

Hanwha Chemical Corporation and Subsidiaries

Consolidated Financial Statements

December 31, 2015 and 2014

Hanwha Chemical Corporation and Subsidiaries
December 31, 2015 and 2014
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Independent Auditor's Report

(English Translation of a Report Originally Issued in Korean)

To the Board of Directors and Shareholders of
Hanwha Chemical Corporation

We have audited the accompanying consolidated financial statements of Hanwha Chemical Corporation and its subsidiaries, which comprise the consolidated statements of financial position as of December 31, 2015 and 2014, and the consolidated statements of comprehensive income, changes in equity and cash flows for the years then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's responsibility for the financial statements

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

Auditor's responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with the Korean Standards on Auditing. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of Hanwha Chemical Corporation and its subsidiaries as of December 31, 2015 and 2014, and their financial performance and cash flows for the years then ended in accordance with the Korean IFRS.

Other Matter

Auditing standards and their application in practice vary among countries. The procedures and practices used in the Republic of Korea to audit such financial statements may differ from those generally accepted and applied in other countries.

/s/ Samil PricewaterhouseCoopers

Seoul, Korea
March 17, 2016

This report is effective as of March 17, 2016, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that there is a possibility that the above audit report may have to be revised to reflect the impact of such subsequent events or circumstances, if any.

Hanwha Chemical Corporation and Subsidiaries
Consolidated Statements of Financial Position
December 31, 2015 and 2014

(in Korean won)		Notes	2015	2014
Assets				
Current assets				
Cash and cash equivalents	5, 6, 8	₩	644,785,721,050	₩ 549,393,182,341
Available-for-sale financial assets	5, 6, 13		-	703,368
Other financial assets	5, 6, 10		390,384,438,875	250,101,726,165
Trade receivables and other receivables	5, 6, 7, 9, 36		1,817,473,968,091	1,394,450,094,958
Other current assets	11		84,577,045,114	194,836,820,093
Inventories	12		1,825,619,332,882	1,872,745,936,421
Current income tax assets			14,900,651,168	11,271,678,715
			<u>4,777,741,157,180</u>	<u>4,272,800,142,061</u>
Non-current assets				
Available-for-sale financial assets	5, 6, 13		150,075,320,459	165,540,689,457
Other financial assets	5, 6, 10, 36		111,463,143,304	96,749,227,684
Long-term trade receivables and other receivables	5, 6, 9		5,947,012,482	2,897,128,009
Investments in associates and joint ventures	14, 36		2,043,074,302,380	1,288,600,215,049
Investment property	15		196,317,196,176	205,267,833,069
Property, plant and equipment	16		6,050,530,729,270	6,038,120,533,546
Intangible assets	17		440,814,090,811	468,545,321,835
Other non-current assets	11		18,972,510,353	21,783,546,791
Deferred income tax assets	33		57,684,260,421	36,719,095,914
			<u>9,074,878,565,656</u>	<u>8,324,223,591,354</u>
Total assets		₩	<u>13,852,619,722,836</u>	₩ <u>12,597,023,733,415</u>
Liabilities				
Current liabilities				
Trade payables and other payables	4, 5, 6, 18, 36		1,614,994,192,837	1,626,190,350,528
Short-term borrowings	4, 5, 6, 7, 19		2,425,288,893,609	2,206,382,987,521
Other financial liabilities	4, 5, 6, 20		136,341,492,695	101,516,820,336
Provisions	23		69,932,134,709	64,044,362,447
Other current liabilities	21		1,146,148,705,403	397,308,447,395
Current income tax liabilities			27,941,942,794	45,770,535,207
			<u>5,420,647,362,047</u>	<u>4,441,213,503,434</u>
Non-current liabilities				
Long-term trade payables and other payables	4, 5, 6, 18		208,595,675,209	13,941,048,834
Long-term borrowings	4, 5, 6, 19		2,615,772,998,845	2,747,069,101,290
Other financial liabilities	4, 5, 6, 20		21,296,887,000	22,971,701,326
Net defined benefit liabilities	22		320,992,400,548	288,944,230,218
Long-term employee benefits			14,355,194,387	-
Provisions	23		30,850,183,425	18,040,690,285
Other non-current liabilities	21		17,944,309	2,769,627
Deferred income tax liabilities	33		288,932,688,854	285,362,404,033
			<u>3,500,813,972,577</u>	<u>3,376,331,945,613</u>
Total liabilities			<u>8,921,461,334,624</u>	<u>7,817,545,449,047</u>
Equity attributable to owners of the Parent Company				
Capital stock	24	₩	815,316,540,000	₩ 815,316,540,000
Capital surplus	24		829,497,470,364	712,889,896,819
Capital adjustments	25		(2,959,148,816)	(3,402,661,137)
Accumulated other comprehensive income	26		104,669,832,306	109,800,817,118
Retained earnings	27		2,886,852,150,585	2,739,445,969,704
			<u>4,633,376,844,439</u>	<u>4,374,050,562,504</u>
Non-controlling interest	40		297,781,543,773	405,427,721,864
Total equity			<u>4,931,158,388,212</u>	<u>4,779,478,284,368</u>
Total liabilities and equity		₩	<u>13,852,619,722,836</u>	₩ <u>12,597,023,733,415</u>

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

Hanwha Chemical Corporation and Subsidiaries
Consolidated Statements of Comprehensive Income
Years ended December 31, 2015 and 2014

<i>(in Korean won)</i>	Notes	2015	2014
Revenue	36	₩ 8,036,991,362,167	₩ 8,055,333,189,002
Cost of sales	30, 36	6,540,636,626,588	6,777,147,441,813
Gross profit		1,496,354,735,579	1,278,185,747,189
Selling and administrative expenses	29, 30	1,159,341,804,191	1,136,925,464,233
Operating profit		337,012,931,388	141,260,282,956
Non-operating income (expenses)			
Other income	31	397,033,859,683	401,551,175,229
Other expenses	31	(517,472,065,424)	(303,144,346,033)
Financial income	32	25,386,631,893	19,966,214,941
Financial costs	32	(179,739,068,902)	(213,369,655,885)
Share of profit of associates and joint ventures	14	166,157,380,212	4,643,559,775
		(108,633,262,538)	(90,353,051,973)
Profit before income tax expense		228,379,668,850	50,907,230,983
Income tax expense	33	(47,963,902,367)	(39,517,064,861)
Profit for the year		180,415,766,483	11,390,166,122
Other comprehensive income (loss)			
Items that may be reclassified subsequently to profit or loss:			
Change in value of available-for-sale financial assets		55,004,751	(14,171,852,587)
Share of other comprehensive income of associates and joint ventures		19,666,076,907	6,390,665,892
Cash flow hedges		(57,246,770)	(191,410,461)
Currency translation differences		(20,652,942,826)	(11,586,496,588)
Items that will not be reclassified to profit or loss:			
Remeasurements of net defined benefit liabilities		(12,925,983,221)	(20,875,485,416)
Share of remeasurements of net defined benefit liabilities of associates and joint ventures		(3,653,255,396)	(3,660,454,364)
Total comprehensive income (loss) for the year		₩ 162,847,419,928	₩ (32,704,867,402)
Profit (loss) attributable to:			
Owners of the parent		188,160,566,124	56,742,202,639
Non-controlling interest		(7,744,799,641)	(45,352,036,517)
Total comprehensive income (loss) attributable to:			
Owners of the parent		166,735,392,823	3,994,630,660
Non-controlling interest		(3,887,972,895)	(36,699,498,062)
Earnings per share attributable to the equity holders of the parent during the year (in won):	34		
Basic earnings per common share		1,154	363
Basic earnings per preferred share		1,204	398

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

Hanwha Chemical Corporation and Subsidiaries
Consolidated Statements of Changes in Equity
Years ended December 31, 2015 and 2014

		Attributable to equity holders of the parent							
(in Korean won)	Notes	Capital stock	Capital surplus	Capital adjustment	Accumulated other comprehensive Income (loss)	Retained earnings	Non-controlling interest	Total equity	
Balance at January 1, 2014		₩ 707,036,240,000	₩ 485,586,579,210	₩ (3,585,880,999)	₩ 139,360,960,403	₩ 2,728,876,494,902	₩ 399,450,424,234	₩ 4,456,724,817,750	
Total comprehensive income (loss)									
Profit (loss) for the year		-	-	-	-	56,742,202,639	(45,352,036,517)	11,390,166,122	
Other comprehensive income (loss)									
Items that may be reclassified subsequently to profit or loss:									
Change in value of available-for-sale financial assets	13	-	-	-	(16,628,946,284)	-	2,457,093,697	(14,171,852,587)	
Share of other comprehensive income (loss) of associates and joint ventures	14	-	-	-	6,397,950,114	-	(7,284,222)	6,390,665,892	
Cash flow hedges		-	-	-	(191,410,461)	-	-	(191,410,461)	
Currency translation differences		-	-	-	(19,137,736,654)	-	7,551,240,066	(11,586,496,588)	
Items that will not be reclassified to profit or loss:									
Remeasurements of net defined benefit liabilities	22	-	-	-	-	(19,513,795,188)	(1,361,690,228)	(20,875,485,416)	
Share of remeasurements of net defined benefit liabilities of associates and joint ventures		-	-	-	-	(3,673,633,506)	13,179,142	(3,660,454,364)	
Transactions with equity holders									
Paid-in capital increase		108,280,300,000	232,840,765,322	-	-	-	-	341,121,065,322	
Dividends paid		-	-	-	-	(21,267,274,050)	(1,662,050,000)	(22,929,324,050)	
Changes in scope for consolidation									
Acquisition of subsidiaries		-	-	-	-	-	22,831,342,129	22,831,342,129	
Disposal of subsidiaries		-	-	-	-	-	(1,755,560,695)	(1,755,560,695)	
Changes in ownership interests in subsidiaries that do not result in a loss of control									
Changes in ownership interests in subsidiaries		-	(3,512,141,975)	-	-	-	22,033,053,837	18,520,911,862	
Others		-	(2,025,305,738)	183,219,862	-	(1,718,025,093)	1,230,010,421	(2,330,100,548)	
Balance at December 31, 2014		₩ 815,316,540,000	₩ 712,889,896,819	₩ (3,402,661,137)	₩ 109,800,817,118	₩ 2,739,445,969,704	₩ 405,427,721,864	₩ 4,779,478,284,368	

Hanwha Chemical Corporation and Subsidiaries
Consolidated Statements of Changes in Equity
Years ended December 31, 2015 and 2014

		Attributable to equity holders of the parent													
(in Korean won)	Notes	Capital stock		Capital surplus		Capital adjustment		Accumulated other comprehensive Income (loss)		Retained earnings		Non-controlling interest		Total equity	
		₩	815,316,540,000	₩	712,889,896,819	₩	(3,402,661,137)	₩	109,800,817,118	₩	2,739,445,969,704	₩	405,427,721,864	₩	4,779,478,284,368
Balance at January 1, 2015															
Total comprehensive income (loss)															
Profit (loss) for the year			-		-		-		-		188,160,566,124		(7,744,799,641)		180,415,766,483
Other comprehensive income (loss)															
Items that may be reclassified subsequently to profit or loss:															
Change in value of available-for-sale financial assets		13	-		-		-		3,118,845,952		-		(3,063,841,201)		55,004,751
Share of other comprehensive income (loss) of associates and joint ventures		14	-		-		-		19,578,292,987		-		87,783,920		19,666,076,907
Cash flow hedges			-		-		-		(57,246,770)		-		-		(57,246,770)
Currency translation differences			-		-		-		(27,770,876,981)		-		7,117,934,156		(20,652,942,825)
Items that will not be reclassified to profit or loss:															
Remeasurements of net defined benefit liabilities		22	-		-		-		-		(12,643,769,192)		(282,214,029)		(12,925,983,221)
Share of remeasurements of net defined benefit liabilities of associates and joint ventures			-		-		-		-		(3,650,419,296)		(2,836,100)		(3,653,255,396)
Transactions with equity holders															
Dividends paid			-		-		-		-		(24,515,683,050)		(1,731,100,000)		(26,246,783,050)
Changes in scope for consolidation															
Acquisition of subsidiaries			-		-		-		-		-		1,203,852,351		1,203,852,351
Changes in ownership interests in subsidiaries that do not result in a loss of control															
Changes in ownership interests in subsidiaries			-		116,559,150,293		-		-		-		(103,236,732,139)		13,322,418,154
Others			-		48,423,252		443,512,321		-		55,486,295		5,774,592		553,196,460
Balance at December 31, 2015															
		₩	815,316,540,000	₩	829,497,470,364	₩	(2,959,148,816)	₩	104,669,832,306	₩	2,886,852,150,585	₩	297,781,543,773	₩	4,931,158,388,212

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

Hanwha Chemical Corporation and Subsidiaries
Consolidated Statements of Cash Flows
Years ended December 31, 2015 and 2014

(in Korean won)

	Note	2015	2014
Cash flows from operating activities			
Cash generated from operations	37	₩ 1,293,680,588,048	₩ 440,410,594,734
Income tax paid		(84,389,593,297)	(77,942,199,878)
Net cash flows from operating activities		<u>1,209,290,994,751</u>	<u>362,468,394,856</u>
Cash flows from investing activities			
Interest received		34,150,209,453	13,983,916,412
Dividends received		68,380,471,751	69,169,035,428
Disposal of available-for-sale financial assets		238,225,943	4,657,243,922
Decrease in other financial assets		91,950,453,370	489,894,738,623
Disposal of investments in associates and joint ventures		4,770,000,000	180,000,000
Disposals of subsidiaries		35,600,000,000	303,035,998,486
Government grants received		100,000,000	47,144,400
Disposals of investment property		224,458,000	439,805,565
Disposition of property, plant and equipment		97,152,288,767	8,571,971,412
Disposition of intangible assets		2,363,836,852	1,037,821,258
Acquisition of available-for-sale financial assets		(214,110,027)	(2,283,174,534)
Increase in other financial assets		(249,896,288,361)	(631,173,422,115)
Acquisition of investments in associates and joint ventures		(257,077,519,486)	(68,674,357,654)
Acquisition of investment property		(17,868,885)	(3,781,683)
Acquisition of property, plant, and equipment		(759,237,070,804)	(465,697,861,075)
Acquisition of intangible assets		(7,469,152,296)	(8,544,782,007)
Acquisition of subsidiaries		(13,579,633,997)	319,670,322
Net cash outflow from investing activities		<u>(952,561,699,720)</u>	<u>(285,040,033,240)</u>
Cash flows from financing activities			
Proceeds from borrowings		2,208,663,050,782	1,397,124,251,161
Increase in other financial liabilities		306,820,373	335,900,000
Paid-in capital increase		-	341,121,065,322
Changes in non-controlling interests		18,982,020,513	16,858,886,907
Repayments of borrowings		(2,164,230,154,589)	(1,951,963,850,991)
Decrease in other financial liabilities		(8,375,891,101)	(2,367,942,816)
Interest payments		(184,873,595,666)	(231,550,126,855)
Dividends paid		(24,515,683,050)	(21,267,274,050)
Net cash outflow from financing activities		<u>(154,043,432,738)</u>	<u>(451,709,091,322)</u>
Net increase (decrease) in cash and cash equivalents		102,685,862,293	(374,280,729,706)
Cash and cash equivalents at the beginning of year		549,393,182,341	920,481,845,882
Exchange gains (losses)		<u>(7,293,323,584)</u>	<u>3,192,066,165</u>
Cash and cash equivalents at the end of year		<u>₩ 644,785,721,050</u>	<u>₩ 549,393,182,341</u>

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

Hanwha Chemical Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2015 and 2014

1. General Information

Hanwha Chemical Corporation ("the Company")'s headquarters are located in Janggyo-dong, Jung-gu, Seoul, and its manufacturing equipment is located in the petrochemical industry complex of Yeosu city, South Jeolla Province, and in Ulsan. The consolidated financial statements as of and for the year ended December 31, 2015, comprise the Company and its subsidiaries (collectively referred to as 'the Group') and the Group's interests in associates and joint ventures.

On June 19, 1974, the Group's shares are listed on the Korea Exchange, and as of December 31, 2015, the Group's major shareholders consist of Hanwha Corporation (percentage of ownership: 36.77%) and others.

On April 30, 2014, the Company listed its Global Depositary Receipts (GDR) for 21,656,060 shares on Singapore Exchange Securities Trading Ltd.

1.1 Consolidated Subsidiaries

Details of the consolidated subsidiaries as of December 31, 2015 and 2014, are as follows:

Subsidiary	Location	Closing month	Main business	Percentage of ownership	
				2015	2014
Gyeonggi Yongin Techno Valley Co., Ltd.	Korea	December	Real estate	75.00%	-
Gyeonggi Hwasung Bio Valley Co.,Ltd.	Korea	December	Real estate	51.00%	51.00%
Gimhae Techno Valley Co.,Ltd	Korea	December	Real estate	80.00%	80.00%
SEOSAN TECHNO VALLEY	Korea	December	Real estate development and sales	65.00%	65.00%
C-space Co., Ltd.	Korea	December	Convenient store chain business	100.00%	100.00%
ASAN TECHNO VALLEY	Korea	December	Real estate	65.00%	65.00%
Hanwha Galleria Co., Ltd.	Korea	December	Department store and wholesale, retail	100.00%	100.00%
Hanwha Galleria Timeworld Co., Ltd.	Korea	December	Department store	70.65%	70.65%
Hanwha City Development Co.,Ltd	Korea	December	Real estate	100.00%	100.00%
Hanwha B&B Co., Ltd.	Korea	December	Restaurants business	100.00%	100.00%
NHL Development co. ltd	Korea	December	Shipping service	100.00%	100.00%
Hanwha Advanced Materials Corporation	Korea	December	Synthetic resin	100.00%	100.00%
Hanwha Compound Co.,Ltd (formerly Hanwha Next Co., Ltd) ¹	Korea	December	Packaging	99.99%	99.98%
Hanwha Compound corporation (formerly H Compound corporation) ¹	Korea	December	Manufacture of compound	-	100.00%
Hanwha Chemical Overseas Holdings, Co., Ltd.	Korea	December	Holding company	100.00%	100.00%
Hanwha Q CELLS Corp.(formerly Hanwha Solar Global)	Korea	December	Photovoltaic business	100.00%	100.00%
HANWHA FINE CHEMICAL CO., LTD. ²	Korea	December	Manufacture and sale of chemical product	48.54%	50.71%
Hanwha Chemical Trading (Shanghai) Co., Ltd.	China	December	Trading business	100.00%	100.00%
Avenir el Divisadero SpA	Chile	December	EPC business	100.00%	-

Hanwha Chemical Corporation and Subsidiaries

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Subsidiary	Location	Closing month	Main business	Percentage of ownership	
				2015	2014
BOURTON RENEWABLES LIMITED	England	December	EPC business	100.00%	-
Chandler LLC.	USA	December	Real estate development	90.00%	90.00%
Fenland Renewables Limited	England	December	Photovoltaic business	100.00%	-
Fotovoltaica De Los Andes SpA	Chile	December	Photovoltaic business	100.00%	-
Fotovoltaica Sol del Norte SpA	Chile	December	Photovoltaic business	100.00%	-
Green End Renewables Limited	England	December	Photovoltaic business	100.00%	-
Hale Ali'i Park Association, LLC	USA	December	Real estate development	100.00%	100.00%
Hale Ka Lae, LLC	USA	December	Real estate development	100.00%	100.00%
Hanwha Advanced Materials America LLC	USA	December	Manufacture of car parts	100.00%	100.00%
Hanwha Advanced Materials Beijing Co., Ltd.	China	December	Manufacture of car parts	100.00%	100.00%
Hanwha Advanced Materials Chongqing Co.,Ltd.	China	December	Manufacture of compound	100.00%	-
Hanwha Advanced Materials Europe, s.r.o.	Czech	December	Manufacture of car parts	100.00%	100.00%
Hanwha Advanced Materials Germany GmbH	Germany	December	Manufacture of car parts	100.00%	-
Hanwha Advanced Materials Holdings USA Inc.	USA	December	Holding company	100.00%	100.00%
Hanwha Advanced Materials Holdings USA LLC	USA	December	Holding company	100.00%	100.00%
Hanwha Advanced Materials Mexico S. De R.L. De C.V.	Mexico	December	Manufacture of car parts	100.00%	-
Hanwha Advanced Materials Shanghai Co., Ltd.	China	December	Manufacturing	100.00%	100.00%
Hanwha America Development LLC	USA	December	Real estate development	100.00%	100.00%
Hanwha AZDEL, Inc.	USA	December	Manufacture of car parts	100.00%	100.00%
Hanwha Chandler LLC	USA	December	Real estate development	100.00%	100.00%
Hanwha Chemical (Ningbo) Co., Ltd.	China	December	Manufacture of compound	100.00%	100.00%
Hanwha Chemical (Thailand) Co.,Ltd.	Thailand	December	Manufacture of compound	99.99%	99.99%
HANWHA CHEMICAL INDIA PRIVATE LIMITED	India	March	Trading business	99.99%	99.99%
Hanwha Chemical Malaysia Sdn. Bhd.	Malaysia	December	Sales of compound	100.00%	100.00%
Hanwha Chemical USA LLC	USA	December	Retail and wholesale service	-	100.00%
Hanwha Development Services LLC	USA	December	Business Operation	100.00%	100.00%
Hanwha Hawaii LLC	USA	December	Real estate development	100.00%	100.00%
Hanwha Holdings(USA), Inc.	USA	December	Holding company	50.98%	50.98%
Hanwha International Corp.	USA	December	Holding company	100.00%	100.00%
Hanwha International LLC	USA	December	Trading business	100.00%	100.00%
Hanwha Machinery Americas, Inc.	USA	December	Sales Machinery	100.00%	100.00%
Hanwha Parcel O LLC	USA	December	Real estate development	100.00%	100.00%
Hanwha Property USA LLC	USA	December	Real estate development and management	100.00%	100.00%
Hanwha PVPLUS LLC	USA	December	Asset Securitization	100.00%	100.00%
Hanwha Q CELLS America Inc. (formerly Hanwha SolarOne USA Inc.)	USA	December	Photovoltaic business	100.00%	100.00%

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Subsidiary	Location	Closing month	Main business	Percentage of ownership	
				2015	2014
Hanwha Q CELLS Australia Pty Ltd.	Australia	December	Photovoltaic business	100.00%	100.00%
Hanwha Q CELLS Canada, Corp. (formerly Hanwha Solar Canada Inc.)	Canada	December	Photovoltaic business	100.00%	100.00%
Hanwha Q CELLS Chile SpA	Chile	December	Photovoltaic business	100.00%	100.00%
Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.) ^{3,4}	England	December	Photovoltaic business	93.89%	44.64%
Hanwha Q CELLS(Qidong) Co., Ltd. (formerly Hanwha SolarOne(Qidong) Co., Ltd.)	China	December	Manufacture of silicon ingot	100.00%	100.00%
Hanwha Q CELLS France SAS	France	December	Photovoltaic business	100.00%	-
Hanwha Q CELLS GmbH	Germany	December	Photovoltaic business	100.00%	100.00%
Hanwha Q CELLS Hong Kong Limited (formerly Hanwha SolarOne Hong Kong Limited)	Hong Kong	December	Investment and Procurement	100.00%	100.00%
Hanwha Q CELLS Investment Co., Ltd.	England	December	Holding company	100.00%	100.00%
Hanwha Q CELLS Malaysia Sdn. Bhd.	Malaysia	December	Photovoltaic business	100.00%	100.00%
Hanwha Q CELLS Peru S.A.C	Peru	December	Photovoltaic business	99.97%	-
HANWHA Q CELLS SOLAR POWER SDN. BHD.	Malaysia	December	Photovoltaic business	100.00%	100.00%
Hanwha Q CELLS Til Til Dos SpA	Chile	December	EPC business	100.00%	-
Hanwha Q CELLS Til Til Uno SPA	Chile	December	Photovoltaic business	100.00%	100.00%
Hanwha Q CELLS Turkey	Turkey	December	Photovoltaic business	100.00%	100.00%
Hanwha Riverside LLC	USA	December	Real estate development	100.00%	100.00%
Hanwha Solar America LLC	USA	December	Solar energy Laboratory	100.00%	100.00%
Hanwha Solar Australia Pty Ltd.	Australia	December	Photovoltaic business	-	100.00%
Hanwha Solar Electric Power Engineering Co., Ltd.	China	December	Photovoltaic business	100.00%	100.00%
Hanwha Solar Engineering R&D center Co., Ltd.	China	December	R&D	100.00%	100.00%
Hanwha Solar Holdings Co., Ltd.	England	December	Holding company	100.00%	100.00%
Hanwha SolarOne (Laiyang) Co., Ltd	China	December	Photovoltaic business	100.00%	-
Hanwha SolarOne (Rugao) Co., Ltd	China	December	Photovoltaic business	100.00%	-
Hanwha SolarOne GmbH (formerly Hanwha SolarOne Deutschland GmbH)	Germany	December	Photovoltaic business	100.00%	100.00%
Hanwha SolarOne Investment Holding Ltd.	England	December	Holding company	100.00%	100.00%
Hanwha SolarOne Power Generation (Wuxi) Co., Ltd.	China	December	Photovoltaic business	100.00%	100.00%
Hanwha SolarOne Technology Co., Ltd.	China	December	Manufacture of silicon ingot	100.00%	100.00%
Hanwha SolarOne(Nantong) Co., Ltd.	China	December	Photovoltaic business	100.00%	100.00%
Hanwha SolarOne(Shanghai) Co., Ltd.	China	December	Photovoltaic business	100.00%	100.00%
Hanwha Sonoran LLC	USA	December	Real estate development	100.00%	100.00%
HANWHA TECHM USA LLC	USA	December	EPC business	100.00%	100.00%
HANWHA UK SOLAR 1 LIMITED (formerly Fenland Green-End Solar Holding Ltd.)	England	December	Photovoltaic business	100.00%	-

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Subsidiary	Location	Closing month	Main business	Percentage of ownership	
				2015	2014
Hanwha Village Market, LLC	USA	December	Real estate development	100.00%	100.00%
Hanwha West Properties LLC	USA	December	Real estate development	100.00%	100.00%
HARELAW RENEWABLES LIMITED	England	December	EPC business	100.00%	-
HIGH ERCALL RENEWABLES LIMITED	England	December	EPC business	100.00%	-
KMPT Solarpark Verwaltung GmbH	Germany	December	Photovoltaic business	100.00%	-
Lodz Solar Sp. z o.o. (formerly E10 AMBER ENERGIA WYTWARZANIE Sp. z o.o.)	Poland	December	EPC business	52.00%	-
Mazovia Solar 1 Sp. Z o.o. (formerly E14 AMB ENERGIA Sp. z o.o.)	Poland	December	EPC business	52.00%	-
Mazovia Solar 2 Sp. Z o.o. (formerly E15 AMB ENERGIA Sp. z o.o.)	Poland	December	EPC business	52.00%	-
Mazovia Solar 3 Sp. Z o.o.	Poland	December	EPC business	52.00%	-
Nantong Hanwha Import & Export Co., Ltd.	China	December	Photovoltaic business	100.00%	100.00%
Nantong Hanwha PV-Tech Co., Ltd.	China	December	Photovoltaic business	-	100.00%
PV Vallenar Uno SpA	Chile	December	Holding company	100.00%	-
SFH Solarpark GmbH	Germany	December	Photovoltaic business	100.00%	-
Silent Power Inc	USA	December	Photovoltaic business	-	58.75%
Solarpark FFT Infrastruktur GmbH & Co. KG	Germany	December	Photovoltaic business	100.00%	-
Sonoran Vista LLC	USA	December	Real estate development	90.00%	90.00%
Tower Hill Farm Ltd., England	England	December	Photovoltaic business	100.00%	100.00%
Universal Bearings LLC	USA	December	Manufacture of Bearings	100.00%	100.00%
WSE Bradley Road Ltd	England	December	Photovoltaic business	100.00%	-

¹ On March 30, 2015, the Group newly established HANWHA POLYDREAMER CO.,LTD. through a split-off. Subsequently, the Group sold HANWHA POLYDREAMER CO.,LTD. and the surviving company changed its name to Hanwha Next Co., Ltd. (Note 39). In 2015, Hanwha Compound Corporation (formerly H Compound Corporation) merged with the compound segment of Hanwha Advanced Materials Corporation, which was split off from Hanwha Advanced Materials Corporation, and Hanwha Compound Corporation (formerly H Compound Corporation) merged with Hanwha Next Co., Ltd. on September 30, 2015. Then Hanwha Next Co., Ltd. changed its name to Hanwha Compound Co., Ltd.

² Although the percentage of ownership of HANWHA FINE CHEMICAL CO., LTD. decreased due to disproportionate paid-in capital increase in 2015, the Group is considered to have control over HANWHA FINE CHEMICAL CO., LTD.as the remaining shareholders are widely dispersed.

³ In 2015, due to the fact that Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.) received shares of Hanwha Q CELLS Investment Co., Ltd., which Hanwha Solar Holdings Co., Ltd. retained as capital contributions from Hanwha Solar Holdings Co., Ltd., the percentage of ownership of Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.) increased.

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⁴ Although the Group owns less than 50% of voting rights of Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.), the Group is considered to have control over Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.), as the remaining shareholders are widely dispersed, and the Group was able to exercise the majority voting rights in its decision-making process using the Company's ownership interests in the general meeting of shareholders in the past years.

1.2 Changes in Scope of Consolidation

Subsidiaries newly included in the consolidation and excluded from the consolidation for the year ended December 31, 2015, are as follows:

(a) Subsidiaries newly included in the consolidation for the year ended December 31, 2015:

Subsidiary	Reason
Gyeonggi Yongin Techno Valley Co., Ltd.	
HANWHA POLYDREAMER CO., LTD ¹	
BOURTON RENEWABLES LIMITED	
Hanwha Advanced Materials Chongqing Co., Ltd.	
Hanwha Advanced Materials Mexico S. De R.L. De C.V.	
Hanwha Q CELLS France SAS	
Hanwha Q CELLS Peru S.A.C	
Hanwha Q CELLS Til Til Dos SpA	
Hanwha SolarOne (Laiyang) Co., Ltd	Newly established
Hanwha SolarOne (Rugao) Co., Ltd	
HANWHA UK SOLAR 1 LIMITED	
(formerly Fenland Green-End Solar Holding Ltd.)	
HARELAW RENEWABLES LIMITED	
HIGH ERCALL RENEWABLES LIMITED	
PV Vallenar Uno SpA	
Avenir el Divisadero SpA	
Fenland Renewables Limited	
Fotovoltaica De Los Andes SpA	
Fotovoltaica Sol del Norte SpA	
Green End Renewables Limited	
Hanwha Advanced Materials Germany GmbH	
KMPT Solarpark Verwaltung GmbH	
Lodz Solar Sp. z o.o.	
(formerly E10 AMBER ENERGIA WYTWARZANIE Sp. z o.o.)	Newly acquired
Mazovia Solar 1 Sp. Z o.o.	
(formerly E14 AMB ENERGIA Sp. z o.o.)	
Mazovia Solar 2 Sp. Z o.o.	
(formerly E15 AMB ENERGIA Sp. z o.o.)	
Mazovia Solar 3 Sp. Z o.o.	
SFH Solarpark GmbH	
Solarpark FFT Infrastruktur GmbH & Co. KG	
WSE Bradley Road Ltd	

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(b) Subsidiaries excluded from the consolidation for the year ended December 31, 2015:

Subsidiary	Reason
HANWHA POLYDREAMER CO., LTD ¹	Loss of control due to disposal
Hanwha Compound corporation (formerly H Compound Corporation)	Merger
Hanwha Chemical USA LLC	
Hanwha Solar Australia Pty Ltd.	
Nantong Hanwha PV-Tech Co., Ltd.	Liquidation
Silent Power Inc	

¹ The Group newly established HANWHA POLYDREAMER CO., LTD. after the split-off of the sheet film and coating membrane segment of Hanwha Compound Co.,Ltd. (formerly Hanwha Next Co., Ltd.), a subsidiary of the Group. Subsequently, the Group disposed of its shares in HANWHA POLYDREAMER CO., LTD. (Note 39).

1.3 Financial Information of Subsidiaries

Financial information of major subsidiaries as of and for the year ended December 31, 2015, is as follows:

(in thousands of Korean won)	Assets	Liabilities	Equity	Sales	Profit (loss)
Gyeonggi Yongin Techno Valley Co., Ltd.	4,923,272	312,335	4,610,937	-	(345,901)
Gyeonggi Hwasung Bio Valley Co.,Ltd.	310,595,102	288,351,807	22,243,295	130,730,340	3,266,043
Gimhae Techno Valley Co.,Ltd	344,267,646	323,191,854	21,075,792	67,852,772	1,215,108
SEOSAN TECHNO VALLEY	102,869,562	102,483,721	385,841	80,878,428	2,815,911
C-space Co., Ltd.	9,917,042	9,663,533	253,509	45,889,178	(554,052)
ASAN TECHNO VALLEY	88,235,308	91,976,555	(3,741,247)	67,090,955	3,431,555
Hanwha Galleria Co., Ltd.	1,704,972,288	928,561,835	776,410,453	356,294,896	(12,861,555)
Hanwha Galleria Timeworld Co., Ltd.	491,789,291	228,149,398	263,639,893	168,887,745	10,786,337
Hanwha City Development Co.,Ltd	215,604,654	25,025,177	190,579,477	-	(6,477,305)
Hanwha B&B Co., Ltd.	10,989,394	2,724,195	8,265,199	14,448,898	(288,562)
NHL Development co. ltd	191,022,246	29,615,855	161,406,391	105,927,383	(4,553,702)
Hanwha Advanced Materials Corporation	893,831,933	518,860,899	374,971,034	631,087,660	17,274,132
Hanwha Compound Co.,Ltd (formerly Hanwha Next Co., Ltd)	83,059,245	13,678,711	69,380,534	81,840,090	6,646,645
Hanwha Chemical Overseas Holdings, Co., Ltd.	80,197,558	(8,477)	80,206,035	-	6,837
HANWHA FINE CHEMICAL CO., LTD.	138,505,948	104,420,136	34,085,812	210,168,936	(40,677,043)
Hanwha Chemical Trading (Shanghai) Co., Ltd.	38,099,493	26,803,062	11,296,431	216,861,104	2,363,664
Fenland Renewables Limited	41,669,393	42,358,777	(689,384)	40,871,337	(498,684)
Green End Renewables Limited	58,033,066	58,860,222	(827,156)	57,218,568	(669,709)
Hanwha Advanced Materials Beijing Co., Ltd.	56,676,985	16,179,429	40,497,556	60,356,554	3,559,257
Hanwha Advanced Materials Europe, s.r.o.	65,311,609	47,330,997	17,980,612	60,134,076	1,497,774
Hanwha Advanced Materials Holdings USA Inc.	46,406,227	3,731,996	42,674,231	-	-
Hanwha Advanced Materials	21,656,016	3,778,879	17,877,137	-	(1,163,485)

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Mexico S. De R.L. De C.V.					
Hanwha Advanced Materials Shanghai Co., Ltd.	56,056,337	28,858,772	27,197,565	49,978,740	328,308
Hanwha Chemical (Ningbo) Co., Ltd.	356,143,405	225,428,967	130,714,438	331,177,404	338,749
Hanwha Chemical (Thailand) Co., Ltd.	49,899,993	28,270,821	21,629,172	38,570,948	749,852
Hanwha Chemical Malaysia Sdn. Bhd.	31,497,265	24,990,829	6,506,436	129,135,639	4,888,782
Hanwha Holdings(USA), Inc. ¹	764,006,044	468,224,682	295,781,362	783,306,026	10,509,959
Hanwha International Corp.	58,866,781	2,783,932	56,082,849	-	(27,717)
Hanwha Q CELLS Australia Pty Ltd.	29,818,986	30,091,044	(272,058)	31,928,847	(764,561)
Hanwha Q CELLS Chile SpA	49,822,530	29,934,420	19,888,110	5,532,199	(1,287,755)
Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.) ²	3,209,782,459	2,079,465,915	1,130,316,544	1,563,149,944	17,648,380
Hanwha Q CELLS Gmbh	483,769,549	224,492,896	259,276,653	668,199,881	4,252,170
Hanwha Q CELLS Investment Co., Ltd.	438,524,638	58,143,184	380,381,454	-	(2,091,020)
Hanwha Q CELLS Malaysia Sdn. Bhd.	508,812,979	477,284,651	31,528,328	450,911,181	13,259,424
Hanwha Q CELLS Turkey	40,458,733	13,736,513	26,722,220	25,691,250	5,024,911
Hanwha Solar Holdings Co., Ltd.	875,397,639	-	875,397,639	-	(4,727)
HANWHA UK SOLAR 1 LIMITED (formerly Fenland Green-End Solar Holding Ltd.)	21,054,506	20,952,473	102,033	-	101,697

¹ Consolidated financial information of Hanwha Holdings(USA), Inc., which has 23 subsidiaries

² Consolidated financial information of Hanwha Q CELLS Co., Ltd.(formerly Hanwha SolarOne Co., Ltd.), which has 16 subsidiaries

2. Significant Accounting Policies

The principal accounting policies applied in the preparation of these consolidated financial statements are set out below. These policies have been consistently applied to all the years presented, unless otherwise stated.

2.1 Basis of Preparation

The Group maintains its accounting records in Korean won and prepares statutory financial statements in the Korean language (Hangul) in accordance with the 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.

Certain information attached to the Korean language financial statements, but not required for a fair presentation of the Group's financial position, financial performance or cash flows, is not presented in the accompanying consolidated financial statements.

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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 preparation of the consolidated financial statements requires the use of certain critical accounting estimates. It also requires management to exercise judgment in the process of applying the Group's accounting policies. The areas involving a higher degree of judgment or complexity, or areas where assumptions and estimates are significant to the consolidated financial statements are disclosed in Note 3.

2.2 Changes in Accounting Policy and Disclosures

(a) New and amended standards adopted by the Group

The Group newly applied the following amended and enacted standards for the annual period beginning on January 1, 2015, and the application of this amendment does not have a material impact on the consolidated financial statements.

- Amendment to Korean IFRS 1019, *Employee Benefits*
- Annual Improvements to Korean IFRS 2010-2012 Cycle
- Annual Improvements to Korean IFRS 2011-2013 Cycle:

(b) New and amended standards and interpretations not yet adopted

New standards and amendments issued but not effective for the financial year beginning January 1, 2015, and not early adopted are enumerated below. The Group expects that these standards and amendments would not have a material impact on its consolidated financial statements.

- Amendment to Korean IFRS 1001, *Presentation of Financial Statements*
- Korean IFRS 1016, *Property, plant and equipment*, and Korean IFRS 1041, *Agriculture and fishing: Productive plants*
- Korean IFRS 1016, *Property, plant and equipment*, and Korean IFRS 1038, *Intangible assets: Amortization based on revenue*
- 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: Exemption for consolidation of investee*
- Korean IFRS 1111, *Joint Agreements*
- Annual Improvements to Korean IFRS 2012-2014 Cycle

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Furthermore, new standards issued, but not effective for the financial year beginning January 1, 2015, and not early adopted are enumerated below:

- Korean IFRS 1109, *Financial Instruments*

The new Standard issued in December 2015 regarding financial instruments replaces Korean IFRS 1039, *Financial Instruments: Recognition and Measurement*.

Korean IFRS 1109, *Financial Instruments*, requires financial assets to be classified and measured on the basis of the holder's business model and the instrument's contractual cash flow characteristics. The Standard requires a financial instrument to be classified and measured at amortized cost, fair value through other comprehensive income, or fair value through profit or loss, and provides guidance on accounting for related gains and losses. The impairment model is changed into an expected credit loss model, and changes in those expected credit losses are recognized in profit or loss. The new Standard is effective for the financial year initially beginning on or after January 1, 2018, but early adoption is allowed. Early adoption of only the requirements related to financial liabilities designated at fair value through profit or loss is also permitted. The Group is in the process of determining the effects resulting from the adoption of the new Standard.

- Korean IFRS 1115, *Revenue from Contracts with Customers*

The new Standard for the recognition of revenue issued in December 2015 will replace Korean IFRS1018, *Revenue*, Korean IFRS 1011, *Construction Contracts*, and related Interpretations.

Korean IFRS 1115, *Revenue from Contracts with Customers*, will replace the risk-and-reward model under the current standards and is based on the principle that revenue is recognized when control of goods or services transfer to the customer by applying the five-step process. Key changes to current practices include guidance on separate recognition of distinct goods or services in any bundled arrangement, constraint on recognizing variable consideration, criteria on recognizing revenue over time, and increased disclosures. The new Standard is effective for annual reporting beginning on or after January 1, 2018, but early application is permitted. The Group is in the process of determining the effects resulting from the adoption of the new Standard.

2.3 Consolidation

The Group has prepared the consolidated financial statements in accordance with Korean IFRS 1110, *Consolidated Financial Statements*.

(a) Subsidiaries

Subsidiaries are all entities (including special purpose entities) over which the parent company has control. The parent company controls the corresponding investee when it is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Consolidation of a subsidiary begins from the date the parent company obtains control of a subsidiary and ceases when the parent company loses control of the subsidiary.

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The Group applies the acquisition method to account for business combinations. The consideration transferred is measured at the fair values of the assets transferred, and identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are initially measured at their fair values at the acquisition date. The Group recognizes any non-controlling interest in the acquiree on an acquisition-by-acquisition basis in the event of liquidation, either at fair value or at the non-controlling interest's proportionate share of the recognized amounts of acquiree's identifiable net assets. All other non-controlling interests are measured at their acquisition-date fair values, unless another measurement basis is required by IFRSs. Acquisition-related costs are expensed as incurred.

Goodwill is recognized as the excess of the aggregate of the consideration transferred, the amount of any non-controlling interest in the acquiree, and the acquisition-date fair value of the acquirer's previously held equity interest in the acquiree over the identifiable net assets acquired. If this consideration is lower than the fair value of the net assets of the subsidiary acquired, the difference is recognized in profit or loss.

Balances of receivables and payables, income and expenses and unrealized gains on transactions between the Group subsidiaries are eliminated. Accounting policies of subsidiaries have been changed where necessary to ensure consistency with the policies adopted by the Group.

In transactions with non-controlling interests, which do not result in loss of control, the Group recognizes directly in equity any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received, and attribute it to the owners of the parent.

If the Group loses control of a subsidiary, any investment continuously retained in the subsidiary is re-measured at its fair value at the date when control is lost and any resulting differences are recognized in profit or loss.

(b) Associates

Associates are all entities over which the Group has significant influence, and investments in associates are initially recognized at acquisition cost using the equity method. Unrealized gains on transactions between the Group and its associates are eliminated to the extent of the Group's interest in the associates. If there is any objective evidence that the investment in the associate is impaired, the Group recognizes the difference between the recoverable amount of the associate and its book value as impairment loss.

(c) Joint Arrangements

A joint arrangement of which two or more parties have joint control is classified as either a joint operation or a joint venture. A joint operator has rights to the assets, and obligations for the liabilities, relating to the joint operation and recognizes the assets, liabilities, revenues and expenses relating to its interest in a joint operation. A joint venturer has rights to the net assets relating to the joint venture and accounts for that investment using the equity method.

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2.4 Foreign Currency Translation

(a) Functional and presentation currency

Items included in the financial statements of each of the Group's entities are measured using the currency of the primary economic environment in which the each entity operates (the "functional currency"). The consolidated financial statements are presented in Korean won, which is the parent company's functional and presentation currency.

(b) Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions or valuation where items are re-measured. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognized in profit or loss.

Exchange differences arising on non-monetary financial assets and liabilities such as equity instruments at fair value through profit or loss and available-for-sale equity instruments are recognized in profit or loss and included in other comprehensive income, respectively, as part of the fair value gain or loss.

(c) Translation into the presentation currency

The results and financial position of all Group entities that have a functional currency different from the presentation currency are translated into the presentation currency as follows:

- assets and liabilities for each statement of financial position presented are translated at the closing rate at the end of the reporting period;
- income and expenses for each statement of income are translated at average exchange rates; and
- equity is translated at the historical exchange rate; and
- all resulting exchange differences are recognized in other comprehensive income.

2.5 Cash and Cash Equivalents

Cash and cash equivalents include cash in hand, deposits held at call with banks, and other short-term highly liquid investments with original maturities of three months or less.

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2.6 Financial Assets

(a) Classification and measurement

The Group classifies its financial assets in the following categories: financial assets at fair value through profit or loss, available-for-sale financial assets, loans and receivables, and held-to-maturity financial assets. Regular purchases and sales of financial assets are recognized on the trade date.

Regular purchases and sales of financial assets are recognized on the trade date. At initial recognition, financial assets are measured at fair value plus, in the case of financial assets not carried at fair value through profit or loss, transaction costs. Transaction costs of financial assets carried at fair value through profit or loss are expensed in the statement of income. After the initial recognition, available-for-sale financial assets and financial assets at fair value through profit or loss are subsequently carried at fair value. Loans and receivables, and held-to-maturity investments are subsequently carried at amortized cost using the effective interest rate method.

Changes in fair value of financial assets at fair value through profit or loss are recognized in profit or loss and changes in fair value of available-for-sale financial assets are recognized in other comprehensive income. When the available-for-sale financial assets are sold or impaired, the fair value adjustments recorded in equity are reclassified into profit or loss.

(b) Impairment

The Group assesses at the end of each reporting period whether there is objective evidence that a financial asset or a group of financial assets is impaired. A financial asset or a group of financial assets is impaired and impairment losses are incurred only if there is objective evidence of impairment as a result of one or more events that occurred after the initial recognition of the asset (a 'loss event') and that loss event (or events) has an impact on the estimated future cash flows of the financial asset or a group of financial assets that can be reliably estimated.

Impairment of loans and receivables is presented as a deduction in an allowance account. Impairment of other financial assets is directly deducted from their carrying amount. The Group writes off financial assets when the assets are determined to be no longer recoverable.

(c) Derecognition

If the Group transfers a financial asset and the transfer does not result in derecognition because the Group has retained substantially of all risks and rewards of ownership of the transferred asset due to a recourse in the event the debtor defaults, the Group continues to recognize the transferred asset in its entirety and recognizes a financial liability for the consideration received. The related financial liability is classified as 'borrowings' in the statement of financial position.

(d) Offsetting of financial instruments

Financial assets and liabilities are offset and the net amount reported in the consolidated statements of financial position where there is a legally enforceable right to offset the recognized amounts and there is an intention to settle on a net basis or realize the assets and settle the

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liability simultaneously. The legally enforceable right must not be contingent on future events and must be enforceable in the normal course of business and in the event of default, insolvency or bankruptcy of the Group or the counterparty.

2.7 Derivative Instruments

Derivatives are initially recognized at fair value on the date when a derivative contract is entered into and are subsequently re-measured at their fair value. Changes in the fair value of the derivatives that are not qualified for hedge accounting are recognized in the statement of income within 'other income (expenses)' according to the nature of transactions.

The Group applies cash flow hedge accounting for hedging price changes risks on forecast purchases of inventories. The effective portion of changes in fair value of derivatives that are designated and qualify as cash flow hedges is recognized in other comprehensive income and the ineffective portion is recognized in 'other income (expenses)'. Amounts of changes in fair value of effective hedging instruments accumulated in other comprehensive income are included in the initial measurement of the cost of non-financial assets as hedging transactions and recognized as 'cost of sales' for the periods when the corresponding transactions affect profit or loss. When a forecast transaction is no longer expected to occur, the cumulative gain or loss that is reported in other comprehensive income is recognized as 'other income (expenses)'.

The Group applies fair value hedge accounting for hedging fixed interest risks on borrowings. The effective portion of changes in fair value of derivatives that are designated and qualify as fair value hedges is recognized as 'finance cost', and the ineffective portion is recognized as 'other income (expenses)'. However, changes in the fair value of the hedged items attributable to hedged risk are recognized as 'finance cost'. If the hedge no longer meets the criteria for hedge accounting, the adjustment to the carrying amount of a hedged item for which the effective interest method is used is amortized to profit or loss over the period to maturity.

An embedded derivative is separated from the host contract and accounted for as a derivative if, and only if the economic characteristics and risks of the embedded derivative are not closely related to those of the host contract and a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative and the hybrid(combined) instrument is not measured at fair value with changes in fair value recognized in profit or loss.

2.8 Trade Receivables

Trade receivables are amounts due from customers for merchandise sold or services performed in the ordinary course of business. If collection is expected in one year or less, they are classified as current assets. If not, they are presented as non-current assets.

2.9 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost is determined using the gross average method or moving-weighted average method, except for materials-in-transit measured using the individual cost method.

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2.10 Investment Property

Property held to earn rentals or for capital appreciation or both is classified as investment property. Investment property is measured initially at its cost. After recognition as an asset, investment property is carried at cost less accumulated depreciation and impairment losses. Investment property, except for land, is depreciated using the straight-line method over their useful lives from five to 60 years.

2.11 Property, Plant and Equipment

Property, plant and equipment are stated at its cost less accumulated depreciation and accumulated impairment losses. Historical cost includes expenditures that is directly attributable to the acquisition of the items.

Land is not depreciated. Depreciation on other assets is calculated using the straight-line method to allocate the difference between their cost and their residual values over their estimated useful lives, as follows:

	Useful life
Buildings	5 – 60 years
Structures	8 – 55
Machinery	2 – 15
Vehicles	1 – 12
Tools and equipment	1 – 20
Others	1 – 12

The depreciation method, residual values and useful lives of property, plant and equipment are reviewed at the end of each reporting period and, if appropriate, accounted for as changes in accounting estimates.

2.12 Borrowing Costs

Borrowing costs incurred in the acquisition or construction of a qualifying asset are capitalized in the period when it is prepared for its intended use, and investment income earned on the temporary investment of borrowings made specifically for the purpose obtaining a qualifying asset is deducted from the borrowing costs eligible for capitalization during the period. Other borrowing costs are recognized as expenses for the period in which they are incurred.

2.13 Government Grants

Grants from a government are recognized at their fair value where there is a reasonable assurance that the grant will be received and the Group will comply with all attached conditions. Government grants relating to costs are deferred and recognized in the statement of income over the period necessary to match them with the costs that they are intended to compensate.

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2.14 Intangible Assets

Goodwill is measured as explained in Note 2.3.(a) and carried at its cost less accumulated impairment losses.

Intangible assets, except for goodwill, are initially recognized at its historical cost and carried at its cost less accumulated amortization and accumulated impairment losses.

Internally generated development costs are the aggregate costs recognized after meeting the asset recognition criteria, including technical feasibility, and determined to have future economic benefits.

Certain intangible assets are regarded as intangible assets with indefinite useful life and not amortized because there is no foreseeable limit to the period over which the assets are expected to be utilized. Intangible assets with definite useful life that are amortized using the straight-line method over their estimated useful lives, are as follows:

	Useful life
Industrial property rights	5 – 10 years
Land use rights	44 – 50
Development costs	5
Memberships	10 – 20
Others	3 – 20

2.15 Impairment of Non-financial Assets

Goodwill or intangible assets with indefinite useful lives are not subject to amortization and are tested annually for impairment. Assets that are subject to amortization are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognized for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. Non-financial assets, other than goodwill, that suffered impairment are reviewed for possible reversal of the impairment at each reporting date.

2.16 Financial Liabilities

(a) Classification and measurement

Financial liabilities at fair value through profit or loss are financial instruments held for trading. Financial liabilities are classified in this category if incurred principally for the purpose of repurchasing them in the near term. Derivatives that are not designated as hedges or bifurcated from financial instruments containing embedded derivatives are also categorized as held-for-trading.

The Group classifies non-derivative financial liabilities, except for financial liabilities at fair value through profit or loss, financial guarantee contracts and financial liabilities that arise when a transfer of financial assets does not qualify for derecognition, as financial liabilities carried at amortized cost and presented as financial liabilities in the statement of financial position.

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(b) Derecognition

Financial liabilities are removed from the statement of financial position when it is extinguished, for example, when the obligation specified in the contract is discharged, cancelled or expired or when the terms of an existing financial liability are substantially modified.

2.17 Trade Payables

Trade payables are obligations to pay for goods or services that have been acquired in the ordinary course of business from suppliers. Trade payables are classified as current liabilities if payment is due within 12 months or less. If not, they are presented as non-current liabilities.

2.18 Borrowings

Borrowings are recognized initially at fair value, net of transaction costs incurred. Borrowings are subsequently carried at amortized cost; any difference between the proceeds (net of transaction costs) and the redemption value is recognized through profit or loss in the consolidated statement of income over the period of the borrowings using the effective interest method. Borrowings are classified as current liabilities unless the Group has an unconditional right to defer the settlement of the borrowings for at least 12 months after the end of the reporting period.

2.19 Compound Financial Instruments

Compound financial instruments are convertible bonds that can be converted into equity instruments at the option of the holder. The liability component of a compound financial instrument is recognized initially at the fair value of a similar liability that does not have an equity conversion option.

2.20 Financial Guarantee Contracts

Financial guarantees contracts provided by the Group are initially measured at fair value on the date the guarantee was given. Subsequent to initial recognition, the Group's liabilities under such guarantees are measured at the higher of the amounts below and recognized as 'other financial liabilities':

- the amount determined in accordance with Korean IFRS 1037, *Provisions, Contingent Liabilities and Contingent Assets*; or
- the initial amount, less accumulated amortization recognized in accordance with Korean IFRS1018, *Revenue*.

2.21 Provisions

Provisions are measured at the present value of the expenditures expected to be required to settle the obligation and the increase in the provision due to passage of time is recognized as expense.

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2.22 Greenhouse Gas Emissions Rights (Allowances) and Obligations

(a) Carrying out an obligation of the emissions and Obligations

With Enforcement of Allocation and Trading of Greenhouse Gas Emissions Allowances, allowances that are received free of charge from the government are measured at zero while allowances purchased are measured at acquisition cost and stated net of accumulated impairment loss. Emissions obligations are measured as the sum of the carrying amount of the allocated allowances that will be submitted to the government and the best estimate of expenditure required to settle the obligation at the end of reporting period for any excess emission. The allowances and emissions obligations are classified as intangible assets and provisions, respectively, in the statement of financial position.

(b) Emissions rights held for trading

Emissions rights held for trading are measured at fair value and changes in fair value are recognized as profit or loss for the period. Changes in fair value and gain (loss) on disposal are recognized as other income and other expenses, respectively.

2.23 Current and Deferred Tax

The tax expense for the period consists of current and deferred tax. Tax is recognized on the profit for the period in the statement of income, except to the extent that it relates to items recognized in other comprehensive income or directly in equity. In this case, the tax is also recognized in other comprehensive income or directly in equity, respectively.

The tax expense is calculated on the basis of the tax laws enacted or substantively enacted at the end of the reporting period.

Deferred tax is recognized for temporary differences arising between the tax bases of assets and liabilities and their carrying amounts as expected tax consequences at the recovery or settlement of the carrying amounts of the assets and liabilities. However, deferred tax assets and liabilities are not recognized if they arise from initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss.

Deferred tax assets are recognized only to the extent that it is probable that future taxable profit will be available against which the deductible temporary differences can be utilized.

Deferred tax liability is recognized for taxable temporary differences associated with investments in subsidiaries, associates, and interests in joint ventures, except to the extent that the Group is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. In addition, deferred tax asset is recognized for deductible temporary differences arising from such investments to the extent that it is probable the temporary difference will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilized.

Deferred tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets against current tax liabilities and when the deferred income taxes assets and

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liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities where there is an intention to settle the balances on a net basis.

2.24 Employee Benefits

(a) Defined benefits liability

The Group has both defined benefit and defined contribution plans.

A defined contribution plan is a pension plan under which the Group pays fixed contributions into a separate entity. The contributions are recognized as employee benefit expenses when an employee has rendered service.

A defined benefit plan is a pension plan that is not a defined contribution plan. Typically defined benefit plans define an amount of pension benefit that an employee will receive on retirement, usually dependent on one or more factors such as age, years of service and compensation. The liability recognized in the statement of financial position in respect of defined benefit pension plans is the present value of the defined benefit obligation at the end of the reporting period less the fair value of plan assets. The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds and that have terms to maturity approximating to the terms of the related pension obligation. The remeasurements of the net defined benefit liability are recognized in other comprehensive income.

If any plan amendments, curtailments, or settlements occur, past service costs or any gains or losses on settlement are recognized as profit or loss for the year.

(b) Share-based payments

Equity-settled share-based payments granted to employees are estimated at the grant date at fair value of equity instruments and recognized as employee benefit expenses over the vesting period. The number of equity instruments expected to vest is remeasured with consideration to non-market vesting conditions at the end of the reporting period, with any changes from the original measurement recognized in the profit for the year and equity.

(c) Long-term employee benefits

Certain Group companies provide long-term employee benefits, which are entitled to employees with service period for ten years and above. The expected costs of these benefits are accrued over the period of employment using the same accounting methodology as used for defined benefit pension plans. The Group recognizes service cost, net interest on other long-term employee benefits and remeasurements as profit or loss for the year. These liabilities are valued annually by independent qualified actuaries.

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2.25 Revenue Recognition

Revenue is measured at the fair value of the consideration received or receivable for the sale of goods or rendering of services arising from the normal activities of the Company. It is stated as net of value added taxes, returns, rebates and discounts, after elimination of intra-company transactions.

The Company recognizes revenue when the amount of revenue can be reliably measured; when it is probable that future economic benefits will flow to the entity; and when specific criteria have been met for each of the Company's activities, as described below. The Company bases its estimate on historical results, taking into consideration the type of customer, the type of transaction and the specifics of each arrangement.

(a) Sale of goods

Sales of goods are recognized when products are delivered to the purchaser. Delivery does not occur until the products have been shipped to the specified location, the risks of obsolescence and loss have been transferred to the wholesaler, and either the purchaser has accepted the products in accordance with the sales contract, the acceptance provisions have lapsed or the Group has objective evidence that all criteria for acceptance have been satisfied.

(b) Rendering of services

Revenue from rendering of services is recognized by reference to the stage of completion if the performance of rendering is reliably estimated. When the outcome of rendering cannot be estimated reliably, revenue is recognized only to the extent of contract costs incurred that are likely to be recoverable.

(c) Interest income

Interest income is recognized using the effective interest method according to the time passed. When a loan and receivable is impaired, the Group reduces the carrying amount to its recoverable amount and continues unwinding the discount as interest income. Interest income on impaired loans and receivables is recognized using the original effective interest rate.

(d) Dividend income

Dividend income is recognized when the right to receive payment is established.

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2.26 Lease

A lease is an agreement, whereby the lessor conveys to the lessee, in return for a payment or series of payments, the right to use an asset for an agreed period of time. Leases where all the risks and rewards of ownership are not transferred to the Group are classified as operating leases. Lease payments under operating leases are recognized as expenses on a straight-line basis over the lease term.

Leases where the Group has substantially all the risks and rewards of ownership are classified as finance leases and recognized as lease assets and liabilities at the lower of the fair value of the leased property and the present value of the minimum lease payments on the opening date of the lease period.

A lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to ownership at the inception of the lease. A lease other than a finance lease is classified as an operating lease. Lease income from operating leases is recognized in income on a straight-line basis over the lease term. Initial direct costs incurred by the lessor in negotiating and arranging an operating lease is added to the carrying amount of the leased asset and recognized as an expense over the lease term on the same basis as the lease income.

2.27 Segment Reporting

Information of each operating segment is reported in a manner consistent with the business segment reporting provided to the chief operating decision-maker (Note 38). The chief operating decision-maker is responsible for allocating resources and assessing performance of the operating segments.

2.28 Approval of Issuance of the Financial Statements

The issuance of the December 31, 2015 financial statements of the Company was approved by the Board of Directors on February 24, 2016, which is subject to change with approval at the annual shareholder's meeting.

3. Critical Accounting Estimates and Assumptions

The Group makes estimates and assumptions concerning the future. The estimates and assumptions are continuously evaluated with consideration to factors such as events reasonably predictable in the foreseeable future within the present circumstance according to historical experience. The resulting accounting estimates will, by definition, seldom equal the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are addressed below.

(a) Estimated impairment of goodwill

The Group tests annually whether goodwill has suffered any impairment. The recoverable amounts of cash-generating units have been determined based on value-in-use calculations (Note 17).

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(b) Income taxes

The Group is operating in numerous countries and the income generated from these operations is subject to income taxes based on tax laws and interpretations of tax authorities in numerous jurisdictions. There are many transactions and calculations for which the ultimate tax determination is uncertain (Note 33).

(c) Fair value of financial instruments

The fair value of financial instruments that are not traded in an active market is determined by using valuation techniques. The Group uses its judgment to select a variety of methods and make assumptions that are mainly based on market conditions existing at the end of each reporting period (Note 5).

(d) Net defined benefit liability

The present value of net defined benefit liability depends on a number of factors that are determined on an actuarial basis using a number of assumptions including the discount rate (Note 22).

4. Financial Risk Management

4.1 Financial Risk Factors

The Group's activities expose it to a variety of financial risks: market risk (including currency risk, fair value interest rate risk, others), credit risk and liquidity risk. The Group's overall risk management program focuses on the unpredictability of financial markets and seeks to minimize potential adverse effects on the Group's financial performance.

4.1.1 Market risk

(a) Foreign exchange risk

Foreign exchange risk of the Group arises when future commercial transactions or recognized assets or liabilities are denominated in a currency that is not the Group's functional currency. The Group is exposed to foreign exchange risk arising from various currency exposures, primarily with respect to the US dollar, the Euro, and the Japanese Yen.

The Group applies foreign exchange risk management policy to each entity individually with considering the entity's business characteristics and existence of alternatives against foreign exchange risk. The Group manages maximum loss for foreign exchange risk exposures within acceptable range by using foreign exchange risk management model. Additionally, the Group periodically evaluates and handles such risks exposed through managing system, and reports the results to the management.

As of December 31, 2015 and 2014, if the Korea won had weakened/strengthened by 1% against the currencies with all other variables held constant, pre-tax profit for the year would have been higher/lower for the following amounts:

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(in thousands of Korean won)	2015				2014			
	Increase 1%		Decrease 1%		Increase 1%		Decrease 1%	
USD	₩	(5,882,851)	₩	5,882,851	₩	(10,038,568)	₩	10,038,568
EUR		(270,453)		270,453		1,575,226		(1,575,226)
JPY		(649,013)		649,013		276,947		(276,947)
	₩	(6,802,317)	₩	6,802,317	₩	(8,186,395)	₩	8,186,395

The above sensitivity analysis was performed just for the assets and liabilities denominated in foreign currencies which are not the Group's functional currency. The effect of changes in foreign exchange rates due to derivative transactions that incur hedge effect was also considered.

(b) Interest rate risk

Interest rate risk is defined as the risk that the interest income or expense arising from deposits and borrowings will fluctuate because of changes in future market interest rate. The interest rate risk mainly arises through floating rate deposits and borrowings.

The objective of interest rate risk management lies in maximizing corporate value by minimizing uncertainty caused by fluctuations in interest rates and minimizing net interest expense

At December 31, 2015, if interest rates on borrowings at that date had been 1% higher/lower with all other variables held constant, pre-tax profit for the year would have been ₩28,098 million (2014: ₩25,867 million) lower/higher, mainly as a result of higher/lower interest expense on floating rate borrowings.

4.1.2 Credit Risk

The Group is exposed to credit risk which is the risk of financial loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations. In order to manage credit risk, the Group opens and maintains its business only with customers whose credit qualities exceed a required minimum rating. When entering into contracts with new customers, the Group evaluates their credit risk based on available information and limits transaction level based on the assessment.

The maximum exposure to credit risk at the reporting date is the carrying value of the cash and cash equivalents, which deposit at the financial institution, the financial assets excluding equity investments and the maximum guaranteed amount.

4.1.3 Liquidity Risk

The Group monitors rolling forecasts of the Group's liquidity requirements to ensure it has sufficient cash to meet operational needs while maintaining sufficient headroom on its undrawn committed borrowing facilities (Note 35) at all times so that the Group does not breach borrowing limits or covenants (where applicable) on any of its borrowing facilities. Such forecasting takes into consideration the Group's debt financing plans, covenant compliance, compliance with internal financial ratio targets and, if applicable external regulatory or legal requirements – for example,

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currency restrictions.

(a) Maturity analysis of non- derivative financial liabilities

The analyses of the Group's liquidity risk for the financial liabilities as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015			
	Less than 1 year	Between 1 and 5 years	Over 5 years	Total
Trade and other payables ¹	₩ 1,616,258,816	₩ 217,152,468	₩ -	₩ 1,833,411,284
Borrowings ¹	2,535,683,217	2,711,166,568	8,172,112	5,255,021,897
Other financial liabilities ²	120,050,329	9,604,220	336,763	129,991,312
	<u>₩ 4,271,992,362</u>	<u>₩ 2,937,923,256</u>	<u>₩ 8,508,875</u>	<u>₩ 7,218,424,493</u>

(in thousands of Korean won)	2014			
	Less than 1 year	Between 1 and 5 years	Over 5 years	Total
Trade and other payables	₩ 1,626,190,351	₩ 13,941,049	₩ -	₩ 1,640,131,400
Borrowings ¹	2,300,834,478	2,761,831,402	294,436,309	5,357,102,189
Other financial liabilities ²	89,079,842	9,786,917	979,929	99,846,688
	<u>₩ 4,016,104,671</u>	<u>₩ 2,785,559,368</u>	<u>₩ 295,416,238</u>	<u>₩ 7,097,080,277</u>

¹ Cash flows of borrowings include cash flows of related interest expense.

² Cash flows of other financial liabilities do not include cash flows of financial guarantee contract and accrued interest.

(b) Maturity analysis of derivative financial liabilities

The analyses of the Group's liquidity risk for the derivative financial liabilities as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015			
	Less than 1 year	Between 1 and 5 years	Over 5 years	Total
Derivative financial liabilities	₩ (3,792,283)	₩ (2,706,958)	₩ -	₩ (6,499,241)

(in thousands of Korean won)	2014			
	Less than 1 year	Between 1 and 5 years	Over 5 years	Total
Derivative financial liabilities	₩ 872,612	₩ 2,091,693	₩ -	₩ 2,964,305

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(c) The Group has entered into financial guarantee contracts and cash deficiency support agreement and others for related parties that are not considered in the above table. If related parties fail to meet an obligation, additional cash outflows from the Group may be incurred within a year (Note 36).

4.2 Capital Risk Management

The Group's objectives when managing capital are to safeguard the Group's ability to continue as a going concern in order to provide returns for shareholders and benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital.

The Group monitors capital on the basis of the debt ratio. This ratio is calculated as total debt divided by total capital. Total debt is 'total liabilities' and total capital is 'total equity' as shown in the consolidated financial statement of financial position.

The debt-to-equity ratios as of December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015		2014	
Total debt (A)	₩	8,921,461,335	₩	7,817,545,449
Total equity (B)		4,931,158,388		4,779,478,284
Debt-to-equity ratio (A/B)		180.92%		163.56%

5. Fair Value

5.1 Fair Value of Financial Instruments by Category

Financial Assets

<i>(in thousands of Korean won)</i>	2015		2014	
	Book value	Fair value	Book value	Fair value
Cash and cash equivalents	₩ 644,785,721	₩ 644,785,721	₩ 549,393,182	₩ 549,393,182
Available-for-sale financial assets ¹	145,770,408	145,770,408	146,309,688	146,309,688
Trade and other receivables	1,823,420,980	1,823,420,980	1,397,347,223	1,397,347,223
Other financial assets				
Derivative financial assets	17,664,093	17,664,093	3,658,755	3,658,755
Others	484,183,489	484,183,489	343,192,200	343,192,200
	<u>₩ 3,115,824,691</u>	<u>₩ 3,115,824,691</u>	<u>₩ 2,439,901,048</u>	<u>₩ 2,439,901,048</u>

¹ Equity instruments that do not have a quoted price in an active market are measured at cost because their fair value cannot be measured reliably and excluded from the fair value disclosures (Note 5.3).

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Financial Liabilities

(in thousands of Korean won)	2015		2014	
	Book value	Fair value	Book value	Fair value
Trade and other payables	₩ 1,823,589,868	₩ 1,823,589,868	₩ 1,640,131,400	₩ 1,640,131,400
Borrowings	5,041,061,892	5,064,411,300	4,953,452,089	4,972,098,518
Other financial liabilities				
Derivative financial liabilities	1,584,698	1,584,698	2,831,015	2,831,015
Others	156,053,682	156,053,682	121,657,506	121,657,506
	₩ 7,022,290,140	₩ 7,045,639,548	₩ 6,718,072,010	₩ 6,736,718,439

5.2 Fair Value Hierarchy

Assets measured at fair value or for which the fair value is disclosed are categorized within the fair value hierarchy, and the defined levels are as follows:

- Quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1).
- Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (that is, prices) or indirectly (that is, derived from prices) (Level 2).
- Inputs for the asset or liability that are not based on observable market data (that is, unobservable inputs) (Level 3).

Fair value hierarchy classifications of the financial assets and financial liabilities that are measured at fair value or its fair value is disclosed as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015			
	Level 1	Level 2	Level 3	Total
Recurring fair value measurements				
Available-for-sale financial assets	₩ 109,157,106	₩ 87,406	₩ 36,525,896	₩ 145,770,408
Derivative financial assets	-	17,664,093	-	17,664,093
Derivative financial liabilities	-	1,584,698	-	1,584,698
(in thousands of Korean won)	2014			
	Level 1	Level 2	Level 3	Total
Recurring fair value measurements				
Available-for-sale financial assets	₩ 110,061,803	₩ 83,617	₩ 36,164,268	₩ 146,309,688
Derivative financial assets	-	3,658,755	-	3,658,755
Derivative financial liabilities	-	2,831,015	-	2,831,015

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5.3 Financial Instruments Measured at Cost

Details of financial instruments measured at cost as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015		2014	
Available-for-sale financial assets				
Unlisted stocks	₩	4,304,912	₩	19,231,705

Above financial instruments do not have quoted market prices in active market and fair value cannot be reliably measured. Therefore, these instruments are measured at cost. The Group does not have any plans to dispose of the above-mentioned in the near future. These instruments will be measured at fair value when the Group can develop a reliable estimate of the fair value.

6. Financial Instruments by Category

6.1 Carrying Amounts of Financial Instruments by Category

Categorizations of financial assets and liabilities as of December 31, 2015 and 2014, are as follows:

Financial Assets

(in thousands of Korean won)

	2015				
	Financial assets at fair value through profit or loss	Available-for-sale financial assets	Loans and receivables	Others ¹	Total
Current					
Cash and cash equivalents	₩ -	₩ -	₩ 644,785,721	₩ -	₩ 644,785,721
Trade and other receivables	-	-	1,817,473,968	-	1,817,473,968
Other financial assets	11,027,032	-	376,425,327	2,932,080	390,384,439
Non-current					
Available-for-sale financial assets	-	150,075,320	-	-	150,075,320
Trade and other receivables	-	-	5,947,012	-	5,947,012
Other financial assets	3,704,981	-	107,758,162	-	111,463,143
	₩ 14,732,013	₩ 150,075,320	₩ 2,952,390,190	₩ 2,932,080	₩ 3,120,129,603

¹ Others include financial assets designated as hedged items.

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Financial Liabilities

(in thousands of Korean won)

		2015			
		Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Others ¹	Total
Current					
Trade and other payables	₩	-	₩ 1,614,994,193	₩ -	₩ 1,614,994,193
Borrowings		-	2,406,960,081	18,328,812	2,425,288,893
Other financial liabilities		1,174,705	134,727,962	438,826	136,341,493
Non-current					
Trade and other payables		-	208,595,675	-	208,595,675
Borrowings		-	2,615,772,999	-	2,615,772,999
Other financial liabilities		409,993	18,202,561	2,684,333	21,296,887
	₩	1,584,698	₩ 6,999,253,471	₩ 21,451,971	₩ 7,022,290,140

¹ Others include finance lease liabilities, financial liabilities designated as hedged items, financial liabilities related to transfer transactions not qualified for derecognition, financial guarantees and others.

Financial Assets

(in thousands of Korean won)

		2014			
		Financial assets at fair value through profit or loss	Available-for- sale financial assets	Loans and receivables	Others ¹
Current					
Cash and cash equivalents	₩	-	₩ -	₩ 549,393,182	-
Available-for-sale financial assets		-	703	-	703
Trade and other receivables		-	-	1,394,450,095	-
Other financial assets		1,785,361	-	248,316,366	-
Non-current					
Available-for-sale financial assets		-	165,540,690	-	-
Trade and other receivables		-	-	2,897,128	-
Other financial assets		1,416,676	-	94,875,834	456,718
	₩	3,202,037	₩ 165,541,393	₩ 2,289,932,605	₩ 456,718

¹ Others include financial assets designated as hedged items.

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Financial Liabilities

(in thousands of Korean won)

	2014			
	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Others ¹	Total
Current				
Trade and other payables	₩ -	₩ 1,626,190,351	₩ -	₩ 1,626,190,351
Borrowings	-	2,187,144,348	19,238,640	2,206,382,988
Other financial liabilities	871,962	93,926,867	6,717,991	101,516,820
Non-current				
Trade and other payables	-	13,941,049	-	13,941,049
Borrowings	-	2,747,069,101	-	2,747,069,101
Other financial liabilities	1,959,053	17,012,512	4,000,136	22,971,701
	₩ 2,831,015	₩ 6,685,284,228	₩ 29,956,767	₩ 6,718,072,010

¹ Others include finance lease liabilities, financial liabilities designated as hedged items, financial liabilities related to transfer transactions not qualified for derecognition, financial guarantees and others.

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6.2 Net gain or Loss by Category of Financial Instruments

Net gain or net loss on each category of financial instruments for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015				
	Financial instruments at fair value through profit or loss	Available-for-sale financial assets	Loans and receivables	Financial liabilities at amortized cost	Total
Interest income	₩ -	₩ -	₩ 21,357,136	₩ -	₩ 21,357,136
Gain on foreign currency transactions	-	-	85,705,286	44,504,560	130,209,846
Gain on foreign currency translation	-	-	13,627,082	64,136,017	77,763,099
Interest expense	-	-	-	(179,739,069)	(179,739,069)
Loss on foreign currency transactions	-	-	(77,216,500)	(40,269,754)	(117,486,254)
Loss on foreign currency translation	-	-	(88,721,792)	(73,464,424)	(162,186,216)
Bad debts expense	-	-	(3,503,309)	-	(3,503,309)
Other bad debts expense	-	-	(7,957,237)	-	(7,957,237)
Reversal of allowance for bad debt	-	-	1,532,165	-	1,532,165
Gain on disposal of available-for-sale financial assets	-	18,588,892	-	-	18,588,892
Loss on disposal of available-for-sale financial assets	-	(8,146)	-	-	(8,146)
Reversal of impairment on available-for-sale financial assets	-	2,303	-	-	2,303
Gain on valuation of Derivatives	15,274,389	-	-	-	15,274,389
Gain on transactions of derivatives	14,296,475	-	-	-	14,296,475
Loss on valuation of Derivatives	(263,598)	-	-	-	(263,598)
Loss on transactions of derivatives	(3,789,014)	-	-	-	(3,789,014)
Dividend income	-	4,029,496	-	-	4,029,496
	25,518,252	22,612,545	(55,177,169)	(184,832,670)	(191,879,042)
Other comprehensive income					
Gain (loss) on valuation of available-for-sale financial assets	-	(806,994)	-	-	(806,994)
	-	(806,994)	-	-	(806,994)
	₩ 25,518,252	₩ 21,805,551	₩(55,177,169)	₩(184,832,670)	₩(192,686,036)

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(in thousands of Korean won)

	2014				
	Financial instruments at fair value through profit or loss	Available-for-sale financial assets	Loans and receivables	Financial liabilities at amortized cost	Total
Interest income	₩ -	₩ 2,639	₩ 17,225,672	₩ -	₩ 17,228,311
Reversal of other bad debts Expense	-	-	205,950	-	205,950
Gain on foreign currency transactions	-	-	91,374,791	11,712,133	103,086,924
Gain on foreign currency translation	-	-	27,801,118	983,289	28,784,407
Interest expense	-	-	-	(213,369,656)	(213,369,656)
Loss on foreign currency transactions	-	-	(89,036,218)	(25,481,862)	(114,518,080)
Loss on foreign currency translation	-	-	(19,312,100)	(24,805,926)	(44,118,026)
Bad debts expense	-	-	(3,738,250)	-	(3,738,250)
Other bad debts expense	-	-	(17,127)	-	(17,127)
Gain on disposal of available-for-sale financial assets	-	16,332,718	-	-	16,332,718
Loss on disposal of available-for-sale financial assets	-	(2,036,151)	-	-	(2,036,151)
Impairment loss on available-for-sale financial assets	-	(4,725,878)	-	-	(4,725,878)
Gain on valuation of Derivatives	8,966,002	-	-	-	8,966,002
Gain on transactions of derivatives	6,973,432	-	-	-	6,973,432
Loss on valuation of Derivatives	(5,211,232)	-	-	-	(5,211,232)
Loss on transactions of derivatives	(2,138,356)	-	-	-	(2,138,356)
Dividend income	-	2,737,904	-	-	2,737,904
	8,589,846	12,311,232	24,503,836	(250,962,022)	(205,557,108)
Other comprehensive income					
Gain (loss) on valuation of available-for-sale financial assets	-	(19,075,105)	-	-	(19,075,105)
	-	(19,075,105)	-	-	(19,075,105)
	₩ 8,589,846	₩ (6,763,873)	₩ 24,503,836	₩(250,962,022)	₩(224,632,213)

7. Transfer of Financial Assets

The Group transfers financial assets by transferring financial assets that are not derecognized in their entirety, and other party has recourse for transferred assets.

Transferred financial assets are recognized as trade receivable as of December 31, 2015, and related liabilities are accounted for as short-term borrowings. The book value and fair value of transferred trade receivable and related liabilities are both ₩18,329 million (2014: ₩19,239 million) and the net position is nil.

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8. Cash and Cash Equivalents

Restricted cash and cash equivalents provided as collateral for borrowings and others as of December 31, 2015, are ₩ 1,568 million (2014: ₩ 5,044 million) (Note 35).

9. Trade Receivables and Other Receivables

Trade receivables and other receivables as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015		2014	
	Current	Non-current	Current	Non-current
Trade receivables	₩ 1,797,433,456	₩ 100,556	₩ 1,298,902,113	₩ 100,556
Less: provisions for impairment	(31,118,957)	(100,556)	(31,263,451)	(100,556)
	<u>1,766,314,499</u>	<u>-</u>	<u>1,267,638,662</u>	<u>-</u>
Other receivables	51,875,420	197,238,847	127,190,840	194,052,790
Less: provisions for impairment	(715,951)	(191,291,835)	(379,407)	(191,291,834)
Add: present value premium	-	-	-	136,172
	<u>51,159,469</u>	<u>5,947,012</u>	<u>126,811,433</u>	<u>2,897,128</u>
	<u>₩ 1,817,473,968</u>	<u>₩ 5,947,012</u>	<u>₩ 1,394,450,095</u>	<u>₩ 2,897,128</u>

The aging analysis of the trade receivables and other receivables as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015	2014
Receivables not past due	₩ 1,408,219,375	₩ 1,053,658,479
Past due but not impaired ¹		
Less than 3 months	279,664,829	268,132,651
Less than 6 months	81,387,848	45,697,346
Less than 1 year	29,205,483	13,828,117
Over 1 year	53,409,624	43,850,295
	<u>443,667,784</u>	<u>371,508,409</u>
Impaired ¹		
Less than 3 months	-	113,763
Less than 6 months	-	133,417
Less than 1 year	521,136	857,913
Over 1 year	194,239,984	193,974,318
	<u>194,761,120</u>	<u>195,079,411</u>
	<u>₩ 2,046,648,279</u>	<u>₩ 1,620,246,299</u>

¹ Classified into impaired and not impaired depending on the results of individual impairment assessment.

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Movements on provisions for impairment of trade receivables and other receivables for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015		2014	
	Trade receivables	Other receivables	Trade receivables	Other receivables
Beginning balance	₩ (31,364,007)	₩ (191,671,241)	₩ (42,738,638)	₩ (191,798,719)
Provisions for impaired receivables	(3,503,309)	(116,855)	(3,738,250)	(17,127)
Unused amounts reversed	-	-	-	205,950
Write-off	3,136,720	-	5,783,451	45,064
Changes in scope of consolidation	770,154	-	9,659,105	-
Changes in exchange rates and others	(259,072)	(219,689)	(329,675)	(106,409)
Ending balance	₩ (31,219,514)	₩ (192,007,785)	₩ (31,364,007)	₩ (191,671,241)

Trade receivables and other receivables are provided as collateral for borrowings as of December 31, 2015 (Note 35).

10. Other Financial Assets

Details of other financial assets as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015		2014	
	Current	Non-current	Current	Non-current
Derivative instruments	₩ 13,959,112	₩ 3,704,981	₩ 1,785,361	₩ 1,873,394
Financial instruments	277,707,312	6,101,300	203,437,833	3,656,201
Loans	82,856,965	48,720,643	35,174,514	37,241,882
Deposits	10,189,308	52,936,219	6,931,137	53,977,751
Accrued revenues	5,671,742	-	2,772,882	-
	₩ 390,384,439	₩ 111,463,143	₩ 250,101,727	₩ 96,749,228

The Group entered into currency forward, currency option and currency swap contracts to hedge exchange rate risk of trade receivables in foreign currency and others.

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Details of valuation of derivative financial instruments as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015		2014	
	Assets	Liabilities	Assets	Liabilities
For trading				
Currency forward contracts	₩ 4,200,024	₩ 65,796	₩ 1,785,361	₩ 939,814
Currency options	6,715,977	-	1,416,676	-
Currency swaps	3,816,012	-	-	1,019,239
Interest rate swaps	-	1,451,444	-	871,962
Other derivative financial instruments	-	67,458	-	-
	<u>14,732,013</u>	<u>1,584,698</u>	<u>3,202,037</u>	<u>2,831,015</u>
For cash flow hedge				
Currency swaps	2,932,080	-	456,718	-
	<u>2,932,080</u>	<u>-</u>	<u>456,718</u>	<u>-</u>
	<u>₩ 17,664,093</u>	<u>₩ 1,584,698</u>	<u>₩ 3,658,755</u>	<u>₩ 2,831,015</u>

Other financial assets are provided as collateral for borrowings as of December 31, 2015 (Note 35).

11. Other Assets

Details of other assets as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015		2014	
	Current	Non-current	Current	Non-current
Advance payments	₩ 135,263,671	₩ -	₩ 192,576,341	₩ -
Provisions for impairment of advance payments	(115,463,603)	-	(118,092,927)	-
Prepaid construction costs	4,354,619	-	4,977,864	-
Prepaid expenses	25,241,805	12,362,941	21,589,517	15,291,930
Prepaid value added tax and others	35,180,553	6,609,569	93,786,025	6,491,617
	<u>₩ 84,577,045</u>	<u>₩ 18,972,510</u>	<u>₩ 194,836,820</u>	<u>₩ 21,783,547</u>

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12. Inventories

Inventories as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015		
	Acquisition cost	Valuation allowance of inventories	Carrying amount
Merchandise	₩ 148,096,806	₩ (609,686)	₩ 147,487,120
Finished goods	546,310,363	(38,806,472)	507,503,891
Half-finished products	31,482,753	(45,544)	31,437,209
Work-in-process	835,795,779	(152,307)	835,643,472
Raw materials	209,801,678	(6,552,797)	203,248,881
Supplies	66,963,742	-	66,963,742
Goods-in-transit	33,335,018	-	33,335,018
	<u>₩ 1,871,786,139</u>	<u>₩ (46,166,806)</u>	<u>₩ 1,825,619,333</u>

(in thousands of Korean won)

	2014		
	Acquisition cost	Valuation allowance of inventories	Carrying amount
Merchandise	₩ 83,471,004	₩ (1,727,273)	₩ 81,743,731
Finished goods	472,250,123	(23,886,619)	448,363,504
Half-finished products	63,539,767	(16,089)	63,523,678
Work-in-process	913,191,137	-	913,191,137
Raw materials	233,214,575	(4,413,814)	228,800,761
Supplies	66,228,760	-	66,228,760
Goods-in-transit	70,894,365	-	70,894,365
	<u>₩ 1,902,789,731</u>	<u>₩ (30,043,795)</u>	<u>₩ 1,872,745,936</u>

The write-down of inventories included in 'cost of sales' is ₩46,167 million for the year ended December 31, 2015 (2014: ₩30,044 million).

Inventories are provided as collateral for borrowings as of December 31, 2015 (Note 35).

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13. Available-for-sale Financial Assets

Details of available-for-sale financial assets as of December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015		2014	
Equity securities				
Listed stocks	₩	109,157,106	₩	110,061,804
Unlisted stocks		40,830,809		55,395,972
Debt securities		87,405		83,617
	₩	150,075,320	₩	165,541,393

Changes in available-for-sale financial assets for the year ended December 31, 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015		2014	
Beginning balance	₩	165,541,393	₩	160,363,334
Acquisition ¹		20,270,198		2,283,174
Disposal/Transfer ¹		(35,266,143)		(6,202,487)
Valuation		(479,002)		(2,063,669)
Others ²		8,874		11,161,041
Ending balance	₩	150,075,320	₩	165,541,393

¹ Available-for-sale financial assets were transferred to investments in associates amounting to ₩ 35,059 million in 2015, as Hanwha City Development Co, Ltd., a subsidiary, acquired additional shares of Hanwha Station Development Co., Ltd. (Note 14).

² Including amounts of increase (decrease) due to changes in scope of consolidation and foreign exchange rates.

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14. Investments in Associates and Joint Ventures

Details of associates and joint ventures of the Group as of December 31, 2015 and 2014, are as follows:

	Percentage of ownership (%)		Location	Closing month	Main business
	2015	2014			
Associates					
HANWHA SAVINGS BANK CO, LTD. ¹	36.05%	36.05%	Korea	December	Bank business
Hanwha General Insurance Co., Ltd.(Formerly Hanwha Non-life Insurance Co., Ltd.) ²	6.02%	6.02%	Korea	December	Services for insurance
Hanwha Newly-development Force Fund	22.50%	22.50%	Korea	December	Fund Investment
Hanwha Station Development Co., Ltd. ³	28.27%	18.84%	Korea	December	Rent business
HANWHA Eagles Professional Baseball club	50.00%	50.00%	Korea	December	Sports club operating
Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.) ^{4,5}	36.05%	-	Korea	December	Manufacture of basic compound of petrochemicals
Hanwha Q CELLS Korea Corp.	39.00%	39.00%	Korea	December	Solar engineering
HANWHA INVESTMENT AND SECURITIES CO.,LTD ⁶	22.26%	22.27%	Korea	December	Stock broking
Hanwha Hotels and Resort CO.,LTD	48.78%	48.78%	Korea	December	Tourism and lodge industry
CRP/Extell Parcel J, L.P.	49.00%	49.00%	USA	December	Real estate development
Crystal Solar Inc. ⁷	29.53%	30.54%	USA	December	Solar engineering
GRANSOLAR ATOTONILCO, S.A. DE C.V.	20.00%	20.00%	Mexico	December	Construction business
GRANSOLAR OCOTLAN, S.A. DE C.V.	20.00%	20.00%	Mexico	December	Construction business
HongKong Yong Wang SiliconInvestment Co.,Ltd.	49.99%	49.99%	Hong Kong	December	Holding company
International Polymers Company	25.00%	25.00%	Saudi Arabia	December	Manufacture of basic compound
OneRoof Energy Group, Inc. ⁸	46.15%	41.56%	Canada	December	Photovoltaic business
Renew Akshay Urja Privated Limited ⁴	43.87%	-	India	March	Photovoltaic business
Saudi Specialized Products Company	25.00%	25.00%	Saudi Arabia	December	Manufacture of chemicals
Joint ventures					
YEOCHUN NCC Co., Ltd.	50.00%	50.00%	Korea	December	Manufacture of basic compound
Burdur Enerji A.S. ⁴	50.00%	-	Turkey	Decomber	Photovoltaic business
Garnet Solar Power Generation Station 1, LLC	50.00%	50.00%	USA	December	Photovoltaic business
Gulf Advanced Cables Insulation Company	50.00%	50.00%	Saudi Arabia	December	Manufacture of cable
Lakeshore East Retail LLC	50.00%	50.00%	USA	December	Real estate development
Parcel O LLC	50.00%	50.00%	USA	December	Real estate development

¹ Financial year-end is changed to December 31 in 2015.

² The Group has joint control by contractual arrangements; therefore, equity method is applied.

³ Available-for-sale financial assets were transferred to investments in associates as the Group acquired additional shares in 2015.

⁴ Newly acquired in 2015.

⁵ In 2015, Hanwha General Chemical Co., Ltd. acquired and retired all shares of Hanwha General Chemical Co., Ltd., which were owned by HANWHA TECHWIN CO.,LTD., other related party of the Group. As a result, the percentage of ownership of Hanwha General Chemical Co., Ltd. increased to 36.05% (Note 35 (m)).

⁶ In 2015, the percentage of ownership of HANWHA INVESTMENT AND SECURITIES CO.,LTD decreased due to disposal of treasury shares.

⁷ In 2015, the percentage of ownership of Crystal Solar Inc. decreased due to disproportionate paid-in capital increase.

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⁸ In 2015, the percentage of ownership of OneRoof Energy Group, Inc. increased due to receivables for equity swaps and disproportionate paid-in capital increase.

Details of valuation of investments in associates and joint ventures under the equity method for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015					
	Beginning balance	Acquisition (disposal)	Gain or loss on equity method investments	Other comprehensive income or loss	Others ¹	Ending balance
Associates						
HANWHA SAVINGS BANK CO., LTD.	₩ 50,043,722	₩ -	₩ 4,267,996	₩ (31,835)	₩ 32,927	₩ 54,312,810
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)	35,804,641	-	5,763,950	10,306,168	(70,824)	51,803,935
Hanwha Newly development Force Fund	7,055,924	(4,770,000)	3,094,317	349,786	(1,350,000)	4,380,027
Hanwha Station Development Co., Ltd.	-	53,425,030	1,376,856	-	23,641	54,825,527
HANWHA Eagles Professional Baseball club	1,940,372	-	(304,876)	-	-	1,635,496
Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.)	-	535,477,300	45,358,720	140,085	22,774,994	603,751,099
Hanwha Q CELLS Korea Corp.	40,933,451	-	8,381,209	787,939	(82,051)	50,020,548
HANWHA INVESTMENT AND SECURITIES CO.,LTD	193,151,130	4,141,316	(2,772,728)	1,823,310	(1,327,405)	195,015,623
Hanwha Hotels and Resort CO.,LTD	378,649,238	-	(6,157,465)	4,205,626	(2,636,543)	374,060,856
CRP/Extell Parcel J, L.P.	-	-	-	-	-	-
Crystal Solar Inc.	4,627,776	2,357,800	(4,009,111)	109,866	1,446,745	4,533,076
GRANSOLAR ATOTONILCO, S.A. DE C.V.	463,353	-	-	-	4,376	467,729
GRANSOLAR OCOTLAN, S.A. DE C.V.	463,353	-	-	-	4,376	467,729
HongKong YongWang Silicon Investment Co., Ltd. ²	-	-	-	-	-	-
International Polymers Company	65,188,755	-	14,323,617	4,800,584	-	84,312,956
OneRoof Energy Group, Inc.	11,914,322	2,299,240	(14,581,592)	-	368,030	-
Renew Akshay Urja Privated Limited	-	19,186,166	(716,945)	-	(162,533)	18,306,688
Saudi Specialized ProductsCompany	4,105,391	-	(74,573)	267,597	-	4,298,415
Joint ventures						
YEOCHUN NCC Co., Ltd.	443,833,655	-	114,043,417	-	(61,435,553)	496,441,519
Burdur Enerji A.S.	-	313,962	48,419	(1,000)	(3,133)	358,248
Garnet Solar Power Generation Station 1, LLC	9,793,570	-	(218,292)	-	(5,330,151)	4,245,127
Gulf Advanced Cables Insulation Company	8,391,745	-	(1,435,884)	501,889	-	7,457,750
Lakeshore East Retail LLC	12,028,289	-	(229,654)	-	(969,628)	10,829,007
Parcel O LLC	20,211,528	-	-	-	1,338,609	21,550,137
	₩1,288,600,215	₩612,430,814	₩ 166,157,381	₩ 23,260,015	₩ (47,374,123)	₩ 2,043,074,302

¹ Others include gain on bargain purchase and dividends received.

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² HongKong YongWang Silicon Investment Co., Ltd. is going through the process of liquidation as of December 31, 2015.

(in thousands of Korean won)

(in thousands of Korean won)		2014								
		Beginning balance	Acquisition (disposal)	Gain or loss on equity method investments		Other comprehensive income or loss		Others ¹	Ending balance	
Associates										
HANWHA SAVINGS BANK CO., LTD.	W	41,667,585	W 9,011,630	W	(306,086)	W	(211,985)	W	(117,422)	W 50,043,722
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)		32,997,714	-		659,272		2,639,780		(492,125)	35,804,641
Hanwha Newly development Force Fund		7,326,167	(180,000)		(772,668)		682,425		-	7,055,924
HANWHA Eagles Professional Baseball club		2,455,368	-		(420,997)		-		(93,999)	1,940,372
Hanwha Q CELLS Korea Corp.		50,920,905	-		(8,491,917)		292,501		(1,788,038)	40,933,451
HANWHA INVESTMENT AND SECURITIES CO.,LTD		191,285,121	-		1,732,362		(163,143)		296,790	193,151,130
Hanwha Hotels and Resort CO.,LTD		394,498,537	-		(15,704,948)		1,330,844		(1,475,195)	378,649,238
CRP/Extell Parcel J, L.P.		-	-		1,431,131		-		(1,431,131)	-
Crystal Solar Inc.		-	8,252,098		(3,715,926)		91,604		-	4,627,776
GRANSOLAR ATOTONILCO, S.A. DE C.V.		-	447,681		-		-		15,672	463,353
GRANSOLAR OCOTLAN, S.A. DE C.V.		-	447,681		-		-		15,672	463,353
HongKong YongWang Silicon Investment Co., Ltd.		-	-		-		-		-	-
International Polymers Company ²		51,075,574	12,107,058		(77,460)		2,083,583		-	65,188,755
OneRoof Energy Group, Inc.		-	24,515,700		(12,801,768)		-		200,390	11,914,322
Saudi Specialized ProductsCompany		-	4,063,300		(18,130)		60,221		-	4,105,391
Joint ventures										
YEOCHUN NCC Co., Ltd.		466,539,070	-		43,045,720		-		(65,751,135)	443,833,655
Garnet Solar Power Generation Station 1, LLC		-	9,829,209		-		-		(35,639)	9,793,570
Gulf Advanced Cables Insulation Company		8,104,324	-		(43,072)		330,493		-	8,391,745
Lakeshore East Retail LLC		11,419,539	-		128,047		-		480,703	12,028,289
Parcel O LLC		19,404,317	-		-		-		807,211	20,211,528
		W1,277,694,221	W 68,494,357	W	4,643,560	W	7,136,323	W	(69,368,246)	W 1,288,600,215

¹ Others include dividends received.

² In 2014, investments in associates increased due to debt-for-equity swaps.

Hanwha Chemical Corporation and Subsidiaries

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Summary of condensed financial information of major associates and joint ventures for the years ended December 31, 2015 and 2014, is as follows:

(in thousands of Korean won)		2015											
		Assets		Liabilities		Equity		Revenue		Net income(loss)		Total comprehensive income(loss)	
Associates													
HANWHA SAVINGS BANK CO, LTD. ¹	₩	601,140,925	₩	535,498,393	₩	65,642,532	₩	38,791,764	₩	11,840,247	₩	11,843,276	
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)		11,803,410,516		10,942,475,499		860,935,017		5,744,369,025		95,791,681		265,893,948	
Hanwha Station Development Co., Ltd.		539,051,620		345,115,068		193,936,552		16,280,932		4,870,410		4,954,034	
Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.)		2,330,528,585		663,018,497		1,667,510,088		839,327,006		164,252,135		163,110,244	
Hanwha Q CELLS Korea Corp.		572,872,059		443,149,145		129,722,914		538,515,630		14,488,448		16,879,055	
HANWHA INVESTMENT AND SECURITIES CO.,LTD		7,662,276,760		6,879,663,532		782,613,228		1,833,789,992		(12,309,355)		(5,648,462)	
Hanwha Hotels and Resort CO., LTD		2,445,448,203		1,665,103,147		780,345,056		1,026,361,186		(6,816,596)		(4,330,337)	
International Polymers Company		1,030,317,054		699,581,299		330,735,755		229,771,585		58,039,474		76,793,399	
Joint ventures													
YEOCHUN NCC Co., Ltd.		2,196,846,000		1,167,154,571		1,029,691,429		4,697,093,092		232,992,647		230,121,541	
Gulf Advanced Cables Insulation Company		100,517,734		85,602,233		14,915,501		19,947,108		(2,871,768)		(1,867,989)	
Lakeshore East Retail LLC		63,082,455		38,322,654		24,759,801		6,472,339		(391,399)		(391,399)	
Parcel O LLC		43,906,883		-		43,906,883		-		-		-	

¹ A summary of financial information reflects the difference in fiscal year end.

(in thousands of Korean won)		2014						
		Assets	Liabilities	Equity	Revenue	Net income(loss)	Total comprehensive income(loss)	
Associates								
HANWHA SAVINGS BANK CO, LTD. ¹	₩	569,555,389	₩ 515,756,133	₩ 53,799,256	₩ 48,207,727	₩ (849,141)	₩ (1,637,801)	
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)		10,331,558,056	9,736,516,987	595,041,069	5,327,563,617	12,296,889	46,648,612	
Hanwha Q CELLS Korea Corp.		290,272,829	182,900,561	107,372,268	252,548,413	(19,496,201)	(18,793,046)	
HANWHA INVESTMENT AND SECURITIES CO.,LTD		6,831,448,688	6,061,845,339	769,603,349	985,213,658	7,097,635	7,819,263	
Hanwha Hotels and Resort CO., LTD		2,406,717,642	1,622,981,782	783,735,860	1,046,826,878	(33,817,689)	(37,384,053)	
International Polymers Company		932,475,758	678,533,401	253,942,357	-	(309,840)	7,787,099	
Joint ventures								
YEOCHUN NCC Co., Ltd.		2,125,963,714	1,206,393,825	919,569,889	7,138,819,819	85,571,307	84,069,037	
Gulf Advanced Cables Insulation Company		90,975,737	74,192,248	16,783,489	-	(86,145)	574,841	
Lakeshore East Retail LLC		65,994,922	40,962,185	25,032,737	5,936,514	256,095	256,095	
Parcel O LLC		40,525,836	-	40,525,836	-	-	-	

¹ A summary of financial information reflects the difference in fiscal year end.

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Financial information of the major associate and joint venture for the years ended December 31, 2015 and 2014, is as follows:

(in thousands of Korean won)

	YEOCHUN NCC Co., Ltd.		Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.)
	2015	2014	2015 ³
Cash and cash equivalents	₩ 297,835,008	₩ 113,848,704	₩ 27,542,847
Current financial liabilities ¹	659,856,744	717,344,660	491,279,251
Financial liabilities, non-current	418,761,282	445,628,841	87,226,847
Depreciation ²	133,645,045	129,043,589	26,838,313
Amortization ²	3,961,115	3,961,115	-
Interest income	1,424,197	265,025	3,349,317
Interest expense	15,765,915	22,926,885	3,111,997
Income tax expense	72,666,247	20,238,836	32,123,365

¹ The amounts include trade payables and other payables amounting to ₩ 473,374 million (2014: ₩ 362,779 million).

² The amounts include expenses classified as cost of sales, and selling and administrative expenses.

³ Income for eight-month period is presented as Hanwha General Chemical Co., Ltd. was acquired in 2015.

Details of dividends received from associates and joint venture for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015	2014
Associates		
Hanwha Newly development Force Fund	₩ 1,350,000	₩ -
HANWHA INVESTMENT AND SECURITIES CO.,LTD	1,304,025	-
CRP/Extell Parcel J, L.P.	-	1,431,131
Lakeshore East Retail LLC	-	128,047
Joint venture		
YEOCHUN NCC Co., Ltd.	60,000,000	65,000,000

Hanwha Chemical Corporation and Subsidiaries

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Details of adjustments from financial information of major associates and joint ventures to the book value of investments in associates and joint ventures for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015					
	Net assets at the end of the year (a) ¹	Net assets of equity shares (b)	Interests in net assets (a*b)	Goodwill	Intergroup transactions	Book value
Associates						
HANWHA SAVINGS BANK CO, LTD.	65,642,532	36.05%	23,661,843	30,650,967	-	54,312,810
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)	860,935,017	6.02%	51,803,935	-	-	51,803,935
Hanwha Newly-development Force Fund	19,466,786	22.50%	4,380,027	-	-	4,380,027
Hanwha Station Development Co., Ltd.	193,936,552	28.27%	54,825,527	-	-	54,825,527
Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.)	1,667,510,088	36.05%	601,060,258	2,693,337	(2,497)	603,751,099
Hanwha Q CELLS Korea Corp. ¹	128,372,845	39.00%	50,065,410	78,624	(123,486)	50,020,548
HANWHA INVESTMENT AND SECURITIES CO.,LTD ¹	780,515,712	22.26%	173,774,416	21,267,686	(26,479)	195,015,623
Hanwha Hotels and Resort CO.,LTD ¹	780,802,155	48.78%	380,870,948	-	(6,810,092)	374,060,856
International Polymers Company	330,735,755	25.00%	82,683,939	1,795,924	(166,907)	84,312,956
Joint ventures						
YEOCHUN NCC Co., Ltd.	1,029,691,429	50.00%	514,845,715	-	(18,404,196)	496,441,519
Gulf Advanced Cables Insulation Company	14,915,501	50.00%	7,457,750	-	-	7,457,750
Lakeshore East Retail LLC	24,759,801	50.00%	12,379,901	-	(1,550,894)	10,829,007
Parcel O LLC	43,906,883	50.00%	21,953,442	-	(403,305)	21,550,137

(in thousands of Korean won)

	2014					
	Net assets at the end of the year (a) ¹	Net assets of equity shares (b)	Interests in net assets (a*b)	Goodwill	Intergroup transactions	Book value
Associates						
HANWHA SAVINGS BANK CO, LTD.	53,799,256	36.05%	19,392,756	30,650,966	-	50,043,722
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)	595,041,069	6.02%	35,804,641	-	-	35,804,641
Hanwha Newly-development Force Fund	31,359,660	22.50%	7,055,924	-	-	7,055,924
Hanwha Q CELLS Korea Corp. ¹	107,372,268	39.00%	41,875,185	78,624	(1,020,358)	40,933,451
HANWHA INVESTMENT AND SECURITIES CO.,LTD ¹	767,634,543	22.27%	170,948,332	22,229,276	(26,478)	193,151,130
Hanwha Hotels and Resort CO.,Ltd ¹	783,306,007	48.78%	382,092,312	-	(3,443,074)	378,649,238
International Polymers Company	253,942,357	25.00%	63,485,589	1,795,924	(92,758)	65,188,755
Joint ventures						
YEOCHUN NCC Co., Ltd.	919,569,889	50.00%	459,784,944	-	(15,951,289)	443,833,655
Gulf Advanced Cables Insulation Company	16,783,489	50.00%	8,391,745	-	-	8,391,745
Lakeshore East Retail LLC	25,032,737	50.00%	12,516,368	-	(488,079)	12,028,289
Parcel O LLC	40,525,836	50.00%	20,262,918	-	(51,390)	20,211,528

¹ The associates prepare their consolidated financial statements and their stated net assets refer to equities attributable to owners of the Group.

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Fair value of marketable investments in associates and joint ventures as of December 31, 2015 and 2014, is as follows:

(in thousands of Korean won)	2015		2014	
	Fair value	Book value	Fair value	Book value
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)	₩ 42,587,345	₩ 51,803,935	₩ 25,088,314	₩ 35,804,641
HANWHA INVESTMENT AND SECURITIES CO.,LTD	75,589,502	195,015,623	68,447,331	193,151,130
OneRoof Energy Group, Inc.	1,809,124	-	9,068,426	11,914,322

Accumulated unrecognized changes in equity due to discontinued use of equity method for the year ended December 31, 2015, are as follows:

(in thousands of Korean won)	2015	
	Unrecognized loss	Unrecognized accumulated losses
OneRoof Energy Group, Inc.	₩ (4,020,186)	₩ (4,020,186)

Investments in associates are provided as collateral for borrowings as of December 31, 2015 (Note 35).

15. Investment Property

Details of investment property as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015		
	Acquisition cost	Accumulated depreciation	Book value
Land	₩ 139,883,867	₩ -	₩ 139,883,867
Buildings	74,385,224	(20,698,582)	53,686,642
Structures	7,505,231	(4,758,544)	2,746,687
	₩ 221,774,322	₩ (25,457,126)	₩ 196,317,196

(in thousands of Korean won)	2014		
	Acquisition cost	Accumulated depreciation	Book value
Land	₩ 146,581,186	₩ -	₩ 146,581,186
Buildings	71,093,315	(15,505,766)	55,587,549
Structures	6,914,092	(3,814,994)	3,099,098
	₩ 224,588,593	₩ (19,320,760)	₩ 205,267,833

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Changes in investment property for the years ended December 31, 2015 and 2014, are as follows:

*(in thousands of
Korean won)*

	2015			
	Land	Building	Structures	Total
Beginning balance	₩ 146,581,186	₩ 55,587,549	₩ 3,099,098	₩ 205,267,833
Acquisition	17,869	-	-	17,869
Transfer	(11,528,335)	(484,606)	(13,866)	(12,026,807)
Disposal	(601,009)	-	-	(601,009)
Depreciation	-	(1,768,712)	(338,643)	(2,107,355)
Changes in exchange rates and others	5,414,156	352,411	98	5,766,665
Ending balance	₩ 139,883,867	₩ 53,686,642	₩ 2,746,687	₩ 196,317,196

*(in thousands of
Korean won)*

	2014			
	Land	Building	Structures	Total
Beginning balance	₩ 226,528,268	₩ 55,179,315	₩ 4,016,292	₩ 285,723,875
Acquisition	3,782	-	-	3,782
Transfer	(82,733,487)	3,214,311	-	(79,519,176)
Disposal	-	(1,104,766)	(549,629)	(1,654,395)
Depreciation	-	(1,925,571)	(366,748)	(2,292,319)
Changes in exchange rates and others	2,782,623	224,260	(817)	3,006,066
Ending balance	₩ 146,581,186	₩ 55,587,549	₩ 3,099,098	₩ 205,267,833

In 2015, rental income from investment property is ₩6,694 million (2014: ₩5,419 million).

As of December 31, 2015, the Group has evaluated that the difference between fair values and book values of investment property are insignificant.

Investment properties are provided as collateral for borrowings as of December 31, 2015 (Note 35).

Hanwha Chemical Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
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16. Property, Plant and Equipment

Details of property, plant and equipment as of December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015		
	Acquisition cost	Accumulated depreciation¹	Book value
Land	₩ 1,839,192,122	₩ -	₩ 1,839,192,122
Buildings	1,554,621,180	(517,713,651)	1,036,907,529
Structures	319,433,692	(140,576,055)	178,857,637
Machinery	5,030,221,428	(2,622,785,548)	2,407,435,880
Vehicles	61,384,031	(34,926,569)	26,457,462
Tools and equipment	304,700,163	(218,163,105)	86,537,058
Other tangible assets	28,029,512	(15,762,208)	12,267,304
Construction-in-progress	462,552,461	(630,618)	461,921,843
Machinery in transit	953,894	-	953,894
	<u>₩ 9,601,088,483</u>	<u>₩ (3,550,557,754)</u>	<u>₩ 6,050,530,729</u>

<i>(in thousands of Korean won)</i>	2014		
	Acquisition cost	Accumulated depreciation¹	Book value
Land	₩ 1,849,974,534	₩ -	₩ 1,849,974,534
Buildings	1,464,497,492	(486,160,501)	978,336,991
Structures	314,040,023	(128,732,755)	185,307,268
Machinery	4,713,232,540	(2,324,932,938)	2,388,299,602
Vehicles	62,784,559	(31,753,183)	31,031,376
Tools and equipment	281,089,736	(203,708,573)	77,381,163
Other tangible assets	41,366,875	(21,667,237)	19,699,638
Construction-in-progress	503,112,064	-	503,112,064
Machinery in transit	4,977,898	-	4,977,898
	<u>₩ 9,235,075,721</u>	<u>₩ (3,196,955,187)</u>	<u>₩ 6,038,120,534</u>

¹ Accumulated depreciation includes accumulated impairment losses.

Hanwha Chemical Corporation and Subsidiaries
Notes to the Consolidated Financial Statements
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Changes in property, plant and equipment for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015				
	Land	Buildings	Structures	Machinery	Vehicles
Beginning balance	₩ 1,849,974,534	₩ 978,336,991	₩ 185,307,268	₩ 2,388,299,602	₩ 31,031,376
Acquisition	5,149,030	54,547,567	1,906,735	321,654,006	621,484
Changes in scope of consolidation	(12,897,220)	(6,246,305)	(657,928)	(1,946,896)	(25,194)
Transfer	17,360,443	70,799,340	5,128,952	80,088,817	531,927
Disposal	(20,640,646)	(2,981,516)	(97,380)	(15,092,093)	(857,264)
Depreciation	-	(56,239,290)	(12,943,287)	(310,885,184)	(4,869,303)
Impairment loss ¹	-	-	-	(52,417,032)	-
Changes in exchange rates and others	245,981	(1,309,258)	213,277	(2,265,340)	24,436
Ending balance	₩ 1,839,192,122	₩ 1,036,907,529	₩ 178,857,637	₩ 2,407,435,880	₩ 26,457,462

(in thousands of Korean won)	2015				
	Tools and equipment	Other tangible assets	Construction-in-progress	Machinery in transit	Total
Beginning balance	₩ 77,381,163	₩ 19,699,638	₩ 503,112,064	₩ 4,977,898	₩ 6,038,120,534
Acquisition	33,167,463	2,139,683	333,679,778	2,444,893	755,310,639
Changes in scope of consolidation	278,500	-	29,815,020	(2,076)	8,317,901
Transfer	21,577,961	1,438,341	(275,902,136)	(6,466,821)	(85,443,176)
Disposal	(1,240,628)	(8,176,422)	(126,088,631)	-	(175,174,580)
Depreciation	(44,539,517)	(3,648,370)	-	-	(433,124,951)
Impairment loss ¹	-	-	(338,138)	-	(52,755,170)
Changes in exchange rates and others	(87,884)	814,434	(2,356,114)	-	(4,720,468)
Ending balance	₩ 86,537,058	₩ 12,267,304	₩ 461,921,843	₩ 953,894	₩ 6,050,530,729

¹ For segment of polysilicon, the Group recognized the carrying amount of property, plant and equipment exceeding the recoverable amounts as impairment loss.

Hanwha Chemical Corporation and Subsidiaries

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(in thousands of Korean won)	2014				
	Land	Buildings	Structures	Machinery	Vehicles
Beginning balance	₩ 1,699,069,878	₩ 983,471,411	₩ 134,268,534	₩ 1,862,476,920	₩ 34,484,380
Acquisition	264,365	10,524,460	368,727	37,476,727	1,148,002
Changes in scope of consolidation	2,576,365	(33,341,166)	22,874,970	(18,134,206)	(159,169)
Transfer	148,182,251	71,886,293	44,229,554	839,658,438	1,200,088
Disposal	(195,763)	(1,913,371)	(2,894,986)	(6,712,986)	(309,539)
Depreciation	-	(52,490,168)	(12,229,514)	(294,520,849)	(5,352,175)
Impairment loss ¹	-	(1,494,976)	(1,573,987)	(41,182,155)	-
Changes in exchange rates and others	77,438	1,694,508	263,970	9,237,713	19,789
Ending balance	₩ 1,849,974,534	₩ 978,336,991	₩ 185,307,268	₩ 2,388,299,602	₩ 31,031,376

(in thousands of Korean won)	2014				
	Tools and equipment	Other tangible assets	Construction-in-progress	Machinery in transit	Total
Beginning balance	₩ 83,786,360	₩ 16,477,066	₩ 1,169,088,073	₩ 10,910,462	₩ 5,994,033,084
Acquisition	12,305,580	6,042,044	399,885,503	3,605,239	471,620,647
Changes in scope of consolidation	(10,183,358)	(282,261)	(5,894,142)	(214,301)	(42,757,268)
Transfer	25,006,824	2,168,525	(1,062,692,344)	(9,323,502)	60,316,127
Disposal	(1,436,446)	(212,393)	(2,175,368)	-	(15,850,852)
Depreciation	(32,640,184)	(3,841,110)	-	-	(401,074,000)
Impairment loss ¹	(621,748)	-	(279,674)	-	(45,152,540)
Changes in exchange rates and others	1,164,135	(652,233)	5,180,016	-	16,985,336
Ending balance	₩ 77,381,163	₩ 19,699,638	₩ 503,112,064	₩ 4,977,898	₩ 6,038,120,534

¹ Due to the withdrawal of the Battery Materials and ITO Glass business, the Group recognized the carrying amount of property, plant and equipment exceeding the recoverable amounts as impairment loss.

In 2015, the Group has capitalized borrowing costs amounting to ₩10,220 million (2014: ₩11,818 million) on qualifying assets. The capitalization rate of borrowings used to determine the amount of borrowing costs eligible for capitalization is 0.38%~5.67% (2014: 3.02%~6.23%).

Line items including depreciation in the statements of income for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015		2014	
	₩		₩	
Cost of sales	₩	356,087,873	₩	329,219,347
Selling and administrative expenses		77,037,078		71,854,653
	₩	433,124,951	₩	401,074,000

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Property, plant and equipment are provided as collateral for borrowings as of December 31, 2015 (Note 35).

Impairment of Property, Plant and Equipment

The Group assessed the recoverable amount for property, plant and equipment in segment of polysilicon. As a result of the assessment, an impairment loss amounting to ₩ 50,163 million is recognized by which the asset's carrying amount exceeds its recoverable amount. Impairment loss is included in other expenses as Impairment loss on property, plant, and equipment.

The recoverable amount is determined on a basis of the value in use, which is calculated by discounting the future cash flows that are expected to be derived from the continuing use of assets. The calculation of the value in use is based on the following key assumptions.

- ① The cash flows are projected over a period of five years based on past experience, actual operating results and business plan for the five year period. The cash flows after five years are estimated using a fixed growth rate of 1%. Such growth rate does not exceed the average long term growth rate of the industry.
- ② The sales price of the product is applied to the cash flows projection period based on external information.
- ③ The value in use is computed by discounting the operating cash flows each year using the discount rate, 9.00%.

The above key assumptions used in calculating the value in use reflect management's evaluation over the industry forecasts and are determined by considering external and internal information (historical information).

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17. Intangible Assets

Intangible assets as of December 31, 2015 and 2014, consist of :

	2015			2014		
	Acquisition cost	Accumulated amortization ¹	Book value	Acquisition cost	Accumulated amortization ¹	Book value
Goodwill	₩ 277,062,904	₩ (19,275,875)	₩ 257,787,029	₩ 271,691,982	₩ (19,128,272)	₩ 252,563,710
Industrial property rights	42,126,665	(27,065,452)	15,061,213	31,759,070	(18,176,775)	13,582,295
Land use rights	90,874,263	(11,116,600)	79,757,663	74,330,166	(7,448,551)	66,881,615
Development costs	41,736,614	(35,066,353)	6,670,261	35,055,268	(6,719,495)	28,335,773
Membership	59,633,481	(1,997,307)	57,636,174	60,534,752	(1,284,923)	59,249,829
Emissions rights	-	-	-	-	-	-
Other intangible assets	68,885,396	(44,983,645)	23,901,751	95,267,556	(47,335,456)	47,932,100
	₩ 580,319,323	₩ (139,505,232)	₩ 440,814,091	₩ 568,638,794	₩ (100,093,472)	₩ 468,545,322

¹ Accumulated amortization includes accumulated impairment losses.

Changes in intangible assets excluding emissions rights for the years ended December 31, 2015 and 2014, are as follows:

	2015			
	Goodwill	Industrial property rights	Land use rights	Development costs
Beginning balance	₩ 252,563,710	₩ 13,582,295	₩ 66,881,615	₩ 28,335,773
Changes in scope of consolidation	8,666,649	(27,829)	-	-
Acquisition	-	3,010,332	-	2,203,383
Transfer	-	3,226,846	14,031,286	475,529
Disposal	(11,447)	(4,847)	-	(44,014)
Amortization	-	(4,264,415)	(1,930,019)	(2,967,553)
Impairment	-	-	-	(21,163,328)
Changes in exchange rates and others	(3,431,883)	(461,169)	774,781	(169,529)
Ending balance	₩ 257,787,029	₩ 15,061,213	₩ 79,757,663	₩ 6,670,261

	2015		
	Membership	Other intangible assets	Total
Beginning balance	₩ 59,249,829	₩ 47,932,100	₩ 468,545,322
Changes in scope of consolidation	-	699,156	9,337,976
Acquisition	1,366,363	889,074	7,469,152
Transfer	-	(17,733,661)	-

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Disposal	(2,298,788)	(17,801)	(2,376,897)
Amortization	(715,713)	(7,028,923)	(16,906,623)
Impairment	-	(1,100,000)	(22,263,328)
Changes in exchange rates and others	34,483	261,806	(2,991,511)
Ending balance	₩ 57,636,174	₩ 23,901,751	₩ 440,814,091

(in thousands of
Korean won)

	2014			
	Goodwill	Industrial property rights	Land use rights	Development costs
Beginning balance	₩ 241,129,998	₩ 20,104,060	₩ 67,418,082	₩ 25,512,979
Changes in scope of consolidation	21,043,514	(239,592)	-	-
Acquisition	-	468,718	-	4,812,708
Transfer	-	29,009	-	5,689,422
Disposal	(10,634)	(978)	-	-
Amortization	-	(5,526,218)	(1,536,553)	(3,668,074)
Impairment	(892,162)	(13,347)	-	(3,618,871)
Changes in exchange rates and others	(8,707,006)	(1,239,357)	1,000,086	(392,391)
Ending balance	₩ 252,563,710	₩ 13,582,295	₩ 66,881,615	₩ 28,335,773

(in thousands of
Korean won)

	2014		
	Membership	Other intangible assets	Total
Beginning balance	₩ 62,749,242	₩ 54,100,913	₩ 471,015,274
Changes in scope of consolidation	(2,942,991)	(896,777)	16,964,154
Acquisition	487,068	3,272,683	9,041,177
Transfer	354,097	(29,009)	6,043,519
Disposal	(1,116,289)	(214,201)	(1,342,102)
Amortization	(302,972)	(7,788,243)	(18,822,060)
Impairment	-	(996,234)	(5,520,614)
Changes in exchange rates and others	21,674	482,968	(8,834,026)
Ending balance	₩ 59,249,829	₩ 47,932,100	₩ 468,545,322

Details of emissions rights in 2015, 2016 and 2017, are as follows:

	2015		2016		2017	
	Quantity (tCO2-eq)	Amount	Quantity (tCO2-eq)	Amount	Quantity (tCO2-eq)	Amount
Beginning	-	₩ -	-	₩ -	-	₩ -
Allocation of no cost	2,022,249	-	1,946,417	-	1,929,251	-
Submitted to the government	-	-	-	-	-	-
Ending	2,022,249	₩ -	1,946,417	₩ -	1,929,251	₩ -

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Borrowing costs were capitalized at the weight average rate of 2.73% (2014: 3.02%) and the capitalized borrowing cost of intangible assets amounts to ₩373 million (2014: ₩496 million) as of December 31, 2015.

Intangible assets are provided as collateral for borrowings as of December 31, 2015 (Note 35).

17.2 Goodwill

Goodwill is monitored by the management at the operating segment level (cash-generating units or group of cash-generating units). The following is a summary of goodwill allocation for each operating segment:

<i>(in thousands of Korean won)</i>	2015		2014	
Photovoltaic business	₩	199,805,677	₩	201,024,235
HANWHA FINE CHEMICAL CO., LTD.		18,510,215		18,510,215
Others		39,471,137		33,029,260
	₩	257,787,029	₩	252,563,710

The recoverable amounts of all CGUs have been determined based on value-in-use calculations which is estimated on financial budgets approved by management covering a five-year period, or net fair value which is the price in an active market, less the disposal cost.

The impairment test for goodwill suggests that the carrying value of cash generating units does not exceed the recoverable amounts. The group recognized as impairment losses on goodwill amounting to ₩892 million for DREAMPHARMA CORP in 2014.

18. Trade Payables and Other Payables

Trade payables and other payables as of December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015		2014	
	Current	Non-current	Current	Non-current
Trade payables	₩ 1,214,246,939	₩ -	₩ 1,176,824,599	₩ -
Other payables (Note 35)	400,747,254	208,595,675	449,365,752	13,941,049
	₩ 1,614,994,193	₩ 208,595,675	₩ 1,626,190,351	₩ 13,941,049

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19. Borrowings

Details of carrying amount of borrowings as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015		2014	
	Current	Non-current	Current	Non-current
Borrowings from financial institutions	₩ 1,796,871,298	₩ 1,556,000,533	₩ 1,629,868,441	₩ 1,644,629,929
Debentures	628,417,595	1,059,772,466	576,514,547	1,102,439,172
	<u>₩ 2,425,288,893</u>	<u>₩ 2,615,772,999</u>	<u>₩ 2,206,382,988</u>	<u>₩ 2,747,069,101</u>

Borrowings from financial institutions as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)			
	Creditor	2015	2014
Borrowings in Korean won	KDB Bank and others	₩ 1,145,947,623	₩ 1,389,923,158
Borrowings in Foreign currency	Korea Export-Import Bank and others	2,184,269,415	1,856,205,198
Overdrafts	Woori Bank and others	4,325,981	9,131,374
Borrowings on negotiated trade bills ¹	Woori Bank and others	18,328,812	19,238,640
		<u>3,352,871,831</u>	<u>3,274,498,370</u>
Less: Reclassification of current portion		<u>(1,796,871,298)</u>	<u>(1,629,868,441)</u>
		<u>₩ 1,556,000,533</u>	<u>₩ 1,644,629,929</u>

¹ The Group discounted trade receivables by a trade receivables factoring contract with banks and accounted for as a collateralized borrowing. In case the entities default under the loan agreements, the Group is obligated to pay the corresponding amount to the financial institutions (Note 7).

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Debentures as of December 31, 2015 and 2014, consist of:

(in thousands of Korean won)

		Maturity date	Annual interest rate (%)	2015	2014
ASAN TECHNO VALLEY	Private placement bond, 10 th	-	-	-	45,000,000
ASAN TECHNO VALLEY	Private placement bond, 11 th	2016.12.05	One year industrial financial debenture +2.59	12,000,000	39,000,000
Hanwha Galleria Co., Ltd.	Public bond, 61-1 st	-	-	-	50,000,000
Hanwha Galleria Co., Ltd.	Public bond, 61-2 nd	2017.09.19	4.34	30,000,000	30,000,000
Hanwha Galleria Co., Ltd.	Public bond, 62 nd	2016.10.15	3.98	50,000,000	50,000,000
Hanwha Galleria Co., Ltd.	Public bond, 63 th	2018.09.09	2.96	50,000,000	-
Hanwha Galleria Co., Ltd.	FRN	2016.11.21	3L+0.80	35,160,000	32,976,000
Hanwha Galleria Timeworld Co., Ltd. ¹	Public convertible bond, 20 th	2018.09.15	0.25	49,984,800	-
Hanwha Advanced Materials Co., Ltd.	Public bond, 47 th	-	-	-	40,000,000
Hanwha Advanced Materials Co., Ltd.	Private placement bond, 48 th	2016.06.27	3L+2.20	35,160,000	32,976,000
Hanwha Advanced Materials Co., Ltd.	Private placement bond, 49 th	2016.10.23	3.37	20,000,000	20,000,000
Hanwha Advanced Materials Co., Ltd.	Private placement bond, 50 th	2016.04.24	3.04	10,000,000	10,000,000
Hanwha Advanced Materials Co., Ltd.	Private placement bond, 51 th	2017.10.27	2.67	30,000,000	30,000,000
Hanwha Advanced Materials Co., Ltd.	52 nd FRN	2018.02.13	3L+1.90	35,160,000	-
Hanwha Chemical Corporation	Public bond, 230-2 nd	-	-	-	100,000,000
Hanwha Chemical Corporation	Public bond, 233-2 nd	2016.10.14	4.43	60,000,000	60,000,000
Hanwha Chemical Corporation	Public bond, 234-1 st	-	-	-	50,000,000
Hanwha Chemical Corporation	Public bond, 234-2 nd	2017.02.07	4.42	100,000,000	100,000,000
Hanwha Chemical Corporation	Public bond, 235-1 st	-	-	-	50,000,000
Hanwha Chemical Corporation	Public bond, 235-2 nd	2017.04.23	4.14	100,000,000	100,000,000
Hanwha Chemical Corporation	Public bond, 236 th	-	-	-	150,000,000
Hanwha Chemical Corporation	Public bond, 237 th	2016.02.25	3.10	150,000,000	150,000,000
Hanwha Chemical Corporation	Private placement bond, 238 th	2016.04.11	3L+1.70	82,040,000	76,944,000
Hanwha Chemical Corporation	Private placement bond, 239 th	2016.09.12	3L+1.80	58,600,000	54,960,000
Hanwha Chemical Corporation	Public bond, 240 th	2017.10.21	2.98	110,000,000	110,000,000
Hanwha Chemical Corporation	Public bond, 241 st	2018.11.17	3.03	100,000,000	100,000,000
Hanwha Chemical	Public bond, 242 nd	2018.02.05	2.75	103,000,000	-

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Corporation						
Hanwha Chemical Corporation	Public bond, 243-1 st	2018.05.28	2.69	102,000,000	-	
Hanwha Chemical Corporation	Public bond, 243-2 nd	2020.05.28	3.07	98,000,000	-	
Hanwha Chemical Corporation	244 th FRN	2018.10.08	3L+1.65	58,600,000	-	
Hanwha Chemical Corporation	Public bond, 245-1 st	2018.10.28	2.75	50,000,000	-	
Hanwha Chemical Corporation	Public bond, 245-2 nd	2020.10.28	3.08	50,000,000	-	
Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.)	FRN	2016.01.15	3L+1.99	115,897,773	108,190,039	
Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.)	Convertible bond	-	-	-	94,613,640	
Total				1,695,602,573	1,684,659,679	
Add: Call premium on bonds				376,135	-	
Less: Discount on debentures				(7,788,647)	(5,705,960)	
Less :Reclassification of current portion				(628,417,595)	(576,514,547)	
				<u>₩ 1,059,772,466</u>	<u>₩ 1,102,439,172</u>	

As of December 31, 2015, details of convertible bonds issued by the Group are as follows:

	Details
Bond issuer	Hanwha Galleria Timeworld Co., Ltd
Par value	₩ 50,000,000 thousand
Value at issue	₩ 45,959,635 thousand
Call premium on bonds	At issue: ₩ 376,250 thousand (0.7525%)
Stated interest rate	0.00%
Guaranteed yield upon maturity	0.25%
Conversion condition	The bond is convertible at the rate of ₩ 113,500 per share
Right of conversion	The bonds are convertible to shares from one month after issuance (October 15, 2015) until one month before the maturity (August 15, 2018).

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20. Other Financial Liabilities

Details of other financial liabilities as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015		2014	
	Current	Non-current	Current	Non-current
Derivatives financial liabilities	₩ 1,174,705	₩ 409,993	₩ 871,962	₩ 1,959,053
Deposits	8,125,506	9,553,758	9,313,633	9,222,555
Accrued expenses	126,602,456	8,648,803	84,613,234	7,789,957
Lease liabilities	-	-	6,290,622	1,342,251
Financial guarantee liability	438,826	2,684,333	427,369	2,657,885
	<u>₩ 136,341,493</u>	<u>₩ 21,296,887</u>	<u>₩ 101,516,820</u>	<u>₩ 22,971,701</u>

21. Other Liabilities

Details of other liabilities as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015		2014	
	Current	Non-current	Current	Non-current
Advances from customers	₩ 1,122,903,482	₩ -	₩ 369,056,527	₩ -
Withholdings	10,379,820	-	20,286,897	-
VAT payables	6,241,729	-	1,709,484	-
Unearned revenues	6,623,674	17,944	6,255,539	2,770
	<u>₩ 1,146,148,705</u>	<u>₩ 17,944</u>	<u>₩ 397,308,447</u>	<u>₩ 2,770</u>

22. Net Defined Benefit Liabilities

The amounts of net defined benefit liabilities recognized in the consolidated statements of financial position as of December 31, 2015 and 2014, are determined as follows:

(in thousands of Korean won)

	2015	2014
Present value of defined benefit obligations	₩ 389,125,027	₩ 363,252,721
Fair value of plan assets	(68,132,626)	(74,308,491)
	<u>₩ 320,992,401</u>	<u>₩ 288,944,230</u>

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Changes in the present value of defined benefit obligations for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>		2015		2014
Beginning balance	₩	363,252,721	₩	357,788,407
Current service cost		42,007,430		38,899,409
Interest expense		13,671,749		15,855,847
Remeasurements ¹		16,166,450		24,502,725
Benefits paid		(40,739,294)		(31,788,705)
Changes in scope of consolidation		(5,672,377)		(43,420,501)
Change in exchange rate and others		438,348		1,415,539
Ending balance	₩	389,125,027	₩	363,252,721

¹ Details of remeasurements for the years ended December 31, 2015 and 2014, are as follows:
(in thousands of Korean won)

		2015		2014
Actuarial losses (gains) arising from experience adjustments	₩	11,887,813	₩	(1,091,910)
Actuarial losses (gains) arising from changes in demographic assumptions		4,923,232		(802)
Actuarial losses (gains) arising from changes in financial assumptions		(644,595)		25,595,437
	₩	16,166,450	₩	24,502,725

Changes in the fair value of plan assets for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>		2015		2014
Beginning balance	₩	74,308,491	₩	77,638,172
Interest income		2,274,590		3,009,053
Remeasurements ¹		(1,208,312)		(1,146,884)
Contributions by the employer		1,615,071		787,667
Benefits paid		(7,566,041)		(3,574,962)
Changes in scope of consolidation		(1,447,360)		(3,382,239)
Change in exchange rate and others		156,187		977,684
Ending balance	₩	68,132,626	₩	74,308,491

¹ Return on plan assets (excluding amounts included in interest income).

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Plan assets as of December 31, 2015 and 2014, consist of:

<i>(in thousands of Korean won)</i>	2015		2014	
Equity instrument	₩	7,822,297	₩	8,303,611
Debt instrument		4,182,232		2,845,293
Principal guaranteed financial instrument		54,857,326		61,291,891
Others		1,270,771		1,867,696
	₩	68,132,626	₩	74,308,491

The amounts recognized in the consolidated statements of income for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015		2014	
Current service cost	₩	42,007,430	₩	38,899,409
Net interest cost		11,397,159		12,846,794
	₩	53,404,589	₩	51,746,203

In 2015, severance benefits of ₩386 million (2014: ₩819 million) were reclassified as construction in progress.

The principal actuarial assumptions as of December 31, 2015 and 2014, are as follows:

<i>(in percentage)</i>	2015	2014
Discount rate	2.58 ~ 3.61%	2.62 ~ 4.02%
Future salary increase	2.50 ~ 7.67%	3.24 ~ 6.00%

The sensitivity of defined benefit obligations as of December 31, 2015, to changes in the weighted principal assumptions is:

<i>(in percentage)</i>	Effect on defined benefit obligation		
	Changes in principal assumption	Increase in principal assumption	Decrease in principal assumption
Discount rate	1%	7.80% decrease	8.94% increase
Salary growth rate	1%	8.95% increase	7.93% decrease

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23. Provisions

Details in provisions for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015		2014	
	Current	Non-current	Current	Non-current
Provisions for sales returns	₩ 792,918	₩ -	₩ 753,943	₩ -
Provision for restoration	-	1,050,000	-	-
Provisions for product warranty	41,623,233	19,800,183	42,764,753	18,040,690
Provision for litigation	243,134	10,000,000	-	-
Emissions obligations	6,553,316	-	-	-
Others	20,719,534	-	20,525,666	-
	<u>₩ 69,932,135</u>	<u>₩ 30,850,183</u>	<u>₩ 64,044,362</u>	<u>₩ 18,040,690</u>

Changes in provisions for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015						
	Sales returns	Restoration	Warranty	Litigation	Emissions obligations	Others	Total
Beginning balance	₩ 753,943	₩ -	₩ 60,805,443	₩ -	₩ -	₩ 20,525,666	₩ 82,085,052
Additional provisions	38,975	1,050,000	20,307,914	10,242,384	6,553,316	-	38,192,589
Used	-	-	(8,307,585)	-	-	-	(8,307,585)
Unused amounts reversed	-	-	(10,301,543)	-	-	-	(10,301,543)
Change in exchange rate and others	-	-	(1,080,813)	750	-	193,868	(886,195)
Ending balance	<u>₩ 792,918</u>	<u>₩ 1,050,000</u>	<u>₩ 61,423,416</u>	<u>₩ 10,243,134</u>	<u>₩ 6,553,316</u>	<u>₩ 20,719,534</u>	<u>₩ 100,782,318</u>
Current	₩ 792,918	₩ -	₩ 41,623,233	₩ 243,134	₩ 6,553,316	₩ 20,719,534	₩ 69,932,135
Non-current	-	1,050,000	19,800,183	10,000,000	-	-	30,850,183

(in thousands of Korean won)

	2014			
	Sales returns	Warranty	Others	Total
Beginning balance	₩ 4,264,942	₩ 57,279,119	₩ 24,977,289	₩ 86,521,350
Changes in scope of consolidation	(2,710,961)	-	-	(2,710,961)
Additional provisions	7,245,178	14,879,730	-	22,124,908
Used	(8,044,377)	(1,997,206)	-	(10,041,583)
Unused amounts reversed	-	(7,342,798)	(4,679,427)	(12,022,225)
Change in exchange rate and others	(839)	(2,013,402)	227,804	(1,786,437)
Ending balance	<u>₩ 753,943</u>	<u>₩ 60,805,443</u>	<u>₩ 20,525,666</u>	<u>₩ 82,085,052</u>
Current	₩ 753,943	₩ 42,764,753	₩ 20,525,666	₩ 64,044,362
Non-current	-	18,040,690	-	18,040,690

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24. Capital Stock and Capital Surplus

Details of capital stock as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won and number of shares)	2015		2014	
	Common stocks	Preferred stocks ¹	Common stocks	Preferred stocks ¹
Number of authorized shares (unit: shares)	200,000,000	100,000,000	200,000,000	100,000,000
Par value per share (in won)	₩ 5,000	₩ 5,000	₩ 5,000	₩ 5,000
Number of issued common stocks (unit: shares)	161,939,571	1,123,737	161,939,571	1,123,737
Capital Stock	₩ 809,697,855	₩ 5,618,685	₩ 809,697,855	₩ 5,618,685

¹ The non-cumulative preferred stock are eligible to receive cash dividends equal to cash dividends for common shares plus additional 1% based on the par value.

Details of capital surplus as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015		2014	
Share premium	₩	462,688,912	₩	462,688,912
Revaluation reserve		94,122,434		94,122,434
Gain from merger		75,670,859		75,670,859
Other capital surplus		197,015,265		80,407,692
	₩	829,497,470	₩	712,889,897

25. Capital Adjustments

Capital adjustments as of December 31, 2015 and 2014, are primarily composed of other capital adjustments recognized due to acquisition of subsidiaries while maintaining controls.

26. Accumulated Other Comprehensive Income

Details of accumulated other comprehensive income as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)	2015		2014	
Changes in value of available-for-sale financial assets	₩	36,582,029	₩	33,463,183
Share of other comprehensive income of associates and joint ventures		123,377,847		103,799,554
Cash flow hedges		(196,450)		(139,203)
Currency translation difference		(55,093,594)		(27,322,717)
	₩	104,669,832	₩	109,800,817

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27. Retained Earnings

Details of retained earnings as of December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015	2014
Legal reserves	₩ 47,891,883	₩ 45,440,314
Discretionary reserves	1,990,685,999	1,952,942,024
Revaluation surplus	724,756,688	724,756,688
Unappropriated retained earnings	123,517,581	16,306,944
	<u>₩ 2,886,852,151</u>	<u>₩ 2,739,445,970</u>

28. Dividends

Dividends distribution to the Parent Company's shareholders amounting to ₩24,291 million (₩150 per share) and preferred stock dividend amounting to ₩225 million (₩200 per share) for the year ended December 31, 2014, were paid in 2015.

Dividends distribution to the Parent Company's shareholders amounting to ₩21,043 million (₩150 per share) and preferred stock dividend amounting to ₩225 million (₩200 per share) for the year ended December 31, 2013, were paid in 2014.

Dividends distribution to the Parent Company's shareholders in respect of the year ended December 31, 2015, of ₩150 per share, amounting to a total dividend of ₩24,291 million and preferred stock dividend in respect of the year ended December 31, 2015, of ₩200 per share, amounting to a total dividend of ₩225 million, are to be proposed at the annual general shareholders' meeting on March 25, 2016. These financial statements do not reflect this dividend payable.

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29. Selling and Administrative Expenses

Selling and administrative expenses for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015		2014	
Salaries	₩	305,726,467	₩	281,448,113
Severance benefits		24,959,334		23,834,798
Other long-term employee benefits		6,555,966		-
Voluntary resignation payments		86,022		394,189
Employee benefits		54,500,295		57,192,053
Rental		58,558,005		54,050,753
Entertainment		10,220,057		11,921,895
Depreciation of investment property		617,605		674,417
Depreciation of property, plant and equipment		77,037,078		71,854,653
Amortization		14,832,581		11,953,634
Taxes and dues		29,001,167		27,458,262
Advertising		34,648,821		42,054,480
Bad debts expense		3,503,309		3,738,250
Travel		14,841,213		24,056,900
Travel expense for overseas branches		329,825		214,577
Conference		2,572,548		3,599,795
Communications		4,941,337		5,895,872
Supplies		5,512,711		5,442,112
Publications		1,381,401		1,821,746
Outsourcing expenses		36,195,515		42,025,592
Freight expenses		47,789,221		51,833,600
Custody charges		64,301,388		61,199,828
Sample and packaging expenses		6,814,206		10,221,118
Utility expenses		15,352,596		14,741,491
Sales commissions		15,048,147		25,489,998
Export expenses		91,901,009		88,412,853
Maintenance		16,626,729		13,539,860
Insurance		12,570,435		10,223,216
Commissions		102,391,331		97,198,797
Research		40,682,912		31,020,450
Development		22,833,723		29,275,211
Market development expense		5,844,353		8,689,857
Operating expenses for overseas branches		673,796		426,508
Product warranty expense		10,422,763		4,510,547
Training		5,926,724		6,978,604
Product handling fee		29,219		214,558
Miscellaneous expenses		7,730,786		4,660,416
Others		6,381,209		8,656,461
	₩	1,159,341,804	₩	1,136,925,464

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30. Expenses by Nature

Expenses by nature for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>		2015		2014
Changes in inventories ¹	₩	50,493,746	₩	(60,778,531)
Merchandise purchased		727,880,792		779,386,321
Raw materials and consumables used		4,302,425,203		4,435,152,053
Salaries ²		559,505,388		572,014,256
Employee benefits		89,603,403		105,861,700
Rental expenses		108,021,040		113,222,121
Depreciation expenses on investment property		2,107,356		2,292,319
Depreciation on property, plant, and equipment		433,124,951		401,074,000
Amortization		16,906,623		18,822,060
Freight and storage expenses		109,277,623		127,230,117
Utility expenses		127,387,141		138,727,123
Outsourcing expenses		131,733,652		141,703,649
Export expenses		73,660,408		95,026,952
Taxes and dues		29,338,855		29,684,457
Other expenses		938,512,250		1,014,654,309
Total cost of sales, selling and administrative expenses ³	₩	7,699,978,431	₩	7,914,072,906

¹ Changes in finished goods, half-finished products and work-in-process.

² Severance benefits and other long-term employee benefits are included.

³ Consists of cost of sales, and selling and administrative on consolidated financial statements.

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31. Other Income and Other Expenses

Details of other income for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>		2015		2014
Gain on foreign currency transactions	₩	130,209,846	₩	103,086,924
Gain on foreign currency translation		77,763,099		28,784,407
Gain on valuation of derivatives		17,458,389		10,283,001
Gain on disposal of available-for-sale financial assets		18,588,892		16,332,718
Gain on disposal of investments in associates		13,604,342		175,122,200
Gain on transactions of derivatives		14,296,475		6,973,432
Reversal of impairment on available-for-sale financial assets		2,303		-
Gain on disposal of property, plant, and equipment		8,705,690		23,619,596
Gain on disposal of intangible assets		436,625		18,172
Reversal of allowance of bad debt		1,532,165		-
Reversal of other bad debts expense		-		205,950
Rental income		211,191		138,016
Gain on bargain purchase ¹		26,590,337		-
Gain on reversed liability (Note 35)		54,898,852		-
Others		32,735,654		36,986,759
	₩	<u>397,033,860</u>	₩	<u>401,551,175</u>

¹ Including gain on bargain purchase amounting to ₩ 22,994 million from the increase in percentage of ownership, by acquiring and retiring treasury stocks of Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.) (Note 14).

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Details of other expenses for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>		2015		2014
Loss on foreign currency transactions	₩	117,486,254	₩	114,518,080
Loss on foreign currency translation		162,186,216		44,118,026
Loss on valuation of derivatives		263,598		5,211,232
Loss on disposal of available-for-sale financial assets		8,146		2,036,151
Loss on disposal of investments in associates		3,597,410		5,134,393
Loss on transactions of derivatives		3,789,014		2,138,356
Loss on disposal of investment property		376,551		1,214,589
Loss on disposal of property, plant, and equipment		86,727,982		9,614,475
Loss on disposal of intangible assets		449,686		322,452
Impairment loss on property, plant, and equipment		52,755,170		45,152,541
Impairment loss on intangible assets		21,163,328		5,520,614
Other bad debts expense		7,957,237		17,127
Obsolescence loss on inventory		206,173		8,326,435
Commissions (non-operating)		11,240,635		6,847,852
Donations		6,750,886		9,782,985
Others		42,513,779		43,189,038
	₩	517,472,065	₩	303,144,346

32. Finance Income and Costs

Details of finance income and costs for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>		2015		2014
Finance income				
Interest income	₩	21,357,136	₩	17,228,311
Dividend income		4,029,496		2,737,904
	₩	25,386,632	₩	19,966,215
 <i>(in thousands of Korean won)</i>				
Finance costs				
Interest expense	₩	179,739,069	₩	213,369,656

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33. Income Tax Expense and Deferred Income Tax

Income tax expense for the years ended December 31, 2015 and 2014, consists of:

<i>(in thousands of Korean won)</i>	2015	2014
Current tax:		
Current tax on profits for the year	₩ 62,040,451	₩ 79,706,427
Adjustments in respect of prior years	6,173,951	2,032,176
Total current tax	68,214,402	81,738,603
Deferred tax:		
Origination and reversal of temporary differences	(18,455,162)	(51,494,431)
Income tax effect charged directly to equity	(1,795,338)	9,272,893
Income tax expense	₩ 47,963,902	₩ 39,517,065

The tax on the Group's profit (loss) before income 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 thousands of Korean won)</i>	2015	2014
Profit before income tax expense	₩ 228,379,669	₩ 50,907,231
Tax calculated at domestic tax rates applicable to profits	₩ 55,267,880	₩ 12,319,550
Tax effects of:		
Income not subject to tax (expenses not deductible for tax purposes)	(9,156,837)	9,563,667
Adjustment in respect of prior years	6,173,951	2,032,176
Tax credit	1,416,207	(9,834,970)
Tax losses for which no deferred income tax asset was recognized	(2,774,573)	23,336,576
Other	(2,962,726)	2,100,066
Income tax expense	₩ 47,963,902	₩ 39,517,065

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The income tax charged or credited directly to equity for the years ended December 31, 2015 and 2014, is as follows:

<i>(in thousands of Korean won)</i>		2015	2014
Current tax			
Remeasurements of net defined benefit liabilities	₩	573,817	₩ 371,643
Deferred tax			
Loss on valuation of available-for-sale financial assets		738,249	4,903,253
Share of other comprehensive loss of associates and joint ventures		(3,477,583)	(745,657)
Gain on valuation of derivatives		22,467	57,035
Currency translation differences		(3,455,445)	171,581
Remeasurements of net defined benefit liabilities		3,874,962	5,676,557
Share of remeasurements of net defined benefit liabilities of associates and joint ventures		781,411	726,819
Other capital surplus		(496,523)	(1,705,044)
Other capital adjustments		(356,693)	(183,294)
Total	₩	(1,795,338)	₩ 9,272,893

Changes in deferred income tax assets and liabilities for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)		2015						
		Beginning balance	Statement of income	Other compre- hensive income	Equity	Changes in scope of consolida- tion	Ending balance	
Allowance for bad debts	₩	47,570,217	₩ (211,702)	₩ -	₩ -	₩ -	₩ 47,358,515	
Loss on valuation of inventories		6,001,268	2,266,570	-	-	-	8,267,838	
Gain (loss) on valuation of derivatives		(669,831)	(1,552,715)	22,467	-	-	(2,200,079)	
Available-for-sale financial assets		17,120,623	(14,847,684)	738,249	-	-	3,011,188	
Bonuses		825,089	3,919,160	-	-	-	4,744,249	
Depreciation		(13,940,736)	(4,413,921)	-	-	-	(18,354,657)	
Defined benefit obligation		77,966,159	124,357	3,874,962	-	-	81,965,478	
Plan assets		(12,336,958)	1,550,164	-	-	-	(10,786,794)	
Revaluation reserve		(27,973,073)	97,981	-	-	-	(27,875,092)	
Surplus from revaluation		(209,697,142)	3,950,445	-	-	-	(205,746,697)	
Temporary differences from subsidiaries and associates and consolidation adjustments		(163,757,135)	25,317,029	(6,151,617)	(853,216)	(1,060,283)	(146,505,222)	
Other		30,248,212	4,624,633	-	-	-	34,872,845	
	₩	(248,643,307)	₩ 20,824,317	₩ (1,515,939)	₩ (853,216)	₩ (1,060,283)	₩ (231,248,428)	

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(in thousands of Korean won)	2014					
	Beginning balance	Statement of income	Other compre- hensive income	Equity	Changes in scope of consolida- tion	Ending balance
Allowance for bad debts	₩ 45,030,229	₩ 2,539,988	₩ -	₩ -	₩ -	₩ 47,570,217
Loss on valuation of inventories	2,285,795	3,715,473	-	-	-	6,001,268
Gain (loss) on valuation of derivatives	434,400	(1,161,266)	57,035	-	-	(669,831)
Available-for-sale financial assets	(1,355,316)	13,572,686	4,903,253	-	-	17,120,623
Bonuses	(2,140,322)	2,965,411	-	-	-	825,089
Depreciation	-	(13,940,736)	-	-	-	(13,940,736)
Defined benefit obligation	45,187,689	27,101,913	5,676,557	-	-	77,966,159
Plan assets	(11,499,920)	(837,038)	-	-	-	(12,336,958)
Revaluation reserve	(26,453,797)	(1,519,276)	-	-	-	(27,973,073)
Surplus from revaluation	(78,181,850)	(131,515,292)	-	-	-	(209,697,142)
Temporary differences from subsidiaries and associates and consolidation adjustments	(229,357,847)	90,639,324	152,743	(1,888,338)	(23,303,017)	(163,757,135)
Other	(20,783,782)	51,031,994	-	-	-	30,248,212
	₩ (276,834,721)	₩ 42,593,181	₩ 10,789,588	₩ (1,888,338)	₩ (23,303,017)	₩ (248,643,307)

34. Earnings per Share

Basic earnings per common share for the years ended December 31, 2015 and 2014, is as follows:

(in thousands of Korean won, except per share amounts)	2015	2014
Profit for the year	₩ 180,415,766	₩ 11,390,166
Profit attributable to owners of the parent	188,160,566	56,742,203
Profit attributable to ordinary share owners of the parent	186,808,074	56,295,369
Weighted average number of ordinary shares outstanding	161,939,571 shares	154,879,102 shares
Basic earnings per share (in won)	₩ 1,154	₩ 363

Basic earnings per preferred share for the years ended December 31, 2015 and 2014, is as follows:

(in thousands of Korean won, except per share amounts)	2015	2014
Profit for the year	₩ 180,415,766	₩ 11,390,166
Profit attributable to owners of the parent	188,160,566	56,742,203
Profit attributable to preferred share owners of the parent	1,352,492	446,834
Weighted average number of preferred shares outstanding	1,123,737 share	1,123,737 share
Basic earnings per share (in won) ¹	₩ 1,204	₩ 398

¹ Preferred shares were issued under the former commercial law before the amendments in 1997. These preferred shares hold the same priority as common shares in terms of dividends pay out and distribution of residual properties. Thus, earnings per share was calculated accordingly.

In 2015, potential ordinary shares consist of convertible bonds issued by Hanwha Galleria

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Timeworld Co., Ltd. Basic earnings per share for the year ended December 31, 2015, is identical to diluted earnings per share since there is no diluting effect of the potential ordinary shares. In 2014, potential ordinary shares consist of convertible bonds issued by Hanwha Q CELLS Co., Ltd (formerly Hanwha SolarOne Co., Ltd.). Basic earnings per share for the year ended December 31, 2014, is identical to diluted earnings per share since there are no diluting effect of the potential ordinary shares.

35. Contingencies and Commitments

(a) Details of credit limits provided by financial institutions as of December 31, 2015, are as follows:

(in US dollars, Euro, Chinese Yuan, Malaysian Ringgit, Czech Koruna and thousands of Korean won)

	Currency	Maximum limit
Overdrafts	KRW	121,000,000
	USD	18,800,000
	EUR	13,000,000
	CNY	26,608,444
	THB	30,000,000
Usances for importing goods	USD	112,320,000
D/A, D/P, Local trade bills for exporting goods and others	USD	103,200,000
	THB	70,000,000
Other credit limits	KRW	2,269,995,826
	USD	1,553,956,129
	EUR	2,000,000
	CNY	2,476,996,749
	MYR	844,000,000
	CZK	837,780,000
	THB	90,000,000
	CLP	2,455,520,230
	MXN	49,741,200

(b) Details of assets provided as collateral for the Group's liabilities as of December 31, 2015, are as follows:

(in thousands of Korean won)

Collateral	Collateral amount	Lender
Cash and cash equivalents	₩ 1,568,090	Agricultural Bank of China and others
Trade receivables and other receivables	125,802,961	KDB Bank and others
Other financial assets	310,155,041	Shinhan Bank and others
Inventories ¹	850,139,999	KDB Bank and others
Investments in associates	292,150,626	KSFC and others
Investment property	48,900,000	Hana Bank and others
Property, plant and equipment	2,648,907,045	KDB Bank and others
Intangible assets	65,027,951	Hana Bank and others
Shares of the subsidiaries	34,000,000	KDB Bank and others

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¹ Inventories are pledged as collateral with certain shares of the subsidiaries.

² Other than the collaterals listed above, the Group provided collaterals to related parties (Note 36).

(c) As of December 31, 2015, the Group provided two notes of ₩ 280 million to financial institutions as collateral.

(d) Details of guarantees provided by the Group as of December 31, 2015, are as follows:

<i>(in US dollars, Euro and thousands of Korean won)</i>		Details	Period	Amount	
BOWON CHEMICAL CO.LTD	Guarantees of borrowings	2015.09.02~2016.09.02	KRW	1,200,000	
PolyMirae Company Ltd.	Performance guarantees	2015.05.01~2016.04.30	KRW	337,325	
Hanwha L&C Co., Ltd.	Joint guarantees	2014.11.05~2017.06.30	KRW	5,828,853	
LTi ReEnergy	Payment guarantees	2014.12.03~ without a time limit	USD	220,000	
LTi ReEnergy	Payment guarantees	2015.06.12~without a time limit	EUR	527,000	
Ideematec	Payment guarantees	2015.01.19~without a time limit	USD	516,000	
Inmobiliaria Lomas Los Colorados S.A.	Lease	2014.02.28~2039.02.28	USD	435,769	
Yapicredit	Payment guarantees	2015.10.19~2017.10.19	USD	40,000,000	

In addition to the above guarantees, the Group has provided payment guarantees and collateral to related parties (Note 36).

(e) Details of guarantees received from third parties as of December 31, 2015, are as follows:

<i>(in thousands of Korean won)</i>		Details	Period	Amount	
Seoul Guarantee Insurance	Forest restoration guarantees	2013.09.05~2018.09.04	₩	13,120	
Seoul Guarantee Insurance	Account payable-NongShim	2015.01.01~2015.12.31		200,000	
Seoul Guarantee Insurance	Performance guarantees	2010.11.22~2019.02.28		3,182,357	
Seoul Guarantee Insurance	Forest restoration guarantees	2014.04.30~2019.04.29		79,899	
Seoul Guarantee Insurance	Forest restoration guarantees	2012.08.13~2016.06.30		313,670	
Seoul Guarantee Insurance	Forest restoration guarantees	2012.12.10~2016.06.30		305,644	
Seoul Guarantee Insurance	Assurance of performance - NongShim	2015.07.01~2016.06.30		60,000	

Shinhan Bank has provided payment guarantees amounting to ₩ 627 million (maximum limit: ₩ 711 million) in relation to the performance of the agreement for the Group.

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(f) In addition to the case discussed in Note 35-(i), (j) and (k), the Group is a plaintiff in six cases aggregating to ₩78,265 million, and a defendant in 12 cases aggregating to ₩35,452 million. As of December 31, 2015, the Group records provision for one litigation and the outcome of the rest of litigations cannot be determined.

(g) The Group entered into an indemnity agreement with the buyer of Hanwha Energy Co.'s stocks to indemnify against loss that may arise for certain period of time after stock transfer date. The maximum amount of loss for which the Company and other sellers are jointly liable was ₩50,000 million as of December 31, 2012. Regarding this agreement, litigation amounting to ₩32,281 million is pending. The Group won the case in Seoul Appellant Court on June 21, 2012. The plaintiff appealed to the Supreme Court on July 25, 2012, and the Court remanded original verdict on October 15, 2015. The Company needs to indemnify if there are damages that are in proximate causal relation with breach of representations and warranties to plaintiff. The management of the Group does not expect the outcome of these lawsuits will have a material effect on the Group's consolidated financial statements.

(h) The Group sold its all shares in POSCO ENERGY Co., Ltd. (formerly Korea Independent Energy Co., Ltd.) to POSCO on July 11, 2005. According to the stock sale agreement, the Group is also liable for the 25% of third party claims for damages related to the water facilities and drainages until the termination of the electric power supply agreement between Korea Independent Energy Co., Ltd. and Korea Electric Power Corporation, or until the cause of such damage is remedied. The management of the Group does not expect the compensation agreement will have a material effect on the Group's consolidated financial statements.

(i) The Hanwha consortium, which includes the Group, entered into a memorandum of understanding on November 14, 2008, with The Korea Development Bank (KDB) to acquire the shares of Daewoo Shipbuilding & Marine Engineering Co., Ltd. and paid a guarantee deposit of ₩315,000 million to KDB on November 19, 2008. On January 22, 2009, the consortium received a notice of the cancellation of the memorandum of understanding and the forfeiture of the related deposit.

In accordance with the settlement agreement between the members of the Hanwha consortium, Hanwha Corporation, Hanwha Engineering & Construction Corporation and the Group, the Group's portion of the guarantee deposit was ₩190,300 million. The guarantee deposit is included in other receivables and the Group provided a full allowance against the receivable during 2010 and is still fully provided for as of December 31, 2015. The Hanwha consortium was liquidated on May 13, 2009, under the consortium liquidation agreement. On June 19, 2009, the Group filed for mediation in Seoul Central District Court for the return of its guarantee deposit, but failed to reach an agreement on November 20, 2009, after which the case became a civil suit.

On February 10, 2011, the Group, which was the plaintiff, lost the case at the Seoul Central District Court and appealed against the decision on March 2, 2011. On June 14, 2012, the Group, which is the plaintiff, lost the case at the Seoul Appellate Court and appealed against the decision on July 30, 2012. The management of the Group does not expect the outcome of these lawsuits will have a material effect on the Group's consolidated financial statements. As a result, the Group established allowance for losses on the entire amount of receivables, amounting to ₩190,300 million.

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(j) On July 15, 2013, the Group filed an arbitration claim against the insolvency administrator of Germany-based Q-Cells SE with the German Institution of arbitration seeking reimbursement of EUR 11.5 million relating to the calculation of the negative EBITDA. In response, the insolvency administrator filed a counter-claim seeking a payment of EUR 46.5 million relating to the calculation of the inventory price adjustment. In 2015, the arbitration is terminated by German Institution of arbitration's final judgment, and other income amounting to ₩ 54,899 million was recognized (Note 31).

(k) On September 30, 2014, Schuco International KG filed an arbitration claim against the Group with the London Court of International Arbitration (LCIA), seeking compensation for damages of approximately EUR 192 million relating to the defective module. In response, the Group filed a counter-claim against Schuco International KG. The outcome of the arbitration cannot be reasonably determined.

(l) The Group sold its all shares in DREAMPHARMA CORP. to KEUNWHA PHARMACEUTICAL CO., LTD. on December 19, 2014. According to the stock sale agreement, if a specific loss occurs during a certain period of time after stock transfer date, the Group should pay 5% to 12.5% of the sales price. In addition, the Group is liable for 50% of the loss incurred related to Myobloc.

(m) On April 30, 2015, the Group acquired 27.62% of Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.) shares in order to enhance competitiveness in petrochemistry field and secure a stable foundation for profitable growth by diversifying products. According to the corresponding stock purchase agreement, the Group might need to pay additional charges in the future based on operational performance of HANWHA TOTAL PETROCHEMICAL Co., Ltd. (formerly SAMSUNG TOTAL PETROCHEMICAL Co., Ltd.).

Meanwhile, Samsung C&T Corporation and Samsung SDI, which have the residual equity of Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.) have a preferential right of sales to the Group regarding the residual equity when Hanwha General Chemical Co., Ltd. goes public. If Hanwha General Chemical Co., Ltd. does not go public within six years (seven years if the Group requests) from the termination date of trade, Samsung C&T Corporation and Samsung SDI have a put option against the Group, and the Group holds a call option regarding the residual equity of Samsung C&T Corporation and Samsung SDI. Furthermore, the Group has the right of preemption when the residual equity of Samsung C&T Corporation and Samsung SDI are sold. When the Group sells the shares, Samsung C&T Corporation and Samsung SDI have tag-along rights, and the Group has drag-along rights. The shares of Hanwha General Chemical Co., Ltd. that the Group holds are provided as collateral for other payables of the seller amounting to ₩ 292,151 million as of December 31, 2015(Note 35(2)).

(n) As of December 31, 2015, the Group has provided performance guarantees amounting to EUR 27.6 million in relation to a solar power EPC contract for Santander Equity SPV.

(o) As of December 31, 2015, the Group has provided performance guarantees amounting to USD 224.2 million in relation to a module supply contract between Hanwha Q CELLS America Inc. (formerly Hanwha SolarOne USA. Inc.) and NextEra.

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36. Related Party Transactions

(a) Significant transactions with related parties for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

(in thousands of Korean won)	2015					
	Sales		Disposal of fixed assets		Purchases	Acquisition of fixed assets
Parent Company						
Hanwha Corporation ¹	₩	197,352,140	₩	-	₩ 523,379,224	₩ 7,822,280
Associates						
HANWHA SAVINGS BANK CO, LTD.		38,205		-	-	-
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)		1,803,956		-	8,912,531	-
Hanwha Station Development Co., Ltd. ²		14,988		-	970,860	-
HANWHA Eagles Professional Baseball club		35,271		-	2,127,566	-
Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.)		619,920		-	5,283,413	-
Hanwha Q CELLS Korea Corp.		100,196,743		32,500	7,747,616	-
HANWHA INVESTMENT AND SECURITIES CO.,LTD. ³		473,205		-	288,227	-
Hanwha Hotels and Resort CO., LTD. ⁴		3,931,774		-	15,359,374	1,674,856
International Polymers Company		-		-	104,549,456	-
Renew Akshay Urja Private Limited		38,407,455		-	-	-
Joint ventures						
YEOCHUN NCC Co., Ltd. ⁵		18,108,930		-	1,238,769,914	-
Burdur Enerji A.S.		11,825,893		-	-	-
Gulf Advanced Cables Insulation Company		19,011		-	-	-
Other related parties						
SIT CO.,LTD.		14,155		-	-	-
SNSACE Co., Ltd.		388,430		-	21,695,284	-
Yeosu Sea World Corporation		-		-	114,781	-
Ilsan Seaworld Co., Ltd.		2,496		-	79,687	-
Taekyung Chemical Co., Ltd.		40,883,711		-	-	-
HAN COMM. INC.		322,687		-	5,960,309	-
Hanwha Engineering & Construction Corporation ¹		2,933,746		-	134,858,816	-
HANWHA 63 CITY CORPORATION		230,305		-	6,911,663	-
HUMANPOWER Co.Ltd.		-		-	513,952	-
Agricultural Corporation Company Green Tomorrow Co.,Ltd.		3,460		-	-	-
DreamPlus Global seed association of investment		3,900		-	-	-
Eco E&O corporation		8,190		-	-	-
Jeju Ocean Science Museum Corporation		-		-	172,070	-
Foodist Food Culture(Shanghai) Co., Ltd.		-		-	5,808,028	-
Hanwha Life Asset Co., Ltd.		7,871		-	-	-
Hanwha LIFE INSURANCE CO.,LTD. ⁶		3,030,635		-	11,187,379	-
Hanwha Insurance Investigation Co., Ltd.		77,171		-	-	-
Hanwha Energy Corporation		12,033,337		-	154,038,895	-
HANWHA S&C CO., LTD.		15,864,915		-	46,053,190	-
Hanwha Investment Corp.		6,618		-	-	-
Hanwha Asset Management Co., Ltd.		116,798		-	-	-
HANWHA THALES CO., LTD. (formerly SAMSUNG THALES CO., LTD.)		283,659		-	-	-
HANWHA TECHWIN CO.,LTD (formerly SAMSUNG TECHWIN CO.,LTD)		928,070		-	-	-
HANWHA TOTAL PETROCHEMICAL Co., Ltd. (formerly SAMSUNG TOTAL PETROCHEMICAL Co., Ltd.)		1,796,397		-	11,527,345	-
Altinorda Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.		1,637,524		-	-	-
Bahcesaray Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.		1,637,524		-	-	-
Blue Albatross FZE		-		-	116,524	-

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BT1 Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.	6,550,095	-	-	-
Hanwha America Development Inc.	-	-	1,023,607	-
Hanwha Europe GmbH	98,114,105	-	1,018,981	-
Hanwha Saudi Contracting Co., Ltd.	19,988	-	-	-
Hanwha Q CELLS Americas Holdings. Corp.	227,351,924	-	499,287	-
Hanwha Q CELLS Japan Co., Ltd.	271,133,845	-	103,787,934	-
Hanwha Q CELLS USA Corp.	24,916,915	-	-	-
Hanwha Techm Hungary Zrt.	-	-	126,877	-
Meca Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.	1,637,524	-	-	-
OneRoof Energy, Inc.	215,750	-	-	-
Razin Elektrik Uretim Sanayi ve Ticaret A.S.	2,303,579	-	-	-
S&P World Network DMCC	1,110,939	-	-	-
	<u>₩ 1,088,393,754</u>	<u>₩ 32,500</u>	<u>₩ 2,412,882,790</u>	<u>₩ 9,497,136</u>

¹ Dividends paid to Hanwha Corporation, the parent of the Company, amounted to ₩ 8,932 million in 2015.

² The Group received dividends from Hanwha Station Development Co., Ltd. amounting to ₩ 864 million.

³ The Group received dividends from HANWHA INVESTMENT AND SECURITIES CO.,LTD amounting to ₩ 1,304 million.

⁴ The Group acquired shares of Hanwha Station Development Co., Ltd. owned by Hanwha Hotels and Resort Co., Ltd. for ₩ 20,056 million.

⁵ The Group received dividends from YEOCHUN NCC Co., Ltd. amounting to ₩ 60,000 million.

⁶ The Group received dividends from Hanwha LIFE INSURANCE CO.,LTD. amounting to ₩ 2,737 million.

Investment of ₩ 4,770 million was returned by Hanwha Newly Development Force Fund due to its capital reduction, and the amount of dividends received is ₩ 1,350 million.

(in thousands of Korean won)

	2014			
	Sales	Disposal of fixed assets	Purchases	Acquisition of fixed assets
Parent Company				
Hanwha Corporation ¹	₩ 306,142,767	₩ 944,759	₩ 464,796,879	₩ -
Associates				
HANWHA SAVINGS BANK CO, LTD.	34,132	-	-	-
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)	1,740,543	-	10,068,114	-
HANWHA Eagles Professional Baseball club	119,561	-	2,737,056	-
Hanwha Q CELLS Korea Corp.	94,532,126	-	361,283	-
HANWHA INVESTMENT AND SECURITIES CO.,LTD.	461,339	-	197,670	-
Hanwha Hotels and Resort CO., LTD.	4,275,201	-	15,054,713	-
Joint ventures				
YEOCHUN NCC Co., Ltd. ²	24,703,115	-	1,692,218,622	-
Gulf Advanced Cables Insulation Company	61,171	-	-	-
Other related parties				
C-space Co., Ltd. ³	14,233	-	-	-
SNSACE Co., Ltd.	391,566	-	13,249,170	-
Yeosu Sea World Corporation	69,875	-	113,217	-
Ilsan Seaworld Co., Ltd.	-	-	73,601	-
Taekyung Chemical Co., Ltd.	43,656,276	-	55,259	-
HAN COMM. INC.	668,493	-	8,789,905	-
Hanwha Engineering & Construction Corporation ¹	25,584,364	944,759	81,942,692	-
HANWHA 63 CITY CORPORATION	239,802	-	6,156,215	-
HUMANPOWER Co.Ltd.	-	-	524,726	-

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Agricultural Corporation Company Green Tomorrow Co.,Ltd.	3,250	-	-	-
Jeju Ocean Science Museum Corporation	-	-	216,415	-
Foodist Food Culture(Shanghai) Co., Ltd.	-	-	5,799,188	-
Hanwha Life Asset (formerly Hanwha Tele Marketing & Services Co., Ltd.)	17,132	-	-	-
Hanwha LIFE INSURANCE CO.,LTD. ⁴	3,136,959	-	14,966,679	-
Hanwha Insurance Investigation Co., Ltd.	86,079	-	-	-
Hanwha Energy Corporation	17,017,076	-	149,914,079	-
HANWHA S&C CO., LTD.	483,967	-	54,736,570	-
Hanwha Station Development Co., Ltd. ⁵	10,429	-	1,008,017	-
Hanwha Investment Corp.	5,997	-	-	-
Hanwha Asset Management Co., Ltd.	67,165	-	-	-
HANWHA TechM CO.,LTD. ⁶	2,314,684	-	11,826,497	-
Hanwha America Development Inc.	-	-	1,320,010	-
Hanwha Canada Development Inc.	455	-	-	-
Hanwha Europe GmbH	110,259,791	-	16,690,477	-
Hanwha Q CELLS Americas Holdings. Corp.	59,257,114	-	5,864,195	-
Hanwha Q CELLS Japan Co.,Ltd.	319,057,882	-	94,187,233	-
OneRoof Energy, Inc. ⁷	6,323,777	-	4,866,155	-
S&P World Network JLT	4,492,852	-	-	-
	<u>₩ 1,025,229,173</u>	<u>₩ 1,889,518</u>	<u>₩ 2,657,734,637</u>	<u>₩ -</u>

¹ The Group received ₩ 945 million from Hanwha Corporation and Hanwha Engineering & Construction Corporation, respectively, for the disposal of second practice ground of Hanwha Eagles Professional Baseball Club. Also, dividends paid to Hanwha Corporation, the parent of the Company, amounted to ₩ 8,932 million in 2015.

² The Group received dividends from YEOCHUN NCC Co., Ltd. amounting to ₩ 65,000 million.

³ Newly included in the consolidation (Note 39).

⁴ The Group received dividends from Hanwha LIFE INSURANCE CO., LTD. amounting to ₩ 1,977 million.

⁵ The Group received dividends from Hanwha Station Development Co., Ltd. amounting to ₩ 740 million.

⁶ Hanwha Corporation merged with HANWHA TechM CO.,LTD.

⁷ A subsidiary of OneRoof Energy Group, Inc.

Investment of ₩ 180 million was returned by Hanwha Newly development Force Fund.

(b) Year-end balances of receivables and payables as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015					
	Receivables			Payables		
	Trade receivables	Loans	Other receivables	Trade payables	Borrowings	Other payables
Parent Company						
Hanwha Corporation	₩95,961,489	₩ -	₩ 155,915	₩204,658,309	₩ -	₩13,737,440
Associates						
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)	322,174	-	287,404	196	-	356,573
Hanwha Station Development Co., Ltd.	235	-	1,393,491	-	-	283,276
HANWHA Eagles Professional Baseball club	-	-	168,300	-	-	-
Hanwha General Chemical Co., Ltd. (formerly Samsung General Chemicals Co., Ltd.)	226,570	-	-	906,788	-	124,850

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Hanwha Q CELLS Korea Corp.	53,721,563	35,358,542	76,810,000	3,726,567	-	-
HANWHA INVESTMENT AND SECURITIES CO.,LTD.	29,509	-	4,655,828	-	-	1,162,029
Hanwha Hotels and Resort CO., LTD.	243,902	-	41,905,331	5,240,439	-	1,413,950
International Polymers Company	-	9,768,343	-	24,584,314	-	-
Renew Akshay Urja Private Limited	6,059,253	-	-	-	-	-
Saudi Specialized Products Company	-	12,276,967	-	-	-	-
Joint ventures						
YEOCHUN NCC Co., Ltd.	1,692,298	-	199,348	128,561,446	-	23,660,720
Burdur Enerji A.S.	1,457,320	-	-	-	-	-
Gulf Advanced Cables Insulation Company	-	22,707,551	-	-	-	-
Other related parties						
SIT CO.,LTD.	13,635	-	1,936	-	-	-
SNSACE Co., Ltd.	153,498	-	-	403,150	-	2,504,217
Yeosu Sea World Corporation	-	-	-	-	-	7,935
Ilsan Seaworld, Co., Ltd.	-	-	-	-	-	7,286
Taekyung Chemical Co., Ltd.	821,699	-	-	-	-	-
Hanwha Engineering & Construction Corporation	325,163	-	12,870,798	48,346,730	-	25,839,000
HANWHA 63 CITY CORPORATION	8,652	-	-	57	-	617,924
HUMANPOWER Co.Ltd.	-	-	-	-	-	19,302
DreamPlus Global seed association of investment	440	-	-	-	-	-
Jeju Ocean Science Museum Corporation	-	-	-	-	-	11,056
Foodist Food Culture(Shanghai) Co., Ltd.	-	-	-	494,937	-	-
Hanwha Life Asset Co., Ltd.	1,315	-	-	-	-	-
Hanwha LIFE INSURANCE CO.,LTD.	27,046	-	41,453,304	-	-	69,822
Hanwha Energy Corporation	42,081	-	4,400	14,506,376	-	35,444
HANWHA S&C CO., LTD.	784	-	23,483	4,542,904	-	8,214,919
Hanwha Asset Management Co., Ltd.	28,816	-	-	-	-	-
HANWHA THALES CO., LTD. (formerly SAMSUNG THALES CO., LTD.)	1,100	-	8,184	-	-	-
HANWHA TECHWIN CO.,LTD (formerly SAMSUNG TECHWIN CO.,LTD)	25,757	-	7,480	248,625	-	-
HANWHA TOTAL PETROCHEMICAL Co., Ltd. (formerly SAMSUNG TOTAL PETROCHEMICAL Co., Ltd.)	1,249,818	-	-	1,387,515	-	35,574
Altinorda Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.	1,657,264	-	-	-	-	-
Bahcesaray Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.	1,657,264	-	-	-	-	-
Blue Albatross FZE	-	-	-	559	-	-
BT1 Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.	6,629,056	-	-	-	-	-
Hanwha America Development Inc.	-	-	-	-	30,337,705	-
Hanwha Europe GmbH	21,623,783	-	140,687	-	11,524,770	129,479
Hanwha Saudi Contracting Co., Ltd.	-	11,740,229	-	-	-	-
Hanwha Q CELLS Americas Holdings. Corp.	45,140,811	-	-	1,288,642	-	-
Hanwha Q CELLS Japan Co.,Ltd.	27,231,179	-	-	7,717,352	-	161,096
Hanwha Q CELLS USA Corp.	-	24,324,928	-	-	-	-
Hanwha Techm Hungary Zrt.	-	-	-	-	5,250,173	-
Meca Enerji IC ve Dis Ticaret Sanayi ve Ticaret Ltd. Sti.	1,657,264	-	-	-	-	-
Primo Gunes Enerjisi A.S.	-	5,925,838	-	-	-	-
Razin Elektrik Uretim Sanayi ve Ticaret A.S.	2,331,348	-	-	-	-	-
	W270,342,086	W122,102,398	W180,085,889	W446,614,906	W47,112,648	W78,391,892

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(in thousands of Korean won)

(in thousands of Korean won)	2014						
	Receivables			Payables			
	Trade receivables	Loans	Other receivables	Trade payables	Borrowings	Other payables	
Parent Company							
Hanwha Corporation	₩128,145,360	₩ -	₩ 22,848,046	₩ 139,755,110	₩ -	₩ 10,041,244	
Associates							
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)	227,455	-	287,404	-	-	556,833	
HANWHA Eagles Professional Baseball club	-	-	-	-	-	77	
Hanwha Q CELLS Korea Corp.	34,645,901	-	-	327,800	-	-	
HANWHA INVESTMENT AND SECURITIES CO.,LTD.	17,188	-	13,450	-	-	1,162,007	
Hanwha Hotels and Resort CO., LTD.	373,826	-	41,821,771	5,238,895	-	6,166,498	
International Polymers Company	-	8,889,555	150,349	-	-	-	
Saudi Specialized Products Company	-	11,234,658	-	-	-	-	
Joint ventures							
YEOCHUN NCC Co., Ltd.	2,035,430	-	178,603	233,581,379	-	8,214,399	
Gulf Advanced Cables Insulation Company	994,367	20,775,695	18,468	-	-	-	
Other related parties							
SNSACE Co., Ltd.	154,256	-	-	-	-	1,181,870	
Yeosu Sea World Corporation	-	-	-	-	-	11,095	
Ilsan Seaworld, Co. ,Ltd.	-	-	-	-	-	6,599	
Taekyung Chemical Co., Ltd.	1,036,738	-	-	-	-	142,310	
HAN COMM. INC.	7,929	-	29,480	1,328,895	-	1,040,131	
Hanwha Engineering & Construction Corporation	892,456	-	121,355	52,519,500	8,581,507	26,930,346	
HANWHA 63 CITY CORPORATION	-	-	140,000	258	-	529,617	
HUMANPOWER Co.Ltd.	-	-	-	-	-	37,303	
Jeju Ocean Science Museum Corporation	-	-	-	-	-	12,250	
Foodist Food Culture(Shanghai) Co., Ltd.	-	-	-	980,511	-	-	
Hanwha LIFE INSURANCE CO.,LTD.	-	-	41,210,557	-	-	63,453	
Hanwha Insurance Investigation Co., Ltd.	48	-	-	-	-	-	
Hanwha Energy Corporation	663,019	-	4,400	14,356,513	-	475,008	
HANWHA S&C CO., LTD.	3,009	-	21,247	2,264,985	-	3,940,751	
Hanwha Station Development Co., Ltd.	182	-	1,410,614	-	-	283,709	
Hanwha Asset Management Co., Ltd.	589	-	-	-	-	-	
Hanwha America Development Inc.	-	-	-	-	31,121,578	-	
Hanwha Europe GmbH	13,178,974	-	-	-	-	69,201	
Hanwha Q CELLS Americas Holdings. Corp.	32,697,228	-	-	5,934,161	-	-	
Hanwha Q CELLS Japan Co.,Ltd.	33,177,747	-	-	9,657,739	-	454,361	
Hanwha Q CELLS USA Corp.	-	16,980,231	-	-	-	-	
Hanwha Techm Hungary Zrt.	-	-	-	-	5,346,080	-	
OneRoof Energy, Inc.	-	3,041,405	28,140	-	-	-	
	₩ 248,251,702	₩ 60,921,544	₩108,283,884	₩ 465,945,746	₩ 45,049,165	₩ 61,319,062	

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(c) Fund transactions with related parties for the years ended December 31, 2015 and 2014, are as follows:

Loan transactions

(in thousands of Korean won)

	2015				
	Beginning balance	Loans	Repayments	Others ¹	Ending balance
Associates					
Hanwha Q CELLS Korea Corp.	₩ -	₩ 33,723,000	₩ -	₩ 1,635,542	₩ 35,358,542
International Polymers Company	8,889,555	-	-	878,788	9,768,343
Saudi Specialized Products Company	11,234,658	-	-	1,042,309	12,276,967
Joint venture					
Gulf Advanced Cables Insulation Company	20,775,695	-	-	1,931,856	22,707,551
Other related party					
Hanwha Saudi Contracting Co., Ltd.	-	11,720,000	-	20,229	11,740,229
Hanwha Q CELLS USA Corp.	16,980,231	11,945,000	(5,860,000)	1,259,697	24,324,928
OneRoof Energy, Inc.	3,041,405	-	(2,437,234)	(604,171)	-
Primo Gunes Enerjisi A.S.	-	5,925,838	-	-	5,925,838
	₩ 60,921,544	₩ 63,313,838	₩ (8,297,234)	₩ 6,164,250	₩ 122,102,398

¹ Others include increase in accrued revenues representing interest income on loans.

(in thousands of Korean won)

	2014				
	Beginning balance	Loans	Repayments	Others ¹	Ending balance
Associates					
Crystal Solar Inc. ²	₩ 527,650	₩ -	₩ (527,650)	₩ -	₩ -
International Polymers Company	22,425,125	-	(14,197,200)	661,630	8,889,555
Saudi Specialized Products Company	-	10,855,932	-	378,726	11,234,658
Joint venture					
Gulf Advanced Cables Insulation Company	18,995,400	-	-	1,780,295	20,775,695
Other related party					
Hanwha Q CELLS USA Corp.	3,331,732	17,381,065	(5,431,750)	1,699,184	16,980,231
OneRoof Energy, Inc.	5,561,186	2,927,840	(5,435,340)	(12,281)	3,041,405
	₩ 50,841,093	₩ 31,164,837	₩ (25,591,940)	₩ 4,507,554	₩ 60,921,544

¹ Others include increase of accrued revenues representing interest income on loans.

² Loans to Crystal Solar Inc. were converted to equity securities through debt-for-equity swaps.

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Borrowing transactions

(in thousands of Korean won)

	2015					
	Beginning balance	Borrowings	Repayments	Others ¹	Ending balance	
Other related parties						
Hanwha Engineering & Construction Corporation	₩ 8,581,507	₩ -	₩ (7,758,868)	₩ (822,639)	₩ -	
Hanwha America Development Inc.	31,121,578	-	(2,811,166)	2,027,293	30,337,705	
Hanwha Europe GmbH	-	11,524,770	-	-	11,524,770	
Hanwha Techm Hungary Zrt.	5,346,080	126,877	-	(222,784)	5,250,173	
	₩ 45,049,165	₩ 11,651,647	₩ (10,570,034)	₩ 981,870	₩ 47,112,648	

¹ Others include increase in accrued interest representing interest expense on borrowings.

(in thousands of Korean won)

	2014					
	Beginning balance	Borrowings	Repayments	Others ¹	Ending balance	
Associate						
Hanwha General Insurance Co., Ltd. (Formerly Hanwha Non-life Insurance Co., Ltd.)	₩ 10,000,000	₩ -	₩ (10,000,000)	₩ -	₩ -	
Other related parties						
Hanwha Engineering & Construction Corporation	7,070,510	-	-	1,510,997	8,581,507	
Hanwha America Development Inc.	27,447,202	2,502,977	-	1,171,399	31,121,578	
Hanwha Techm Hungary Zrt.	-	5,339,880	-	6,200	5,346,080	
	₩ 44,517,712	₩ 7,842,857	₩ (10,000,000)	₩ 2,688,596	₩ 45,049,165	

¹ Others include increase in accrued interest representing interest expense on borrowings.

(d) As of December 31, 2015, the Group has provided payment guarantees amounting to USD 51.5 million, USD 13.2 million and USD 3.47 million for the borrowings of the associates, International Polymers Company, Gulf Advanced Cables Insulation Company and Saudi Specialized Products Company, respectively.

(e) As of December 31, 2015, the Group has provided collateral to Hanwha Investment & Securities Co., Ltd., a related party, amounting to ₩ 1,511 million for the refund of the security deposit of the office building in Seo-gu, Daejeon.

(f) As of December 31, 2015, the Group has a cash deficiency support agreement amounting to EUR 24.7 million for Hanwha Q CELLS Korea Corp. when fund supplementary obligation is not met by Luxbon Solar S.A.

(g) As of December 31, 2015, the Group provides performance guarantees amounting to USD 131.2 million in relation to a module sales contract between Hanwha Q CELLS Japan Co., Ltd. and MARUBENI CORPORATION. In addition, the Group provides performance guarantees amounting to JPY 4,610 million in relation to goods purchase agreements between Hanwha Q CELLS Japan Co., Ltd. and NTT-F.

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(h) As of December 31, 2015, the Group has a cash deficiency support agreement amounting to ₩ 300 billion for Hanwha Q CELLS Korea Corp.

(i) As of December 31, 2015, the Group provides payment guarantees (loan deposits amounting to ₩ 27,804 million) for loans of directors and employees from financial institutions.

(j) The compensation paid or payable to key management for employee services for the years ended December 31, 2015 and 2014, consists of:

<i>(in thousands of Korean won)</i>	2015		2014	
Salaries ¹	₩	20,465,732	₩	11,385,645
Severance benefits		5,772,923		5,045,233
Other long-term benefits		8,049		-
	₩	26,246,704	₩	16,430,878

¹ Represents the amount after deducting return on compensation of the executive director amounting to ₩ 16,021 million in 2014.

37. Cash Generated from Operations

Details of cash generated from operations for the years ended December 31, 2015 and 2014, are as follows:

<i>(in thousands of Korean won)</i>	2015		2014	
Profit before income tax	₩	228,379,669	₩	50,907,231
Adjustments for:				
Severance benefits ¹		53,018,947		50,927,502
Other long-term employee benefits		15,594,797		-
Depreciation of investment property		2,107,355		2,292,319
Depreciation		433,124,951		401,074,000
Amortization		16,906,623		18,822,060
Bad debts expense		3,503,309		3,738,250
Rent		1,097,508		611,254
Contribution to provisions		27,891,045		14,782,111
Gain on valuation of derivatives		(17,458,389)		(10,283,001)
Reversal of impairment of available-for-sale financial assets		(2,303)		-
Gain on foreign currency translation		(77,763,099)		(28,784,407)
Gain on disposal of available-for-sale financial assets		(18,588,892)		(16,332,718)
Gain on disposal of investment in associates		(13,604,342)		(175,122,200)
Gain on disposal of property, plant and equipment		(8,705,690)		(23,619,596)
Gain on disposal of intangible assets		(436,625)		(18,172)
Reversal of other bad debts expense		(1,532,165)		(205,950)
Gain on bargain purchase		(26,590,337)		-

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Loss on foreign currency translation	162,186,216	44,118,026
Loss on disposal of available-for-sale financial assets	8,146	2,036,151
Loss on disposal of investments in associates	3,597,410	5,134,393
Loss on valuation of derivatives	263,598	5,211,232
Loss on disposal of investment property	376,551	1,214,589
Loss on disposal of property, plant and equipment	86,727,982	9,614,475
Impairment loss of property, plant and equipment	52,755,170	45,152,541
Loss on disposal of intangible assets	449,686	322,452
Impairment loss of intangible assets	21,163,328	5,520,614
Other bad debts expense	7,957,237	17,127
Loss on retirement of inventories	206,173	8,326,435
Loss on valuation of inventories	46,166,806	30,043,795
Interest income	(21,357,136)	(17,228,311)
Dividend income	(4,029,496)	(2,737,904)
Interest expense	179,739,069	213,369,656
Share of profit of associates and joint ventures	(166,157,380)	(4,643,560)
Others, net	(47,618,229)	7,902,454
Changes in operating assets and liabilities		
Trade receivables	(595,340,945)	(119,656,741)
Other receivables	112,542,445	23,808,002
Inventories	70,050,494	(200,326,216)
Other financial assets	212,648	(2,526,564)
Other current assets	104,683,282	(16,524,840)
Other non-current assets	(6,769,976)	22,960,208
Trade payables	55,576,918	(25,871,652)
Other payables	(140,049,107)	47,929,963
Other financial liabilities	48,964,776	5,556,316
Other current liabilities	759,310,001	106,660,738
Other non-current liabilities	(12,716)	(210,368)
Defined benefit obligation	(40,739,294)	(31,788,705)
Plan assets	5,950,969	2,787,295
Other long-term employee benefits	(1,261,354)	326,970
Provisions	(8,307,585)	(10,041,583)
Settlement of derivatives	(10,507,461)	(4,835,076)
Cash generated from operations	₩ 1,293,680,588	₩ 440,410,595

¹ The amount excludes ₩ 386 million (2014: ₩ 819 million), which was transferred to construction-in-progress.

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38. Operating Segment Information

The CEO of the Company is the chief operating decision maker. The Group's reportable segments are as follows:

- Raw materials: Sales and manufacture of PE, PVC, CA and others
- Manufacturing: Sales and manufacture of interior material using PVC, car parts and others
- Retail: Department stores and wholesales stores
- Photovoltaic: Sales and manufacture of ingot, modules and other associated photovoltaic products

Other operating segment includes sales and manufacture of real estates, pharmaceutical, machinery, and other various products.

(a) Operating profit or loss by each reportable segment for the years ended December 31, 2015 and 2014, are as follows:

	2015							
	Raw materials	Manufacturing	Retail	Photovoltaic	Sub-total	Others	Consolidation adjustments	Total
Revenue								
External revenues	₩3,479,149,617	₩ 662,813,441	₩566,689,054	₩1,915,960,976	₩6,624,613,088	₩1,412,378,274	₩ -	₩ 8,036,991,362
Inter-segment revenue	351,555,138	282,974,143	18,831,664	955,002,489	1,608,363,434	170,087,008	(1,778,450,442)	-
Total	₩3,830,704,755	₩ 945,787,584	₩585,520,718	₩2,870,963,465	₩8,232,976,522	₩1,582,465,282	₩ (1,778,450,442)	₩8,036,991,362
Operating profit (loss) ¹	166,679,240	36,580,272	17,464,058	78,408,549	299,132,119	58,548,907	(20,668,095)	337,012,931
Share of profit of associates and joint ventures								166,157,380
Other income, net								(120,438,205)
Finance costs, net								(154,352,437)
Profit before income tax								₩ 228,379,669
Depreciation and amortization ²	216,038,343	39,279,061	40,916,310	126,638,789	422,872,503	20,465,892	8,800,534	452,138,929
Inventory write-down	28,703,931	1,242,055	510,702	14,435,988	44,892,676	1,391,918	(117,788)	46,166,806
Bad debts expense	(482,566)	266,245	1,882,328	981,272	2,647,279	856,030	-	3,503,309
Capital expenditures ³	187,289,961	98,954,201	64,365,752	377,983,615	728,593,529	38,610,769	(480,206)	766,724,092

¹ The total segment operating profit (loss) is different from the consolidated operating profit (loss) due to the unrealized profits on transactions between the segments as of the reporting date. Such unrealized profits were eliminated upon consolidation.

² Total amount of amortization of intangible assets and depreciation of property, plant and equipment and investment property.

³ Consists of additions to investment property, property, plant and equipment and intangible assets.

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2014

	Raw materials	Manufacturing ¹	Retail	Photovoltaic	Sub-total	Others	Consolidation adjustments	Total
Revenue								
External revenues	₩3,606,737,521	₩1,109,944,643	₩ 541,825,298	₩1,487,782,710	₩6,746,290,172	₩1,309,043,017	₩ -	₩8,055,333,189
Inter-segment revenue	372,240,379	284,593,709	21,387,655	542,035,613	1,220,257,356	79,284,281	(1,299,541,637)	-
Total	₩3,978,977,900	₩1,394,538,352	₩563,212,953	₩2,029,818,323	₩7,966,547,528	₩1,388,327,298	₩ (1,299,541,637)	₩8,055,333,189
Operating profit (loss)	(15,999,297)	51,772,637	54,781,401	8,568,783	99,123,524	54,173,164	(12,036,405)	141,260,283
Share of profit of associates and joint ventures								4,643,560
Other income, net								98,406,829
Finance costs, net								(193,403,441)
Profit before income tax								₩ 50,907,231
Depreciation and amortization	199,281,866	45,400,664	38,051,006	111,170,043	393,903,579	18,992,530	9,292,270	422,188,379
Inventory write-down	12,607,661	988,543	1,635,961	13,747,267	28,979,432	1,603,660	(539,298)	30,043,794
Bad debts expense	(807,841)	419,713	979,442	2,468,953	3,060,267	677,983	-	3,738,250
Capital expenditures	160,789,329	56,503,983	51,224,805	146,638,508	415,156,625	59,089,800	-	474,246,425

¹ Gains or losses from the sale of construction materials products of Hanwha L&C Corporation, which was excluded from consolidation for the year ended December 31, 2014, are included in the amount (Note 39).

(b) Assets and liabilities of each reportable segment as of December 31, 2015 and 2014, are as follows:

(in thousands of
Korean won)

2015

	Raw materials	Manufacturing	Retail	Photovoltaic	Sub-total	Others	Consolidation adjustments	Total
Assets								
Current assets	₩ 954,257,736	₩ 419,387,515	₩ 357,504,138	₩2,337,247,447	₩4,068,396,836	₩1,470,743,319	₩ (761,398,998)	₩4,777,741,157
Investments in subsidiaries, associates and joint ventures	3,604,605,899	302,723,335	161,055,029	2,231,915,664	6,300,299,927	278,544,195	(4,535,769,820)	2,043,074,302
Other non-current assets	3,029,284,688	620,275,481	1,701,470,356	1,426,198,947	6,777,229,472	404,537,378	(149,962,586)	7,031,804,264
Total	₩7,588,148,323	₩1,342,386,331	₩2,220,029,523	₩5,995,362,058	₩17,145,926,235	₩2,153,824,892	₩ (5,447,131,404)	₩13,852,619,723
Liabilities								
Current liabilities	₩1,439,998,708	₩462,339,564	₩697,293,759	₩2,368,427,185	₩4,968,059,216	₩1,212,874,526	₩ (760,286,380)	₩5,420,647,362
Non-current liabilities	1,985,997,690	233,227,869	471,805,201	700,191,611	3,391,222,371	170,892,067	(61,300,465)	3,500,813,973
Total	₩3,425,996,398	₩695,567,433	₩1,169,098,960	₩3,068,618,796	₩8,359,281,587	₩1,383,766,593	₩ (821,586,845)	₩8,921,461,335

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	2014							
	Raw materials	Manufacturing	Retail	Photovoltaic	Sub-total	Others	Consolidation adjustments	Total
Assets								
Current assets	₩1,044,679,518	₩ 599,000,172	₩ 293,458,542	₩1,543,099,014	₩3,480,237,246	₩1,374,705,745	₩ (582,142,849)	₩4,272,800,142
Investments in subsidiaries, associates and joint ventures	3,030,684,658	319,771,157	155,913,713	1,189,019,313	4,695,388,841	313,690,815	(3,720,479,441)	1,288,600,215
Other non-current assets	3,261,916,082	684,178,492	1,694,060,201	1,269,281,062	6,909,435,837	492,930,006	(366,742,467)	7,035,623,376
Total	₩7,337,280,258	₩1,602,949,821	₩2,143,432,456	₩4,001,399,389	₩15,085,061,924	₩2,181,326,566	₩ (4,669,364,757)	₩12,597,023,733
Liabilities								
Current liabilities	₩1,389,401,817	₩ 617,630,101	₩ 624,542,350	₩1,367,094,574	₩3,998,668,842	₩984,508,303	₩ (541,963,642)	₩ 4,441,213,503
Non-current liabilities	1,778,558,147	303,716,436	453,523,956	711,089,553	3,246,888,092	398,644,811	(269,200,957)	3,376,331,946
Total	₩3,167,959,964	₩ 921,346,537	₩1,078,066,306	₩2,078,184,127	₩7,245,556,934	₩1,383,153,114	₩ (811,164,599)	₩ 7,817,545,449

(c) Reconciliations of information on reportable segments totals to consolidated Korean IFRS measures as of December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

	2015	2014
Assets		
Total assets for reportable segments	₩ 17,145,926,235	₩ 15,085,061,924
Total assets of other segments not classified to reportable segments	2,153,824,892	2,181,326,566
Consolidation adjustments:		
Elimination of investments in subsidiaries including equity method adjustment	(4,535,769,820)	(3,720,479,441)
Elimination of intercompany receivables	(722,617,792)	(414,214,259)
Others, net ¹	(188,743,792)	(534,671,057)
Consolidated total assets	₩ 13,852,619,723	₩ 12,597,023,733
Liabilities		
Total liabilities for reportable segments	₩ 8,359,281,587	₩ 7,245,556,934
Total liabilities of other segments not classified to reportable segments	1,383,766,593	1,383,153,114
Consolidation adjustments:		
Elimination of intercompany payables	(852,454,365)	(544,050,832)
Deferred tax liabilities from consolidation adjustments	71,149,301	39,430,134
Others, net ¹	(40,281,781)	(306,543,901)
Consolidated total liabilities	₩ 8,921,461,335	₩ 7,817,545,449

¹ Others include the assets and liabilities of Hanwha L&C Corporation and subsidiaries and DREAMPHAR CORP. excluded from consolidation in 2014 (Notes 39).

(d) The following tables provide information by geographical areas for the years ended December 31, 2015 and 2014. The revenue and assets were presented based on the Company's location which generates the revenue.

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Revenue by region

(in thousands of Korean won)

	2015	2014
Domestic	₩ 4,596,575,326	₩ 5,221,784,841
Overseas		
China	2,127,622,129	1,300,021,872
Germany	271,028,451	735,426,494
Others	1,041,765,456	798,099,982
	<u>3,440,416,036</u>	<u>2,833,548,348</u>
	<u>₩ 8,036,991,362</u>	<u>₩ 8,055,333,189</u>

Assets by region

(in thousands of Korean won)

	2015	2014
Domestic	₩ 6,610,912,132	₩ 6,064,918,615
Overseas		
China	1,257,243,935	1,245,386,713
Germany	222,042,441	242,237,123
Others	659,510,321	469,774,999
	<u>2,138,796,697</u>	<u>1,957,398,835</u>
	<u>₩ 8,749,708,829</u>	<u>₩ 8,022,317,450</u>

¹ Financial instruments and deferred tax assets are excluded from non-current assets.

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39. Significant Changes in scope of consolidation

(a) Inclusion of C-space Co., Ltd. in the consolidation

In 2014, C-space Co., Ltd. is newly included in the consolidation as the name trust agreement related to the shares of C-space Co., Ltd. is terminated.

Details of assets and liabilities of C-space Co., Ltd. acquired by the Group on the deemed date of acquisition of March 31, 2014, are as follows:

(in thousands of Korean won)

	Amounts
Assets acquired	
Current assets	
Cash and cash equivalents	₩ 937,356
Trade and other receivables	256,499
Other financial assets	4,354,258
Other current assets	33,617
Inventories	1,135,079
Current income tax assets	39,336
Non-current assets	
Available-for-sale financial assets	201,750
Other financial assets	4,477,680
Property, plant and equipment	907,193
Intangible assets	384,530
Sub-total	12,727,298
Liabilities assumed	
Current liabilities	
Trade and other payables	(4,439,798)
Borrowings	(1,727,074)
Other financial liabilities	(230,500)
Other current liabilities	(507,794)
Non-current liabilities	
Other financial liabilities	(1,387,400)
Net defined benefit liabilities	(2,990,411)
Sub-total	(11,282,977)
	₩ 1,444,321

Net assets of C-space Co., Ltd. amounting to ₩ 1,444 million were recognized as other income.

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(b) Exclusion of Hanwha L&C Co., Ltd. and its subsidiaries from the consolidation

In 2014, Hanwha L&C Co., Ltd., a company established through a split-off from the construction materials segment of Hanwha Advanced Materials Co., Ltd., and its subsidiaries including Hanwha L&C Canada, Inc., Hanwha L&C USA Inc., Hanwha L&C USA LLC, and Hanwha L&C Trading (Shanghai) Co., Ltd., were sold and excluded from the consolidation.

Details of the amount received as a consideration for the disposal as of December 31, 2014, are as follows:

(in thousands of Korean won)

	Amounts	
Cash and cash equivalents	₩	141,437,154
Available-for-sale financial assets		15,715,240
	₩	157,152,394

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Details of assets and liabilities disposed as of December 31, 2014, are as follows:

<i>(in thousands of Korean won)</i>	Amounts
Assets	
Current assets	
Cash and cash equivalents	₩ 17,379,809
Trade and other receivables	188,917,523
Other assets	9,167,850
Inventories	51,669,829
Current income tax assets	648
Non-current assets	
Available-for-sale financial assets	79,314
Other financial assets	2,567,943
Property, plant and equipment	133,125,529
Intangible assets	3,404,587
Other assets	479,743
Deferred income tax assets	13,602,662
Sub-total: assets disposed	<u>420,395,437</u>
Liabilities	
Current liabilities	
Trade and other payables	(138,408,075)
Borrowings	(84,957,724)
Other financial liabilities	(1,310,611)
Other liabilities	(5,599,486)
Current income tax liabilities	(89,834)
Non-current liabilities	
Borrowings	(34,087,838)
Other financial liabilities	(3,000)
Net defined benefit liabilities	(32,821,266)
Sub-total: liabilities disposed	<u>(297,277,834)</u>
Net assets disposed	<u>₩ 123,117,603</u>

(c) Acquisition of equity shares of HANWHA FINE CHEMICAL CO., LTD. (formerly KPX Fine Chemical Co., Ltd.)

On October 1, 2014, the Group acquired 50.71% of the equity shares of HANWHA FINE CHEMICAL CO., LTD. (formerly KPX Fine Chemical Co., Ltd.) for ₩ 42,000 million in order to strengthen its competitiveness through vertical integration of CA business.

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Details of consideration paid according to the contract as of December 31, 2014, are as follows:

<i>(in thousands of Korean won)</i>	Amounts	
Cash and cash equivalents	₩	42,000,000

The following table summarizes the fair value of the identifiable assets acquired, liabilities assumed, and non-controlling interest and goodwill at the acquisition date of October 1, 2014:

(in thousands of Korean won)	Amounts	
Recognized amounts of identifiable assets acquired and liabilities assumed		
Assets		
Current assets		
Cash and cash equivalents	₩	43,510,719
Trade and other receivables		8,973,285
Inventories		11,109,918
Other financial assets		1,683,505
Other current assets		4,455,882
Non-current assets		
Available-for-sale financial assets		100,000
Property, plant and equipment		108,984,459
Intangible assets		281,938
Other non-current assets		178,830
Sub-total assets acquired		179,278,536
Liabilities		
Current liabilities		
Trade and other payables		(73,798,934)
Borrowings		(51,450,000)
Other financial liabilities		(5,806,594)
Non-current liabilities		
Other financial liabilities		(177,009)
Net defined benefit liabilities		(1,724,872)
Sub-total liabilities assumed		(132,957,409)
Fair value of identifiable net assets		46,321,127
Non-controlling interest		(22,831,342)
Goodwill		18,510,215
	₩	42,000,000

The Group recognizes the non-controlling interest in HANWHA FINE CHEMICAL CO., LTD. (formerly KPX Fine Chemical Co., Ltd.) at the proportionate share of the recognized amounts of acquiree's identifiable net assets.

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Revenues and net loss of HANWHA FINE CHEMICAL CO., LTD. (formerly KPX Fine Chemical Co., Ltd.) since the acquisition date amounting to ₩ 71,101 million and ₩ 6,296 million, respectively, were included in the consolidated statements of comprehensive income.

If HANWHA FINE CHEMICAL CO., LTD. (formerly KPX Fine Chemical Co., Ltd.) were included in the scope of consolidation since the beginning of the current fiscal year, revenues and net loss reflected in the consolidated statements of comprehensive income would have been ₩ 136,583 million and ₩ 49,639 million, respectively.

(d) Exclusion of DREAMPHARMA CORP. from the consolidation

In 2014, DREAMPHARMA CORP., a company established through a split-off from the pharmaceutical segment of Hanwha Basis Co., Ltd., was sold on December 19, 2014, and was excluded from the consolidation.

Details of the amount received as a consideration for the disposal as of December 31, 2014, are as follows:

(in thousands of Korean won)

	Amounts	
Cash and cash equivalents	₩	182,675,252

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The following table summarizes the disposed assets and liabilities of DREAMPHARMA CORP. as of December 31, 2014:

<i>(in thousands of Korean won)</i>		<u>Amounts</u>
Assets		
Current assets		
Cash and cash equivalents	₩	1,941,038
Trade and other receivables		28,253,507
Other assets		946,450
Inventories		15,726,950
Non-current assets		
Available-for-sale financial assets		63,180
Other financial assets		1,238,580
Property, plant and equipment		19,523,391
Intangible assets		969,121
Deferred income tax assets		9,700,355
Sub-total: assets disposed		<u>78,362,572</u>
Liabilities		
Current liabilities		
Trade and other payables		(6,937,347)
Other financial liabilities		(5,436,112)
Provisions		(2,710,961)
Other liabilities		(2,420,510)
Current income tax liabilities		(244,978)
Non-current liabilities		
Net defined benefit liabilities		(12,672,645)
Sub-total: Liabilities disposed		<u>(30,422,553)</u>
Net assets disposed	₩	<u>47,940,019</u>

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(e) Exclusion of HANWHA POLYDREAMER CO., LTD. from the consolidation

On April 23, 2015, the Group sold HANWHA POLYDREAMER CO., LTD., which was established through a split-off of the segment of sheet film and coating membrane of Hanwha Compound Co.,Ltd. (formerly Hanwha Next Co., Ltd.).

Details of the amount received as a consideration for the disposal as of December 31, 2015, are as follows:

(in thousands of Korean won)

	Amounts	
Cash and cash equivalents	₩	36,000,000

The following table summarizes the disposed assets and liabilities of HANWHA POLYDREAMER CO., LTD as of December 31, 2015:

(in thousands of Korean won)

	Amounts	
Assets		
Current assets		
Cash and cash equivalents	₩	400,000
Trade and other receivables		16,192,884
Other financial assets		3,500
Other assets		75,044
Inventories		6,411,935
Non-current assets		
Other financial assets		14,700
Property, plant and equipment		23,746,941
Intangible assets		28,095
Deferred income tax assets		994,065
Sub-total: assets disposed		47,867,164
Liabilities		
Current liabilities		
Trade and other payables		(12,969,396)
Borrowings		(6,260,674)
Other financial liabilities		(258,707)
Other liabilities		(285,394)
Non-current liabilities		
Borrowings		(34,100)
Other financial liabilities		(33,500)
Net defined benefit liabilities		(4,225,017)
Sub-total: Liabilities disposed		(24,066,788)
Net assets disposed	₩	23,800,376

Hanwha Chemical Corporation and Subsidiaries

Notes to the Consolidated Financial Statements

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40. Information on Non-controlling Interests

(a) Changes in Accumulated Non-controlling Interests

The profit or loss allocated to non-controlling interests and accumulated non-controlling interests of subsidiaries that are material to the Group for the years ended December 31, 2015 and 2014, is as follows:

(in thousands of Korean won)

		2015						
	Percentage of non-controlling interests(%)	Accumulated non-controlling interests at the beginning of the year	Profit or loss allocated to non-controlling interests	Dividends paid to non-controlling interests	Others	Accumulated non-controlling interests at the end of the year		
Hanwha Gelleria Timeworld Co., Ltd.	29.35%	₩ 81,715,131	₩ 2,784,918	₩ (1,731,100)	₩ (2,074,943)	₩ 80,694,006		
Hanwha Holdings(USA), Inc.	49.02%	130,774,218	4,843,170	-	7,981,914	143,599,302		

(in thousands of Korean won)

		2014						
	Percentage of non-controlling interests(%)	Accumulated non-controlling interests at the beginning of the year	Profit or loss allocated to non-controlling interests	Dividends paid to non-controlling interests	Others	Accumulated non-controlling interests at the end of the year		
Hanwha Gelleria Timeworld Co., Ltd.	29.35%	₩ 72,066,792	₩ 7,006,015	₩ (1,662,050)	₩ 4,304,375	₩ 81,715,132		
Hanwha Holdings(USA), Inc.	49.02%	122,370,043	2,633,667	-	5,770,508	130,774,218		
Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.)	55.36%	195,662,031	(54,801,123)	-	22,098,504	162,959,412		

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(b) Summarized Financial Information on Subsidiaries

The summarized financial information for each subsidiary with non-controlling interests that are material to the Group before inter-company eliminations is as follows:

Summarized consolidated statements of financial position as of December 31, 2015 and 2014:

(in thousands of Korean won)

	2015	
	Hanwha Galleria Timeworld Co., Ltd.	Hanwha Holdings(USA), Inc.¹
Current assets	₩ 92,691,717	₩ 441,928,637
Non-current assets	399,097,574	322,077,407
Current liabilities	145,318,872	305,114,952
Non-current liabilities	82,830,526	163,109,730
Equity	263,639,893	295,781,362

¹ Consolidated financial information of Hanwha Holdings(USA), Inc., which has 23 subsidiaries.

(in thousands of Korean won)

	2014		
	Hanwha Galleria Timeworld Co., Ltd.	Hanwha Holdings(USA), Inc.¹	Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.)²
Current assets	₩ 28,237,304	₩ 355,686,290	₩ 795,582,759
Non-current assets	359,144,008	289,760,082	868,374,581
Current liabilities	96,833,427	310,133,512	1,022,593,070
Non-current liabilities	24,428,892	67,791,375	395,148,197
Equity	266,118,993	267,521,485	246,216,073

¹ Consolidated financial information of Hanwha Holdings(USA), Inc., which has 25 subsidiaries.

² Consolidated financial information of Hanwha SolarOne Co., Ltd., which has 16 subsidiaries.

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Summarized consolidated statements of comprehensive income for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

		2015	
		Hanwha Galleria Timeworld Co., Ltd.	Hanwha Holdings(USA), Inc.¹
Revenue	₩	168,887,745	₩ 783,306,026
Profit (loss) for the year		10,786,337	10,509,959
Other comprehensive income (loss)		(10,384,227)	17,749,918
Total comprehensive income (loss)		402,110	28,259,877

¹ Consolidated financial information of Hanwha Holdings(USA), Inc., which has 23 subsidiaries.

(in thousands of Korean won)

		2014		
		Hanwha Galleria Timeworld Co., Ltd.	Hanwha Holdings(USA), Inc.¹	Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.)²
Revenue	₩	160,265,488	₩ 746,648,119	₩ 826,533,593
Profit (loss) for the year		24,162,715	5,441,110	(105,316,846)
Other comprehensive income (loss)		7,069,222	9,262,965	3,917,364
Total comprehensive income (loss)		31,231,937	14,704,075	(101,399,482)

¹ Consolidated financial information of Hanwha Holdings(USA), Inc., which has 25 subsidiaries.

² Consolidated financial information of Hanwha SolarOne Co., Ltd., which has 16 subsidiaries.

Summarized consolidated statements of cash flows for the years ended December 31, 2015 and 2014, are as follows:

(in thousands of Korean won)

		2015	
		Hanwha Galleria Timeworld Co., Ltd.	Hanwha Holdings(USA), Inc.¹
Cash flows from operating activities	₩	47,503,122	₩ (432,252)
Cash flows from investing activities		(57,437,159)	(40,879,276)
Cash flows from financing activities		62,365,917	54,631,455
Net increase in cash and cash equivalents		52,431,880	13,319,927
Cash and cash equivalents at beginning of year		6,064,979	19,582,324
Exchange gains on cash and cash equivalents		40,425	1,776,136
Cash and cash equivalents at end of year	₩	58,537,284	₩ 34,678,387

¹ Consolidated financial information of Hanwha Holdings(USA), Inc., which has 23 subsidiaries.

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(in thousands of Korean won)	2014					
	Hanwha Galleria Timeworld Co., Ltd.		Hanwha Holdings(USA), Inc. ¹		Hanwha SolarOne Co., Ltd. ²	
Cash flows from operating activities	₩	24,723,569	₩	25,580,621	₩	22,770,161
Cash flows from investing activities		(22,026,397)		(68,208,813)		(189,176,035)
Cash flows from financing activities		(6,413,973)		30,407,871		84,078,809
Net decrease in cash and cash equivalents		(3,716,801)		(12,220,321)		(82,327,065)
Cash and cash equivalents at beginning of year		9,805,604		31,050,772		246,063,806
Exchange gains (losses) on cash and cash equivalents		(23,824)		751,873		10,832,621
Cash and cash equivalents at end of year	₩	6,064,979	₩	19,582,324	₩	174,569,362

¹ Consolidated financial information of Hanwha Holdings(USA), Inc., which has 25 subsidiaries

² Consolidated financial information of Hanwha SolarOne Co., Ltd., which has 16 subsidiaries

(c) Transactions with Non-controlling Interests

In 2015, due to the fact that Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.) received contributions in kind from Hanwha Solar Holdings Co., Ltd. in the form of Hanwha Q CELLS Investment Co., Ltd.'s shares, the percentage of ownership in Hanwha Q CELLS Co., Ltd. (formerly Hanwha SolarOne Co., Ltd.) increased and non-controlling interests decreased by ₩ 122,432 million.

41. Event After the Reporting Period

The Group decided to sell Ulsan CA plant (chlorine, caustic soda) to UNID CO.,LTD. in 2016.