exchange differences and others.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

The tables below provide summarized financial information for those associates and joint ventures.

(in millions of Korean won)

	2016			
	Total assets	Total liabilities	Sales	Profit (loss) for the period
Associates				
Guang Dong Xingpu Steel Center	₩ 6,623	₩ 337	₩ 5,693	₩ (1,178)
Tamra Offshore Wind Power Co., Ltd	128,777	101,900	-	(5,411)
DSDMP	45,358	17,174	14,012	(2,871)
Shinbundang Railroad Co., Ltd.	1,003,274	952,397	83,493	(41,340)
Kyunggi Railroad Co., Ltd	684,400	658,638	26,072	(57,780)
Neo Trans Co., Ltd	59,064	14,755	75,890	8,311
New Seoul Railroad Co., Ltd.	46,715	15,508	-	(776)
KIAMCO	73,737	17	-	6
Doosan Eco Biznet	1,612	1,260	954	(385)
Others	41,927	17,204	66,594	2,668
Joint ventures				
Sichuan Kelun-Doosan Biotechnology Company Limited	7,993	2,119	6,514	2,365
Haman Industrial Complex	10,016	11,357	-	-
Doosan PSI LLC	8,306	5,928	2,482	(199)
Doosan Infracore Liaoning Machinery Sales Co., Ltd	869	242	3,348	(415)

(in millions of Korean won)

	2015			
	Total assets	Total liabilities	Sales	Profit (loss) for the period
Associates				
Guang Dong Xingpu Steel Center	₩ 22,051	₩ 2,667	₩ 22,184	₩ 129
Doosan Eco Biznet	1,857	1,120	1,042	(314)
Tamra Offshore Wind Power Co., Ltd	90,810	64,095	-	(154)
DSDMP	49,609	17,637	21,986	(2,129)
Shinbundang Railroad Co., Ltd.	1,009,219	917,002	59,663	(68,094)
Kyunggi Railroad Co., Ltd.	577,382	510,694	-	(12,115)
Neo Trans Co., Ltd	44,655	8,656	57,487	4,886
New Seoul Railroad Co., Ltd.	5,223	3,971	-	(357)
Others	33,165	11,767	63,760	3,110
Joint ventures				
Sichuan Kelun-Doosan Biotechnology Company Limited	7,611	1,807	6,427	1,848
Haman Industrial Complex	24,866	27,416	131	(835)
Doosan PSI LLC	3,860	1,353	4,855	158

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

The following table provides a reconciliation of the summarized financial information of the associates and joint ventures to the carrying amount of its interest in the associates and joint ventures.

(in millions of Korean won)

	2016						
	Net assets at the end of the year	Percentage of ownership (%)	Group's share in net assets	Adjustment amounts			Book amount
				Goodwill	Internal transactions and others		
Associates¹							
Guang Dong Xingpu Steel Center Tamra Offshore Wind Power Co., Ltd.	₩ 6,286	21.05	₩ 1,323	₩ -	₩ -	₩ -	1,323
DSDMP	26,877	36.00	9,675	-	-	-	9,675
Shinbundang Railroad Co., Ltd.	28,184	10.80	3,043	-	-	-	3,043
Kyunggi Railroad Co., Ltd.	50,878	29.03	14,770	-	-	-	14,770
Neo Trans Co., Ltd.	25,756	7.35	1,893	-	-	-	1,893
New Seoul Railroad Co., Ltd.	44,309	42.86	18,991	-	-	-	18,991
KIAMCO	31,206	25.05	7,818	-	19	-	7,837
	73,719	31.41	23,155	-	(6)	-	23,149
Joint ventures¹							
Sichuan Kelun-Doosan Biotechnology Company Limited	5,874	50.00	2,937	-	-	-	2,937
Doosan PSI LLC	2,378	50.00	1,189	-	-	-	1,189
Doosan Infracore Liaoning Machinery Sales Co., Ltd.	627	43.00	270	-	(136)	-	134

¹ Adjustments on Haman Industrial Complex Company were not included as the Group discontinued using equity method.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)

				2015		
				Adjustment amounts		
	Net assets at the end of the year	Percentage of ownership (%)	Group's share in net assets	Goodwill	Internal transactions and others	Book amount
Associates¹						
Guang Dong Xingpu Steel Center	₩ 19,384	21.05	₩ 4,080	₩ -	₩ -	₩ 4,080
Doosan Eco Biznet	737	29.79	219	-	-	219
Tamra Offshore Wind Power Co., Ltd.	26,715	36.00	9,617	-	-	9,617
DSDMP	31,972	10.80	3,453	-	-	3,453
Shinbundang Railroad Co., Ltd.	92,217	29.03	26,770	-	-	26,770
Kyunggi Railroad Co., Ltd.	66,688	7.91	5,277	-	-	5,277
Neo Trans Co., Ltd.	35,999	42.86	15,429	-	-	15,429
New Seoul Railroad Co., Ltd.	1,252	32.65	409	202	-	611
Joint ventures¹						
Sichuan Kelun-Doosan Biotechnology Company Limited	5,804	50.00	2,902	-	-	2,902
Doosan PSI LLC	2,507	50.00	1,254	-	-	1,254

¹ Adjustments on Haman Industrial Complex Company were not included as the Group discontinued using equity method.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

12. Property, Plant and Equipment

Changes in property, plant and equipment for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016					
	Land	Buildings and structures	Machinery	Others	Construction in progress	Total
Opening net book amount	₩ 5,375,970	₩ 1,712,041	₩ 1,086,848	₩ 361,919	₩ 259,277	₩ 8,796,055
Acquisition / capital expenditures	2,319	76,046	57,521	85,924	297,050	518,860
Reclassification	(4,031)	36,160	158,879	13,618	(270,282)	(65,656)
Disposal	(15,515)	(17,990)	(10,190)	(7,494)	(3,756)	(54,945)
Depreciation	(43)	(97,276)	(224,741)	(96,943)	-	(419,003)
Impairments	-	(5,709)	(14,782)	(977)	(279)	(21,747)
Transfer of business ¹	(499,007)	(112,495)	(41,275)	(15,687)	(403)	(668,867)
Others ²	3,316	7,289	2,541	(20,424)	(377)	(7,655)
Closing net book amount	₩ 4,863,009	₩ 1,598,066	₩ 1,014,801	₩ 319,936	₩ 281,230	₩ 8,077,042
Acquisition cost	₩ 3,298,906	₩ 2,668,310	₩ 3,325,990	₩ 1,071,485	₩ 281,230	₩ 10,645,921
Accumulated depreciation (accumulated impairment losses are included)	-	(1,070,244)	(2,311,189)	(751,549)	-	(4,132,982)
Accumulated revaluation surplus	1,564,103	-	-	-	-	1,564,103

¹ Merger, acquisition of subsidiaries and transfer of business (See Notes 37 and 38).

² Changes from exchange differences and others.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)	2015					
	Land	Buildings and structures	Machinery	Others	Construction in progress	Total
Opening net book amount	₩ 4,907,520	₩ 1,910,384	₩ 1,210,545	₩ 331,143	₩ 223,935	₩ 8,583,527
Acquisition / capital expenditures	26,959	13,860	51,084	82,965	272,417	447,285
Reclassification	19,379	(8,259)	133,312	21,465	(192,500)	(26,603)
Disposal	(1,957)	(10,163)	(12,646)	(4,435)	-	(29,201)
Net increase (decrease) in revaluation	559,019	-	-	-	-	559,019
Depreciation	(43)	(102,886)	(243,142)	(112,074)	-	(458,145)
Impairments	(870)	(77,798)	(41,021)	(18,267)	-	(137,956)
Transfer of business ¹	(123,449)	(8,902)	(5,053)	59,010	-	(78,394)
Others ²	(10,588)	(4,195)	(6,231)	2,112	(44,575)	(63,477)
Closing net book amount	₩ 5,375,970	₩ 1,712,041	₩ 1,086,848	₩ 361,919	₩ 259,277	₩ 8,796,055
Acquisition cost	₩ 3,595,803	₩ 2,781,534	₩ 3,430,012	₩ 1,150,046	₩ 259,277	₩ 11,216,672
Accumulated depreciation (accumulated impairment losses are included)	-	(1,069,493)	(2,343,164)	(788,127)	-	(4,200,784)
Accumulated revaluation surplus	1,780,167	-	-	-	-	1,780,167

¹ Merger, acquisition of subsidiaries and transfer of business (See Notes 37 and 38).

² Changes from exchange differences and others.

The Group recognized the land subsequently measured at revaluation amount; and if the land were stated at cost, the land would amount to ₩3,298,906 million and ₩3,595,803 million as at December 31, 2016 and 2015, respectively.

As at December 31, 2016, a certain portion of the Group's land and buildings are pledged as collaterals for loans from KDB and others (See Note 34).

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

Details of revaluation model, which the Group applies to measurement of the land are as follows:

For the year ended December 31, 2016, the Group measured all land assets using revaluation model. As at December 31, 2015, the fair value of land assets was determined from the appraisal that was undertaken by independently qualified valuers, the First Appraisal & Consulting Co., Ltd ("FACC") and Mirae & Saehan Appraisal Co., Ltd., on October 31, 2015.

FACC and Mirae & Saehan Appraisal Co., Ltd. are members of Korea Association of Property Appraisers and comprise of certified professionals that have a significant amount of industry experience.

Fair value hierarchy classifications of the land as at December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016			2015		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
Land	₩ -	₩ -	₩ 4,863,009	₩ -	₩ -	₩ 5,375,970

Valuation techniques and inputs used for fair value measurement of land (level 3) are as follows:

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

There are no significant differences between the fair value of land in 2016 and revalued amount in 2015.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Capitalized borrowing costs for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016	2015
Capitalized borrowing cost	₩ 7,440	₩ 2,286
Capitalization interest rate	3.60~4.47%	3.66~4.49%

Classification of depreciation expenses for the periods ended December 31, 2016 and 2015, is as follows:

<i>(in millions of Korean won)</i>	2016	2015
Cost of sales	₩ 344,180	₩ 389,488
Selling and administrative expenses	43,782	41,861
Research and development cost and others	20,093	25,638
Profit for the period from discontinued operations	10,948	1,158
	<u>₩ 419,003</u>	<u>₩ 458,145</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

13. Intangible Assets

Changes in intangible assets for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of Korean won)

	2016				
	Goodwill	Industrial rights	Development costs	Other intangible assets	Total
Opening net book amount	₩ 4,687,119	₩ 1,160,263	₩ 905,282	₩ 272,677	₩ 7,025,341
Acquisition / capital expenditures	-	406	244,689	33,546	278,641
Reclassification	-	-	(7,911)	32,163	24,252
Disposal	-	(17)	-	(3,505)	(3,522)
Amortization	-	(17,819)	(126,668)	(77,092)	(221,579)
Impairments	(3,579)	-	(54,707)	(1,758)	(60,044)
Reversal of impairment loss	-	-	-	18	18
Business combinations and others ¹	(132,229)	(910)	(13,693)	(6,811)	(153,643)
Others ²	23,356	18,992	(1,184)	23,550	64,714
Closing net book amount	<u>₩ 4,574,667</u>	<u>₩ 1,160,915</u>	<u>₩ 945,808</u>	<u>₩ 272,788</u>	<u>₩ 6,954,178</u>
Acquisition cost	₩ 4,574,667	₩ 1,336,335	₩ 1,469,433	₩ 708,364	₩ 8,088,799
Accumulated amortization (accumulated impairment losses are included)	-	(175,420)	(523,625)	(435,576)	(1,134,621)

¹ Merger, acquisition of subsidiaries and transfer of business (See Notes 37 and 38).

² Changes from exchange differences and others.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)

	2015				
	Goodwill	Industrial rights	Development costs	Other intangible assets	Total
Opening net book amount	₩ 4,806,911	₩ 1,149,595	₩ 908,125	₩ 308,779	₩ 7,173,410
Acquisition / capital expenditures	-	2,960	241,444	21,255	265,659
Reclassification	-	208	(7,181)	47,239	40,266
Disposal	-	(44)	-	(2,115)	(2,159)
Amortization	-	(17,842)	(125,645)	(87,017)	(230,504)
Impairments	(42,112)	(6)	(121,758)	(33,364)	(197,240)
Reversal of impairment loss	-	-	-	74	74
Business combinations and others ¹	40,889	-	-	15,477	56,366
Others ²	(118,569)	25,392	10,297	2,349	(80,531)
Closing net book amount	₩ 4,687,119	₩ 1,160,263	₩ 905,282	₩ 272,677	₩ 7,025,341
Acquisition cost	₩ 4,687,119	₩ 1,311,520	₩ 1,618,822	₩ 904,935	₩ 8,522,396
Accumulated amortization (accumulated impairment losses are included)	-	(151,257)	(713,540)	(632,258)	(1,497,055)

¹ Merger, acquisition of subsidiaries and transfer of business (See Notes 37 and 38).

² Changes from exchange differences and others.

The book amount of membership with indefinite useful lives in other intangible assets item is ₩53,359 million and ₩42,646 million as at December 31, 2016 and 2015, respectively. Meanwhile, expenditure on research and development, which was recognized as an expense, amounted to ₩270,716 million and ₩359,194 million for the periods ended December 31, 2016 and 2015, respectively.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Details of impairment test of goodwill, are as follows:

Goodwill allocated to the CGU as at December 31, 2016 and 2015, are as follows:

(in millions of
Korean won)

	CGUs	2016	2015	Description
Doosan	Mottrol BG	₩ 84,562	₩ 84,562	Manufacturing and sale of hydraulic components
	Industrial Vehicle BG	79,175	84,600	Manufacturing and sale of industrial vehicles
	Fuel Cell BG	42,521	42,151	Manufacturing and sale of fuel cell
DHC	Power Generation	619,233	616,092	Manufacturing and sale of power generation
	Water	6,786	6,803	Manufacturing and sale of desalination and water treatment plants
DI	Construction Machinery	3,671,278	3,694,957	Manufacturing and sale of construction machinery and others
DEC	Construction industry	60,049	72,781	Housing and infrastructure construction
DST	Defence industry	-	74,110	Defense industry
Oricom Inc.	Magazine	1,373	1,373	Providing advertising
	Advertising	9,690	9,690	services
		<u>₩ 4,574,667</u>	<u>₩ 4,687,119</u>	

The recoverable amount of a CGU is determined based on a value-in-use calculation and a discount rate used as follows:

Company	CGUs	Discount rate	Long-term growth rate
Doosan	Mottrol BG	9.80%	1.00%
	Industrial vehicle BG	7.60%	0.00%
	Fuel Cell BG	11.90%	1.00%
DHC	Power generation	9.55%	2.00%
	Water	9.55%	2.00%
DI	Construction machinery	8.50~9.40%	2.00%
DEC	Construction industry	10.00%	1.00%
Oricom Inc.	Magazine	11.00%	0.00%
	Advertising		1.00%

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

The Group uses cash flow projections based on financial budgets approved by management covering a five-year period for a value-in-use calculation. The financial budgets are determined based on historical result and expectation of market growth. Cash flows beyond that a five-year period have been estimated expected growth rate, and the growth rate does not exceed long-term average growth rate of market. The discount rates used reflect relevant risks specific to the CGUs.

The Group calculated recoverable amount based on value-in-use calculations. The book amount of goodwill of Doosan Mecatec Co., Ltd, exceeded recoverable amount. Accordingly, impairment loss of ₩3,579 million is recognized for the year ended December 31, 2016.

The recoverable amount may change according to changes in key assumptions. Accordingly, the Group's management regularly observes relevant turnovers and industrial trends.

Capitalized borrowing costs for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korea won)</i>	2016	2015
Capitalized borrowing cost	₩ 12,268	₩ 9,051
Capitalization interest rate	3.60 ~ 4.47%	3.88 ~ 4.49%

Classification of amortization expense for the periods ended December 31, 2016 and 2015, is as follows:

<i>(in millions of Korea won)</i>	2016	2015
Cost of sales	₩ 134,104	₩ 138,288
Selling and administrative expenses	84,955	91,181
Research and development cost and others	883	905
Profit for the period from discontinued operations	1,637	130
	<u>₩ 221,579</u>	<u>₩ 230,504</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

14. Investment Properties

Changes in investment properties for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korea won)</i>	2016			2015		
	Land	Building	Total	Land	Building	Total
Beginning balance	₩ 212,958	₩ 120,283	₩ 333,241	₩ 327,030	₩ 152,425	₩ 479,455
Acquisition / capital expenditures	505	7,791	8,296	3,148	64	3,212
Disposal	(24,778)	(11,513)	(36,291)	(685)	(6,030)	(6,715)
Fair value gain (loss)	4,095	(4,564)	(469)	9,474	(21,008)	(11,534)
Reclassification	(97)	(15,478)	(15,575)	(130,666)	(5,168)	(135,834)
Others ¹	803	-	803	4,657	-	4,657
Ending balance	₩ 193,486	₩ 96,519	₩ 290,005	₩ 212,958	₩ 120,283	₩ 333,241

¹ Changes from exchange differences and others.

Certain of the Group's land and buildings included in the above investment properties are pledged as collaterals for borrowings from KEB Hana Bank and others (See Note 34).

During the year ended December 31, rental income from investment properties is ₩ 42,150 million (2015: ₩ 48,205 million).

Details of fair value model that the Group applies to measurement of investment properties are as follows:

For the year ended December 31, 2016, the Group measured all investment properties using revaluation model. As at December 31, 2016, the fair value of investment properties was determined from the appraisal that was undertaken by independently qualified valuers, the First Appraisal & Consulting Co., Ltd ("FACC") and Mirae & Saehan Appraisal Co., Ltd., on November 30, 2016.

FACC and Mirae & Saehan Appraisal Co., Ltd. are members of Korea Association of Property Appraisers and comprise of certified professionals who have a significant amount of industry experience.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Fair value hierarchy classifications of investment properties as at December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016			2015		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
Land	₩ -	₩ -	₩ 193,486	₩ -	₩ -	₩ 212,958
Buildings	-	-	96,519	-	-	120,283

Valuation techniques and inputs used for fair value measurement of land assets (level 3) are as follows:

Valuation technique	Significant and unobservable inputs	Correlation between unobservable inputs and fair value arguments
OARLP approach : OARLP of similar parcels nearby the subject land and reflating corrections are necessary for differences between the subject and the comparable.	Fluctuation rate of land price and others	Fair value increases (decreases) if rate of land price increases (decreases).
	Parcel conditions and others	Fair value increases (decreases) if correction of parcel conditions and others increases (decreases).
	Land conditions affecting the sales price and others	Fair value increases (decreases) if correction of land conditions affecting the sales price increases (decreases).
Sales comparison approach : Fair value is based on sales comparison of a similar object based on marketability with target object, while measuring fair value as compared with circumstance correction, time correction and individual factors.	Circumstance correction	Fair value increases (decrease) if circumstance correction increases (decreases).
	Regional factors	Fair value increases (decrease) if regional factors increase (decrease).
	Comparative value of individual factors	The comparative value of individual factors increases (decreases) if the fair value increases (decreases).
Estimated cost price approach: Fair value is based on depreciation and replacement costs considered with structure, building materials, construction condition, building equipment, end use, present condition and management condition.	Replacement cost	Fair value decreases (increase) if replacement cost increases (decreases).

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

15. Bonds and Borrowings

Details of bonds and borrowings as at December 31, 2016 and 2015, are as follows:

(a) Bonds

<i>(in millions of Korean won)</i>	Annual interest rate (%)	2016	2015
Public subscription bond	2.38~5.27	₩ 2,077,434	₩ 2,892,788
Private subscription bond ¹	1.77~5.50	535,000	390,000
Exchangeable bond	-	-	115,656
Convertible bonds	3.20~4.00	152,630	311,112
Bonds with stock warrants	3.00	143,423	-
Bonds denominated in foreign currencies ²	2.13~3.80	737,185	585,999
		<u>3,645,672</u>	<u>4,295,555</u>
Less: conversion rights adjustment		(17,524)	(2,471)
Less: exchange rights adjustment		(9,998)	(28,370)
More: premium on bonds		30,658	54,439
Less: discount on bonds		(26,264)	(22,409)
Less: current portion of long-term bonds		<u>(1,535,144)</u>	<u>(1,499,290)</u>
		<u>₩ 2,087,400</u>	<u>₩ 2,797,454</u>

¹ Property, plant and equipment and others are pledged as collaterals for bonds (See Note 34).

² The Group is provided with guarantee for public subscription bond in foreign currencies by the Korea Exim Bank and others (See Note 33).

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Detailed terms on issuance of convertible notes and bonds with warrants issued by Group's subsidiary, DEC, are as follows:

Details	Convertible bonds(84 th) ¹	Convertible bonds(85 th) ¹	Bonds with stock warrants ²
Issue date	2014.9.4	2015.6.11	2016.6.24
(Maturity date)	(2017.9.4)	(2018.6.11)	(2019.6.24)
Coupon rate	4.00%	3.20%	3.00%
Guaranteed return	7.50% (111.6534% of principal)	6.50% (110.8345% of principal)	6.00% (109.7809% of principal)
Exercise period	From one month after date of issue to one month before maturity	From one month after date of issue to one month before maturity	From one month after date of issue to one month before maturity
Exercise price	₩8,190 per share	₩6,000 per share	₩3,615 per share
Issuing price	₩190,798 million	₩143,560 million	₩143,019 million
The option of redemption	Right exercisable after one and a half years and two and a half years from the day of issue	Right exercisable after two years and two and a half years from the day of issue	Right exercisable after two years and two and a half years from the day of issue
The modification of exercise price	Exercising price adjustable due to capital increase with consideration, share dividends and others	Exercising price adjustable due to capital increase with consideration, share dividends and others	Exercising price adjustable due to capital increase with consideration, share dividends and others
Share for conversion	Ordinary share of DEC	Ordinary share of DEC	Ordinary share of DEC

¹As at December 31, 2016, 14.74% of principal amount of convertible bonds (84th) and 7.27% of principal amount of convertible bonds (85th) have been converted as a result of exercise of conversion rights. Accordingly, accumulated shares in issuance are 2,896,156 shares and 1,545,853 shares, respectively, as a result of exercise of conversion rights.

²As at December 31, 2016, 4.51% of stock warrants have been exercised and 4.38% of principal amount of debentures have been under substitution payment. 1,485,504 shares are issued as a result of stock warrants exercised on bonds with warrants.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(b) Short-term borrowings

(in millions of Korean won)

Line item ¹	Creditor	Annual interest rate (%)	2016 ²	2015
Borrowings in Korean won:				
Doosan	Korea Exim Bank and others	2.79 ~ 6.98	₩ 716,100	₩ 488,380
	Discount of notes receivable ³	-	4,306	2,276
DHC	KDB and others	2.77 ~ 4.80	725,000	1,168,081
	Discount of notes receivable ³	-	25,790	23,008
DI	Korea Exim Bank and others	3.30 ~ 5.86	495,419	545,901
DEC	Woori Bank and others	1.43 ~ 7.95	202,858	506,608
	Discount of notes receivable ³	-	14,438	76,690
DE	KDB and others	3.30 ~ 5.19	44,200	50,000
Doosan Cuvex Co., Ltd	Woori Bank and others	3.62 ~ 5.32	14,000	-
			<u>2,242,111</u>	<u>2,860,944</u>
Borrowings in foreign currency:				
Doosan	Woori Bank and others	1.36 ~ 4.83	222,176	146,054
DHC	Woori Bank and others	0.10 ~ 11.70	901,698	827,038
DI	KDB and others	0.72 ~ 9.06	375,233	637,967
	Sale of bonds in foreign currency ³	-	93,904	84,798
DEC	KDB and others	0.36 ~ 2.00	5,749	39,868
DE	Korea Exim Bank and others	1.72 ~ 4.99	7,240	13,803
	Discount of notes receivable ³	-	-	6,304
			<u>1,606,000</u>	<u>1,755,832</u>
			<u>₩3,848,111</u>	<u>₩4,616,776</u>

¹ Includes the Parent Company's domestic and foreign subsidiaries (excluding DHC and its subsidiaries) and consolidated subsidiaries.

² Property, plant and equipment and others are pledged as collaterals for borrowings (See Note 34).

³ As discounting of commercial papers with recourse do not qualify for derecognition of a financial instrument, the Group continues to recognize the related receivables and accounted for the related amounts received as short-term borrowings.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(c) Long-term borrowings

(in millions of Korean won)

Line item ¹	Creditor	Annual interest rate (%)	2016 ²	2015
Borrowings in Korean won:				
Doosan	KDB and others	2.30 ~ 5.17	₩ 261,589	₩ 296,635
DHC	KDB and others	3.00 ~ 5.02	1,075,903	787,801
DI	KDB and others	3.90 ~ 4.98	55,000	300,667
DEC	Doosan E&C Second Co., Ltd.	6.46, CD+4.73	82,000	102,412
DE	KDB and others	3.48 ~ 4.42	75,000	75,000
			<u>1,549,492</u>	<u>1,562,515</u>
Borrowings in foreign currency:				
		1.74 ~ 3m		
Doosan	Korea Exim Bank and others	libor+2%	203,384	256,500
	National Bank of Abu Dhabi			
DHC	and others	2.43 ~ 10.30	385,912	414,211
DI	JP Morgan and others	0.23 ~ 8.00	1,958,087	2,548,131
			<u>2,547,383</u>	<u>3,218,842</u>
			<u>4,096,875</u>	<u>4,781,357</u>
	Less: present value discounts		(30,783)	(32,790)
	Less: current portion of long-term borrowings		<u>(1,178,915)</u>	<u>(1,033,279)</u>
			<u>₩2,887,177</u>	<u>₩3,715,288</u>

¹ Includes the Parent Company's domestic and foreign subsidiaries (excluding DHC and its subsidiaries) and consolidated subsidiaries.

² Property, plant and equipment and others are pledged as collaterals for borrowings (See Note 34).

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(d) Asset-backed loans

Asset-backed loans for future receivables from various construction project and others of the Group are as follows:

(in millions of Korean won)

Entity's name	Creditor	Annual interest rate (%)	2016 ¹	2015
DHC	KDB and others	3.29~5.50	₩377,000	₩165,000
DEC	Shinyoung Securities Co.,Ltd. and others	5.50~8.59	307,300	383,600
			<u>684,300</u>	<u>548,600</u>
	Less: present value discounts		(4,337)	(4,148)
	Less: current portion of long-term borrowings		<u>(432,988)</u>	<u>(394,044)</u>
			<u>₩ 246,975</u>	<u>₩ 150,408</u>

¹ Property, plant and equipment and others are pledged as collaterals for borrowings (See Note 34).

16. Net Defined Benefit Liabilities

The Group partially operates a defined benefit plan for employees, and the actuarial valuation of plan assets and the defined benefit obligations are performed by a reputable actuary using the projected unit credit method.

Details of net defined benefit liabilities as at December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016	2015
Present value of defined benefit obligations	₩ 2,577,100	₩ 2,538,128
Fair value of plan assets ¹	<u>(1,655,553)</u>	<u>(1,571,665)</u>
Net defined benefit liabilities	<u>₩ 921,547</u>	<u>₩ 966,463</u>

¹ The contributions to the National Pension Fund of ₩ 1,682 million are included in the fair value of plan assets as at December 31, 2016 (2015: ₩ 1,947 million).

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Post-employment benefits recognized in the consolidated statements of profit or loss for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016	2015
Current service cost	₩ 118,779	₩ 133,028
Net interest cost	36,560	40,783
Effect of downscale and liquidation	(3,834)	2,977
	<u>₩ 151,505</u>	<u>₩ 176,788</u>

Classification of post-employment benefits recognized in the consolidated statements of profit or loss for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016	2015
Cost of sales	₩ 86,287	₩ 87,965
Selling and administrative expenses	51,259	59,874
Research and development cost and others	10,475	13,849
Profit for the period from discontinued operations	3,484	16,295
	<u>₩ 151,505</u>	<u>₩ 176,788</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Movements in the net defined benefit liabilities for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016		
	Defined benefit obligations	Plan assets	Net defined benefit liabilities
Beginning balance	₩ 2,538,128	₩ (1,571,665)	₩ 966,463
Current service cost	118,779	-	118,779
Interest expense (income)	83,219	(46,659)	36,560
Effect of downscale and liquidation	(5,215)	1,381	(3,834)
	<u>196,783</u>	<u>(45,278)</u>	<u>151,505</u>
Remeasurements:			
Return on plan assets (excluding amounts included in interest income)	-	(113,191)	(113,191)
Actuarial gain from change in demographic assumptions	(3,503)	-	(3,503)
Actuarial gain from change in financial assumptions	218,511	-	218,511
Others	(13,976)	-	(13,976)
	<u>201,032</u>	<u>(113,191)</u>	<u>87,841</u>
Transfer in/out	(46)	1,104	1,058
Business combination	(136,363)	96,068	(40,295)
Contributions by employee	2,623	(2,569)	54
Contributions by employer directly to plan assets	-	(212,145)	(212,145)
Benefit payments	(125,207)	106,910	(18,297)
Others	(99,850)	85,213	(14,637)
Ending balance	<u>₩ 2,577,100</u>	<u>₩ (1,655,553)</u>	<u>₩ 921,547</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)

	2015		
	Defined benefit obligations	Plan assets	Net defined benefit liabilities
Beginning balance	₩ 2,606,142	₩ (1,521,102)	₩ 1,085,040
Current service cost	133,028	-	133,028
Interest expense (income)	90,769	(49,986)	40,783
Effect of downscale and liquidation	1,472	1,505	2,977
	225,269	(48,481)	176,788
Remeasurements:			
Return on plan assets (excluding amounts included in interest income)	-	52,252	52,252
Actuarial gain from change in demographic assumptions	(44,306)	-	(44,306)
Actuarial loss from change in financial assumptions	(66,546)	-	(66,546)
Others	27,716	-	27,716
	(83,136)	52,252	(30,884)
Transfer in/out	(193)	37	(156)
Business combination	(13,458)	6,286	(7,172)
Contributions by employee	2,611	(2,486)	125
Contributions by employer directly to plan assets	-	(197,390)	(197,390)
Benefit payments	(266,152)	171,210	(94,942)
Others	67,045	(31,991)	35,054
Ending balance	₩ 2,538,128	₩ (1,571,665)	₩ 966,463

The significant actuarial assumptions as at December 31, 2016 and 2015, are as follows:

(in percentage, %)	2016	2015
Discount rate	1.20 ~ 7.72	1.30 ~ 7.73
Salary growth rate	2.00 ~ 8.00	2.00 ~ 8.00

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Plan assets as at December 31, 2016 and 2015, consist of:

<i>(in millions of Korean won)</i>	2016		2015	
Equity securities	₩	441,389	₩	561,786
Debt securities		542,487		420,103
Deposits and others		671,677		589,776
	₩	<u>1,655,553</u>	₩	<u>1,571,665</u>

Plan assets are mostly invested in assets that have a quoted market price in an active market.

The sensitivity analysis of the defined benefit obligation as at December 31, 2016 and 2015, is as follows:

<i>(in millions of Korean won)</i>	2016				2015			
	Discount rate		Salary growth rate		Discount rate		Salary growth rate	
	1% increase	1% decrease	1% increase	1% decrease	1% increase	1% decrease	1% increase	1% decrease
Amount	₩ (273,796)	₩ 342,157	₩ 63,257	₩ (57,111)	₩ (198,937)	₩ 237,249	₩ 57,825	₩ (52,725)
Ratio	(-)10.62%	13.28%	2.45%	(-)2.22%	(-)7.80%	9.30%	2.30%	(-)2.10%

The expected maturity analysis of defined benefit obligations as at December 31, 2016, is as follows:

<i>(in millions of Korean won)</i>	Less than 1 year	Between 1- 2 years	Between 2- 5 years	Between 5- 10 years	Total
Expected contribution	₩ 149,190	₩ 236,737	₩ 526,196	₩ 891,861	₩ 1,803,984

Above maturity profile does not include estimated payments after 10 years. The Group expects to contribute ₩148,499 million for the defined benefit plans in 2017.

The expense recognized in the current period in relation to defined contribution plan was ₩ 19,949 million (2015: ₩ 22,649 million).

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

17. Provisions

Changes in provisions for other liabilities and charges for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016						
	Beginning balance	Addition	Used	Others	Ending balance	Current	Non- current
Provision for warranties	₩ 380,897	₩ 71,999	₩ (83,213)	₩ (18,062)	₩ 351,621	₩ 121,472	₩ 230,149
Provision for sales return	2,295	1,773	(1,548)	(1)	2,519	2,519	-
Provision for restoration	5,602	281	-	158	6,041	-	6,041
Provision for loss compensation	1,296	9,027	(34)	(1,229)	9,060	-	9,060
	<u>₩ 390,090</u>	<u>₩ 83,080</u>	<u>₩ (84,795)</u>	<u>₩ (19,134)</u>	<u>₩ 369,241</u>	<u>₩ 123,991</u>	<u>₩ 245,250</u>

The Group estimates expenditure required to settle the Group's obligations from product warranty, refund, related after service and others based on warranty period, historical claim rate and recognized provision. Meanwhile, the Group recognized provisions amounting to ₩ 152,668 million related to pending litigation as other liabilities.

18. Share Capital and Share Premium

Changes in share capital and share premium for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won and in shares)</i>	Number of shares		Share capital			Share premium
	Ordinary shares	Preferred shares	Ordinary shares	Preferred shares	Total	
Balance at January 1, 2015	21,270,888	5,396,759	₩107,854	₩26,984	₩134,838	₩355,736
Balance at December 31, 2015	<u>21,270,888</u>	<u>5,396,759</u>	<u>₩107,854</u>	<u>₩26,984</u>	<u>₩134,838</u>	<u>₩355,736</u>
Balance at January 1, 2016	21,270,888	5,396,759	₩107,854	₩26,984	₩134,838	₩355,736
Retirement of shares	(1,064,000)	-	-	-	-	-
Balance at December 31, 2016	<u>20,206,888</u>	<u>5,396,759</u>	<u>₩107,854</u>	<u>₩26,984</u>	<u>₩134,838</u>	<u>₩355,736</u>

The Parent Company's total number of authorized to issue shares is 400,000,000 shares with a par value of ₩5,000 per share. There is a difference arising from retirement of shares through retained earnings, and share capital is not the same as total par value of shares issued.

The number of ordinary shares that have limitation on voting right under commercial law is

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

5,276,455 shares and 5,977,528 shares as at December 31, 2016 and 2015, respectively.
Preferred share does not have voting right.

19. Capital Surplus

Details of capital surplus as at December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won):</i>	2016	2015
Share premium	₩ 355,736	₩ 355,736
Gain from merger	1,390	1,390
Revaluation reserve	277,542	277,542
Other reserves	193,114	204,236
	<u>₩ 827,782</u>	<u>₩ 838,904</u>

20. Other Components of Equity

Other components of equity as at December 31, 2016 and 2015, consist of:

<i>(in millions of Korean won)</i>	2016	2015
Treasury shares	₩ (323,456)	₩ (359,235)
Loss on sale of treasury shares	(16,738)	(16,738)
Stock option	12,296	18,426
Loss on capital reduction	(127,319)	(127,319)
Others	(38,463)	(37,556)
	<u>₩ (493,680)</u>	<u>₩ (522,422)</u>

The Group held treasury shares for the purpose of stabilizing the share price and changes in treasury shares for the year ended December 31, 2016, are as follows:

<i>(in shares and in millions of Korean won)</i>	Number of treasury shares			Book amount of treasury shares		
	Ordinary share	Preferred share	Total	Ordinary share	Preferred share	Total
Beginning balance	5,977,528	673,054	6,650,582	₩344,183	₩15,052	₩359,235
Acquisition	362,927	-	362,927	27,767	-	27,767
Disposal (retirement of shares)	(1,064,000)	-	(1,064,000)	(63,546)	-	(63,546)
Ending balance	<u>5,276,455</u>	<u>673,054</u>	<u>5,949,509</u>	<u>₩308,404</u>	<u>₩15,052</u>	<u>₩323,456</u>

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

The Group has granted stock options to its directors several times. Stock options are settled based on the Board of Directors' decision by issuance of new share, treasury share or cash settlement. Vesting condition offers two-year service after the resolution at the shareholders' meeting.

Number of granted options as at December 31, 2016, is as follows:

(in shares and in Korean won)

	Date of grant	Number of granted options	Exercise period	Exercise price	Expected fair value at the date of grant
8th	2007.3.16	800	2010.3.16 - 2017.3.15	₩ 59,600	₩ 28,930
9th	2008.3.21	11,900	2011.3.21 - 2018.3.20	165,100	68,846
10th	2009.3.27	2,250	2012.3.27 - 2019.3.26	106,500	53,382
12th	2010.3.26	40,810	2013.3.26 - 2020.3.26	116,500	56,460
13th	2011.3.25	16,300	2014.3.25 - 2021.3.25	137,500	68,045
14th	2012.3.30	25,000	2015.3.30 - 2022.3.30	156,200	63,647
15th	2013.3.29	53,000	2016.3.29 - 2023.3.28	128,100	43,353
16th	2014.3.28	101,900	2017.3.28 - 2024.3.27	134,300	39,558

The Group measured the stock options by fair value approach. The related assumptions to measure the cost of the stock options granted are as follows:

	Risk-free interest rate	Expected option life	Expected price volatility	Expected dividend yield ratio
8th	4.79%	3.00	46.73%	0%
9th	5.18%	3.00	58.89%	0%
10th	3.71%	3.53	69.82%	22%
12th	3.82%	3.27	71.67%	35%
13th	3.66%	3.29	73.42%	40%
14th	3.57%	3.41	62.76%	43%
15th	2.45%	3.42	49.22%	46%
16th	2.88%	3.60	40.90%	48%

Risk-free interest rate is based on a three-year treasury bond yield rate.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Changes in stock options for the year ended December 31, 2016, are as follows:

<i>(in shares)</i>	Number of ordinary shares to be issued				
	Beginning	Granted	Exercised	Forfeited	Ending
8th	800	-	-	-	800
9th	21,600	-	-	(9,700)	11,900
10th	2,450	-	-	(200)	2,250
12th	68,260	-	-	(27,450)	40,810
13th	31,300	-	-	(15,000)	16,300
14th	46,200	-	-	(21,200)	25,000
15th	92,400	-	-	(39,400)	53,000
16th	110,600	-	-	(8,700)	101,900
	<u>373,610</u>	<u>-</u>	<u>-</u>	<u>(121,650)</u>	<u>251,960</u>

<i>(in millions of Korean won)</i>	Valuation amount				
	Beginning balance	Granted	Exercised	Forfeited	Ending balance
8th	₩ 23	₩ -	₩ -	₩ -	₩ 23
9th	1,487	-	-	(668)	819
10th	131	-	-	(11)	120
12th	3,854	-	-	(1,550)	2,304
13th	2,130	-	-	(1,021)	1,109
14th	2,940	-	-	(1,349)	1,591
15th	4,006	-	-	(1,708)	2,298
16th	3,854	177	-	-	4,031
	<u>₩ 18,425</u>	<u>₩ 177</u>	<u>₩ -</u>	<u>₩ (6,307)</u>	<u>₩12,295</u>

The weighted-average remaining contractual period of stock options is 5.62 years.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

21. Accumulated Other Comprehensive Income

Accumulated other comprehensive income as at December 31, 2016 and 2015, consist of:

<i>(in millions of Korean won)</i>	2016	2015
Changes in the fair value of available-for-sale financial assets	₩ (14,104)	₩ 210,997
Change in equity of equity method investments	(2,707)	(2,404)
Currency translation differences	(100,006)	(115,182)
Cash flow hedge	40,511	43,143
Revaluation surplus	588,202	632,111
	<u>₩ 511,896</u>	<u>₩ 768,665</u>

22. Retained Earnings

Retained earnings as at December 31, 2016 and 2015, consist of:

<i>(in millions of Korean won)</i>	2016	2015
Legal reserves	₩ 52,864	₩ 43,737
Discretionary reserves	51,666	74,999
Retained earnings before appropriation	1,306,129	1,238,281
	<u>₩ 1,410,659</u>	<u>₩ 1,357,017</u>

The Commercial Code of the Republic of Korea requires the Parent Company to appropriate for each financial period, as a legal reserve, an amount equal to a minimum of 10% of cash dividends paid until such reserve equals 50% of its issued share capital.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Changes in retained earnings for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016		2015	
Beginning balance	₩	1,357,017	₩	1,816,234
Profit (loss) for the period		196,568		(391,245)
Actuarial loss on retained earnings		(28,114)		(2,097)
Dividends payments		(91,267)		(72,267)
Revaluation of land		40,001		6,392
Retirement of shares		(63,546)		-
Ending balance	₩	1,410,659	₩	1,357,017

Details of dividends for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won and in share)</i>	2016			2015		
	Preferred shares (old)	Preferred shares (new)	Ordinary shares	Preferred shares (old)	Preferred shares (new)	Ordinary shares
Face value per share	₩5,000	₩5,000	₩5,000	₩5,000	₩5,000	₩5,000
Year-end dividends:						
Number of shares issued	4,411,074	985,685	20,206,888	4,411,074	985,685	21,270,888
Number of treasury shares	(620,812)	(52,242)	(5,276,455)	(620,812)	(52,242)	(5,977,528)
Shares eligible for dividends	3,790,262	933,443	14,930,433	3,790,262	933,443	15,293,360
Rate of dividend per par value	103%	102%	102%	92%	91%	91%
Dividend per share	5,150	5,100	5,100	4,600	4,550	4,550
Dividend amount						
(in millions of Korean won)	19,520	4,761	76,145	17,435	4,247	69,585
Average closing price ¹	70,480	70,200	112,300	61,300	61,175	95,050
Dividend yield	7.31%	7.26%	4.54%	7.50%	7.44%	4.79%

¹ Average of prices in the stock market for one week preceding the two business days before the record date of the shareholders' list related to above dividends.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

23. Information for Non-controlling Interests

(a) Hybrid Capital Instruments

Details of hybrid capital instruments issued by the Group's subsidiary, DI, as at December 31, 2016, are as follows:

Details	
Issue date	October 5, 2012
Value at issue	USD 500,000,000
Maturity	30 years revolving
Dividends condition	-Amount: 3.25% at par value, resets every 5 years, and 5% and 2% will be added after 5 and 7 years, respectively, according to a "Step up" clause. -Payment: Dividends are paid at the end of every six months, optional deferral of distributions is available.
Other	-DI can exercise a call option every 6-month after five year from issuance. - If the Group did not exercise a call option, the holder of hybrid capital instruments can exercise put option Core Partners Limited.

If investors exercise their put option and Core Partners Limited, an SPE, acquires the instruments after 5 years since the issue date, the SPE has a right to put the instruments back to DI (the "Stock Exchange Right") under which the SPE can exchange a unit of the instrument with a par value of \$ 15.4 for one share of DI's common stock. The hybrid instruments are classified as equity as of December 31, 2016 as they do not contain a contractual obligation for DI to settle in cash and the Stock Exchange Right confers a right to receive a fixed number of DI's common stock at the issue date.

Details of hybrid capital instruments issued by the Group's subsidiary, DPS.S.A., as at December 31, 2015, are as follows:

Details	
Issue date	December 3, 2015
Value at issue	USD 300,000,000
Maturity	30 years revolving
Dividends condition	-Amount: 2.5% at par value, resets once after 3 years, and 1.3% will be added after 3 years, according to a "Step up" clause. -Payment: Dividends are paid at the end of every six months, optional deferral of distributions is available.
Other	-DPS S.A can exercise a call option on the instrument 3 years after the issue date - The guarantee financial institution, Korea Exim Bank has to retain all

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

of the hybrid instruments owned by investors, if DPS.S.A does not exercise its call option (Non-call Put right).

If Korea Exim Bank gets to retain the hybrid instruments as the investors exercise the non-call put rights after 3years, Korea Exim Bank is awarded exchange rights, which allow an exchange of the hybrid instruments with equity shares of DHC. Korea Exim Bank, when it elects to exercise the exchange rights, is entitled to either i) an exchange of par value of USD 19.1 on the hybrid instrument with one share of common stock, or ii) a cash settlement at the issue price of USD 300 million, at DHC's decision. In this regard, DHC has provided as collateral 75,509,366 shares of DI stock and 29,650,000 shares of DE stock to Korea Exim Bank. DHC assessed that the hybrid instruments are equity securities as the instruments are exchangeable with DHC's equity securities or settled in cash at the DHC's decision when the exchange rights are exercised by Korea Exim Bank.

(b) Redeemable convertible preference shares

Details of redeemable convertible preference shares issued by the Group's subsidiary, DEC, as at December 31, 2016, are as follows:

Details	
Issue date	December 16, 2013
Issue purpose	For securement of liquidity and improvement of financial structure
Issued shares	Cumulative non-participating preferred stock
Total number of outstanding shares	22,727,272 shares
Issue price per share	₩ 17,600
Voting right	No voting right is awarded. However, in the case where no dividend for preferred stock is declared at the shareholders' meeting, the preferred shareholders are awarded one voting right per share from the next shareholders' meeting up to the shareholders' meeting where dividend payment for preferred stock is declared.
Rate of dividend	Annual 6.5% of the issue price
Redemption right	-Redemption: On December 16, 2016, if there is profit available for dividends, DEC can redeem all or some portion of preferred stock. -Early settlement: On December 16, 2015, if there is profit available for dividends, DEC can redeem all or some portion of preferred stock (limited to 30% of total issued amount).
Conversion right	-Conversion right : Both preferred stockholders and DEC hold conversion rights. However, only preferred stockholders may exercise early conversion rights. -Conversion period: From March 16, 2017 to March 15, 2018 -Early conversion: Preferred stockholders can convert on December 16, 2015 and 2 business days prior to such date

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

-Conversion ratio: 1 share of preferred shares issued is converted to 1 share of ordinary shares.

The Group has the redemption rights in connection with the above redeemable convertible preferred stock. As the Group has no contractual obligation to settle in cash or other financial assets, the redeemable convertible preferred stock is classified as equity securities. In the year ended December 31, 2016, DHC purchased whole amount of convertible preferred stock. It doesn't not appear in non-controlling interest, as netting.

Details of redeemable convertible preference shares issued by the Group's subsidiary, DHC, as at December 31, 2016, are as follows:

Details

Issue date	November 25, 2014
Issue purpose	For improvement of financial structure
Issued shares	Cumulative non-participating preferred stock
Total number of outstanding shares	13,203,540 shares
Issue price per share	₩ 28,250
Voting right	Preferred stock has one voting right per share, same as common stock, and when a resolution of shareholders' meeting is unfavorable to the preferred stock, such resolution must be also approved at the preferred stockholders' meeting.
Rate of dividend	Annual 3.3% of the issue price (after 5 years, 0.75% will be added annually on the index of 5-year average rate of returns posted by the private bond value appraisal institutions)
Redemption right	-1 ~ 5 years: early redemption is available to the extent of 10% of total preferred stock with 10% plus issuance price. -Redemption at year 5: redeemable all or some portion of preferred stock 5 years after the payment date. (At issue price plus 5.48% per annum less prepaid dividends) -5 ~ 10 years: redeemable with adjusted amount based on the rate of returns posted by the private bond value appraisal institutions.
Conversion right	-Conversion right: Convertible all or some portion of preferred stocks -Conversion period: From one to 10 years from the contribution date -Conversion ratio: 1 share of preferred shares issued is converted to 1 share of ordinary shares

DHC, a subsidiary of the Group has the redeemable right in connection with the above RCPS and there are no contractual obligations for DHC to pay in cash and/or other financial assets. Therefore, DHC classified the RCPS as equity.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

24. Operating Segment Information

The Group is engaged in various businesses, such as heavy industry, machinery manufacturing, apartment construction industry and service industry; key products and services of each division are as follows:

Business segment	Main products and services
Electro-Materials BG	Copper-clad laminates and others
Mottrol BG	Oil hydraulic equipment and others
Industrial Vehicle BG	Forklift and others
Information and Communication BU	Development and maintenance service of information technology system and others
Others	Advertisement, manufacture and sale of industrial installations and operating condominiums, golf course and others
DHC	Generating unit, casting, forging and others
DI	Internal combustion engine, construction machinery of all kinds, transportation equipment and others
DEC	Construction of apartment buildings and others
DE	Marine engine, internal combustion engine, nuclear power plant emergency generator and others

Information on each segment for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016									
	Total sales		Inter-segment sales		Net sales		Operating profit		Profit (loss) for the period	
Electro-Materials BG	₩	999,338	₩	(199,884)	₩	799,454	₩	80,183	₩	74,894
Mottrol BG		338,710		(115,032)		223,678		11,316		2,479
Industrial Vehicle BG		902,575		(216,831)		685,744		52,151		34,444
Information and Communication BU		263,613		(249,572)		14,041		37,561		29,309
Others		1,375,738		(390,051)		985,687		133,471		432,288
DHC		6,553,646		(502,762)		6,050,884		286,116		(223,174)
DI		7,953,616		(2,279,629)		5,673,987		490,818		115,985
DEC		1,274,566		(94,295)		1,180,271		12,795		(357,034)
DE		818,222		(21,275)		796,947		4,237		(181,226)
		20,480,024		(4,069,331)		16,410,693		1,108,648		(72,035)
Consolidation adjustments		(4,069,331)						(191,405)		122,451
	₩	16,410,693					₩	917,243	₩	50,416

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)	2015									
	Total sales		Inter-segment sales		Net sales		Operating profit		Profit (loss) for the period	
Electro-Materials BG	₩	937,942	₩	(185,726)	₩	752,216	₩	60,946	₩	47,094
Mottrol BG		299,116		(116,032)		183,084		1,007		(575)
Industrial Vehicle BG		919,964		(210,702)		709,262		54,008		34,790
Information and Communication BU		257,726		(249,428)		8,298		35,452		26,857
Others		1,111,169		(208,270)		902,899		65,807		73,382
DHC		7,082,143		(505,732)		6,576,411		261,754		(279,626)
DI		8,097,868		(2,171,339)		5,926,529		(95,087)		(859,505)
DEC		1,200,501		(44,794)		1,155,707		(127,893)		(520,746)
DE		704,089		(16,108)		687,981		(63,754)		(125,442)
		20,610,518		(3,708,131)		16,902,387		192,240		(1,603,771)
Consolidation adjustments		(3,708,131)						(121,628)		(97,039)
	₩	16,902,387					₩	70,612	₩	(1,700,810)

The above inter-segment sales are made under arm's length terms.

Segment assets and liabilities as at December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016				2015			
	Asset		Liabilities		Asset		Liabilities	
Electro-Materials BG	₩	558,306	₩	340,561	₩	515,797	₩	301,046
Mottrol BG		221,426		119,106		216,211		107,712
Industrial Vehicle BG		462,252		278,113		469,959		283,509
Information and Communication BU		124,664		80,912		110,898		67,402
Others		4,944,959		2,386,444		5,036,187		2,387,437
DHC		14,610,281		9,329,638		14,370,099		8,984,473
DI		10,026,809		6,578,432		11,383,173		8,280,217
DEC		3,030,035		1,965,359		4,225,712		2,811,405
DE		1,356,450		822,185		1,406,042		831,369
		<u>35,335,182</u>		<u>21,900,750</u>		<u>37,734,078</u>		<u>24,054,570</u>
Consolidation adjustments		<u>(6,670,377)</u>		<u>(1,136,803)</u>		<u>(6,177,768)</u>		<u>(891,785)</u>
	₩	<u>28,664,805</u>	₩	<u>20,763,947</u>	₩	<u>31,556,310</u>	₩	<u>23,162,785</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Sales information by geographical location for the periods ended December 31, 2016 and 2015, is as follows:

(in millions of Korean won)	2016			2015		
	Total sales	Inter-segment sales	Net sales	Total sales	Inter-segment sales	Net sales
Korea	₩ 9,221,381	₩ (1,973,344)	₩ 7,248,037	₩ 8,968,167	₩ (1,813,918)	₩ 7,154,249
U.S.A.	3,598,999	(504,081)	3,094,918	3,925,987	(608,795)	3,317,192
Asia	2,827,530	(453,392)	2,374,138	2,934,154	(415,096)	2,519,058
Middle East	1,131,751	(1,461)	1,130,290	1,399,848	-	1,399,848
Europe	3,545,060	(1,136,966)	2,408,094	3,349,200	(870,323)	2,478,877
Other countries	155,303	(87)	155,216	33,163	-	33,163
	<u>20,480,024</u>	<u>(4,069,331)</u>	<u>16,410,693</u>	<u>20,610,519</u>	<u>(3,708,132)</u>	<u>16,902,387</u>
Consolidation adjustments	<u>(4,069,331)</u>			<u>(3,708,132)</u>		
	<u>₩ 16,410,693</u>			<u>₩ 16,902,387</u>		

25. Revenues

Details of revenues for the periods ended December 31, 2016 and 2015, are as follows

(in millions of Korean won)	2016	2015
Sales on merchandises and finished goods	₩ 8,708,916	₩ 8,701,596
Construction contracts	7,283,645	7,796,117
Others	<u>418,132</u>	<u>404,674</u>
	<u>₩ 16,410,693</u>	<u>₩ 16,902,387</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

26. Construction Contracts

Details of the Group's accumulated construction revenue and assets and liabilities related to construction contracts as at and for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016					
	Accumulated contract revenue	Accumulated contract cost	Accumulated profit or loss	Receivables from		Due to customers
				construction contracts		
				Billed	Unbilled	
DHC	₩38,744,512	₩32,748,738	₩5,995,774	₩713,803	₩1,548,041	₩ (667,763)
DEC	7,643,392	6,733,554	909,838	1,208,749	228,130	(175,765)
DE	233,372	187,819	45,553	452	15,762	(16,562)
DPS S.A. and others	8,960,275	8,255,746	704,529	287,304	217,639	(74,036)
DST	123,298	134,672	(11,374)	-	-	-
Doosan Mecatec Co., Ltd.	1,231,229	1,094,010	137,220	60,057	145,199	(9,569)
	56,936,078	49,154,538	7,781,540	2,270,364	2,154,771	(943,695)
Inter-company transactions	(145,347)	(130,661)	(14,687)	(179,730)	10,931	33,476
Amount attributable to discontinued operation segment	(256,007)	(247,988)	(8,019)	(2,365)	(12,105)	1,532
	₩56,534,724	₩48,775,889	₩7,758,834	₩2,088,269	₩2,153,597	₩ (908,687)
(in millions of Korean won)	2015					
	Accumulated contract revenue	Accumulated contract cost	Accumulated profit or loss	Receivables from		Due to customers
				construction contracts		
				Billed	Unbilled	
DHC	₩35,901,682	₩30,572,337	₩5,329,345	₩1,121,744	₩1,427,003	₩ (736,796)
DEC	8,286,876	7,320,769	966,107	1,245,243	219,482	(261,524)
DE	226,100	177,913	48,187	-	2,331	(9,702)
DPS S.A. and others	9,717,433	8,839,573	877,860	171,555	191,903	(183,311)
DST	141,196	135,856	5,340	3,781	67,843	(5,117)
Doosan Mecatec Co., Ltd.	1,428,066	1,278,780	149,286	61,429	142,687	(9,266)
	55,701,353	48,325,228	7,376,125	2,603,752	2,051,249	(1,205,716)
Inter-company transactions	(90,010)	(81,073)	(8,937)	(135,035)	(31)	45,055
Amount attributable to discontinued operation segment	(863,336)	(765,459)	(97,877)	(27,034)	(106,080)	75,356
	₩54,748,007	₩47,478,696	₩7,269,311	₩2,441,683	₩1,945,138	₩ (1,085,305)

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Changes in the remaining balance of construction contracts for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of Korean won)			2016			
			Beginning balance	Changes	Recognized construction revenue	Ending balance
DHC	Vinh Tan 4 Thermal Power Plant and others	2012.11~2018.06	₩13,454,315	₩4,510,835	₩ (4,364,274)	₩13,600,876
DEC	Suseo-Pyungtaek high-speed rail second Construction district and others	2007.05~2019.12	6,793,342	1,154,649	(1,446,103)	6,501,887
DE	Singori No. 3-4 emergency generators and 15 others	2005.02~2017.03	85,208	(831)	(34,446)	49,931
DPS S.A. and others	Raipur and others	2008.12~2030.12	3,319,743	1,348,350	(1,442,001)	3,226,092
DST	Prototype research and development and others	2011.06~2019.05	146,868	(145,537)	(1,332)	-
Doosan Mecatec Co., Ltd.	Liwa Bullets and others	2008.04~2020.04	279,427	157,753	(291,731)	145,449
			24,078,903	7,025,220	(7,579,888)	23,524,235
Inter-company transactions			(283,799)	(169,311)	80,174	(372,936)
Amount attributable to discontinued operation segment			(738,856)	558,566	180,290	-
			₩23,056,248	₩7,414,474	₩ (7,319,424)	₩23,151,299

(in millions of Korean won)			2015			
			Beginning balance	Changes	Recognized construction revenue	Ending balance
DHC	Vinh Tan 4 Thermal Power Plant and others	2012.11~2018.06	₩13,238,961	₩4,994,325	₩ (4,778,971)	₩13,454,315
DEC	Suseo-Pyungtaek high-speed rail second Construction district and others	2007.05~2017.12	6,418,373	1,795,115	(1,420,146)	6,793,342
DE	Singori No. 3-4 emergency generators and 15 others	2005.02~2017.03	97,502	24,460	(36,754)	85,208
DPS S.A. and others	Raipur and others		1,916,543	2,954,622	(1,551,422)	3,319,743
DST	Prototype research and development and others	2008.12~2030.12	161,410	45,945	(60,487)	146,868
Doosan Mecatec Co., Ltd.	CPF Khazzan Project and others	2011.06~2018.11	317,953	283,512	(322,039)	279,427
			22,150,741	10,097,980	(8,169,819)	24,078,903
Inter-company transactions			(95,195)	(224,684)	36,080	(283,799)
Amount attributable to discontinued operation segment			(645,916)	(426,523)	333,584	(738,855)
			₩21,409,630	₩9,446,773	₩ (7,800,155)	₩23,056,248

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Changes profit or loss for the period and the succeeding year and the book value of due from customers for contracts work (excluding foreign currency translation effect) resulting from changes in total contract revenue and in total estimated contract costs for construction contracts in progress as at December 31, 2016, are as follows:

<i>(in millions of Korean won)</i>	Changes in estimated total contract revenue	Changes in estimated total contract costs	Impact on profit or loss for the period	Impact on profit or loss for the succeeding year	Changes in due from/to customers for contract work	Provision for construction loss
DHC	₩ 633,149	₩ 407,505	₩ 130,074	₩ 95,570	₩ 130,074	₩ 12,593
DE	-	1,440	(1,415)	(25)	(1,415)	-
DEC	13,376	5,470	(18,012)	33,425	(18,012)	2,176
Doosan Mecatec Co., Ltd.	3,708	1,587	1,656	464	1,656	464
	<u>650,233</u>	<u>416,002</u>	<u>112,303</u>	<u>129,434</u>	<u>112,303</u>	<u>15,233</u>
Amount attributable to discontinued operation segment	10,258	(5,538)	8,348	(58)	8,348	-
	<u>₩ 660,491</u>	<u>₩ 410,464</u>	<u>₩ 120,651</u>	<u>₩ 129,377</u>	<u>₩ 120,651</u>	<u>₩ 15,233</u>

The impact on profit or loss for the period and the succeeding year is determined based on total contract costs, which are estimated based on the circumstances present from the start of the contract to the end of current year, and the estimated contract revenue as of December 31, 2016. The total contract costs and contract revenue may change in the future.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

As of December 31, 2016, details of contracts that the revenue was recognized based on the percentage of completion measured by contract cost incurred, which is more than 5% of sales of years ended December 31, 2015 are as follows:

(in millions of Korean won)

	Contract date	Contractual completion date	Percentage-of-completion (%)	Due from customers		Trade receivables (receivables from construction contracts)	
				Accumulated impairment		Gross amount	Provision for impairment
				Gross amount	loss		
UAE BNPP No.1 and 2 NSSS	2010-06-30	2018-05-01	97	₩ -	₩ -	₩ -	-
Ras Al Khair	2010-08-31	2017-03-27	94	12,996	-	74,797	-
Nghi Son II	2014-12-24	2019-07-30	-	-	-	-	-
Vinh Tan 4 TPP	2014-02-26	2018-06-30	82	270,792	-	15,012	200
UAE BNPP No.3 and 4 NSSS	2010-06-30	2020-05-01	74	-	-	-	-
Sinhanwul No. 1 and 2 NSSS	2009-07-31	2018-02-28	94	34,486	-	-	-
Singori No 5 and 6 NSSS	2014-08-28	2022-03-31	36	-	-	-	-
Singori No. 3 and 4 NSSS	2006-08-28	2017-03-31	98	22,209	-	-	-
Yanbu Ph.3 MSF ¹	2012-12-04	2016-12-15	90	55,253	-	-	-
Qurayyah Add-On ¹	2009-09-16	2013-02-15	100	130,681	-	-	-
Fadhili CHP	2016-11-12	2019-11-30	3	-	-	-	-
Song Hau	2015-04-10	2019-10-02	33	154,219	-	234	-
Raipur Chhattisgarh TPP ¹	2010-01-22	2016-04-03	100	-	-	72,343	-

¹ The Company is negotiating to extend contract period with respective contract party.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

27. Breakdown of Expenses by Nature

Breakdown of expenses by nature for the periods ended December 31, 2016 and 2015, is as follows:

<i>(in millions of Korean won)</i>	2016	2015
Changes in inventories	₩ 606,551	₩ 96,862
Purchases of raw materials and goods	6,988,202	8,169,481
Employee benefits expenses	2,641,127	2,970,363
Depreciation and amortization	622,594	645,998
Others	4,634,976	4,949,072
Total cost of sales and administrative expenses	₩ 15,493,450	₩ 16,831,776

28. Selling and Administrative Expenses

Selling and administrative expenses for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016	2015
Salaries	₩ 701,255	₩ 707,153
Post-employment benefits	48,514	248,361
Employee benefits	132,095	145,391
Travel expenses	59,604	67,568
Sales commission	69,173	72,894
Taxes and dues	34,940	33,204
Rental expenses	51,113	47,654
Depreciation	43,782	39,275
Insurance	31,030	33,225
Entertainment expenses	11,820	12,120
Advertising expenses	63,474	75,143
Packaging expenses	10,820	12,180
Research and development	218,479	266,460
Training expenses	15,499	18,803
Freight expenses	28,613	27,309
Promotional expenses	41,540	21,887
Commission expenses	157,051	132,235
Service contract expenses	21,828	11,173
Impairment loss	28,337	319,490
Amortization	84,955	82,714

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

<i>(in millions of Korean won)</i>	2016	2015
Overseas marketing expenses	25,012	30,114
Warranty expenses	20,813	29,617
Others	59,953	45,819
	<u>₩ 1,959,700</u>	<u>₩ 2,479,789</u>

29. Finance Income and Costs

Details of finance income and costs for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016	2015
Finance income		
Interest income	₩ 48,617	₩ 46,775
Dividend income	2,494	2,514
Gain on foreign currency transactions	264,233	317,025
Gain on foreign currency translations	152,683	128,676
Gain on derivatives transactions	325,832	309,453
Gain on valuation of derivatives	104,772	141,773
Gain on valuation of firm contracts	186,909	296,705
Gain on redemption of liabilities	41	-
Gain on exemption of debt	-	351
Financial guarantee income	704	2,047
	<u>1,086,285</u>	<u>1,245,319</u>
Finance costs		
Interest expense	582,955	684,132
Loss on foreign currency transactions	283,013	277,367
Loss on foreign currency translations	223,246	318,531
Loss on derivatives transactions	264,738	292,129
Loss on valuation of derivatives	229,460	311,233
Loss on valuation of firm contracts	76,489	89,306
Loss on repayment of bonds	9,944	350
Loss on repayment of borrowings	667	1,588
Financial guarantee expenses	32,458	41,376
Others	1,759	1,046
	<u>1,704,729</u>	<u>2,017,058</u>
Finance costs, net	<u>₩ (618,444)</u>	<u>₩ (771,739)</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

30. Other Non-operating Income and Expenses

Details of other non-operating income and expenses for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016	2015
Non-operating income		
Gain on disposal of short-term investment securities ₩	14,528	₩ 5,998
Gain on disposal of long-term investment securities	231,285	13,678
Gain on disposal of investment in subsidiaries	-	29,718
Gain on disposal of property, plant and equipment	15,927	6,788
Gain on disposal of intangible assets	406	625
Gain on disposal of investment properties	469	618
Gain on valuation of investment properties	6,362	9,513
Others	102,213	54,674
	<u>371,190</u>	<u>121,612</u>
Non-operating expenses		
Loss on disposal of trade receivables	13,662	13,090
Loss on disposal of long-term investment securities	1,540	1,009
Impairment loss on long-term investment securities	32,520	655
Loss on disposal of property, plant and equipment	20,213	17,185
Loss on disposal of intangible assets	251	235
Loss on disposal of investment properties	9,379	5,636
Impairment loss on property, plant and equipment	22,834	137,956
Impairment loss on intangible assets	60,044	197,134
Loss on valuation of investment properties	6,831	21,046
Impairment loss on assets held for sale	31,399	54,983
Impairment loss on other receivables	209,989	283,517
Donations	21,606	43,112
Others	226,726	195,044
	<u>656,994</u>	<u>970,602</u>
Other non-operating expenses, net	<u>₩ (285,804)</u>	<u>₩ (848,990)</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

31. Tax Expense and Deferred Tax

Income tax expense for the periods ended December 31, 2016 and 2015, consists of:

<i>(in millions of Korean won)</i>	2016		2015	
Current tax on profits for the year	₩	251,749	₩	162,055
Deferred tax:				
Origination and reversal of temporary differences		96,517		250,226
Business combination		-		2,146
Charged or credited directly to equity		22,836		(184,914)
Others		(265)		-
Charged or credited directly to discontinued operations		(179,344)		(45,629)
Income tax expense related to continuing operations	₩	191,493	₩	183,884

The movement in deferred tax assets and liabilities during the year ended December 31, 2016 and 2015, is as follows:

(in millions of Korean won)	2016							
	Beginning balance		Changes				Ending balance	
			Profit or loss		Equity			
Inventories	₩	2,567	₩	17,388	₩	-	₩	19,955
Available-for-sale financial assets		(75,898)		27,430		36,123		(12,345)
Property, plant and equipment		(778,293)		75,086		4,005		(699,202)
Accrued expenses		15,003		64,627		-		79,630
Post-employment benefit obligations		269,955		15,143		11,456		296,554
Reserve for research and human resource		(110,157)		51,884		-		(58,273)
Investment properties		(15,162)		2,238		-		(12,924)
Others		1,247,907		(374,219)		(28,748)		844,940
Consolidation adjustment		(42,738)		1,070		-		(41,668)
	₩	513,184	₩	(119,353)	₩	22,836	₩	416,667

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)	2015									
	Beginning balance		Changes				Business combination		Ending balance	
			Profit or loss		Equity					
Inventories	₩	2,485	₩	82	₩	-	₩	-	₩	2,567
Available-for-sale financial assets		(30,947)		108		(45,059)		-		(75,898)
Property, plant and equipment		(721,413)		61,148		(118,028)		-		(778,293)
Accrued expenses		14,256		747		-		-		15,003
Post-employment benefit obligations		273,313		(20,836)		17,030		448		269,955
Reserve for research and human resource		(158,499)		48,342		-		-		(110,157)
Investment properties		(17,913)		2,751		-		-		(15,162)
Others		1,420,729		(148,245)		(26,275)		1,698		1,247,907
Consolidation adjustment		(18,601)		(11,555)		(12,582)		-		(42,738)
	₩	763,410	₩	(67,458)	₩	(184,914)	₩	2,146	₩	513,184

The Group offsets deferred tax assets and liabilities, if the Group has a legally enforceable right to set off current tax assets against current tax liabilities and the deferred tax assets against deferred tax liabilities relating to income taxes levied by the same taxation authority.

Temporary differences, net loss and tax credit carryforwards, which have not been recognized as deferred tax assets as at December 31, 2016 and 2015, are as follows:

(in millions of Korean won)	2016	2015
Deductible temporary differences	₩ 4,871,307	₩ 3,664,186

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

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Details of unrecognized deductible (taxable) temporary differences as deferred tax assets (liabilities) related to investments in subsidiaries, joint ventures and associates as at December 31, 2016 and 2015, are as follows:

<i>(in millions of Korean won)</i>	2016	2015	Remarks
Investments in subsidiaries	₩ (786,206)	₩ (117,730)	Able to control the reversal of the temporary difference
Investments in associates and joint ventures	55,494	109,235	Probable that the temporary difference will not reverse in the foreseeable future
	<u>₩ (730,712)</u>	<u>₩ (8,495)</u>	

The tax on the Group's profit before tax differs from the theoretical amount that would arise using the weighted average tax rate applicable to profits of the consolidated entities as follows:

<i>(in millions of Korean won)</i>	2016	2015
Loss before income tax expense	₩ (147)	₩ (1,627,806)
Tax at domestic tax rates applicable to profits	(36)	(393,929)
Adjustments:		
Non-temporary difference	31,691	(39,183)
Temporary difference not recognized as deferred tax	181,803	602,754
Tax credits	(21,270)	(16,851)
Effect of tax rate change	(22)	2,697
Additional income tax paid(refunded) for prior periods	(570)	31,054
Others	(105)	(2,658)
Income tax expense	<u>₩ 191,493</u>	<u>₩ 183,884</u>
Effective tax rate (Income tax expense/Loss before income tax expense) ¹	NA	NA

¹ Effective tax rate is not calculated due to net loss before income tax.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

32. Earnings per Share

(a) Basic earnings per share

Basic earnings per share for the periods ended December 31, 2016 and 2015, are as follows:

<i>(in Korean won)</i>	2016		
	Continuing	Discontinued	Total
Basic earnings (losses) per ordinary share	₩ 4,751	₩ 5,221	₩ 9,972
Basic earnings (losses) per old-type preferred share ¹	4,774	5,248	10,022

<i>(in Korean won)</i>	2015		
	Continuing	Discontinued	Total
Basic earnings (losses) per ordinary share	₩ (25,532)	₩ 5,240	₩ (20,292)
Basic earnings (losses) per old-type preferred share ¹	(25,532)	5,240	(20,292)

¹ The Group calculated earnings per share for old-type preferred share due to the nature of the share, which does not have preferred right on dividends and liquidation; therefore, the share is considered as ordinary share based on Korean IFRS 1033 'Earnings per share'.

Profit attributable to ordinary shares is as follows:

<i>(in Korean won)</i>	2016		
	Continuing	Discontinued	Total
Profit attributable to the ordinary equity holders of the Parent Company	₩ 93,647,033,760	₩ 102,921,247,627	₩ 196,568,281,387
(-)Expected dividends on new-type preferred shares	2,267,976,575	2,492,582,725	4,760,559,300
(-)Expected residual income attributable to new-type preferred shares	2,166,372,629	2,380,916,564	4,547,289,193
(-)Expected dividends on old-type preferred shares	9,299,445,330	10,220,403,970	19,519,849,300
(-)Expected residual income attributable to old-type preferred shares	8,796,594,816	9,667,754,301	18,464,349,117
Profit attributable to ordinary shares	<u>₩ 71,116,644,410</u>	<u>₩ 78,159,590,067</u>	<u>₩ 149,276,234,477</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in Korean won)	2015		
	Continuing	Discontinued	Total
Profit attributable to the ordinary equity holders of the Parent Company	₩ (492,406,441,486)	₩ 101,161,820,711	₩ (391,244,620,775)
(-)Expected dividends on new-type preferred shares	-	93,344,300	93,344,300
(-)Expected residual income attributable to new-type preferred shares	-	-	-
(-)Expected dividends on old-type preferred shares	-	-	-
(-)Expected residual income attributable to old-type preferred shares	(96,774,217,192)	19,863,311,816	(76,910,905,376)
Profit attributable to ordinary shares	<u>₩ (395,632,224,294)</u>	<u>₩ 81,205,164,595</u>	<u>₩ (314,427,059,699)</u>

The weighted-average number of ordinary shares and old-type preferred shares outstanding used in the earnings per share calculation is as follows:

(in shares)	2016		2015	
	Ordinary shares	Old-type preferred shares	Ordinary shares	Old-type preferred shares
Beginning outstanding shares	15,280,760	3,790,262	15,853,290	3,790,262
Change in treasury shares	(310,506)	-	(357,946)	-
Weighted-average number of ordinary shares outstanding	14,970,254	3,790,262	15,495,344	3,790,262

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(b) Diluted earnings per share

Diluted earnings per share for the periods ended December 31, 2016 and 2015, are as follows:

(in Korean won)

	2016					
	Continuing		Discontinued		Total	
Diluted earnings (losses) per share	₩	4,750	₩	5,221	₩	9,971
Diluted earnings (losses) per old-type preferred share		4,774		5,248		10,022

(in Korean won)

	2015					
	Continuing		Discontinued		Total	
Diluted earnings (losses) per share	₩	(25,532)	₩	5,240	₩	(20,292)
Diluted earnings (losses) per old-type preferred share		(25,532)		5,240		(20,292)

Diluted profit attributable to ordinary shares is as follows:

(in Korean won)

	2016					
	Continuing		Discontinued		Total	
Profit attributable to ordinary shares	₩	71,116,644,410	₩	78,159,590,067	₩	149,276,234,477
Share-based expense (after tax)		-		-		-
Diluted profit attributable to ordinary shares	₩	71,116,644,410	₩	78,159,590,067	₩	149,276,234,477

(in Korean won)

	2015					
	Continuing		Discontinued		Total	
Profit attributable to ordinary shares	₩	(395,632,224,294)	₩	81,205,164,595	₩	(314,427,059,699)
Share-based expense(after tax)		-		-		-
Diluted profit attributable to ordinary shares	₩	(395,632,224,294)	₩	81,205,164,595	₩	(314,427,059,699)

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

The weighted-average number of ordinary shares outstanding used in the earnings per share is calculated as follows:

<i>(in shares)</i>	2016		2015	
Weighted-average number of ordinary shares outstanding	₩	14,970,254	₩	15,495,344
Effect of stock option exercise		314		434
Adjusted weighted-average number of ordinary shares outstanding	₩	14,970,568	₩	15,495,778

Diluted earnings per share for old-type preferred share equals the basic earnings per share since there is no potential ordinary share for old-type preferred share.

Conditions for preferred shares dividends are as follows:

<i>(in Korean won, in shares)</i>	Face value		Number of shares issued
Old-type preferred share ¹	₩	5,000	4,411,074
New-type preferred share ²		5,000	985,685

¹ The Group should distribute cash dividend available to ordinary shares +1%

² The Group should distribute 2% of face value of preferred share annually. In case the dividend rate of ordinary share exceeds that of preferred share, preferred share is participated in dividend for the exceeded dividend.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

33. Contingencies and Commitments

(a) Notes, bills and checks offered in security

The Group pledged 22 face value presented notes (Face value: ₩ 16,136 million), four face value presented checks (Face value: ₩ 973 million), 19 blank notes and 40 blank checks to financial institutions as collaterals for borrowings and performance guarantee agreements.

(b) Financial covenant and others

1) DI

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 for when and if DI's guarantor, KDB, becomes privatized, and the funds required for such redemption will be provided by KDB to DI. Also, in connection with such borrowings, the Group provided 11,178,538 shares of Doosan Bobcat Inc. owned by DI as collaterals for such bonds.

As at December 31, 2016, DI, a shareholder of Doosan Infracore China Co., Ltd. ("DICC") and subsidiary of the Group, 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.

2) DEC

DEC entered into construction contracts with INTDC Co., Ltd. and Daewon Plus Constructions Co., Ltd. to develop Ilsan Zenith project and Haeundae Zenith project, respectively. DEC has provided guarantees to customers, who purchase the Ilsan Zenith and Haeundae Zenith apartments for the consideration paid to purchase the apartments during the repurchase guarantee periods (two to three years after the date of sale), should customers apply for such guarantees.

As at December 31, 2016, the Group's consolidated financial statements do not reflect the effect from such guarantees, as the Group cannot reasonably predict the number of purchasers applying for the guarantee and the related guaranteed amount.

(c) Transferred trade receivables

Outstanding trade receivables sold with recourse by the Group are in the amount of ₩ 106,225 million and ₩ 105,442 million as at December 31, 2016 and 2015, respectively. Because the Group retains some level of risks and rewards relating to trade receivables, the Group has recognized its carrying amount and cash receipt from transfer as short-term

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

borrowings in consolidated statements of financial position (See Note 15-2).

(d) *Litigation in progress*

Details of major lawsuits as at December 31, 2016, are as follows:

(in millions of Korean won)

Subsidiaries	Claim	Claimed amount
Doosan Corp.	Claims for damages and others	₩ 17,124
DHC and subsidiaries	Claims for cancelation of apartment contracts and others	321,494
DI and subsidiaries	Claims for damages and others	78,988
DEC and subsidiaries	Claims for damages and others	115,547
DE and subsidiaries	Claims for damages and others	37,496
		<u>₩ 570,649</u>

The outcome of such pending lawsuits cannot presently be determined.

In 2015, Hyundai Engineering & Construction Co., Ltd. requested International Chamber of Commerce to arbitrate disputes on manufacture of HRSG and warranties for general repairs with DEC. As at December 31, 2016, arbitration is in process, and the outcome of the arbitration cannot be reasonably estimated.

(e) *Technical contract*

The Group has technical license agreements for the purpose of manufacturing specific products with Mitsubishi Heavy Industries, Ltd. and others as at December 31, 2016, and the Group paid ₩ 60,958 million as license fee for the year ended December 31, 2016.

(f) *Operating leases*

Total minimum lease payments in relation to non-cancellable operating leases that are payable at the end of the reporting period are as follows:

(in millions of Korean won)	2016
Within one year	₩ 48,326
Later than one year but not later than five years	139,380
Later than five years	113,511
	<u>₩ 301,217</u>

(g) *Credit lines for borrowings*

As at December 31, 2016, the Group has entered into bank overdraft agreements amounting

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

to ₩ 10,339,953 million with various financial institutions.

(h) *Payment guarantees and others*

As at December 31, 2016, guarantees provided by the Group for third parties or received from third parties are as follows:

(in millions of Korean won)

Provider	Provided to	Amount
Guarantees provided by the Group:		
Doosan Corp.	Korea Tax Exemption Limit Institute Corp.	₩ 694
Circuit Foil Luxembourg Sarl	Alsarec and others	1,933
DHC and subsidiaries	Rentees of Yongin Doosan we've Apt. and others	141,338
DI and subsidiaries	Daewoo Engineering & Construction and others	216,245
DEC and subsidiaries	Ilsan Zenith's customers and others	1,763,680
		<u>₩ 2,123,890</u>

As at December 31, 2016, guarantees provided by third parties for the Group are as follows:

(in millions of Korean won)

Provided to	Provider	Amount
Guarantees received from financial institutions:		
Doosan Corp.	Hanguk Azimuth Industrial Industry Corp. and others	₩ 50,571
	Seoul Guarantee Insurance	26,437
	Machinery Financial Cooperative	29,333
	Woori Bank and others	25,078
	Korea Software Financial Cooperative	4,288
Doosan Feed & Livestock Co., Ltd.	Seoul Guarantee Insurance	119
	Shinhan Bank and others	3,879
Doosan Tower Co., Ltd.	Seoul Guarantee Insurance	251
DLI Corp.	Seoul Guarantee Insurance	117
Doosan Mecatec Co. ,Ltd.	Seoul Guarantee Insurance and others	6,638
	Machinery Financial Cooperative	48,160
	Woori Bank and others	196,982
Doosan Bears, Inc.	Seoul Guarantee Insurance	3,835

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)

Provided to	Provider	Amount
Circuit Foil Luxembourg Sarl	Credit Agricole and others	205
Oricom Inc.	Seoul Guarantee Insurance	2,107
Hancomm Inc.	Seoul Guarantee Insurance	715
DHC and subsidiaries	Korea Exim Bank	1,680,291
	Machinery Financial Cooperative	1,519,818
	Seoul Guarantee Insurance	950,420
	Construction Guarantee Cooperative	432,430
	Nonghyup Bank	163,952
	KEB Hana Bank	148,997
	Korea Federation of Small and Medium Business	148,918
	Korea Trade Insurance Corporation	136,092
	Others	2,515,832
DI and subsidiaries	KDB	362,550
	Seoul Guarantee Insurance	1,721
	Machinery Financial Cooperative	25,216
	Korea Exim Bank	115,000
	KEB Hana Bank and others	190
DEC and subsidiaries	Construction Guarantee Cooperative	1,874,792
	Korea Housing Guarantee	1,361,959
	HANSHIN Engineering & Construction Co., Ltd.	209,020
	Machinery Financial Cooperative	75,682
	KDB	7,208
	Seoul Guarantee Insurance	180,740
	Others	21,132
DE and subsidiaries	KEB Hana Bank	11,666
	Woori Bank	15,746
	Nonghyup Bank	26,560
	Kookmin Bank	12,581
	Seoul Guarantee Insurance	28,304
		<u>₩ 12,425,532</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

As at December 31, 2016, payment guarantees provided by DEC and DHC for PF of developer are as follows:

(in millions of Korean won)

Business name	Bond institution	The term of guarantee	Limit of guarantee	The balance	Description
Asset-backed commercial paper:					
Yongin Administration Town Doosan Weve	Meritz Securities	2016.04.07~ 2017.04.04	₩ 45,000	₩ 45,000	Debt acceptance
			45,000	45,000	
Loan:					
Seoul Forest Trimage	KFCC and others	2014.04.29~ 2017.08.29	135,000	135,000	Debt acceptance
Ulsan Daehyeon-dong	Woori Bank and others	2013.07.11~ 2017.11.30	116,350	89,500	Joint and several guarantee
Banwol-dong, Hwaseong	Nonghyup Bank and others	2008.03.31~ 2017.06.30	52,000	40,000	Joint and several guarantee
Pohang New Port	Shinhan Bank and others	2010.03.26~ 2025.12.31	7,447	7,447	Joint and several guarantee
Daejeon Cheonbyeon	KEB Hana Bank	2004.05.06~ 2024.05.06	5,500	5,500	Joint and several guarantee
			316,297	277,447	
Short-term debenture:					
Seoul Forest Trimage	LIG Securities and others	2014.04.29~ 2017.08.29	35,000	35,000	Debt acceptance
Sangdo-dong Doosan Weve 2	Hyundai Securities and others	2016.02.26~ 2017.02.24	17,000	17,000	Debt acceptance
Hongcheon Mokok CC	Hyundai Securities and others	2016.04.19~ 2017.04.18	175,400	175,400	Debt acceptance
Ulsan Daehyeon-dong	KTB Securities	2016.10.06~ 2017.01.05	41,600	32,000	Joint and several guarantee
Cheonan Cheongdang-dong	HMC Securities	2016.12.30~ 2017.03.30	52,000	40,000	Joint and several guarantee
Cheonan Cheongdang-dong	HMC Securities	2016.12.02~ 2017.03.02	52,000	40,000	Joint and several guarantee
Cheonan Cheongdang-dong	HMC Securities	2016.12.09~ 2017.03.09	65,000	50,000	Joint and several guarantee
Cheonan Cheongdang-dong	HMC Securities	2016.12.15~ 2017.03.15	39,000	30,000	Joint and several guarantee
Cheonan Cheongdang-dong	HMC Securities	2016.12.30~ 2017.03.30	78,000	60,000	Joint and several guarantee
Yongin samga	KTB Securities	2016.12.19~ 2017.03.17	78,000	60,000	Joint and several guarantee
Yongin samga	KTB Securities	2016.12.29~ 2017.03.29	78,000	60,000	Joint and several guarantee
			711,000	599,400	
			₩ 1,072,297	₩ 921,847	

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

Other commitments and contingencies are as follows:

With regard to the Incheon-Gimpo Highway Construction Project, DHC, a subsidiary of the Parent Company, entered into a capital supplement agreement with a limited guarantee of ₩ 22,346 million with Incheon-Gimpo Expressway Co., Ltd. Construction investors associated with SOC business have an agreement of providing for an insufficient fund when the agreement is terminated or insufficient to repay the loan principal and interest by buy price or payment arising from purchase requirement from authorities.

As at December 31, 2016, DHC has entered into a contract to assume a liability (limit: ₩ 92,600 million) if it fails to complete construction of The Land Park Office in Magok district and Gwanggyo Doosan Weve Project.

(i) Ordinary wages

Based on the Supreme Court decision, regular bonuses and other salaries paid periodically, uniformly and steadily should be included in the ordinary wage. However, if the Group pays additional past salaries in accordance with this inclusion, significant managerial difficulties are caused by unexpected excessive financial burden. Therefore, the Group sees the possibility of the likeliness of having to pay related amounts to be low and any effect on the consolidated financial statements cannot be reliably estimated.

(j) Covenant related to unconsolidated structured entities

Details of unconsolidated structured entities as at December 31, 2016, are as follows:

<i>(in millions of Korean won)</i>	Line item of interests in unconsolidated structured entities or financial support provided	Asset amount of interests in unconsolidated structured entities	Liability amount of interests in unconsolidated structured entities	Maximum exposure to the loss of unconsolidated structured entities
DHC				
KDPP 1st Co., Ltd.		₩ -	₩ 92,000	₩ 92,000
KDPP 2nd Co., Ltd.		-	135,000	135,000
KDPP 3rd Co., Ltd.		-	70,000	70,000
Happy Tomorrow 25th Co., Ltd.		-	50,000	50,000
Happy Tomorrow 27th Co., Ltd.		-	30,000	30,000
DEC	Fund supplementary obligation such as loan's principal and interests			
DM BEST 2nd Co., Ltd.		-	95,000	93,200
PINETREECITY 1st Co., Ltd.		-	60,000	60,000
DM BEST 3rd Co., Ltd.		-	80,000	76,600
DM BEST 4th Co., Ltd.		-	45,000	45,000
The DSWAY 1st Co., Ltd.		-	20,500	20,500
Yongin samga project First Ltd.		-	12,000	12,000
Doosan E&C 2nd Co., Ltd.		-	82,000	82,000

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Details of securitization assets and method are as follows:

<i>(in millions of Korean won)</i>	Assets	Method
DHC		
KDPP 1st Co., Ltd.	Future construction receivables	Issuing ABCP and others
KDPP 2nd Co., Ltd.	Future construction receivables	Issuing ABCP and others
KDPP 3rd Co., Ltd.	Investments in subsidiaries	Issuing ABCP and others
Happy Tomorrow 25th Co., Ltd.	Investments in subsidiaries	Issuing ABCP and others
Happy Tomorrow 27th Co., Ltd.	Investments in subsidiaries	Issuing ABCP and others
DEC		
DM BEST 2nd Co., Ltd.	Future construction receivables	Issuing ABS bonds
PINETREECITY 1st Co., Ltd.	Changwon 2nd plant	Issuing ABS bonds
DM BEST 3rd Co., Ltd.	Future construction receivables	Issuing ABS bonds
DM BEST 4th Co., Ltd.	Future construction receivables	Issuing ABS bonds
The DSWAY 1st Co., Ltd.	Future construction receivables	Issuing ABS bonds
Yongin samga project First Ltd.	Plant	Issuing ABS bonds
Doosan E&C 2nd Co., Ltd.	Plant	Issuing ABS bonds

(k) Joint liabilities related to construction performance

As at December 31, 2016, the Group has provided joint guarantees on construction performance of ₩ 488,649 million to other construction companies. Also, the Group has provided joint guarantees on construction performance to Korea Housing Urban Guarantee Corporation related to developer's lot sale guarantee provided by Korea Housing Urban Guarantee Corporation.

34. Pledged Assets

The Group pledged certain assets as collaterals for its long-term and short-term borrowings as at December 31, 2016, as follows:

1) DI, DIBH and DE

Clark Equipment Co. ("CECO") and Doosan Holdings Europe Ltd. ("DHEL"), subsidiaries of the Group, repaid all long-term borrowings related to acquisition of Compact Equipment business unit of Ingersoll-Rand in 2011, and entered into a new loan agreement amounting to USD 1,700,000 thousand on May 28, 2014. DI has provided 62,495 shares in CECO, 38,446 shares in DHEL, 110,071,219 shares in Doosan Infracore South East Asia Pte. Ltd., and property, plant and equipment, intangible assets and others of CECO, DHEL and their subsidiaries as collateral for borrowings. As at December 31, 2016, the outstanding balance of borrowings is USD 947,500 thousand.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

DI has provided all of its shares in Doosan Infracore America Corp. and Doosan Infracore Norway AS. as collateral for borrowings. Also, DI has provided 5,004,125 shares in Doosan Bobcat Inc. as collateral for borrowings amounting to ₩ 100,000 million from SC Bank.

2) DEC

DEC has provided its 1,200,000 shares of Doosan Cuvex Co., Ltd. as collateral in connection with an overdraft limit agreement amounting to ₩ 105,958 million with Woori Bank. As at December 31, 2016, the related outstanding balance of borrowings is ₩ 105,958 million.

DEC has provided 24.76% of equity interests in DHI Vietnam Co., Ltd. and 20% of equity interests in DHI Vietnam Haiphong Co., Ltd. as collateral in connection with an overdraft limit agreement amounting to ₩ 45,868 million with KDB. As at December 31, 2016, the related outstanding balance of borrowings is ₩ 45,868 million.

3) Pledged assets by consolidated entities other than the above are summarized as follows:

(in millions of Korean won)

Provided by	Secured assets	Secured party	Financial liabilities	Secured amount
Doosan Corp.	Property, plant and equipment and investment properties	KDB and others	₩ 330,301	₩ 431,061
Doosan Feed & Livestock Co., Ltd.	Property, plant and equipment	KDB	4,989	14,000
Doosan Tower Co., Ltd.	Property, plant and equipment and investment properties	KEB Hana Bank and others	229,500	301,837
Doosan Mecatec Co., Ltd.	Property, plant and equipment	KEB Hana Bank and others	105,566	117,560
Doosan Electro-Materials (Changshu) Co., Ltd.	Property, plant and equipment	BANK OF CHINA	6,261	8,662
Doosan Industrial Vehicle America Corp.	Trade receivables and inventories	5/3 BANK	6,043	6,043
Doosan Industrial Vehicle Yantai	Property, plant and equipment	Woori Bank (Weihai)	2,599	7,348
Doosan Bears, Inc.	Property, plant and equipment	KEB Hana Bank	32,100	48,700
DHC	Property, plant and equipment	KDB and others	1,033,641	1,056,334
	Investments in subsidiaries	KDB and others	250,000	490,285
DI	Property, plant and equipment ¹	KDB	163,460	941,589
DEC	Short-term financial instruments	IBK	1,000	1,000
	Beneficiary right and loaned securities	KDB ²	-	31,200

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)

Provided by	Secured assets	Secured party	Financial liabilities	Secured amount
	Inventories	KEB Hana Bank and others	45,868	172,500
	Property, plant and equipment	KDB and others	142,000	208,050
	Property, plant and equipment ³	KDB	82,700	110,000
DE	Property, plant and equipment	KDB	6,320	7,584
Doosan Cuvex Co., Ltd.	Property, plant and equipment	KEB Hana Bank	4,000	19,500
			<u>₩ 2,446,348</u>	<u>₩ 3,973,253</u>

¹ Benefit entitlement on inventories has been provided as collateral to KDB.

² Beneficiary certificate of treasury share trust and loaned securities are pledged as collateral to KDB and others.

³ Property, plant and equipment are provided as collaterals in connection with borrowings of Doosan Mecatec Co., Ltd.

Pledged assets to parties other than consolidated entities as at December 31, 2016, are summarized as follows:

(in millions of Korean won)

Provided by	Secured assets	Carrying amount	Secured party	Provided to
DHC	Long-term investment securities	₩ 23,818	Kookmin Bank and others	Incheon-Kimpo express highway Co., Ltd. and others
	Inventories	9,824	CSOB	Abener Energia S.A.
DEC	Long-term investment securities	101,657	KDB and others	Metropolitan West Highway and others
		<u>₩ 135,299</u>		

As at December 31, 2016, shares in Shinbundang Railroad Co., Ltd. and others (Book amount: ₩ 24,499 million) out of DEC's investments in associates are pledged as collateral related to the entity's project financing to KDB, a creditor of the PF. Also, as at December 31, 2016, certain property, plant and equipment of DEC are pledged as collateral (Amount: ₩ 3,000 million) for leasehold deposits received of Next Entertainment Co., Ltd.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

35. Related Party Transactions

The related parties of the Group and nature of their relationship with the Group as at December 31, 2016 are as follows:

	Company
Associates ^{1,2}	Guang Dong Xingpu Steel Center Tamra Offshore Wind Power Co., Ltd. DSDMP Shinbundang Railroad Co., Ltd. Kyunggi Railroad Co., Ltd. Neo Trans and others
Joint ventures ³	Sichuan Kelun-Doosan Biotechnology Company Limited Haman Industrial Complex Xuzhou Xugong Doosan Engine Co., Ltd. and others
Other related parties ⁴	Doosan Credit Union Yeongang Foundation Chung-Ang University Neoplux and others

¹ KIAMCO and One O one Global Co., Ltd. are included in the associates as the Group acquired the equity shares.

² Doosan Eco Biznet is excluded from the associates as decrease in percentage of ownership.

³ Doosan Infracore Liaoning Machinery Sales Co., Ltd is included in the joint ventures as the Group acquired the equity shares.

⁴ Other related parties include entities which belong to a large enterprise group in accordance with the Monopoly Regulation and Fair Trade Act, although the entities are not the related party of the Group in accordance with Korean IFRS 1024.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Sales and purchases with related parties for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of
Korean won)

		2016					
Type	Name of entity	Sales	Disposal of property, plant and equipment	Purchases	Other expenses	Acquisition of property, plant and equipment	
Associates	Kyunggi Railroad Co., Ltd.	₩ 47,047	₩ -	₩ 3	₩ -	₩ -	-
	Neo Trans	11,433	-	437	-	-	-
	Shinbundang Railroad Co., Ltd.	-	-	56	-	-	-
	Tamra Offshore Wind Power Co., Ltd	39,767	-	-	-	-	-
	Others	10,938	-	5,628	-	-	-
		<u>109,185</u>	<u>-</u>	<u>6,124</u>	<u>-</u>	<u>-</u>	<u>-</u>
Joint ventures	Haman Industrial Complex	180	-	-	-	-	-
	Others	-	-	-	-	-	-
		<u>180</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Other related parties	Doosan Credit Union	218	5,325	2	-	-	-
	Yeongang Foundation	1,565	-	5,100	990	-	-
	Chung-Ang University	18,671	-	6,962	6,670	-	-
	Dongdaemun Miraechangj o Foundation	1,085	-	10	-	-	-
	Others	300	-	28	37	35	
		<u>21,839</u>	<u>5,325</u>	<u>12,102</u>	<u>7,697</u>	<u>35</u>	
		<u>₩ 131,204</u>	<u>₩ 5,325</u>	<u>₩ 18,226</u>	<u>₩ 7,697</u>	<u>₩ 35</u>	

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of
Korean won)

Type	Name of entity	2015			
		Sales	Other income	Purchases	Other expenses
Associates	Kyunggi Railroad Co., Ltd.	₩ 81,243	₩ -	₩ 1	₩ -
	Neo Trans	5,919	-	554	61
	Shinbundang Railroad Co., Ltd.	-	-	47	12
	Tamra Offshore Wind Power Co., Ltd	63,443	-	2	-
	Others	1,486	2,901	3,775	126
		152,091	2,901	4,379	199
Joint ventures	Haman Industrial Complex	-	215	-	-
	Others	-	-	-	-
		-	215	-	-
Other related parties	Doosan Credit Union	691	-	372	445
	Yeongang Foundation	4,047	-	23	4,984
	Chung-Ang University	45,984	-	1,365	17,124
	Dongdaemun Miraechangjo Foundation	1	-	-	10,000
	Others	1,185	2	-	8
		51,908	2	1,760	32,561
		₩ 203,999	₩ 3,118	₩ 6,139	₩ 32,760

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Outstanding balances arising from sales/purchases of goods and services as at December 31, 2016 and 2015, are as follows:

(in millions of
Korean won)

Type	Name of entity	2016					
		Trade receivables	Other receivables	Loans	Trade payables	Other payables	
Associates	Kyunggi Railroad Co., Ltd.	₩ -	₩ -	₩ 35,000	₩ -	₩ -	-
	Neo Trans	868	-	-	495		152
	Shinbundang Railroad Co., Ltd.	11,023	-	27,859	5		-
	Tamra Offshore Wind Power Co., Ltd	-	115	-	-		12,795
	Others	3	-	-	284		-
		<u>11,894</u>	<u>115</u>	<u>62,859</u>	<u>784</u>		<u>12,947</u>
Joint ventures	Haman Industrial Complex	1,535	4,196	-	-		-
	Others	-	-	-	-		-
		<u>1,535</u>	<u>4,196</u>	<u>-</u>	<u>-</u>		<u>-</u>
Other related parties	Doosan Credit Union	19	-	-	-		84
	Yeongang Foundation	120	1,835	-	441		20
	Chung-Ang University	14	330	-	571		499
	Others	37	13	-	10		230
		<u>190</u>	<u>2,178</u>	<u>-</u>	<u>1,022</u>		<u>833</u>
		<u>₩ 13,619</u>	<u>₩ 6,489</u>	<u>₩ 62,859</u>	<u>₩ 1,806</u>	<u>₩</u>	<u>13,780</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of
Korean won)

Korean won)		2015											
		Name of entity		Trade receivables		Other receivables		Loans		Trade payables		Other payables	
Type													
Associates	Kyunggi Railroad Co., Ltd.	₩	101	₩	269	₩	26,000	₩	1	₩	-		
	Neo Trans		831		-		-		133		79		
	Shinbundang Railroad Co., Ltd.		11,023		-		15,858		10		-		
	Tamra Offshore Wind Power Co., Ltd		63,126		-		-		-		12,795		
	Others		75		-		560		193		-		
			75,156		269		42,418		337		12,874		
Joint ventures	Haman Industrial Complex		5,523		5,929		-		-		-		
	Others		-		586		-		-		-		
			5,523		6,515		-		-		-		
Other related parties	Doosan Credit Union		23		-		-		-		86		
	Yeongang Foundation		205		1,908		-		2		506		
	Chung-Ang University		37		198		-		58		1,128		
	Others		13		4		-		4		230		
			278		2,110		-		64		1,950		
		₩	80,957	₩	8,894	₩	42,418	₩	401	₩	14,824		

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Fund and equity transactions with related parties for the periods ended December 31, 2016 and 2015, are as follows:

(in millions of Korean won)

Type	Name of entity	2016					
		Loan		Contribution		Dividend	
		Loans	Repayments	Received	Provided	Income	Paid
Associates	Guang Dong Xingqu Steel Center	₩ -	₩ -	₩ -	₩ -	₩ 2,319	-
	Tamra Offshore Wind Power Co., Ltd	-	-	-	2,016	-	-
	Kyunggi Railroad Co., Ltd.	9,000	-	-	-	-	-
	New Seoul Railroad Co., Ltd.	45	45	-	7,421	-	-
	Shinbundang Railroad Co., Ltd.	12,001	-	-	-	-	-
	One O one Global Co., Ltd.	-	-	-	178	-	-
	KIAMCO	-	-	-	23,149	-	-
		21,046	45	-	32,764	2,319	-
Joint ventures	Sichuan Kelun-Doosan Biotechnology Company Limited	-	-	-	-	1,056	-
	Doosan Infracore Liaoning Machinery Sales Co., Ltd	-	-	-	335	-	-
		-	-	-	335	1,056	-
		₩ 21,046	₩ 45	₩ -	₩ 33,099	₩ 3,375	₩ -

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(in millions of Korean won)

(in millions of Korean won)

Type	Name of entity	2015											
		Loan				Contribution				Dividend			
		Loans		Repayments		Received		Provided		Income		Paid	
Associates	DCFL	₩	105,926	₩	-	₩	-	₩	-	₩	-	₩	-
	Shinbundang Railroad Co., Ltd.		6,000		-		-		-		-		-
	Kyunggi Railroad Co., Ltd.		13,700		-		-		-		-		-
	New Seoul Railroad Co., Ltd.		206		-		-		-		-		-
	Others		-		-		-		-		45		-
			125,832		-		-		-		45		-
Joint ventures	Sichuan Kelun- Doosan Biotechnology Company Limited		-		-		-		-		988		-
	Doosan PSI LLC		-		-		-		1,108		-		-
			-		-		-		1,108		988		-
			-		-		25,000		-		-		-
Other related party	DPS Pension Scheme	₩	125,832	₩	-	₩	25,000	₩	1,108	₩	1,033	₩	-

As at December 31, 2016, the Group has provided payment guarantees and others for related parties (See Notes 33 and 34).

The compensation to key management for employee services for the periods ended December 31, 2016 and 2015, consists of:

(in millions of Korean won)

	2016	2015
Short-term employee benefits	₩ 99,361	₩ 124,516
Post-employment benefits	6,894	12,084
Share-based payments	640	4,042
	₩ 106,895	₩ 140,642

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

36. Cash Generated from Operations

(a) Cash generated from operations

(in millions of Korean won)

	2016	2015
Adjustments for:		
Impairment loss on trade receivables	₩ 30,234	₩ 322,839
Cost of sales (valuation allowance)	(16,545)	5,947
Depreciation	419,003	458,145
Amortization	221,579	230,504
Post-employment benefits	151,505	176,788
Share-based payments	670	4,042
Interest income	(50,584)	(49,362)
Dividend income	(2,655)	(3,089)
Gain on foreign currency translations	(147,217)	(131,859)
Gain on valuation of derivatives	(109,996)	(142,608)
Gain on valuation of firm contracts	(186,909)	(297,431)
Gain on exemption of debt	-	(351)
Financial guarantee income	(410)	(2,047)
Interest expense	583,364	695,217
Loss on foreign currency translations	202,949	324,285
Loss on valuation of derivatives	231,962	318,195
Loss on valuation of firm contracts	76,489	89,306
Loss on repayment of bonds	9,944	1,938
Financial guarantee expenses	6,333	22,151
Provisions	46,631	30,847
Gain on disposal of short-term investment securities	(14,528)	(5,998)
Gain on disposal of long-term investment securities	(231,285)	(13,678)
Gain on disposal of investments in subsidiaries	-	(29,718)
Gain on disposal of property, plant and equipment	(16,510)	(8,012)
Gain on disposal of intangible assets	(406)	(625)
Gain on disposal of investment properties	(469)	(618)
Gain on disposal of assets held for sale	(1,102)	-
Gain on disposal of business	(546,080)	-
Gain on valuation of investment properties	(6,362)	(9,513)
Reversal of impairment loss on property, plant and equipment	(871)	-
Reversal of impairment loss on intangible assets	(18)	(74)
Gain on transfer of business unit	-	12,296
Loss on disposal of trade receivables	13,662	14,859
Loss on disposal of long-term investment securities	1,540	1,009

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

<i>(in millions of Korean won)</i>	2016	2015
Impairment loss on long-term investment securities	32,520	777
Loss on disposal of property, plant and equipment	20,442	17,940
Loss on disposal of intangible assets	251	235
Loss on disposal of investment properties	9,379	5,636
Loss on valuation of investment properties	6,831	21,046
Impairment loss on property, plant and equipment	42,099	137,956
Impairment loss on intangible assets	147,002	197,240
Impairment loss on non-current assets held for sale	57,134	54,983
Other impairment loss	209,989	284,560
Share of profit of associates and joint ventures	13,141	77,689
Income tax expenses	370,796	229,513
Other expenses	72,369	10,828
	<u>₩ 1,645,871</u>	<u>₩ 3,051,788</u>

<i>(in millions of Korean won)</i>	2016	2015
Change in operating assets and liabilities:		
Decrease in trade receivables	₩ 159,704	₩ 180,733
Decrease (increase) in other receivables	105,101	(41,680)
Decrease (increase) in due from customers for contract work	(326,700)	7,295
Increase in derivative assets (liabilities)	(51,255)	(118,903)
Decrease in inventories	13,704	99,082
Decrease in other current assets	971	67,626
Decrease in long-term other receivables	9,021	9,677
Decrease (increase) in other non-current assets	(90,459)	20,832
Increase (decrease) in trade payables	591,005	(677,681)
Increase (decrease) in other payables	(113,337)	126,765
Increase (decrease) in due to customers for contract work	(220,495)	90,553
Increase (decrease) in provisions	17,346	(32,768)
Increase (decrease) in other current liabilities	6,733	(32,207)
Increase in long-term other payables	102,561	3,698
Increase in other non-current liabilities	20,722	89
Benefit payments	(125,207)	(266,152)
Increase in plan assets	(106,885)	(48,053)
Change in other operating assets and liabilities	10,791	(5,643)
	<u>₩ 3,321</u>	<u>₩ (616,737)</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

(b) Non-cash transactions

<i>(in thousands of Korean won)</i>		2016		2015
Reclassification of construction-in-progress to property, plant and equipment and others	₩	216,994	₩	211,126
Transfer from land to inventories		-		41,099
Transfer from property, plant and equipment and investment properties to assets held for sales		112,101		99,698

37. Assets and Liabilities Held for sale

As at December 31, 2016, the Group transferred HRSG business unit and other assets, which Doosan Heavy Industries Vietnam Haipong Co. Ltd., a subsidiary, are actively pursuing to dispose, to non-current assets held for sale in 2016 and details are as follows:

	2016			2015
	HRSG	Others	Total	Others
Non-current assets held for sale				
Trade receivables	₩ 25,247	₩ -	₩ 25,247	₩ -
Due from customers for contract work	12,105	-	12,105	-
Inventories	8,512	-	8,512	-
Property, plant and equipment	82,954	9,625	92,579	99,698
Other assets	6,794	13	6,807	-
	<u>₩ 135,612</u>	<u>₩ 9,638</u>	<u>₩ 145,250</u>	<u>₩ 99,698</u>
Non-current liabilities held for sale				
Trade payables	₩ 2,834	₩ -	₩ 2,834	₩ -
Short-term borrowings	14,595	-	14,595	-
Advance received	285	-	285	-
Other liabilities	6,993	-	6,993	-
	<u>₩ 24,707</u>	<u>₩ -</u>	<u>₩ 24,707</u>	<u>₩ -</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

38. Business Combination

Details of business combination for the year ended December 31, 2016, are summarized as follows:

(in millions of Korean won)

Acquired Company	Main business	Date of acquisition	Ownership after acquisition	Purchase consideration
Doosan GridTech Inc.	Software and system engineering	June 30, 2016	100%	₩ 36,108
Doosan GridTech LLC	Software and system engineering	June 30, 2016	100%	

The Group acquired Doosan GridTech Inc. and Doosan GridTech LLC to enter ESS (Energy Storage System) business and to enhance the competitiveness of related business by obtaining core technologies of Energy Storage System.

Details of fair value of consideration transferred for business combination for the year ended December 31, 2016, are as follows:

(in millions of Korean won)

Amount

Cash and cash equivalents	₩	36,108
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Details of fair value of the assets and liabilities recognized as a result of the acquisition are as follows:

(in millions of Korean won)

Amount

Current assets	₩	6,247
Non-current assets		6,856
		<u>13,103</u>
Current liabilities		4,338
Non-current liabilities		2,313
		<u>6,651</u>
Net identifiable assets acquired, net (A)		<u>6,452</u>
Consideration transferred (B)		<u>36,108</u>
Difference (B-A)		<u>29,656</u>
Goodwill		<u>28,586</u>
Acquisition-related costs (charged to administrative expenses in the consolidated statement of profit or loss for the year ended December 31, 2016)	₩	<u>1,070</u>

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Net cash outflow in business combinations for the year ended December 31, 2016, is as follows:

<i>(in millions of Korean won)</i>		Amount
Consideration paid in cash	₩	36,108
Less: Acquisition of cash and cash equivalents		4,267
	₩	<u>31,841</u>

39. Discontinued Operations

Details of discontinued operations as at December 31, 2016 and 2015, are as follows:

2016			
Discontinued Operations	DI, Machine-tools business unit	Doosan DST Co., Ltd. ("DST")	HRSG business unit ¹
Main business	Manufacturing and sales of machine-tools for working	Manufacture of motor vehicles for combat	Manufacturing and installation of generator materials
Date of acquisition	April 29, 2016	May 31, 2016	August 17, 2016
Method	Disposal of business unit	Disposal of shares	Disposal of business unit
Acquiring company	DMT Holdings Co., Ltd.	Hanwha Techwin Co., Ltd.	GE GLOBAL PARTS&PRODUCTS GMBH and 4 others
Disposal price	KRW 1,130,819 million	KRW 353,818 million	KRW 300,000 million
2015			
Discontinued Operations	Rexcon business unit, DEC	OSS business unit DEC (Offshore Structure & Subsea),	
Main business	Production and distribution of ready-mixed concrete	Manufacturing of offshore and subsea structures and equipment	
Date of acquisition	May 22, 2015	March 27, 2015	
Method	Disposal of business unit and disposal of subsidiary after spin-off	Decided to discontinue the business	
Acquiring company	Jungsun remicon and 5 other parties	-	
Disposal price	KRW 128,317 million	-	

¹ In 2016, DEC has completed the disposal of HRSG business unit. The Group is actively pursuing to dispose HRSG business unit that Doosan Heavy Industries Vietnam Haiphong Co., Ltd. and Doosan Heavy Industries Vietnam Co., Ltd., the subsidiaries of the Group, are holding.

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Profit and loss from discontinued operation for the periods ended December 31, 2016 and 2015, are as follows:

		2016							
		Machine-tools		DST		HRSG		Total	
Sales	₩	313,348	₩	223,917	₩	181,632	₩	718,897	
Cost of sales		241,571		209,382		158,750		609,703	
Selling and administrative expenses		48,909		25,952		18,387		93,248	
Operating profit(loss)		22,868		(11,417)		4,495		15,946	
Non-operating profit(loss)		(10,608)		(857)		(130,491)		(141,956)	
Profit(loss) before income tax		12,260		(12,274)		(125,996)		(126,010)	
Income tax expense		5,944		(5,100)		(1,443)		(599)	
Profit(loss) from discontinued operation		6,316		(7,174)		(124,553)		(125,411)	
Gain on disposal of discontinued business		109,677		58,043		199,748		367,468	
Profit for the period from discontinued operation	₩	115,993	₩	50,869	₩	75,195	₩	242,057	

		2015											
		Machine-tools		DST		HRSG		OSS		Rexcon		Total	
Sales	₩	1,248,091	₩	660,544	₩	164,226	₩	976	₩	56,228	₩	2,130,065	
Cost of sales		920,383		589,287		121,473		3,248		53,176		1,687,567	
Selling and administrative expenses		205,179		30,342		18,641		1,489		3,480		259,131	
Operating profit(loss)		122,529		40,914		24,112		(3,761)		(428)		183,367	
Non-operating profit(loss)		(5,539)		1,653		(4,651)		(2,744)		(5,914)		(17,195)	
Profit(loss) before income tax		116,990		42,568		19,461		(6,505)		(6,342)		166,172	
Income tax expense (benefit)		34,362		8,788		(155)		-		-		42,995	
Profit(loss) from discontinued operation		82,628		33,780		19,616		(6,505)		(6,342)		123,177	
Gain(loss) on disposal of discontinued business		-		-		-		-		(12,297)		(12,297)	
Profit(loss) for the period from discontinued operation	₩	82,628	₩	33,780	₩	19,616	₩	(6,505)	₩	(18,639)	₩	110,880	

Doosan Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
December 31, 2016 and 2015

Cash flows from discontinued operations for the periods ended December 31, 2016 and 2015, are as follows:

		2016			
		Machine-tools	DST	HRSG	Total
Net cash inflow (outflow)					
from operating activities	₩	2,209	₩ 17,100	₩ (62,422)	₩ (43,113)
Net cash inflow (outflow)					
from investing activities ¹		923,928	(4,194)	112,310	1,032,044
Net cash inflow (outflow)					
from financing activities		(30,714)	(60,000)	5,608	(85,106)
Effects of exchange rate changes		-	-	86	86
Net increase (decrease) in cash generated from discontinued operations	₩	895,423	₩ (47,094)	₩ 55,582	₩ 903,911

¹ Cash flows related to disposal of discontinued business are included.

		2015					
		Machine-tools	DST	HRSG	OSS	Rexcon	Total
Net cash inflow (outflow)							
from operating activities	₩	36,432	₩ 42,685	₩ 88,468	₩ (7,862)	₩ (24,400)	₩ 135,323
Net cash inflow (outflow)							
from investing activities ¹		(16,546)	(6,571)	(3,740)	4	127,998	101,145
Net cash inflow (outflow)							
from financing activities		29,791	(35,000)	(13,542)	5,699	24,720	11,668
Effects of exchange rate changes		-	12	(54)	138	-	96
Net increase (decrease) in cash generated from discontinued operations	₩	49,677	₩ 1,126	₩ 71,132	₩ (2,021)	₩ 128,318	₩ 248,232

¹ Cash flows related to disposal of discontinued business are included.

Doosan Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2016 and 2015

40. Events After the Reporting Period

The Parent Company entered into a contract to dispose Doosan Feed & Livestock Co., Ltd., a subsidiary, to Dongwon F&B Co., Ltd. at ₩ 35.3 billion, on March 10, 2017.

Principal conditions the Group decided to issue coupon on and non-guaranteed bonds with share warrants amounting to ₩ 500,000 million on May 4, 2017, are as follows:

Details

Date of maturity	Five years from issuance date
Interest rate	1%
Return rate on issuance	2% (105.2448% of principal amount at maturity date)
Early redemption option	Right exercisable after three years (May 4, 2020) from issuance date (103.0839% of principal amount)
Exercise price	KRW 26,550 (expected)
Exercise ratio	1 registered ordinary share per 1 preemptive right security

Korea Gas Corp. filed a litigation for payment of ₩ 200,000 million against 13 construction companies including the Group on February 16, 2017.