SAMSUNG SDI CO., LTD. AND SUBSIDIARIES

Consolidated Financial Statements

December 31, 2016 and 2015

(With Independent Auditors' Report Thereon)

Contents

KPMG SAMJONG

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Independent Auditors' Report

Based on a report originally issued in Korean

The Board of Directors and Shareholders
Samsung SDI Co., Ltd.:

Report on the Consolidated Financial Statements
We have audited the accompanying consolidated financial statements of Samsung SDI Co., Ltd. and its subsidiaries (the "Group"), which comprise the consolidated statement of financial position as of December 31, 2016 and 2015, the consolidated statements of comprehensive income (loss), 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 Consolidated Financial Statements
Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Korean International Financial Reporting Standards ("K-IFRS"), and for such internal control as management determines is necessary to enable the preparation of consolidation financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility
Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with 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 consolidated financial statements are free of material misstatement.

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

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

Opinion
In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2016 and 2015 and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with International Financial Reporting Standards.

Emphasis of Matter

Without qualifying our opinion, we draw attention to Note 32 to the consolidated financial statements which states that the Group has performed physical division of its chemical business as of February 1st, 2016, and completed disposal of 90% of its shares of the spin-off company on April 29th, 2016. The comparative consolidated statement of profit or loss and OCI has been restated to show the discontinued operation separately from continuing operations.

Seoul, Korea
March 10, 2017

This report is effective as of March 10, 2017, 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 the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

As of December 31, 2016 and 2015

(In thousands of won)	***Note***	**2016**	**2015**
Assets			
Cash and cash equivalents	*4,6*	₩ 1,011,701,875	1,287,968,374
Trade and other receivables, net	*4,7,30*	1,046,794,724	1,203,289,302
Inventories, net	*8*	729,058,574	749,950,202
Other investments	*4,9*	932,699,740	595,558,128
Other assets	*10*	158,666,026	78,710,193
Non-current assets held for sale	*33*	79,344,788	858,403,959
Total current assets		**3,958,265,727**	**4,773,880,158**
Long-term trade and other receivables, net	*4,7,30*	5,145,658	65,848,344
Investments in equity-accounted investees	*11*	5,525,570,910	5,172,923,892
Property, plant and equipment, net	*5,12*	2,503,794,949	3,228,961,727
Intangible assets, net	*5,13*	941,686,030	1,277,621,026
Investment property	*5,14*	145,683,976	228,181,655
Employee benefit assets, net	*18*	15,732,303	-
Deferred tax assets	*28*	38,421,656	40,764,515
Other non-current investments, including derivatives	*4,9,19*	1,626,791,063	1,298,649,902
Other non-current assets	*10,13*	139,218,962	138,472,239
Total non-current assets		**10,942,045,507**	**11,451,423,300**
Total assets		₩ **14,900,311,234**	**16,225,303,458**
Liabilities			
Trade and other payables	*4,15,17,19,30*	₩ 1,658,167,210	2,068,729,998
Income taxes payable	*28*	43,097,066	17,250,351
Advance received		77,372,218	48,343,482
Unearned revenue		50,198,580	19,820,912
Short-term borrowings	*4,16*	383,960,819	1,047,190,364
Total current liabilities		**2,212,795,893**	**3,201,335,107**
Trade and other payables	*4,15,17,19,30*	218,037,567	125,909,534
Long-term unearned revenue		69,135,390	60,737,684
Long-term borrowings	*4,16*	566,585,622	702,450,008
Employee benefit liabilities, net	*18*	-	79,274,232
Derivative liabilities	*4,19*	19,211,000	-
Deferred tax liabilities	*28*	850,435,535	802,404,040
Total non-current liabilities		**1,723,405,114**	**1,770,775,498**
Total liabilities		**3,936,201,007**	**4,972,110,605**
Capital stock	*1,20*	356,712,130	356,712,130
Capital surplus	*20*	5,031,244,206	5,031,244,206
Other capital	*21*	(251,530,118)	(10,848,673)
Accumulated other comprehensive income	*22*	590,987,396	781,748,992
Retained earnings	*23*	4,994,717,278	4,853,139,572
Equity attributable to owners of the Parent Company	*31*	**10,722,130,892**	**11,011,996,227**
Non-controlling interests		**241,979,335**	**241,196,626**
Total equity		**10,964,110,227**	**11,253,192,853**
Total liabilities and equity		₩ **14,900,311,234**	**16,225,303,458**

See accompanying note to the consolidated financial statements.

For the years ended December 31, 2016 and 2015

(In thousands of won, except per share information)	***Note***		**2016**	**2015**
Revenue	*5,30*	₩	**5,200,822,510**	**4,954,861,346**
Cost of sales	*8,18,25,30*		(4,450,250,017)	(4,114,742,488)
Gross profit			**750,572,493**	**840,118,858**
Selling, general and administrative expenses	*13,18,24,25*		(1,676,905,127)	(1,107,612,752)
Operating income (loss)	*5*		**(926,332,634)**	**(267,493,894)**
Other income	*14,26,30,33*		522,463,322	839,362,792
Other expenses	*14,26,30*		(649,922,870)	(1,000,732,520)
Finance income	*27*		285,569,135	170,296,343
Finance costs	*27*		(297,649,579)	(191,449,336)
Share of profit of equity accounted investees	*11*		245,178,734	279,900,382
Profit(loss) before income taxes			**(820,693,892)**	**(170,116,233)**
Income tax expense(income)	*28*		57,809,853	(39,218,617)
Profit(loss) from continuing operations			**(878,503,745)**	**(130,897,616)**
Profit (loss) from discontinued operations	*29,32*		**1,089,614,935**	**156,583,382**
Profit (loss) for the year		₩	**211,111,190**	**25,685,766**
Other comprehensive income (loss)				
Items that will never be reclassified to profit or loss:				
Defined benefit plan actuarial losses	*18*		(9,891,812)	9,591,502
Related tax			2,377,272	(2,306,373)
Items that are or may be reclassified to profit or loss:				
Effective portion of unrealized changes in fair values of cash flow hedges			-	279,630
Unrealized net changes in fair values of available-for-sale financial assets	*9*		(319,318,208)	(732,330,579)
Change in equity of equity-method accounted investees	*11*		107,468,284	(35,382,510)
Change in gain (loss) on translation of foreign operations			(54,772,639)	21,165,812
Related tax			51,961,660	183,184,366
Other comprehensive income (loss) for the year, net of tax			**(222,175,443)**	**(555,798,152)**
Total comprehensive income (loss)		₩	**(11,064,253)**	**(530,112,386)**
Profit(loss) attributable to:				
Owners of the Parent Company	*29*	₩	219,405,853	53,846,138
Non-controlling interests	*31*		(8,294,663)	(28,160,372)
Total comprehensive income (loss) attributable to:				
Owners of the Parent Company			21,129,717	(502,765,900)
Non-controlling interests	*31*		(32,193,970)	(27,346,486)
Earnings per share	*29,32*			
Basic earnings per share (won) - Ordinary share		₩	3,133	766
Earnings per share -Continuing operations			(12,434)	(1,458)
Earnings per share -Discontinued operations			15,567	2,224
Basic earnings per share (won) - Preferred share			3,183	816
Earnings per share -Continuing operations			(12,384)	(1,408)
Earnings per share -Discontinued operations			15,567	2,224

See accompanying note to the consolidated financial statements.

For the years ended December 31, 2016 and 2015

(In thousands of won)		Capital stock	Capital surplus	Other capital	Accumulated other comprehensive income	Retained earnings	Non-controlling interests	Total equity
Balance at January 1, 2015	₩	**356,712,130**	**5,032,600,515**	**(10,848,673)**	**1,345,646,158**	**4,862,321,913**	**240,479,248**	**11,826,911,292**
Comprehensive income								
Profit (loss) for the year		-	-	-	-	53,846,138	(28,160,372)	25,685,766
Defined benefit plan actuarial gain		-	-	-	-	7,285,129	-	7,285,129
Gain on valuation of derivatives		-	-	-	279,630	-	-	279,630
Changes in fair values of available-for-sale financial assets		-	-	-	(474,272,248)	-	25,458	(474,246,790)
Changes in fair values of available-for-sale financial assets (Non-current assets held-for-sale)		-	-	-	(80,243,717)	-	-	(80,243,717)
Change in equity of equity-accounted investees		-	-	-	(28,355,132)	-	-	(28,355,132)
Change in gain (loss) on translation of foreign operations		-	-	-	18,694,299	-	788,428	19,482,728
Total comprehensive income (loss)		**-**	**-**	**-**	**(563,897,166)**	**61,131,267**	**(27,346,486)**	**(530,112,386)**
Transactions with shareholders directly recognized in equity								
Dividends to owners of the Company		-	-	-	-	(70,313,608)	(1,790,831)	(72,104,439)
Capital contribution from non-controlling interests		-	-	-	-	-	30,680,388	30,680,388
Capital reduction to non-controlling interests		-	-	-	-	-	(18,576,341)	(18,576,341)
Acquisition of interests in subsidiary		-	-	-	-	-	20,817,663	20,817,663
Change in non-controlling interests		-	(1,356,309)	-	-	-	(3,067,015)	(4,423,324)
Balance at December 31, 2015	₩	**356,712,130**	**5,031,244,206**	**(10,848,673)**	**781,748,992**	**4,853,139,572**	**241,196,626**	**11,253,192,853**

See accompanying notes to the consolidated financial statements.

For the years ended December 31, 2016 and 2015

(In thousands of won)		Capital stock	Capital surplus	Other capital	Accumulated other comprehensive income	Retained earnings	Non-controlling interests	Total equity
Balance at January 1, 2016	₩	**356,712,130**	**5,031,244,206**	**(10,848,673)**	**781,748,992**	**4,853,139,572**	**241,196,626**	**11,253,192,853**
Comprehensive income								
Profit (loss) for the year		-	-	-	-	219,405,853	(8,294,663)	211,111,190
Defined benefit plan actuarial loss		-	-	-	-	(7,514,540)	-	(7,514,540)
Changes in fair values of available-for-sale financial assets		-	-	-	(242,750,245)	-	(30,476)	(242,780,721)
Change in equity of equity-accounted investees		-	-	-	81,316,914	-	-	81,316,914
Change in gain (loss) on translation of foreign operations		-	-	-	(29,328,265)	-	(23,868,831)	(53,197,096)
Total comprehensive income (loss)		**-**	**-**	**-**	**(190,761,596)**	**211,891,313**	**(32,193,970)**	**(11,064,253)**
Transactions with shareholders directly recognized in equity								
Dividends to owners of the Company		-	-	-	-	(70,313,607)	(2,363,756)	(72,677,363)
Capital contribution from non-controlling interests		-	-	-	-	-	49,592,089	49,592,089
Capital reduction to non-controlling interests		-	-	-	-	-	(14,251,654)	(14,251,654)
Acquisition of treasury shares		-	-	(240,681,445)	-	-	-	(240,681,445)
Balance at December 31, 2016	₩	**356,712,130**	**5,031,244,206**	**(251,530,118)**	**590,987,396**	**4,994,717,278**	**241,979,335**	**10,964,110,227**

See accompanying notes to the consolidated financial statements.

For the years ended December 31, 2016 and 2015

(In thousands of won)	***Note***		**2016**	**2015**
Cash flows from operating activities				
Profit for the year		₩	211,111,190	25,685,766
Adjustments for expense (benefit)	*34*		150,042,110	330,626,724
Changes in assets and liabilities	*34*		(1,412,929,478)	623,637,525
Interest received			26,597,529	30,917,430
Interest paid			(41,711,984)	(62,434,654)
Dividends received			11,784,589	19,378,257
Income taxes paid			(254,413,455)	(86,744,490)
Net cash provided by (used in) operating activities		₩	**(1,309,519,499)**	**881,066,558**
Cash flows from investing activities				
Sale of other investments		₩	102,684,289	679,934,719
Disposal of non-current assets held for sale			947,177,078	15,174,034
Proceeds from sale of property, plant and equipment			79,348,617	20,480,747
Proceeds from sale of intangible assets			158,378	109,430
Proceeds from sale of investment property			2,568,199	-
Proceeds from sale of investments in equity-accounted investees			3,794,963	85,080,863
Disposal of discontinued operation, net of cash disposed of			2,084,194,057	232,650,000
Acquisition of other investment assets			(514,869,800)	-
Acquisition of other non-current assets			(9,148,836)	(41,360,567)
Acquisition of property, plant and equipment			(832,629,248)	(725,906,416)
Acquisition of intangible assets			(9,013,857)	(16,085,315)
Acquisition of investments in equity-accounted investees			-	(3,764,145)
Acquisition of subsidiary, net of cash acquired			-	(130,983,163)
Net cash from investing activities		₩	**1,854,263,840**	**115,330,187**
Cash flows from financing activities				
Proceeds from short-term borrowings		₩	506,456,967	45,129,693
Issuance of debentures			-	298,823,100
Proceeds from long-term borrowings			67,928,374	99,483,541
Capital contribution from Non-controlling Interesting			49,592,089	30,680,389
Establishment of subsidiaries			-	20,817,663
Dividends paid			(72,677,363)	(72,104,439)
Repayment of short-term borrowings			(615,069,069)	-
Repayment of current portion of long-term borrowings			(500,000,000)	(731,720,324)
Repayment of long-term borrowings			-	(6,535,157)
Capital reduction from non-controlling interesting			(14,251,654)	(18,576,341)
Acquisition of non-controlling interests			-	(4,423,324)
Acquisition of treasury stock			(240,681,445)	-
Transactions with non-controlling interests			-	(16,229,745)
Net cash used in financing activities		₩	**(818,702,101)**	**(354,654,944)**
Net increase (decrease) in cash and cash equivalents		₩	(273,957,760)	641,741,801
Cash and cash equivalents at January 1			1,287,968,374	627,528,155
Effect of exchange rate fluctuations on cash held			(2,308,739)	18,698,418
Cash and cash equivalents at December 31		₩	**1,011,701,875**	**1,287,968,374**

See accompanying notes to the consolidated financial statements.

1. Reporting Entity

Samsung SDI Co., Ltd. (the "Parent Company" or the "Company") was incorporated on January 20, 1970 under the laws of the Republic of Korea with paid-in capital of ₩200 million. The consolidated financial statements comprise the Company and its subsidiaries (together referred to as the "Group" and individually as "Group entities") and the Group's interests in associates. In 1979, the Parent Company was listed on the Korean Stock Exchange and its head office is located in Gi-heung, Gyeong-gi Do.

The Parent Company merged with former Cheil Industries Inc. (current material division) on July 1, 2014. Its main business is manufacturing and selling chemicals and electronic material products. The Group physically split and sold the chemical business on April 29, 2016. The major business segments and locations of domestic production facilities of the Parent Company are as follows.

Business	Major product lines	Domestic Locations
Energy solutions	Small-sized li-on battery, Automotive battery, ESS (Energy Storage System)	Cheon-an, Ulsan
Electronic Materials	Semi-conductor and display materials	Cheong-ju, Gumi

In addition to these local business locations, the Parent Company also has 23 subsidiaries operating in the United States, China, Germany, Hungary, and so on.

Under its Articles of Incorporation, the Parent Company is authorized to issue 200,000 thousand shares of capital stock with a par value of ₩5,000 per share. As of December 31, 2016, 70,382,426 shares of capital stock (including 1,617,896 shares of preferred stock) have been issued and are outstanding, and the Parent Company's paid-in-capital amounts to ₩356,712 million. The major shareholder of the Parent Company is Samsung Electronics Co., Ltd. (ownership: 19.13%). The Parent Company is allowed to retire its stock through a board resolution within its profit available for dividends to its shareholders. Pursuant to the resolution made by the board of directors on October 18, 2004, the Parent Company retired 930,000 shares of ordinary stock and 30,000 shares of preferred stock, which were acquired at ₩99,333 million on December 8, 2004 by appropriating retained earnings. The par value of outstanding shares is ₩351,912 million (₩343,823 million for common stock and ₩8,089 million for preferred stock, excluding the retired shares) and it differs from the Group's paid-in-capital due to the share retirement.

Under its Articles of Incorporation, the Parent Company is authorized to issue 30,000 thousand shares of non-voting preferred stock. Holders of preferred shares issued before February 28, 1997 are entitled to receiving additional dividends of 1% of its par value per annum. As of December 31, 2016, 1,617,896 shares of non-cumulative and non-voting preferred stocks are eligible for these additional dividends.

2. Basis of Preparation

The consolidated financial statements have been prepared in accordance with Korean International Financial Reporting Standards ("K-IFRS"), as prescribed in the Act on External Audits of Corporations in the Republic of Korea. The consolidated financial statements were authorized for issue by the Board of Directors on January 24, 2017 and will be submitted for approval to general shareholders meeting to be held on March 24, 2017.

(1) Basis of measurement

The consolidated financial statements have been prepared on the historical cost basis except for the following material items in the statement of financial position:

- Financial instruments measured at fair value.

- Liabilities for defined benefit plans recognized at the net of the total present value of defined benefit obligations less the fair value of plan assets.

(2) Functional and presentation currency

These consolidated financial statements are presented in Korean won, which is the Parent Company's functional currency and the currency of the primary economic environment in which the Group operates.

(3) Use of estimates and judgments

The preparation of the consolidated financial statements in conformity with K-IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

Information about critical judgments in applying accounting policies that have the most significant effect on the amounts recognized in the consolidated financial statements is included in the following notes:

- Note 3: consolidation: whether the Group has de facto control over an investee

Information about assumptions and estimation uncertainties that have a significant risk of resulting in a material adjustment within the next financial year are included in the following notes:

- Note 12 and 13 - impairment test: key assumptions underlying recoverable amounts, including the recoverability of development costs;

- Notes 17 and 19: recognition and measurement of provisions and contingencies: key assumptions about likelihood and magnitude of an outflow of resources;

- Note 18: measurement of defined benefit obligations: key actuarial assumptions; and

- Note 28: recognition of deferred tax assets: availability of future taxable profit against which carry-forward tax losses can be used, cash reserve taxation

2. Basis of Preparation, Continued

(4) Fair value measurement

A number of the Group's accounting policies and disclosures require the measurement of fair values, for both financial and non-financial assets and liabilities. The Group has an established control framework with respect to the measurement of fair values. This includes a valuation team that has overall responsibility for overseeing all significant fair value measurements, including Level 3 fair values, and reports directly to the CFO.

The valuation team regularly reviews significant unobservable inputs and valuation adjustments. If third party information, such as broker quotes or pricing services, is used to measure fair values, then the valuation team measures the evidence obtained from the third parties to support the conclusion that such valuations meet the requirements of K-IFRS, including the level in the fair value hierarchy in which such valuations should be classified.

Significant valuation issues are reported to the Group's Audit Committee.

When measuring the fair value of an asset or a liability, the Group uses market observable data as far as possible. Fair values are categorized into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows.

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or Liability, either directly (i.e. as prices) or indirectly (i.e. derived from price)
- Level 3: inputs for the asset or liability that fare not based on observable market data (unobservable inputs)

If the inputs used to measure the fair value of an asset or a liability might be categorized in different levels of the fair value hierarchy, then the fair value measurement is categorized in its entirety in the same level of the fair value hierarchy as the lowest level input that is significant to the entire measurement. The Group recognized transfers between levels of the fair value hierarchy at the end of the reporting period during which the change has occurred.

Further information about the assumptions made in measuring fair values is included in following note:

- Note 4: Financial Risk Management

3. Significant Accounting Policies

The significant accounting policies applied by the Group in preparation of its consolidated financial statements are included below. The accounting policies set out below have been applied consistently to all periods presented in these consolidated financial statements except as disclosed in Note 2.

Certain comparative amounts in the statement of comprehensive income have been reclassified as a result of an operation discontinued during the previous year (see Note 32).

(1) Consolidation

1) Business combination

A business combination is accounted for by applying the acquisition method, unless it is a combination for entities or businesses under common control.

The consideration transferred in the acquisition is generally measured at fair value, as are the identifiable net assets acquired. Any goodwill that arises is tested annually for impairment. Any gain on a bargain purchase is recognized in profit or loss immediately. Acquisition-related costs, other than those associated with the issue of debt or equity securities recognized in accordance with K-IFRS No. 1032 and No. 1039, are expensed in the periods in which the costs are incurred and the services are received.

The consideration transferred does not include amounts related to the settlement of pre-existing relationships. Such amount are generally recognized in profit or loss.

Any contingent consideration payable is measured at fair value at the acquisition date. If the contingent consideration is classified as equity, then it is not re-measured and settlement is accounted for within equity. Otherwise, subsequent changes in the fair value of the contingent consideration are recognized in profit or loss.

If share-based payment awards (replacement awards) are required to be exchanged for awards held by the acquiree's replacement (acquiree's awards), then all or a portion of the amount of the acquirer's replacement awards is included in measuring the consideration transferred in the business combination. This determination is based on the market-based measure of the replacement awards compared with the market-based measure of the acquiree's awards and the extent to which the replacement awards relate to pre-combination service.

2) Non-controlling interests

Non-controlling interests ("NCI") are measured at their proportionate share of the acquiree's identifiable net assets at the acquisition date. Changes in the Group's interest in subsidiaries that do not result in a loss of control are accounted for as equity transactions.

3) Subsidiaries

Subsidiaries are entities controlled by the Group. The Group controls an entity when it is exposed, or has right to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

If a member of the Group uses accounting policies other than those adopted in the consolidated financial statements for like transactions and events in similar circumstances, appropriate adjustments are made to its financial statements in preparing the consolidated financial statements.

3. Significant Accounting Policies, Continued

(1) Consolidation, continued

3) Subsidiaries, continued

(i) The list of subsidiaries as of December 31, 2016 and 2015 are as follows: All subsidiaries' fiscal year- end is December 31.

(In thousands of won, except number of shares and percentage of ownership)

Subsidiaries	Location	Primary business	Percentage of ownership (*1) 2016	2015
Samsung SDI Japan Co., Ltd. ("SDIJ")	Japan	Purchase and sales of raw materials for rechargeable battery	100%	100%
Samsung SDI America, Inc. ("SDIA")	U.S.A.	Sales of rechargeable battery	91.7%	91.7%
Subsidiary of SDIA				
Samsung SDI Mexico, S.A. de C.V. ("SDIM")	Mexico	-	91.7%	91.7%
Samsung SDI Hungary Rt. ("SDIHU")	Hungary	Manufacturing and sales of automotive battery	100%	100%
Samsung SDI Europe GmbH ("SDIEU")	Germany	Sales of rechargeable battery, etc.	100%	100%
Samsung SDI Battery Systems GmbH ("SDIBS")	Austria	Manufacturing and sales of automotive battery	100%	100%
Samsung SDI (Malaysia) Sdn, Bhd. ("SDI(M)")	Malaysia	-	68.6%	68.6%
Samsung SDI Vietnam Co., Ltd. ("SDIV")	Vietnam	Manufacturing and sales of rechargeable battery	100%	100%
Samsung SDI Energy Malaysia Sdn, Bhd. ("SDIEM")	Malaysia	Manufacturing and sales of rechargeable battery	100%	100%
Samsung SDI (Hong Kong) Ltd. ("SDIHK")	Hong Kong	Sales of rechargeable battery	97.6%	97.6%
Subsidiary of SDIHK				
Shenzhen Samsung SDI Co., Ltd. ("SSDI")(*2)	China	-	-	78.0%
Tianjin Samsung SDI Co., Ltd. ("TSDI")	China	Manufacturing and sales of rechargeable battery	78.0%	78.0%
Samsung SDI China Co., Ltd. ("SDIC")	China	Supporting sales in China	100%	100%
Samsung SDI-ARN (Xi'An) Power Battery Co., Ltd. ("SAPB")(*3)	China	Manufacturing and sales of automotive battery	50.0%	50.0%
Samsung SDI-Sungrow Energy Storage Battery Co., Ltd. ("SSEB")	China	Manufacturing and sales of ESS products	65.0%	65.0%
Samsung SDI (Changchun) Power Battery Co., Ltd. ("SCPB") (*3)	China	Manufacturing and sales of automotive battery	50.0%	50.0%
Samsung SDI (Tianjin) Battery Co., Ltd. ("SDITB") (*3)	China	Manufacturing and sales of rechargeable battery	50.0%	50.0%
Samsung SDI Brazil Ltda. ("SDIB")	Brazil	-	96.1%	96.1%
STM Co., Ltd. ("STM")	Korea	Manufacturing and sales of cathode active material for secondary battery	100%	100%
SVIC 15 Fund ("SVIC 15")	Korea	Investments in new technology venture business	99.0%	99.0%
Samsung Chemical Electronic Materials (SuZhou) Co., Ltd. ("SCES")	China	Manufacturing and sales of electronic materials products	100%	100%

3. Significant Accounting Policies, Continued

(1) Consolidation, continued

3) Subsidiaries, continued

(i) The list of subsidiaries as of December 31, 2016 and 2015 are as follows: All subsidiaries' fiscal year end is December 31., continued

(In thousands of won, except number of shares and percentage of ownership)

Subsidiaries	Location	Primary business	Percentage of ownership (*1) 2016	2015
Samsung SDI Wuxi Co., Ltd. ("SDIW")	China	Manufacturing and sales of electronic materials products	100%	100%
Novaled GmbH ("NOVALED")	Germany	Manufacturing and sales of electronic materials products	50.1%	50.1%
SVIC 24 Fund ("SVIC24")	Korea	Investments in new technology venture business	99%	99%
Samsung Chemical U.S.A Inc. ("SCI") (*4)	U.S.A.	Sales of synthetic resin and artificial marble	-	100%
Samsung Chemical Europe GmbH ("SCEG") (*4)	Germany	Sales of synthetic resin and artificial marble	-	100%
Samsung Chemical Material Trading (Shanghai) Co., Ltd. ("SCSC") (*4)	China	Sales of synthetic resin and artificial marble	-	100%
Samsung Chemical (Thailand) Co., Ltd.("SCT") (*4)	Thailand	Sales of synthetic resin and construction materials	-	59.4%
Tianjin Samsung Engineering Plastics Co., Ltd. ("TSEP") (*4)	China	Manufacturing of synthetic resin	-	100%
Samsung Chemical Hungary LLC ("SCH") (*4)	Hungary	Manufacturing and sales of synthetic resin	-	100%
Dongguan Samsung Engineering Plastics Co., Ltd. ("DSEP") (*4)	China	Manufacturing of synthetic resin	-	100%
Stacom Mexico, S.A. de C.V. ("STACOM") (*4)	Mexico	Manufacturing of chemical products	-	100%

(*1) Effective ownership interest has been measured based on ownership of the Parent Company and its subsidiaries considering the control structure. In accordance with the local laws and regulations, no shares have been issued and ownership interest has been measured based on investments.

(*2) The Group has lost its control on SSDI due to the subsidiary's termination of liquidation process.

(*3) Although the Group's ownership in SAPB, SCPB, and SDITB does not exceed 50%, the Group has determined that the Group controls the entities based on the terms of the shareholders' agreement.

(*4) The Group has lost its control on SCI, SCEG, SCH, SCSC, SCT, TSEP, DSEP, and STACOM due to its split-off and sale of the chemical business, as stated in Note 32 to the consolidated financial statements.

3. Significant Accounting Policies, Continued

(1) Consolidation, continued

3) Subsidiaries, continued

(ii) Summary of financial information of subsidiaries as of and for the year ended December 31, 2016 is as follows:

(In thousands of won)

Subsidiaries	Assets	Liabilities	Equity	Revenue	Net profit (loss)	Total comprehensive income (loss)
SDIJ	7,497,767	2,144,209	5,353,558	19,476,431	(78,513)	397,444
SDIA	88,317,127	31,725,725	56,591,402	42,572,582	1,289,321	32,457,425
SDIM	454,815	7,037	447,778	-	(126,527)	(34,536,182)
SDIHU	104,137,782	60,017,906	44,119,876	-	(12,137,985)	(10,377,569)
SDIEU	14,482,421	8,440,761	6,041,660	20,615,768	1,808,142	1,737,395
SDIBS	261,712,761	246,744,754	14,968,007	239,391,981	(17,426,015)	(17,340,844)
SDI(M)	959,520	-	959,520	-	(5,072,645)	54,411,043
SDIV	281,974,107	167,846,199	114,127,908	709,769,163	47,489,211	50,502,847
SDIEM	450,459,853	161,263,661	289,196,192	584,710,567	38,710,081	46,232,744
SDIHK	524,306,347	26,639,770	497,666,577	208,785,619	259,772,132	199,397,323
TSDI	420,731,978	95,713,817	325,018,161	649,970,386	28,787,554	261,109,427
SDIC	6,241,536	687,891	5,553,645	17,165,445	1,560,142	1,419,717
SAPB	445,452,049	289,379,794	156,072,255	63,887,429	(38,072,486)	(41,994,997)
SSEB	38,942,836	14,636,649	24,306,187	35,235,711	2,244,298	1,596,151
SCPB	16,329,493	9,179,177	7,150,316	2,943,503	(602,862)	(851,597)
SDITB	162,565,955	160,500,286	2,065,669	86,173,596	(14,778,724)	(15,303,416)
SDIB	27,729,532	1,468,924	26,260,608	-	1,471,708	33,499,307
STM	81,650,741	7,160,381	74,490,360	49,780,121	(5,143,444)	(5,146,114)
NOVALED	298,539,705	37,361,478	261,178,227	84,970,223	26,209,625	9,044,527
SCES	11,007,379	4,073,159	6,934,220	24,598,760	2,028,865	1,922,168
SDIW	358,688,956	99,881,025	258,807,931	52,850,987	(9,347,427)	(21,746,198)
SVIC15	18,234,355	95,384	18,138,971	-	(128,801)	(3,176,401)
SVIC24	15,648,478	1,122,470	14,526,008	-	(1,514,569)	(1,514,569)

3. Significant Accounting Policies, Continued

(1) Consolidation, continued

4) Loss of control

If the controlling company loses control of subsidiaries, the controlling company derecognizes the assets and liabilities of the former subsidiaries from the consolidated statement of financial position and recognizes the gain or loss associated with the loss of control attributable to the former controlling interest. Meanwhile, the controlling company recognizes any investment retained in the former subsidiaries at its fair value when control is lost.

5) Interest in equity – accounted investees

The Group's interests in equity-accounted investees comprise interests in associates and joint venture.

Associates are those entities in which the Group has significant influence, but not control or joint control, over the financial and operating policies. A joint venture is an arrangement in which the Group has joint control, whereby the Group has rights to the net assets of the arrangement, rather than rights to its assets and obligations for its liabilities.

Interests in associates and the joint venture are accounted for using the equity method. They are initially recognized at cost, which includes transaction costs. Subsequent to initial recognition, the consolidated financial statements include the Group's share of the profit or loss and OCI of equity-accounted investees, until the date on which significant influence or joint control ceases.

6) Transactions eliminated on consolidation

Intra-group balances and transactions, including income and expenses and any unrealized income and expenses arising from intra-group transactions, are eliminated. Meanwhile, unrealized gains arising from transactions with equity-accounted investees are eliminated against the investment to the extent of the Group's interest in the investee. Unrealized losses are eliminated in the same way as unrealized gains, but only to the extent that there is no evidence of impairment.

7) Business combination under common control

Combination of entities and business under common control recognizes the acquired assets and liabilities obtained at book values of consolidated financial statements of ultimate controlling company. The Group recognizes the differences between the net book value acquired and consideration transferred in capital surplus.

(2) Discontinued operation

A discontinued operation is a component of the Group's business that represents a separate major line of business or geographical area of operations that has been disposed of or is held for sale, or is a subsidiary acquired exclusively with a view to resale. When an operation is classified as a discontinued operation, the comparative consolidated statement of comprehensive income is re-presented as if the operation had been discontinued from the start of the comparative period.

3. Significant Accounting Policies, Continued

(3) Foreign currency transactions

Transactions in foreign currencies are translated to the respective functional currencies of Group entities at exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies are retranslated to the functional currency using the reporting date's exchange rate. Non-monetary assets and liabilities denominated in foreign currencies that are measured at fair value are retranslated to the functional currency at the exchange rate at the date that the fair value was determined. Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the original transaction.

Exchange differences arising on the settlement of monetary items or on translating monetary items, except for translation differences from net investment in foreign operation and from financial liabilities designated to cash flow hedges, are recognized in profit or loss in the period in which they arise. If profit or loss from non-monetary items is regarded as other comprehensive income then the exchange rate change effects are treated as other comprehensive income, where regarded as current profit or loss then treated as current profit or loss.

(4) Cash and cash equivalents

Cash and cash equivalents comprise cash balances and call deposits with maturities of three months or less from the acquisition date that are subject to an insignificant risk of changes in their fair value, and are used by the Group in the management of its short-term commitments. Equity investments are excluded from cash equivalents unless they are, in substance, cash equivalents, for example in the case of preferred shares when it has a short maturity with a specified redemption date.

(5) Non-derivative financial assets

The Group recognizes and measures non-derivative financial assets by the following four categories: financial assets at fair value through profit or loss, held-to-maturity investments, loans and receivables and available-for-sale financial assets. The Group recognizes financial assets in the consolidated statement of financial position when the Group becomes a party to the contractual provisions of the instrument.

Upon initial recognition, non-derivative financial assets are measured at their fair value and transaction costs of other than financial assets at fair value through profit and loss are directly attributable to the asset's fair value at the initial recognition.

1) Financial assets at fair value through profit or loss

A financial asset is classified as financial assets at fair value through profit or loss if it is held for trading or is designated as such upon initial recognition. Upon initial recognition, transaction costs are recognized in profit or loss when incurred. Financial assets at fair value through profit or loss are measured at fair value, and changes therein are recognized in profit or loss.

2) Held-to-maturity financial assets

A non-derivative financial asset with a fixed or determinable payment and fixed maturity, for which the Group has the positive intention and ability to hold to maturity, are classified as held-to-maturity investments. Subsequent to initial recognition, held-to-maturity investments are measured at amortized cost using the effective interest method except for loans and receivables of which the effect of discounting is immaterial.

3. Significant Accounting Policies, Continued

(5) Non-derivative financial assets, continued

3) Loans and receivables

Loans and receivables are financial assets with fixed or determinable payments that are not quoted in an active market. Subsequent to initial recognition, loans and receivables are measured at amortized cost using the effective interest method except for loans and receivables of which the effect of discounting is immaterial.

4) Available-for-sale financial assets

Available-for-sale financial assets are those non-derivative financial assets that are not classified as financial assets at fair value through profit or loss, held-to-maturity investments or loans and receivables. Subsequent to initial recognition, they are measured at fair value. Investments in equity instruments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured are measured at cost.

5) De-recognition of financial assets

The Group derecognizes a financial asset when the contractual rights to the cash flows from the asset expire, or it transfers the rights to receive the contractual cash flows on the financial asset in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred.

If the Group neither transfers nor retains substantially all the risks and rewards of ownership of the financial asset, the Group determines whether it has retained control of the financial asset. If the Group has not retained control, derecognizes the financial asset. If the Group has retained control, continues to recognize the financial asset to the extent of its continuing involvement in the financial asset.

If the Group has retained substantially all the risks and rewards of ownership of the transferred asset, the Group continues to recognize the transferred asset in its entirety and recognizes a financial liability for the consideration received.

6) Offsetting a financial asset and a financial liability

Financial assets and financial liabilities are offset and the net amount is presented in the consolidated statement of financial position only when the Group currently has a legally enforceable right to offset the recognized amounts, and there is the intention to settle on a net basis or to realize the asset and settle the liability simultaneously.

3. Significant Accounting Policies, Continued

(6) Non-derivative financial liabilities

The Group classifies non-derivative financial liabilities into financial liabilities at fair value through profit or loss or other financial liabilities in accordance with the substance of the contractual arrangement and the definitions of financial liabilities. The Group recognizes financial liabilities in the consolidated statement of financial position when the Group becomes a party to the contractual provisions of the financial liability.

1) Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading or designated as such upon initial recognition. Subsequent to initial recognition, financial liabilities at fair value through profit or loss are measured at fair value, and changes therein are recognized in profit or loss. Upon initial recognition, transaction costs that are directly attributable to the acquisition are recognized in profit or loss as incurred.

2) Other financial liabilities

Non-derivative financial liabilities other than financial liabilities at fair value through profit or loss are classified as other financial liabilities. At the date of initial recognition, other financial liabilities are measured at fair value minus transaction costs that are directly attributable to the acquisition. Subsequent to initial recognition, other financial liabilities are measured at amortized cost using the effective interest method.

The Group derecognizes a financial liability from the consolidated statement of financial position when it is extinguished (i.e. when the obligation specified in the contract is discharged, cancelled or expires).

(7) Equity capital

Ordinary shares are classified as equity. Incremental costs directly attributable to the capital transactions are recognized as a deduction from equity, net of any tax effects.

Preference share capital is classified as equity if it is non-redeemable, or redeemable only at the Group's option, and any dividends are discretionary. Dividends thereon are recognized as distributions within equity upon approval by the Group's shareholders.

When the Group repurchases its share capital, the amount of the consideration paid is recognized as a deduction from equity and classified as treasury shares. The profits or losses from the purchase, disposal, reissue, or retirement of treasury shares are not recognized as current profit or loss.

3. Significant Accounting Policies, Continued

(8) Property, plant and equipment

1) Recognition and measurement

Property, plant and equipment are initially measured at cost and after initial recognition, are carried at cost less accumulated depreciation and accumulated impairment losses. The cost of property, plant and equipment includes expenditures arising directly from the construction or acquisition of the asset, any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management and the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

If the useful lives of certain components of the property, plant and equipment are different from the useful life of the asset as a whole, those components are treated as separate assets.

The gain or loss arising from the de-recognition of an item of property, plant and equipment shall be determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item and recognized in other income and expenses.

2) Subsequent costs

Subsequent costs are recognized in the carrying amount of property, plant and equipment at cost or, if appropriate, as separate items if it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognized. The costs of the day-to-day servicing are recognized in profit or loss as incurred.

3) Depreciation

Property, plant and equipment, except for land, are depreciated on a straight-line basis over estimated useful lives that appropriately reflect the pattern in which the asset's future economic benefits are expected to be consumed.

If the cost of a part of property, plant and equipment is significant compared to the cost of property, plant and equipment as a whole, and has a different useful life, that part of the cost should be accounted for as a separate item and is depreciated over its separate useful life.

The estimated useful lives of the Group's property, plant and equipment are as follows:

	Useful lives (years)
Buildings	10 ~ 60
Structures	10 ~ 40
Machineries	5 ~ 10
Tools, furniture and fixtures	4 ~ 5
Vehicles	4 ~ 5

Depreciation methods, useful lives and residual values are reviewed at the end of each reporting date and adjusted, if appropriate. The change is accounted for as a change in an accounting estimate.

3. Significant Accounting Policies, Continued

(9) Borrowing costs

The Group capitalizes borrowing costs directly attributable to the acquisition, construction or production of a qualifying asset as part of the cost of that asset. Other borrowing costs are recognized in expense as incurred. A qualifying asset is an asset that requires a substantial period of time to get ready for its intended use or sale. Financial assets and inventories that are manufactured or otherwise produced over a short period of time are not qualifying assets. Assets that are ready for their intended use or sale when acquired are not qualifying assets.

To the extent that the Group borrows funds specifically for the purpose of obtaining a qualifying asset, the Group determines the amount of borrowing costs eligible for capitalization as the actual borrowing costs incurred on that borrowing during the period less any investment income on the temporary investment of those borrowings. To the extent that the Group borrows funds generally and uses them for the purpose of obtaining a qualifying asset, the Group shall determine the amount of borrowing costs eligible for capitalization by applying a capitalization rate to the expenditures on that asset. The capitalization rate shall be the weighted average of the borrowing costs applicable to the borrowings of the Group that are outstanding during the period, other than borrowings made specifically for the purpose of obtaining a qualifying asset. The amount of borrowing costs that the Group capitalizes during a period shall not exceed the amount of borrowing costs incurred during that period.

(10) Intangible asset

Intangible assets are measured initially at cost and, subsequently, are carried at cost less accumulated amortization and accumulated impairment losses.

Amortization of intangible assets except for goodwill is calculated on a straight-line basis over the estimated useful lives of intangible assets from the date that they are available for use. The residual value of intangible assets is zero.

The estimated useful lives of the group's assets are as follows:

	Useful lives (years)
Industrial property rights	5 ~10
Development costs	8 ~11
Others intangible assets	4 ~20

Amortization periods and the amortization methods for intangible assets with finite useful lives are reviewed at each end of reporting period. If appropriate, the changes are accounted for as changes in accounting estimates.

Expenditures on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding, is recognized in profit or loss as incurred. Development expenditures are capitalized only if development costs can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable, and the Group intends to and has sufficient resources to complete development and to use or sell the asset. Other development expenditures are recognized in profit or loss as incurred.

Subsequent expenditure is capitalized only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure, including expenditure on internally generated goodwill and brands, is recognized in profit or loss as incurred.

3. Significant Accounting Policies, Continued

(11) Investment property

Property held for the purpose of earning rentals or benefiting from capital appreciation is classified as investment property. Investment property is measured initially at its cost and transaction costs are included in the initial measurement. Subsequently, investment property is carried at depreciated cost less any accumulated impairment losses.

Subsequent costs are recognized in the carrying amount of investment property at cost or, if appropriate, as separate items if it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognized. The costs of the day-to-day servicing are recognized in profit or loss as incurred.

Investment property, except for land, are depreciated on a straight-line basis over estimated useful lives that appropriately reflect the pattern in which the asset's future economic benefits are expected to be consumed.

Depreciation methods, useful lives and residual values are reviewed at the end of each reporting date and adjusted, if appropriate. The change is accounted for as a change in an accounting estimate.

(12) Inventories

The cost of inventories is based on specific method for materials in transit, moving average method for raw materials and sub-materials and gross average method (monthly moving average method) for all the other inventories, and includes expenditures for acquiring the inventories, production or conversion costs and other costs incurred in bringing them to their existing location and condition. In the case of manufactured inventories and work in progress, cost includes an appropriate share of production overheads based on normal operating capacity.

Inventories are measured at the lower of cost and net realizable value. Net realizable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and selling expenses. The amount of any write-down of inventories to net realizable value and all losses of inventories are recognized as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realizable value, are recognized as a reduction in the amount of inventories recognized as an expense in the period in which the reversal occurs.

3. Significant Accounting Policies, Continued

(13) Impairment

1) Impairment of financial assets

A financial asset other than financial assets at fair value through profit or loss is assessed at each reporting date to determine whether there is objective evidence that it is impaired. A financial asset is impaired if objective evidence indicates that a loss event has occurred after the initial recognition of the asset, and that the loss event had a negative effect on the estimated future cash flows of that asset that can be estimated reliably. However, losses expected as a result of future events, regardless of likelihood, are not recognized.

If financial assets have objective evidence that they are impaired, impairment losses are be measured and recognized.

(i) Financial assets measured at amortized cost

An impairment loss in respect of a financial asset measured at amortized cost is calculated as the difference between its carrying amount and the present value of its estimated future cash flows discounted at the asset's original effective interest rate. The Group can recognize impairment losses directly or establish a provision to cover impairment losses. If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, the previously recognized impairment loss shall be reversed in profit or loss either directly or by adjusting an allowance account.

(ii) Financial assets carried at cost

The amount of the impairment loss is measured as the difference between the carrying amount of the financial asset and the present value of estimated future cash flows discounted at the current market rate of return for a similar financial asset and is recorded in profit or loss. Such impairment losses shall not be reversed.

(iii) Available-for-sale financial assets

When a decline in the fair value of an available-for-sale financial asset has been recognized in other comprehensive income and there is objective evidence that the asset is impaired, the cumulative loss that had been recognized in other comprehensive income shall be reclassified from equity to profit or loss as a reclassification adjustment even though the financial asset has not been derecognized. Impairment losses recognized in profit or loss for an investment in an equity instrument classified as available-for-sale shall not be reversed through profit or loss. If, in a subsequent period, the fair value of a debt instrument classified as available-for-sale increases and the increase can be objectively related to an event occurring after the impairment loss was recognized in profit or loss, the impairment loss shall be reversed, with the amount of the reversal recognized in profit or loss.

2) Impairment of non-financial assets

The carrying amounts of the Group's non-financial assets, other than assets arising from employee benefits, inventories, deferred tax assets and non-current assets held for sale are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. Goodwill and intangible assets that have indefinite useful lives or that are not yet available for use, irrespective of whether there is any indication of impairment, are tested for impairment annually by comparing their recoverable amount to their carrying amount.

3. Significant Accounting Policies, Continued

(13) Impairment, continued

2) Impairment of non-financial assets, continued

The Group estimates the recoverable amount of an individual asset, if it is impossible to measure the individual recoverable amount of an asset, then the Group estimates the recoverable amount of cash-generating unit ("CGU"). A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell. The value in use is estimated by applying a pre-tax discount rate that reflect current market assessments of the time value of money and the risks specific to the asset or CGU for which estimated future cash flows have not been adjusted, to the estimated future cash flows expected to be generated by the asset or CGU.

An impairment loss is recognized if the carrying amount of an asset or its CGU exceeds its estimated recoverable amount. Impairment losses are recognized in profit or loss.

Goodwill acquired in a business combination is allocated to each CGU that is expected to benefit from the synergies arising from the goodwill acquired. Any impairment identified at the CGU level will first reduce the carrying value of goodwill and then be used to reduce the carrying amount of the other assets in the CGU on a pro rata basis. Except for impairment losses in respect of goodwill which are never reversed, an impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

(14) Employee benefits

1) Short-term employee benefits

Short-term employee benefits are employee benefits that are due to be settled within 12 months after the end of the period in which the employees render the related service. When an employee has rendered service to the Group during an accounting period, the Group recognizes the undiscounted amount of short-term employee benefits expected to be paid in exchange for that service.

2) Other long-term employee benefits

Other long-term employee benefits include employee benefits that are settled beyond 12 months after the end of the period in which the employees render the related service, and are calculated at the present value of the amount of future benefit that employees have earned in return for their service in the current and prior periods, less the fair value of any related assets. The present value is determined by discounting the expected future cash flows using the interest rate of high-quality corporate bonds that have maturity dates approximating the terms of the Group's obligations and that are denominated in the same currency in which the benefits are expected to be paid. Any actuarial gains and losses are recognized in profit or loss in the period in which they arise.

3. Significant Accounting Policies, Continued

(14) Employee benefits, continued

3) Retirement benefits: defined contribution plans

When an employee has rendered service to the Group during a period, the Group recognizes the contribution payable to a defined contribution plan in exchange for that service as a liability (accrued expense), after deducting any contribution already paid. If the contribution already paid exceeds the contribution due for service before the end of the reporting period, the Group recognizes that excess as an asset (prepaid expense) to the extent that the prepayment will lead to a reduction in future payments or a cash refund.

4) Retirement benefits: defined benefit plans

The Group’s net obligation in respect of defined benefit plans is calculated by estimating the amount of future benefit and that benefit is discounted to determine its present value deducted by the fair value of plan assets.

The calculation is performed annually by an independent actuary using the projected unit credit method. When the fair value of plan assets exceeds the present value of the defined benefit obligation, the Group recognizes an asset, to the extent of the present value of any economic benefits available in the form of refunds from the plan or reduction in the future contributions to the plan.

Remeasurement of the net defined benefit liability comprise actuarial gains and losses, the return on plan assets excluding amounts included in net interest on the net defined benefit liability, and any change in the effect of the asset ceiling, excluding amounts included in net interest on the net defined benefit liability and recognized in other comprehensive income. The Group determines net interests on net defined benefit liability (asset) by multiplying discount rate determined at the beginning of the annual reporting period and considers changes in net defined benefit liability (asset) from contributions and benefit payments. Net interest costs and other costs relating to the defined benefit plan are recognized through profit or loss.

When the plan amendment or curtailment occurs, gains or losses on amendment or curtailment in benefits for the past service provided are recognized through profit or loss. The Group recognizes gain or loss on a settlement when the settlement of defined benefit plan occurs.

5) Share-based payment transactions

For equity-settled share-based awards which are granted to employees, the Group measures the goods or services received, and the corresponding increase in equity, directly, at the fair value of the goods or services received, unless that fair value cannot be reliably estimated. If the Group cannot reliably estimate the fair value of the goods or services received, the Group measures their value, and the corresponding increase in equity, by reference to the fair value of the equity instruments granted.

6) Termination benefits

The Group recognizes a liability and expense for termination benefits at the earlier of the period when the Group can no longer withdraw the offer of those benefits and the period when the Group recognizes costs for a restructuring. If benefits are payable more than 12 months after the reporting period, then they are discounted to their present value.

3. Significant Accounting Policies, Continued

(15) Provisions

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

The risks and uncertainties that inevitably surround many events and circumstances are taken into account in reaching the best estimate of a provision. Where the effect of the time value of money is material, provisions are determined at the present value of the expected future cash flows.

Where some or all of the expenditures required to settle a provision are expected to be reimbursed by another party, the reimbursement shall be recognized when, and only when, it is virtually certain that reimbursement will be received if the entity settles the obligation. The reimbursement shall be treated as a separate asset.

Provisions are reviewed at the end of each reporting period and adjusted to reflect the current best estimates. If it is no longer probable that an outflow of resources embodying economic benefits will be required to settle the obligation, the provision is reversed.

A provision shall be used only for expenditures for which the provision was originally recognized.

(16) Revenue

Revenue from sale of goods, rendering of services or use of the Group's assets is measured at the fair value of the consideration received or receivable, and returns, trade discounts and volume rebates are recognized as a reduction of revenue.

1) Sales of goods

Revenue is recognized when persuasive evidence exists, usually in the form of an executed sales agreement, that the significant risks and rewards of ownership have been transferred to the buyer, recovery of the consideration is probable, the associated costs and possible return of goods can be estimated reliably, there is no continuing management involvement with the goods, and the amount of revenue can be measured reliably.

The timing of the transfers of risks and rewards varies depending on the individual terms of the contract of sale. For some international shipments transfer occurs upon loading the goods onto the relevant carrier at the port of the seller.

When two or more revenue generating activities or deliverables are sold under a single arrangement, each deliverable that is considered to be a separate unit of account is accounted for separately. The allocation of consideration from a revenue arrangement to its separate units of account is based on the relative fair values of each unit.

2) Rental income

Rental income from investment property is recognized in profit on a straight-line basis over the term of the lease.

3. Significant Accounting Policies, Continued

(17) Government grants

Government grants are not recognized unless there is reasonable assurance that the Group will comply with the grant's conditions and that the grant will be received. Government grants which are intended to compensate the Group for expenses incurred are recognized as other income (government grants) in profit or loss over the periods in which the Group recognizes the related costs as expenses. If the Group has received government grants whose primary condition is that the Group purchase, construct or otherwise acquire long-term assets, the amounts are deducted in calculating the carrying amount of the asset. The grant is recognized in profit or loss over the life of a depreciable asset as a reduction to depreciation expense.

As of December 31, 2016 the Group has 8 ongoing national projects on which government grants are provided.

(18) Finance income and costs

Finance income comprises interest income on funds invested (including available-for-sale financial assets), dividend income, changes in the fair value of financial assets at fair value through profit or loss, and gains on hedging instruments that are recognized in profit or loss. Interest income is recognized as it accrues in profit or loss, using the effective interest method.

Finance costs comprise interest expense on borrowings, unwinding of the discount on provisions, changes in the fair value of financial assets at fair value through profit or loss, and losses on hedging instruments that are recognized in profit or loss. Borrowing costs are recognized in profit or loss using the effective interest method.

(19) Income taxes

Income tax expense comprises current and deferred tax. Current tax and deferred tax are recognized in profit or loss except to the extent that it relates to a business combination, or items recognized directly in equity or in other comprehensive income.

1) Current tax

Current tax is the expected tax payable or receivable on the taxable profit or loss for the year, using tax rates enacted or substantively enacted at the end of the reporting period and any adjustment to tax payable in respect of previous years. The taxable profit is different from the accounting profit for the period since the taxable profit is calculated excluding the temporary differences, which will be taxable or deductible in determining taxable profit (tax loss) of future periods, and non-taxable or non-deductible items from the accounting profit.

3. Significant Accounting Policies, Continued

(19) Income taxes, continued

2) Deferred tax

The measurement of deferred tax assets and deferred tax liabilities reflects the tax consequences that would follow from the manner in which the Group expects, at the end of the reporting period to recover or settle the carrying amount of its assets and liabilities. The Group recognizes a deferred tax liability for all 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 differences and it is probable that the temporary differences will not reverse in the foreseeable future. A deferred tax asset is recognized for all deductible temporary differences to the extent that it is probable that the differences will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilized.

The carrying amount of a deferred tax asset is reviewed at the end of each reporting period and reduces the carrying amount to the extent that it is no longer probable that sufficient taxable profit will be available to allow the benefit of part or all of that deferred tax asset to be utilized.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply to the period when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period.

Deferred tax assets and liabilities are offset only if there is a legally enforceable right to offset the related current tax liabilities and assets, and they relate to income taxes levied by the same tax authority and they intend to settle current tax liabilities and assets on a net basis.

(20) Earnings per share

The Group presents basic and diluted earnings per share (the “EPS”) data for its ordinary shares. Basic EPS is calculated by dividing the profit or loss attributable to ordinary shareholders of the Parent Company by the weighted average number of ordinary shares outstanding during the period, adjusted for own shares held. Diluted EPS is determined by adjusting the profit or loss attributable to ordinary shareholders and the weighted average number of ordinary shares outstanding, adjusted for the effects of all dilutive potential ordinary shares, which comprise share options granted to employees.

(21) Operating segment

The Group has three reportable segments: the chemicals business segment, electronic materials business segment and energy and other business segment. Strategic operations are operated separately because each segment is manufacturing different products respectively and requires different technologies and marketing strategies.

The performance of the operating segment is assessed based on profit attributable to owners of the Parent Company of each segment, which is considered to be useful for the management to compare the Group’s performance in a specific segment with other companies in the same industry.

3. Significant Accounting Policies, Continued

(22) Non-current assets held-for-sale

If the carrying amount of non-current assets held for sale or disposal group is highly probable to be recovered through sale other than from continuing operation, those assets are classified as non-current assets held for sale. The asset (or, disposal group) must be available for immediate sale and the sale is highly probable to be classified as held for sale. Immediately before the initial classification of the asset (or, disposal group) as held for sale, the carrying amount of the asset will be measured at the lower of carrying amount and fair value less costs to sell.

Any subsequent decrease in fair value less costs to sell of an asset, recognized impairment loss at the time of classification as held for sale, may result in an immediate charge to profit or loss and gain for any subsequent increase in fair value less costs to sell of an asset can be recognized in the profit or loss to the extent that it is not in excess of the cumulative impairment loss that has been recognized previously.

Non-current assets or disposal groups that are classified as held for sale are not depreciated.

(23) Emissions Rights

The Company accounts for greenhouse gases emission right and the relevant liability as below pursuant to the Act on Allocation and Trading of Greenhouse Gas Emission which became effective in 2015.

1) Greenhouse Gases Emission Right

Greenhouse Gases Emission Right consists of emission allowances which are allocated from the government free of charge or purchased from the market. The cost includes any directly attributable costs incurred during the normal course of business.

Emission rights held for the purpose of performing the obligation is classified as intangible asset and is initially measured at cost and after initial recognition, are carried at cost less accumulated impairment losses. Emission rights held for short-swing profits are classified as current asset and are measured at fair value with any changes in fair value recognized as profit or loss in the respective reporting period.

The Company derecognizes an emission right asset when the emission allowance is unusable, disposed or submitted to government in which the future economic benefits are no longer expected to be probable.

2) Emission liability

Emission liability is a present obligation of submitting emission rights to the government with regard to emission of greenhouse gas. Emission liability is recognized when it is probable that outflows of resources will be required to settle the obligation and the costs required to perform the obligation are reliably estimable. Emission liability is an amount of estimated obligations for emission rights to be submitted to the government for the performing period. The emission liability is measured based on the expected quantity of emission for the performing period in excess of emission allowance in possession and the unit price for such emission rights in the market at the end of the reporting period.

The Group expects that the emission of greenhouse gas will be approximately 379 thousand ton which is less than the emission allowance in possession. Also, the Group does not hold any emission allowances held for sale.

3. Significant Accounting Policies, Continued

(24) New standards and interpretations not yet adopted

A number of new standards and amendments to standards are effective for annual periods beginning after January 1, 2018 and earlier application is permitted; however, the Group has not early adopted the following new or amended standards in preparing these consolidated financial statements.

K-IFRS No. 1109, Financial Instruments

In September 25, 2015, K-IFRS No. 1109 Financial Instruments was issued. K-IFRS No. 1109 is effective for annual periods beginning on or after 1 January 2018, with early adoption permitted. The new standard replaces existing K-IFRS No. 1039 Financial Instruments: Recognition and Measurement. The Group currently plans to apply K-IFRS No. 1109 initially on 1 January 2018.

Changes in accounting policies resulting from the adoption of IFRS 9 will generally be applied retrospectively, except for the exemption allowing not to restate comparative information for prior periods with respect to classification and measurement (including impairment) changes. Also, new hedge accounting requirements will generally be applied prospectively except for the accounting of time value of option.

Key characteristics of K-IFRS No. 1109 are a new classification and measurement approach for financial assets that reflects the business model in which assets are managed and their cash flow characteristics, an impairment loss model of financial instruments based on expected credit loss, extension of hedged item and hedging instruments that meet the criteria of hedging accounting, or changes in approach to assessing hedge effectiveness.

Adoption of K-IFRS No. 1109 generally requires an analysis of financial impact, establishment of accounting policy, development of accounting system, and stabilization of system as preliminary work. The actual impact of adopting the new standard on the Group's consolidated financial statements in 2018 may be different depending on the financial instruments that the Group holds and economic conditions at that time as well as accounting elections and judgments that it will make in the future.

As of December 31, 2016, the Group has not revised its accounting processes and internal controls related to reporting financial instruments and has not performed a preliminary assessment of the potential impact of adoption of K-IFRS No. 1109. The Group plans to analyze the financial impact of adopting K-IFRS No. 1109 by the third quarter of 2017 and disclose the results on the 2017 financial statements. General potential impacts on the Group's financial statements for each of important items are as follows.

① Classification and measurement of financial assets

When the new K-IFRS No. 1109 is applied, the Group shall classify financial assets on the basis of the business model in which assets are managed and their cash flow characteristics. As it is shown on the following table, the financial assets are classified into three categories; amortized cost, fair value through other comprehensive income (FVTOCI), and fair value through profit or loss (FVTPL). Derivatives embedded in contracts where the host is a financial asset in the scope of the stand are never bifurcated. Instead, the hybrid financial instrument as a whole is assessed for classification.

The criteria for measuring financial assets at amortized cost or FVTOCI under new K-IFRS No. 1109 are stricter than the criteria under existing K-IFRS No. 1039. Therefore, when the new standard is adopted, volatility in the Group's profits may increase as the financial assets that are measured at FVTPL increase.

3. Significant Accounting Policies, Continued

(24) New standards and interpretations not yet adopted, continued

① Classification and measurement of financial assets, continued

As of December 31, 2016, the Group holds ₩ 3,084,124 million of loans and receivables, ₩ 382 million of held-to-maturity financial assets, ₩ 1,247,541 million of available-for-sale financial assets, and ₩ 250,009 million of financial assets at fair value through profit or loss

② Classification and measurement of financial liability

Under new K-IFRS No. 1109, gain or loss on a financial liability that is designated as at FVTPL shall be presented as follows: the amount of change in the fair value of the financial liability that is attributable to changes in the credit risk of that liability shall be presented in other comprehensive income and this amount shall not be subsequently recycled to profit or loss. However, if recognizing fair value changes that are attributable to changes in the financial liability's credit risk as other comprehensive income would create or enlarge an accounting mismatch, all fair value changes shall be recognized in profit or loss.

As partial of profit or loss currently recognized under existing K-IFRS No. 1039 for fair value changes of financial liabilities designated as at FVTPL shall be presented as other comprehensive income, profit or loss related to valuation of financial liabilities may decrease.

③ Impairment: Financial asset and Contract asset

Under current K-IFRS No. 1039, on the basis of incurred loss model, impairment loss is recognized when an objective evidence indicates that impairment loss has incurred. However, under new K-IFRS No. 1109, impairment loss for debt instruments, lease receivables, contract assets, loan commitment, and financial guarantee contracts measured at amortized cost or FVTOCI shall be recognized on the basis of expected credit loss (ECL) impairment model.

Under K-IFRS No. 1109, loss allowances are measured on the basis of 3 stages as it is shown on the table and are measured on either 12-month ECL or lifetime ECL based on increase of credit risk since the initial recognition of financial assets. Therefore, under No. 1109, credit loss may be recognized earlier than under the incurred loss model of No. 1039.

Stages		Loss Allowance
Stage 1	Credit risk has not increased significantly since initial recognition	12-month ECL: ECLs that result from possible default events within the 12 month after the reporting date
Stage 2	Credit risk has increased significantly since initial recognition	Lifetime ECL: ECLs that result from all possible default events over the expected life of a financial instrument
Stage 3	Credit has been impaired	

Under K-IFRS No. 1109, only cumulative changes of lifetime ECLs are recognized as loss allowances for financial assets of which credit is impaired at the initial recognition.

3. Significant Accounting Policies, Continued

(24) New standards and interpretations not yet adopted, continued

K-IFRS No. 1115, Revenue from Contracts with Customers

In September 25, 2015, K-IFRS No. 1115 Revenues from Contracts with Customers was issued. K-IFRS No. 1115 is effective for annual periods beginning on or after 1 January 2018, with early adoption permitted. The new standard replaces existing revenue recognition guidance, including K-IFRS No. 1018 Revenue, No. 1011 Construction Contracts, No. 2031 Revenue: Barter Transactions Involving Advertising Services, No. 2113 Customer Loyalty Programs, No. 2115 Agreements for the Construction of Real Estate, No. 2118 Transfers of Assets from Customers. The Group plans to adopt K-IFRS No. 1115 in its consolidated financial statements for the year ended 31, December 2018, using the retrospective approach for the comparative prior reporting periods in accordance with K-IFRS No. 1008 Accounting Policies, Changes in Accounting Estimates and Errors, and plans to use practical.

Revenues are recognized based on the type of transactions such as sale of goods, provision of services, interest revenues, royalty revenues, dividend revenues, and construction contract under existing K-IFRS No. 1018. However, under the new standard, revenues are recognized using the 5-step revenue recognition model (① Identification of contracts → ② Identification of the performance obligations → ③ Determination of transaction price→ ④ Allocation of the transaction price to the performance obligations → ⑤ Recognition of revenue upon the satisfaction of performance obligation) for all contract types.

As of December 31, 2016, the Group has not revised its accounting processes and internal controls related to reporting financial instruments and has not performed a preliminary assessment of the potential impact of adoption of K-IFRS No. 1115. The Group plans to analyze the financial impact of adopting K-IFRS No. 1115 and disclose the results on the 2017 financial statements.

4. Financial Risk Management

The Group has exposure to the credit risk, liquidity risk and market risk. This note presents information about the Group's exposure to each of the above risks, the Group's objectives, policies and processes for measuring and managing risk, and the Group's management of capital. Further quantitative disclosures are included throughout these consolidated financial statements.

(1) Credit risk

Credit risk is the risk of financial loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations. The Group's exposure to credit risk is influenced mainly by the individual characteristics of each customer. Most customers have been transacting with the Group for many years and impairment loss has not occurred very often. In addition, the Group reviews credit rating of new customers prior to the determination of payment terms and also re-examines the credit rating of customers on a regular basis.

The Group sets allowances for estimated losses from accounts receivable and investment assets. In addition, the Group reports present conditions and countermeasures of delayed recovery for the financial assets and takes reasonable steps depending on the reasons for delay in order to manage the credit risk.

1) Exposure to credit risk

The carrying amount of financial assets represents the maximum credit exposure. The Group limits its exposure to credit risk by depositing cash and cash equivalents in financial institutions that have a high credit rate. The maximum exposure to credit risk at the reporting date as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Cash and cash equivalents	₩	1,011,701,875	1,287,968,374
Trade and other receivables, net		1,052,536,296	1,272,000,532
Held-to-maturity financial assets		382,050	401,775
Non-derivative financial instruments		875,886,507	548,045,664
Guarantee deposits		144,594,868	146,478,433
Total	₩	3,085,101,596	3,254,894,778

The maximum exposure to credit risk for trade and other receivables at the reporting date by geographic region as of December 31, 2016 and 2015 are as follows:

(In thousands of won)		2016	2015
Domestic	₩	197,417,857	373,065,641
North America		87,044,685	72,230,897
Europe		155,692,705	120,708,567
China		366,523,878	369,145,141
Other		245,857,171	336,850,286
Total	₩	1,052,536,296	1,272,000,532

4. Financial Risk Management, Continued

(1) Credit risk, continued

2) Impairment loss

The aging of trade and other receivables and respective impaired amounts as of December 31, 2016 and 2015 are as follows:

(In thousands of won)		**2016**		**2015**	
		Gross	**Impairment**	**Gross**	**Impairment**
Not past due	₩	979,218,165	-	1,214,093,354	
Past due 1-30 days		43,214,478	-	44,159,376	-
Past due 31-60 days		1,406,974	-	3,601,883	-
Past due over 61 days		28,696,679	34,120	10,145,919	1,877,267
Total	₩	1,052,536,296	34,120	1,272,000,532	1,877,267

3) Financial assets that are past due but not impaired

Financial assets that are past due but not impaired as of December 31, 2016 are as follows:

(In thousands of won)		**Carrying amount**	**Less than 6 months**	**Over 6 months**
Trade and other receivables	₩	73,284,011	55,787,133	17,496,878

Financial assets that are past due but not impaired as of December 31, 2015 are as follows:

(In thousands of won)		**Carrying amount**	**Less than 6 months**	**Over 6 months**
Trade and other receivables	₩	56,029,911	50,434,431	5,595,480

(2) Liquidity risk

Liquidity risk is the risk that the Group will encounter difficulty in meeting the obligations associated with its financial liabilities that are settled by delivering cash or another financial asset. The Group's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Group's reputation.

The Group monitors its cash flows through long-term and short-term management strategies and ensures it has sufficient cash on demand to meet expected operational expenses. This excludes the potential impact of extreme circumstances that cannot reasonably be predicted.

The Group establishes short-term and long-term cash management plans to manage liquidity risk. The Group matches maturity structures of financial assets and liabilities through analyzing and reviewing cash flow budget and actual cash flow. Management believes that the Group is able to redeem its financial liabilities through operating cash flows and cash inflows of financial assets.

4. Financial Risk Management, Continued

(2) Liquidity risk, continued

Maturity analysis of financial liabilities as of December 31, 2016 is as follows:

(In thousands of won)		Carrying amount	Contractual Cash flow	1 Year or less	More than 1 year and less than 5 years	More than 5 years
Trade and other payable	₩	971,677,249	971,677,249	862,829,251	108,847,998	-
Short-term borrowings		383,960,819	390,417,329	390,417,329	-	-
Long-term borrowings		566,585,622	591,038,945	11,003,525	580,035,420	-
Forward exchange(*)		5,472,497	2,942,177	-	2,942,177	-
Total	₩	1,927,696,187	1,956,075,700	1,264,250,105	691,825,595	-

(*) Cash flow for forward exchange is net of inflow and outflow of contractual cash flow.

(3) Market risk

Market risk is the risk that changes in market prices, such as foreign exchange rates, interest rates and equity prices will affect the Group's income or the value of its holdings of financial instruments. The objective of market risk management is to manage and control market risk exposures within acceptable parameters, while optimizing the return.

1) Exchange rate risk

The Group has exposure to the exchange rate risk for the sale, purchase, and borrowing of currencies not denominated in functional currency. Main currencies used for these transactions are EUR, USD, JPY and etc. The Group manages the exchange rate risk through currency forward transactions as considered necessary in order to hedge the exchange risk.

Carrying amounts of monetary assets and liabilities expressed as other than functional currency as of December 31, 2016 and 2015 are as follows:

(In thousands of won)		2016			2015		
		USD	EUR	JPY, etc.	USD	EUR	JPY, etc.
Monetary assets :							
Cash and cash equivalents	₩	316,396,684	2,623,658	44,680,023	206,030,690	825,907	3,654,458
Trade and other receivables		787,373,129	15,129,804	280,640	883,650,248	51,796,065	8,943,985
Other investments		233,681	2,871	81,650	371,323	2,900	138,380
Total	₩	1,104,003,494	17,756,333	45,042,313	1,090,052,261	52,624,872	12,736,823
Monetary liabilities:							
Trade and other payables	₩	283,169,526	11,631,786	42,028,270	715,509,820	11,886,311	37,240,964
Borrowings		206,335,842	1,021,364	-	451,202,359	41,977,083	5,506,400
Total	₩	489,505,368	12,653,150	42,028,270	1,166,712,179	53,863,394	42,747,364

4. Financial Risk Management, Continued

(3) Market risk, continued

1) Exchange rate risk, continued

The following exchange rates were applied during the years ended December 31, 2016 and 2015:

(In Won)	Average rate		Reporting date spot rate	
Currency	**2016**	**2015**	**2016**	**2015**
USD	1,160.4	1,131.0	1,208.5	1,172.0
EUR	1,284.0	1,255.6	1,267.6	1,280.5
JPY	10.68	9.35	10.37	9.72

Effects on income (loss) after income taxes as a result of change in exchange rate as of December 31, 2016 and 2015 are as follows:

(In thousands of won)	2016		2015	
Currency	**If increased by 5%**	**If decreased by 5%**	**If increased by 5%**	**If decreased by 5%**
USD	23,289,479	(23,289,479)	(2,905,411)	2,905,411
EUR	193,411	(193,411)	(46,940)	46,940
JPY, etc.	114,232	(114,232)	(1,137,400)	1,137,400

The Group entered into 4 foreign exchange forwards contracts to hedge the currency risk of SAPB's repayment of long-term borrowings. Details of the Group's foreign exchange forwards are as follows:

(In CNY, USD)

Selling Currency	**Selling Amount**	**Buying Currency**	**Buying Amount**	**Forward Rate**
CNY	615,870,000	USD	90,000,000	6.843
CNY	307,800,000	USD	45,000,000	6.840
CNY	68,760,000	USD	10,000,000	6.876
CNY	176,350,000	USD	25,000,000	7.054

As of December 31, 2016, the carrying amount of the foreign exchange forwards is ₩ 5,472 million, and the Group recognized gain on fair value evaluation of derivatives amounting ₩ 5,341 million.

4. Financial Risk Management, Continued

(3) Market risk, continued

2) Interest rate risk

The Group entered into interest rate swaps contracts in order to hedge the interest rate fluctuation risk for certain borrowings.

(i) The interest rate profile of the Group's interest-bearing financial instruments as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Fixed interest rate:			
Short-term borrowings	₩	205,237,725	500,148,934
Long-term borrowings		299,252,552	504,756,963
Sub-total	₩	504,490,277	1,004,905,897
Floating interest rate:			
Short-term borrowings	₩	178,723,094	547,041,430
Long-term borrowings		267,333,070	197,693,045
Sub-total		446,056,164	744,734,475
Total	₩	950,546,441	1,749,640,372

(ii) Fair value sensitivity analysis for fixed rate instruments

Debentures and borrowings at amortized cost bear fixed interest rates. Therefore, change in interest rates at the reporting date would not affect the Group's profit or loss.

(iii) Cash flow sensitivity analysis for variable rate instruments

Under assumption that all other variables remain constant, change of one percent point in interest rate would have increased (decreased) equity and income after income taxes by the amounts shown below as of December 31, 2016 and 2015.

(In thousands of won)		Equity		Profit after income taxes	
		If increased by 1%	If decreased by 1%	If increased by 1%	If decreased by 1%
2016	₩	(3,381,106)	3,381,106	(3,381,106)	3,381,106
2015		(5,645,087)	5,645,087	(5,645,087)	5,645,087

4. Financial Risk Management, Continued

(3) Market risk, continued

3) Other market price risk

Market price risk arises from the available-for-sale financial assets that the Group possesses. Major investments within the portfolio are managed separately and the approval of the Board of Directors is necessary for significant acquisition or sale decisions.

The effect on other comprehensive income (gains/losses on valuation of available-for-sale financial assets), when the price of listed equity financial assets that the Group possesses, changed by five percent points as of December 31, 2016 is as follows:

(In thousands of won)		**December 31, 2016**	
		If increased by 5%	**If decreased by 5%**
Total comprehensive income, net of tax effect	₩	42,907,188	(42,907,188)

(4) Capital management

The Group's capital management is to maintain a sound capital structure and to maximize shareholders' profit. The Group uses financial ratios such as debt ratio and net borrowings ratio as a capital management indicator to achieve the optimum capital structure. Debt to equity ratio is calculated as total debt divided by total equity and net borrowings to equity ratio is calculated as net borrowings divided by total equity.

(In thousands of won)		**2016**	**2015**
Debt to equity ratio:			
Total liabilities	₩	3,936,201,007	4,972,110,605
Total equity		10,964,110,227	11,253,192,853
Debt to equity ratio		35.9%	44.2%
Net borrowings to equity ratio:			
Borrowings	₩	950,546,441	1,749,640,372
Less : Cash and cash equivalents		(1,011,701,875)	(1,287,968,374)
Less : Short-term financial instruments		(875,861,007)	(543,881,171)
Net borrowings	₩	(937,016,441)	(82,209,173)
Net borrowings to equity ratio		(8.5%)	(0.7%)

4. Financial Risk Management, Continued

(5) Fair values

1) Fair value versus carrying amounts

The fair values of financial assets and liabilities, together with the carrying amounts shown in the statement of financial position, as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016		2015	
		Carrying amount	**Fair value**	**Carrying amount**	**Fair value**
Financial assets:					
Assets carried at fair value					
Available-for-sale financial assets(*)	₩	1,224,037,462	1,224,037,462	1,177,756,457	1,177,756,457
Financial assets designated at fair value through profit or loss		250,009,000	250,009,000	-	-
Derivative financial assets		41,077,566	41,077,566	-	-
Subtotal	₩	1,515,124,028	1,515,124,028	1,177,756,457	1,177,756,457
Assets carried at amortized cost					
Cash and cash equivalents	₩	1,011,701,875	1,011,701,875	1,287,968,374	1,287,968,374
Trade receivables and other receivables		1,051,940,382	1,051,940,382	1,269,137,646	1,269,137,646
Available-for-sale financial assets		23,503,350	23,503,350	21,525,701	21,525,701
Held-to-maturity financial assets		382,050	382,050	401,775	401,775
Financial instruments		875,886,507	875,886,507	548,045,664	548,045,664
Guarantee deposits		144,594,868	144,594,868	146,478,433	146,478,433
Subtotal	₩	3,108,009,032	3,108,009,032	3,273,557,593	3,273,557,593
Total financial assets	₩	4,623,133,060	4,623,133,060	4,451,314,050	4,451,314,050
Financial liabilities:					
Liabilities carried at fair value					
Derivative financial liabilities	₩	19,211,000	19,211,000	-	-
Subtotal		19,211,000	19,211,000	-	-
Liabilities carried at amortized cost					
Borrowings	₩	950,546,441	953,326,040	1,749,640,372	1,754,143,409
Trade and other payables		971,677,249	971,677,249	1,800,790,644	1,800,790,644
Subtotal		1,922,223,690	1,925,003,289	3,550,431,016	3,554,934,053
Total financial liabilities	₩	1,941,434,690	1,944,214,289	3,550,431,016	3,554,934,053

(*) Available-for-sale financial assets classified as non-current assets held-for-sale as of December 31, 2015 are excluded

4. Financial Risk Management, Continued

(5) Fair values, Continued

2) Interest rates used for determining fair value

The interest rates used to discount estimated cash flows, when applicable, are based on the treasury bond yield curve at the reporting date plus an adequate credit spread, and were as follows:

	2016	2015
Borrowings	2.06%	2.12%

3) Fair value hierarchy

The Group classifies financial instruments carried at fair value in the statement of financial position according to fair value hierarchy which reflects significance of input variables used. The different levels of fair value hierarchy have been defined as follows:

"Level 1" indicates quoted prices in active markets for identical assets or liabilities. Instruments included in "Level 1" are composed of listed equity securities that are classified as available-for-sale financial assets.

The Group uses a valuation technique to estimate fair values of financial instruments which are not traded in an active market. If the significant inputs which are required for a fair value measurement are observable directly or indirectly in a market, the fair value input is classed as "Level 2". "Level 2" consists of currency swap agreement which is classified as derivatives. On the other hand, if the significant inputs are not based on observable market data, the fair value input for that instrument is classed as "Level 3".

Among unlisted equity securities, the fair value of Hanwha Total Petrochemicals Co., Ltd. is estimated using the discounted cash flow method in income approach and the fair value of Samsung Venture Investment Corporation is estimated using the probability distribution of value per share in accordance with estimated price per share calculated by the free cash flows to equity method. The Korea Economic Daily are estimated by the continuous probability distribution of value per share in accordance with estimated price per share calculated by the discounted cash flow valuation model and Comparable company valuation multiples.

The Group estimated fair value of equity securities of Lotte Advanced Materials Co., Ltd. by discounted cash flow method in income approach. The Group also evaluated the fair value of put and call option that underlies on the price of Lotte Advanced Materials Co., Ltd.'s shares, by binomial tree model.

These unlisted equity securities and derivatives are classed as "Level 3".

4. Financial Risk Management, Continued

(5) Fair values, Continued

3) Fair value hierarchy, Continued

The fair values of financial instruments based on the fair value hierarchy as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		Level 1	Level 2	Level 3	Total
December 31, 2016:					
Financial assets					
Available-for-sale financial assets	₩	1,132,115,791	-	91,921,671	1,224,037,462
Financial assets designated at fair value through profit and loss		-	-	250,009,000	250,009,000
Derivative assets		-	5,472,566	35,605,000	41,077,566
Financial liabilities					
Derivative liabilities		-	-	19,211,000	19,211,000
December 31, 2015:					
Available-for-sale financial assets(*)	₩	1,085,659,912	-	92,096,545	1,177,756,457

(*) Available-for-sale financial assets classified as non-current-asset held-for-sale are excluded. .

(6) Transfer of financial assets and others

The list of transferred financial assets which are not derecognized in the statement of financial position as of December 31, 2016 and 2015 are as follows:

(In thousands of won)		Trade receivables	
		2016	2015
Carrying amount of assets	₩	89,648,227	402,264,929
Carrying amount of associated liabilities		89,648,227	402,264,929

5. Segments Information

(1) Operating segments

1) The Group has three reportable segments, which are summarized as follows:

Segment	Main business
Chemical(*)	Resin materials and petrochemicals including ABS and PS
Electronic material	Semi-conductor and display materials
Energy and other	Rechargeable lithium-ion batteries and other businesses

(*) The Group has disposed its chemical business to Lotte Chemical Corporation on April 29th, 2016.

2) The operating segments of the consolidated group are decided by management, which is established for strategic decision making. Management reviews the operating income for each operating segment in order to allocate resources to each segment and assess the segments' performance. The Group has three reportable segments which offer different products and services. The following table provides information for each reportable segment for the years ended December 31, 2016 and 2015.

(i) 2016

(In thousands of won)		Revenues	Depreciation	Amortization	Operating profit (loss)
Chemical(*1)	₩	872,583,760	5,480,803	1,652,660	148,318,038
Electronic material		1,770,637,897	78,981,632	52,383,511	177,603,974
Energy and other(*2)		3,430,184,613	276,002,013	40,505,781	(1,103,936,608)
Total	₩	6,073,406,270	360,464,448	94,541,952	(778,014,596)

(ii) 2015

(In thousands of won)		Revenues	Depreciation	Amortization	Operating profit (loss)
Chemical(*1)	₩	2,614,469,494	76,892,992	17,877,615	207,661,869
Electronic material		1,642,146,662	79,672,647	54,637,582	228,164,598
Energy and other(*2)		3,312,714,684	376,555,602	57,806,718	(495,658,493)
Total	₩	7,569,330,840	533,121,241	130,321,915	(59,832,026)

(*1) Operation results from chemical business is classified as profit from discontinued operations.
(*2) The Group recognized impairment loss for non-financial assets of energy segment.

Total assets and total liabilities of each segment is not presented since the information is not provided to management on a regular basis.

5. Segments Information, Continued

(2) Geographical information

The Group operates in global markets such as Korea (the Parent Company's domicile), North America, Europe, South America, China, South-eastern Asia, and so on. The following table provides information for each geographical region as of and for the years ended December 31, 2016 and 2015.

(In thousands of won)

		2016		2015	
		Revenue(*1)	**Non-current assets(*2)**	**Revenue(*1)**	**Non- current assets(*2)**
Korea	₩	1,020,106,024	2,298,090,583	1,300,538,671	3,583,270,511
North America		354,319,961	14,649,695	96,188,673	14,287,309
Europe and South America		853,326,757	140,095,153	664,379,523	124,533,475
China		1,233,903,366	793,865,665	1,293,713,917	521,073,121
South-eastern Asia and etc.		1,739,166,402	335,003,243	1,600,040,563	364,251,334
Consolidation adjustments		-	9,460,617	(2,173,291,761)	127,348,658
Total	₩	5,200,822,510	3,591,164,956	4,954,861,346	4,734,764,408

(*1) As described in Note 30, the Group's related party transactions comprise more than 10% of the Group's consolidated revenue.

(*2) Non-current assets include carrying amount of property, plant and equipment, intangible assets and investment property.

6. Cash and Cash Equivalents

Cash and cash equivalents as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Cash on hand	₩	1,706,452	2,762,698
Demand deposits		996,481,334	759,717,196
Short-term investments		13,514,089	525,488,480
Total	₩	1,011,701,875	1,287,968,374

7. Trade and Other Receivables

(1) Trade and other receivables as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016		2015	
		Current	Non-current	Current	Non-current
Loans	₩	1,123,236	5,578,657	1,353,807	9,153,645
Present value discount		-	(432,999)	-	(769,474)
Other account receivables		131,184,014	-	133,761,849	55,265,779
Allowance		(157)	-	(66,370)	-
Accrued income		13,427,259	-	78,534,530	-
VAT receivables		120,681,465	-	68,036,632	-
Trade account receivable		780,541,665	-	922,975,851	2,918,439
Allowance		(162,758)	-	(1,306,997)	(720,045)
Total	₩	1,046,794,724	5,145,658	1,203,289,302	65,848,344

(2) Changes in allowance for trade and other receivables for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016		2015	
		Current	Non-current	Current	Non-current
Balance at beginning	₩	1,373,367	720,045	721,682	798,155
Business combination(Spin-off)		(753,712)	(485,715)	22,572	-
Write off		(513,193)	(234,330)	(174,304)	-
(Reversal of) Bad debt expense		56,453	-	803,417	(78,110)
Balance at ending	₩	162,915	-	1,373,367	720,045

8. Inventories

(1) Inventories as of December 31, 2016 and 2015 are summarized as follows:

1) 2016

(In thousands of won)		Acquisition cost	Allowance for valuation	Carrying amount
Merchandize	₩	637,079	-	637,079
Finished goods		254,347,454	(35,020,988)	219,326,466
Semi-finished goods		278,453,987	(26,567,889)	251,886,098
Raw materials		183,171,979	(7,994,956)	175,177,023
Supplies		13,357,270	-	13,357,270
Materials-in-transit		60,602,154	-	60,602,154
Other inventories		8,072,484	-	8,072,484
Total	₩	798,642,407	(69,583,833)	729,058,574

8. Inventories, Continued

(1) Inventories as of December 31, 2016 and 2015 are summarized as follows:, Continued

2) 2015

(In thousands of won)		Acquisition cost	Allowance for valuation	Book value
Merchandize	₩	3,863,458	-	3,863,458
Finished goods		256,299,697	(32,368,738)	223,930,959
Semi-finished goods		248,833,278	(20,224,083)	228,609,195
Raw materials		218,041,505	(2,583,625)	215,457,880
Supplies		18,972,434	-	18,972,434
Materials-in-transit		58,071,908	-	58,071,908
Other inventories		1,044,368	-	1,044,368
Total	₩	805,126,648	(55,176,446)	749,950,202

(2) The amount of inventories expensed as cost of sales and loss on valuation of inventories for the years ended December 31, 2016 and 2015 are as follows:

(In thousands of won)		2016	2015
Inventories recognized as cost of sales	₩	4,431,517,874	4,092,034,163
Loss on valuation of inventories		18,732,144	22,708,325
Total	₩	4,450,250,018	4,114,742,488

9. Other Investments

(1) Other investments as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016		2015	
		Current	Non-current	Current	Non-current
Held for maturity financial assets	₩	-	382,050	-	401,775
Available-for-sale financial assets		-	1,247,540,812	-	1,199,282,158
Financial assets designated at fair value through profit and loss		-	250,009,000	-	-
Financial instruments		875,861,007	25,500	543,881,171	4,164,493
Guarantee deposits		56,838,733	87,756,135	51,676,957	94,801,476
Derivatives financial assets		-	41,077,566	-	-
Total	₩	932,699,740	1,626,791,063	595,558,128	1,298,649,902

9. Other Investments, Continued

(2) Available-for-sale financial assets as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)

			Unrealized gain (loss)				
		Acquisition cost	Beginning balance	Changes in unrealized gain or loss	Ending balance	Allowances for impairment	Carrying amount
December 31, 2016							
Listed equity securities	₩	1,025,363,499	566,943,499	(99,589,990)	467,353,509	(360,601,217)	1,132,115,791
Unlisted equity securities		128,386,182	(12,827,544)	(133,617)	(12,961,161)	-	115,425,021
Total	₩	1,153,749,681	554,115,955	(99,723,607)	454,392,348	(360,601,217)	1,247,540,812
Tax effect	₩		(133,584,495)	23,395,594	(110,188,901)		
December 31, 2015							
Listed equity securities	₩	877,689,909	1,085,180,542	(518,237,042)	566,943,500	(358,973,497)	1,085,659,912
Unlisted equity securities		126,535,597	95,403,652	(108,231,114)	(12,827,462)	(85,889)	113,622,246
Total	₩	1,004,225,506	1,180,584,194	(626,468,156)	554,116,038	(359,059,386)	1,199,282,158
Tax effect	₩		(285,805,881)	152,221,366	(133,584,515)		

1) The Group estimates fair values of certain unlisted equity securities as follows:

- The fair value of Hanwha General Chemical Co., Ltd. is estimated using the discounted cash flow method in income approach. The acquisition cost and the carrying value of the unlisted security are ₩78,672 million and ₩ 58,994 million, respectively, as of December 31, 2016. As mentioned in note 19, the Group entered into a contract with third party regarding this equity instrument.

- The fair value of Samsung Venture Investment Corporation is estimated using the free cash flows to equity method. The acquisition cost and the carrying value of the unlisted security are ₩4,900 million and ₩7,060 million, respectively, as of December 31, 2016.

- The fair value of The Korea Economic Daily is estimated using the discounted cash flow model and comparable company valuation multiples. The acquisition cost and the carrying value of the unlisted security are ₩9,073 million and ₩14,614 million, respectively, as of December 31, 2016.

- Unlisted equity securities of 12 companies including iMarket Asia Co., Ltd. and debt securities of 2 companies including XG Sciences are valued at acquisition costs net of impairment loss as they are nonmarketable and fair value cannot be estimated reliably. The acquisition cost and the carrying value of those securities are ₩23,503 million.

2) The Group has disposed portion of its shares of Hanwha General Chemical Co., Ltd. during the period ended December 31, 2015. The Group has right for contingent considerations dependent to operation result of Hanwha Total Petrochemical Co., Ltd. The possibility for cash inflow of the contingent consideration cannot be measured reliably as of December 31, 2016.

3) The Group recognized impairment loss of ₩1,628 million due to significant and prolonged decrease of fair value of Samsung Heavy Industries Co., Ltd. below its acquisition cost.

(3) The Group has sold 90% of its ownership in Lotte Advanced Materials Co., Ltd, the spin-off company of the Group's chemical business. As stated in Note 19 to the consolidated financial statements, the remaining shares of Lotte Advanced Materials Ltd. can be disposed upon exercise of call option by Lotte Chemical Corporation, or exercise of put option by the Group. The remaining shares are classified as financial assets at fair value through profit and loss, and its fair value was evaluated by discounted cash-flow model in income approach. The acquisition cost and carrying amount of the shares as of December 31, 2016 are ₩ 258,500 million and ₩ 250,009 million, respectively.

10. Other Current Assets and Non-current Assets

Other current and non-current assets as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016		2015	
		Current	Non-current	Current	Non-current
Advance payments	₩	125,082,968	19,709,347	32,548,715	-
Prepaid expenses		29,034,736	119,509,615	38,803,007	127,352,038
Prepaid income tax		4,548,322	-	7,358,472	11,120,201
Total	₩	158,666,026	139,218,962	78,710,194	138,472,239

11. Equity-method-accounted Investees

(1) The equity-method accounted investees of the Group as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)			2016		2015	
Associates:	Country	Primary business	Percentage of ownership	Carrying amount	Percentage of ownership	Carrying amount
Samsung Display Ltd.("SDC") (*)	Korea	Manufacturing and sale of LCD, OLED	15.2%	₩ 5,477,456,629	15.2%	₩ 5,120,790,592
Samsung Economic Research Institute Ltd. ("SERI")	Korea	Management advisory consulting	29.6%	22,905,607	29.6%	27,011,254
Intellectual Keystone Technology ("IKT")	U.S.A	Investing in new technology	41.0%	12,937,228	41.0%	12,547,054
Sungrow-Samsung SDI Energy Storage Power Supply Co., Ltd. ("SSEP")	China	Manufacturing ESS products	35.0%	3,296,794	35.0%	4,024,017
SD Flex Co., Ltd.	Korea	Manufacturing printed-circuit board	50.0%	8,974,652	50.0%	8,550,975
Total				₩ 5,525,570,910		₩ 5,172,923,892

(*) Although the Group owns less than 20% of its shares and voting rights, the Group has classified the shares equity-accounted investees due to the fact that the Group has representations in the board of directors of SDC.

Fiscal year of equity-method accounted investees ended on December 31, 2016.

11. Equity-accounted Investees, Continued

(2) The summarized financial information of equity-accounted investees as of and for the years ended December 31, 2016 and 2015 are summarized as follows:

1) 2016

(In thousands of won)		SDC	SERI	IKT	SSEP	SDFLEX
Current assets	₩	17,208,125,641	59,708,137	4,891,354	17,278,465	14,382,192
Non-current assets		30,421,181,486	48,965,954	37,568,475	11,241,831	4,584,316
Current liabilities		8,108,138,158	21,245,500	10,905,615	19,100,885	834,109
Non-current liabilities		3,040,696,756	10,044,783	-	-	183,095
Revenue		26,816,450,315	156,717,534	7,252,742	14,096,770	9,969,756
Operating profit (loss)		2,104,306,004	(1,514,896)	(5,798)	(2,996,902)	756,747
Net income (loss)		1,618,022,813	199,016	(1,366)	409,635	798,865
Other comprehensive income (loss)		721,849,127	(14,049,749)	1,130,570	(1,700,658)	-
Total comprehensive income (loss)		2,339,871,940	(13,850,733)	1,129,204	(1,291,023)	798,865

2) 2015

(In thousands of won)		SDC	SERI	IKT	SSEP	SDFLEX
Current assets	₩	16,947,132,688	62,897,899	5,731,696	7,754,491	14,964,043
Non-current assets		25,161,234,553	68,693,670	42,486,363	4,597,603	4,809,640
Current liabilities		6,758,263,823	22,303,316	17,615,487	854,904	2,224,992
Non-current liabilities		1,206,089,990	18,034,018	-	-	446,740
Revenue		27,446,418,864	165,781,758	7,068,453	-	13,089,700
Operating profit (loss)		2,187,219,473	783,340	106,712	(69,771)	1,300,798
Net income (loss)		1,841,636,699	240,722	108,052	790,070	1,253,785
Other comprehensive income		(233,526,548)	560,588	1,897,877	(47,579)	-
Total comprehensive income (loss)		1,608,110,151	801,310	2,005,929	742,491	1,253,785

11. Equity-accounted Investees, Continued

(3) The comparison between carrying amount of the investments and the investees' net assets based on the Group's percentage of ownership as of December 31, 2016 and 2015 are summarized as follows:

1) 2016

(In thousands of won)	SDC	SERI	IKT	SSEP	SDFLEX
Net assets(a)(*)	₩ 35,982,390,351	77,383,808	31,554,214	9,419,411	17,949,304
Percentage of ownership(b)	15.2%	29.6%	41.0%	35.0%	50.0%
Equity to net assets(axb)	5,477,456,629	22,905,607	12,937,228	3,296,794	8,974,652
Carrying amounts	5,477,456,629	22,905,607	12,937,228	3,296,794	8,974,652

2) 2015

(In thousands of won)	SDC	SERI	IKT	SSEP	SDFLEX
Net assets(a)(*)	₩ 33,639,387,485	91,254,235	30,602,572	11,497,190	17,101,951
Percentage of ownership(b)	15.2%	29.6%	41.0%	35.0%	50.0%
Equity to net assets(axb)	5,120,790,592	27,011,254	12,547,054	4,024,017	8,550,975
Carrying amounts	5,120,790,592	27,011,254	12,547,054	4,024,017	8,550,975

(*) Net asset of equity-accounted investees owned by the controlling interests

(4) Changes in investments in equity-accounted investees for the years ended December 31, 2016 and 2015 are as follows:

1) 2016

(In thousands of won)

Company	January 1, 2016	Acquisition (Disposition)	Dividends received	Share of profits(loss)	Other capital movements	December 31, 2016
SDC	₩ 5,120,790,592	-	-	245,015,927	111,650,110	5,477,456,629
SERI	27,011,254	-	-	53,079	(4,158,726)	22,905,607
IKT	12,547,054	-	-	(73,360)	463,534	12,937,228
SSEP	4,024,017	-	-	(131,992)	(595,231)	3,296,794
SDFLEX	8,550,975	-	-	315,080	108,597	8,974,652
Total	₩ 5,172,923,892	-	-	245,178,734	107,468,284	5,525,570,910

11. Equity-accounted Investees, Continued

(4) Changes in investments in equity-accounted investees for the years ended December 31, 2016 and 2015 are as follows: continued

2) 2015

(In thousands of won)

Company		January 1, 2015	Acquisition (Disposition)	Dividends received	Share of profits(loss)	Other capital movements	December 31, 2015
SDC	₩	4,882,490,386	-	-	274,507,970	(36,207,764)	5,120,790,592
SBPC		50,077,859	(50,782,918)	(3,592,523)	4,399,739	(102,157)	-
SERI		26,774,200	-	-	71,119	165,935	27,011,254
IKT		11,724,624	-	-	44,302	778,128	12,547,054
SSEP		-	3,764,145	-	276,524	(16,652)	4,024,017
SDFLEX		7,950,247	-	-	600,728	-	8,550,975
Total	₩	4,979,017,316	(47,018,773)	(3,592,523)	279,900,382	(35,382,510)	5,172,923,892

(5) None of the equity-accounted investees is a listed company as of December 31, 2016.

(6) No significant restriction exists on the Group's ability to transfer money from equity-accounted investees and redemption of borrowings or advances to equity-accounted investees.

(7) No contingent liability related to equity-accounted investees exists as of December 31, 2016.

12. Property, Plant and Equipment

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

(1) 2016

(In thousands of won)

		Land	Buildings and structures	Machinery	Tools, furniture and fixtures	Construction in progress	Total
Beginning balance	₩	597,578,882	1,291,199,569	939,794,767	141,307,123	259,081,386	3,228,961,727
Acquisition cost		597,578,882	2,604,393,100	2,488,276,975	448,260,604	259,081,386	6,397,590,947
Accumulated depreciation		-	(1,313,193,531)	(1,548,482,208)	(306,953,481)	-	(3,168,629,220)
Acquisitions and capital expenditure		16,891,379	23,369,654	17,186,403	42,771,383	854,816,893	955,035,712
Depreciation		-	(66,301,469)	(231,781,964)	(62,085,635)	-	(360,169,068)
Disposals		(20,639,717)	(20,643,157)	(28,084,847)	(3,993,213)	(15,468,009)	(88,828,943)
Impairment losses		-	(112,860,610)	(237,797,344)	(16,014,349)	-	(366,672,303)
Government grant		-	(588,240)	(11,258,451)	(8,504)	-	(11,855,195)
Business spin-off		(319,276,207)	(248,106,946)	(134,543,303)	(20,820,968)	(3,143,963)	(725,891,387)
Other		2,273,542	147,150,851	345,006,917	46,275,926	(637,644,119)	(96,936,883)
Exchange rate fluctuation		295,021	(21,080,132)	13,056,704	(5,251,472)	(16,868,832)	(29,848,711)
Ending balance	₩	277,122,900	992,139,520	671,578,882	122,180,291	440,773,356	2,503,794,949
Acquisition cost		277,122,900	2,472,541,590	2,533,733,211	449,960,401	440,773,356	6,174,131,458
Accumulated depreciation		-	(1,480,402,070)	(1,862,154,329)	(327,780,110)	-	(3,670,336,509)

Other amounts include reclassification of construction-in-progress to appropriate accounts such as investment property, property, plant and equipment, and expense accounts.

The Group recognized impairment loss as the estimated recoverable amount of assets in certain business segments is less than the carrying amount.

12. Property, Plant and Equipment, Continued

(2) 2015

(In thousands of won)

		Land	Buildings and structures	Machinery	Tools, furniture and fixtures	Construction in progress	Total
Beginning balance	₩	710,981,599	1,235,033,288	1,022,906,573	150,058,716	205,897,375	3,324,877,551
Acquisition cost		710,981,599	2,536,501,790	2,851,780,921	421,806,857	205,897,375	6,726,968,542
Accumulated depreciation		-	(1,301,468,502)	(1,828,874,348)	(271,748,141)	-	(3,402,090,991)
Acquisitions and capital expenditure		943,245	82,332,365	95,104,237	44,465,255	513,987,422	736,832,524
Business combinations		2,289,882	21,322,668	67,735,545	4,075,346	4,895,405	100,318,846
Depreciation		-	(87,541,654)	(352,944,880)	(91,747,045)	-	(532,233,579)
Disposals		(1,719,813)	(4,501,245)	(23,982,554)	(16,950,939)	(955,296)	(48,109,847)
Impairment losses		-	(8,090,454)	(114,014,378)	(13,864,754)	-	(135,969,586)
Government grant		-	-	(57,259,345)	-	-	(57,259,345)
Other		(115,023,023)	41,025,043	286,428,689	64,453,184	(464,442,640)	(187,558,747)
Exchange rate fluctuation		106,992	11,619,558	15,820,880	817,360	(300,880)	28,063,910
Ending balance	₩	597,578,882	1,291,199,569	939,794,767	141,307,123	259,081,386	3,228,961,727
Acquisition cost		597,578,882	2,604,393,100	2,488,276,975	448,260,604	259,081,386	6,397,590,947
Accumulated depreciation		-	(1,313,193,531)	(1,548,482,208)	(306,953,481)	-	(3,168,629,220)

Other amounts include reclassification of construction-in-progress to appropriate accounts such as investment property, property, plant and equipment, and expense accounts.

The Group recognized impairment loss as the estimated recoverable amount of assets in certain business segments is less than the carrying amount.

13. Intangible Assets

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

(1) 2016

(In thousands of won)		Industrial property	Development costs	Others	Goodwill	Total
Beginning balance	₩	60,623,000	2,035,372	401,963,973	812,998,681	1,277,621,026
Acquisition cost		100,216,901	6,675,599	699,317,786	824,340,891	1,630,551,177
Accumulated depreciation		(39,593,901)	(4,640,227)	(297,353,813)	(11,342,210)	(352,930,151)
Acquisitions		2,441,328	-	7,608,453	-	10,049,781
Amortization		(8,498,282)	(9,003)	(86,034,667)	-	(94,541,952)
Disposals		(10,798,103)	-	(1,887,709)	-	(12,685,812)
Impairment losses		(2,494,073)	-	(23,992,175)	(86,981,116)	(113,467,364)
Business divestment		(1,741,330)	(225,079)	(55,297,229)	(123,519,454)	(180,783,092)
Other		12,404,206	-	59,279,518	-	71,683,724
Exchange rate fluctuation		154,453	(49,195)	(17,658,468)	1,362,929	(16,190,281)
Ending balance	₩	52,091,199	1,752,095	283,981,696	603,861,040	941,686,030
Acquisition cost		100,183,382	6,401,326	667,370,176	603,861,040	1,377,815,924
Accumulated depreciation		(48,092,183)	(4,649,231)	(383,388,480)	-	(436,129,894)

Other amounts include reclassification of long-term prepaid expenses to exclusive facility usage rights and of construction-in-progress to other intangible assets.

For the year ended December 31, 2016, the Group has recognized impairment loss since the recoverable amount of intangible assets of some divisions is expected to be lower than the carrying amount.

13. Intangible Assets, Continued

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

(2) 2015

(In thousands of won)		Industrial property	Development costs	Others	Goodwill(*)	Total
Beginning balance	₩	60,001,781	2,688,214	456,671,330	759,580,267	1,278,941,592
Acquisition cost		104,597,938	4,874,310	665,907,976	770,922,477	1,546,302,701
Accumulated depreciation		(44,596,157)	(2,186,096)	(209,236,646)	(11,342,210)	(267,361,109)
Acquisitions		1,539,222	1,766,188	12,779,905	-	16,085,315
Business combinations(*)		3,597,729	-	23,892,664	54,300,471	81,790,864
Amortization		(9,873,325)	(108,039)	(120,340,551)	-	(130,321,915)
Disposals		(8,245,981)	(109,380)	(27,520)	-	(8,382,881)
Impairment losses		(744,101)	(2,236,713)	(885,493)	-	(3,866,307)
Other		14,408,427	-	33,443,970	-	47,852,397
Exchange rate fluctuation		(60,752)	35,102	(3,570,332)	(882,057)	(4,478,039)
Ending balance	₩	60,623,000	2,035,372	401,963,973	812,998,681	1,277,621,026
Acquisition cost		100,216,901	6,675,599	699,317,786	824,340,891	1,630,551,177
Accumulated depreciation		(39,593,901)	(4,640,227)	(297,353,813)	(11,342,210)	(352,930,151)

(*) The Group recognized goodwill from their acquisition of SDIBS for the year ended December 31, 2015.

Other amounts include reclassification of long-term prepaid expenses to exclusive facility usage rights and of construction-in-progress to other intangible assets.

(3) Amortization expenses

Amortization expenses are classified as manufacturing cost and selling, general and administrative expenses, and the Group recognizes the manufacturing cost as cost of sales when the inventory is sold.

(4) Research and development expenses

Research and development expenses recognized as selling, general and administrative expenses for the years ended December 31, 2016 and 2015 are ₩552,529 million and ₩538,923 million, respectively.

(5) Impairment of CGU including goodwill

The Group performed impairment test on the goodwill allocated to automotive battery business, electronic material business, and Novaled, a cash generating unit ("CGU") respectively.

The Group estimated value-in-use of automotive battery business based on its 5-year cash flow projections and discount rate of 13.0%. The Group recognized ₩ 349,384 million of impairment loss on PP&E and ₩ 104,647 million of impairment loss on intangible assets, as the estimated recoverable amount of CGU was below its carrying amount.

The Group estimated recoverable amount of Electronic Material Business and Novaled, based on its projections on 5 years' cash flow of each CGU, under assumption of terminal growth rate of 1% for both CGU, and discount rate of 11.3% and 9.8% for Electronic Material Business and Novaled, respectively.

The Group did not recognize impairment losses as the estimated recoverable amount exceeded its carrying amount.

As of December 31, 2016, the Group has allocated ₩ 500,991 million of its goodwill to its electronic material business, and ₩ 102,870 million to Novaled.

14. Investment Property

Changes in investment property for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)	2016			2015		
	Land	**Buildings**	**Total**	**Land**	**Buildings**	**Total**
Beginning balance	₩ 207,812,651	20,369,004	228,181,655	92,888,813	75,838,786	168,727,599
Reclassification	(60,728,826)	(20,018,163)	(80,746,989)	115,553,941	1,180,345	116,734,286
Disposal	(770,935)	-	(770,935)	-	-	-
Depreciation	-	(295,380)	(295,380)	-	(887,662)	(887,662)
Impairment loss	-	-	-	-	(55,757,054)	(55,757,054)
Business combinations	-	-	-	(530,918)	-	(530,918)
Exchange rate fluctuations	(684,375)	-	(684,375)	(99,185)	(5,411)	(104,596)
Ending balance	₩ 145,628,515	55,461	145,683,976	207,812,651	20,369,004	228,181,655

Investment property consists of land and buildings, leased to Samsung Electronics Co., Ltd. and etc.

The Group classified its investment property, located in Gimpo, Gyeonggi-do, to non-current assets held-for-sale, as sale of the asset within a year is highly probable.

Due to fire damage to the investment property lent to Samsung C&T Corporation, located in Gimpo, Gyeong-gi do, the Group assessed that the expected recoverable amount was significantly below its carrying amount and recognized impairment loss of ₩ 55,757 million as other expenses. The Group also recognized the compensation from insurance as other income, since the group has right to receive the amount according to the terms of insurance policy.

15. Trade Payables and Other Liabilities

Trade payables and other liabilities as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016		2015	
		Current	**Non-current**	**Current**	**Non-current**
Trade payables	₩	341,755,706	-	378,105,662	-
Accounts payable		179,814,403	31,740	216,825,453	19,976
Accrued expenses		279,221,871	-	516,851,115	1,744,697
Other		857,375,230	218,005,827	956,947,768	124,144,861
Total	₩	1,658,167,210	218,037,567	2,068,729,998	125,909,534

Other liabilities include provisions, withholdings, guarantee deposits received, etc.

16. Borrowings

(1) Borrowings of the Group as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Short-term borrowings			
Current portion of debentures in Korean won	₩	199,948,098	499,771,427
Current portion of long-term borrowings in foreign currency		-	377,508
Disposals of trade receivable		89,648,227	402,264,929
Short-term borrowings in foreign currency		94,364,494	144,776,500
Sub total	₩	383,960,819	1,047,190,364
Long-term borrowings			
Debentures	₩	299,252,552	498,715,758
Long-term borrowings in foreign currency		267,333,070	203,734,250
Sub total		566,585,622	702,450,008
Total	₩	950,546,441	1,749,640,372

16. Borrowings, Continued

(2) Debentures issued by the Parent company as of December 31, 2016 and 2015 are as follows:

(In thousands of won)

Type	Classification	Date of maturity	Annual Interest rate (%)		2016	2015
Corporate Bonds	Unsecured	2016.04.05	2.72	₩	-	200,000,000
		2016.08.01	4.46		-	200,000,000
		2016.10.26	4.39		-	100,000,000
		2017. 02.02	4.03		100,000,000	100,000,000
		2017. 08.16	3.31		100,000,000	100,000,000
		2018.09.14	1.96		200,000,000	200,000,000
		2020.09.14	2.20		100,000,000	100,000,000
Sub total				₩	500,000,000	1,000,000,000
Less discount on debentures					(799,350)	(1,512,815)
Less current portion of long-term borrowings					(199,948,098)	(499,771,427)
Total				₩	299,252,552	498,715,758

(3) Long-term borrowings as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)

Borrower	Description	Financial institution	Date of maturity	Annual interest rate (%)		2016	2015
SCH	Financial lease	UniCredit Leasing Hungary Zrt	2026.03.31	6.50	₩	-	6,418,713
SDIBS	Facility loan	Sumitomo Mitsui Banking Corp. Europe Limited	2018.04.27	EURIBOR 3M+0.78		92,534,800	93,478,690
SAPB	Facility loan	Bank of China	2018.04.10	LIBOR 3M+1.45		107,643,785	104,214,355
SDITB	Facility loan	Bank of Communication Tianjin Branch	2019.02.04	PBOC*0.95		16,450,485	-
SDIHU	Facility loan	Unicredit Bank	2019.12.15	EURIBOR 3M+0.80		50,704,000	-
Sub total						267,333,070	204,111,758
Less current portion of long-term borrowings						-	(377,508)
Total					₩	267,333,070	203,734,250

17. Provisions

Changes in provisions for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)

		Current				Non-current				
		Royalty expenses	**Quality assurance**	**Onerous contract**	**Others**	**Incentives**	**Quality assurance**	**Onerous contract**	**Others**	**Total**
Balance at Jan. 1,2015	₩	9,597,022	10,551,098	-	23,255,808	23,936,524	-	-	-	67,340,452
Business combination		-	1,767,095	-	736,260	-	-	-	-	2,503,355
Provisions made		191,083	27,298,187	-	26,873,836	11,597,005	-	-	1,844,672	67,804,783
Provisions used		(3,168,248)	(7,626,684)	-	(41,571,652)	(11,566,716)	-	-	(518,531)	(64,451,831)
Balance at Dec. 31,2015	₩	6,619,857	31,989,696	-	9,294,252	23,966,813	-	-	1,326,141	73,196,759
		-	-		-	-	-	-	-	-
Balance at Jan. 1, 2016	₩	6,619,857	31,989,696	-	9,294,252	23,966,813	-	-	1,326,141	73,196,759
Business divestment		-	-	-	-	-	-	-	(19,893)	(19,893)
Provisions made		4,681,965	146,968,014	59,887,712	1,745,640	22,320,559	9,298,107	39,586,698	143,362	284,632,057
Provisions used		-	(51,787,892)	(18,947,710)	(9,429,176)	(11,910,192)	-	-	(297,598)	(92,372,568)
Balance at Dec. 31,2016	₩	11,301,822	127,169,818	40,940,002	1,610,716	34,377,180	9,298,107	39,586,698	1,152,893	265,436,355

Royalty expenses are accrued in relation to the technology usage agreement, for which the related amounts have not been determined, based on expected future royalty expenses. The payment timing of some royalty expenses may change according to negotiations with respective companies

The Group recognizes a warranty provision (quality assurance) for the estimated costs of future repairs and recalls as accrued expenses, based on past experience. The Group also recognizes estimated costs in case of its customers' product recall from its end-users.

The Group has long-term incentive plans for its executives based on three-year performance criteria and made a provision for the estimated incentive.

The Group recognized provision for estimated net loss from onerous contract, as unavoidable incremental cost regarding non-cancellable long-term contracts with customers are expected to exceed their economic benefit.

Other than provisions stated above, the Group recognized provision for litigations and restructuring expenses. As stated in Note 19 to the consolidation financial statements, details of provisions for litigations and restructuring are not disclosed as it may affect the result of pending litigations and further proceedings of restructuring process.

18. Employee Benefits

(1) Employee benefit liabilities as of December 31, 2016 and 2015 are summarized as follows:

1) Present value of defined obligations

(In thousands of won)		2016	2015
Defined Benefit Obligations:			
Beginning balance	₩	565,777,906	507,884,165
Current service cost		67,694,427	80,228,762
Interest cost		15,010,761	18,324,074
Obligations transferred from(to) related parties		767,149	5,221,974
Gross benefit payments		(90,875,482)	(28,830,762)
Actuarial loss (gain) arising from assumptions		2,104,163	(16,877,427)
Contribution to the defined contribution plan		(15,894,232)	(5,256,166)
Obligations transferred in business combination(disposal)		(55,511,911)	5,278,414
Exchange rate fluctuations		(37,606)	(195,128)
Ending balance	₩	489,035,175	565,777,906
Plan Assets		(504,767,478)	(486,503,674)
Net defined benefit liability(asset)		(15,732,303)	79,274,232

2) Fair value of plan assets

(In thousands of won)		2016	2015
Beginning balance	₩	486,503,674	496,358,797
Contributions paid into plan		155,966,209	358,146
Obligations paid by the plan		(87,156,358)	(15,633,863)
Plan assets transferred from(to) related parties		(407,987)	-
Contribution to the defined contribution plan		(15,894,232)	(5,256,166)
Interest income		15,362,245	17,820,446
Actuarial gain (loss) arising from assumptions		(7,787,649)	(7,285,926)
Obligations transferred in business combination (disposal)		(41,889,760)	96,758
Exchange rate fluctuations		71,336	45,482
Ending balance	₩	504,767,478	486,503,674

3) Other liabilities for employee benefits as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Liabilities for paid absence	₩	44,746,940	56,177,752
Long-term incentive provisions		34,377,180	30,966,336
Total	₩	79,124,120	87,144,088

18. Employee Benefits, Continued

(2) Expenses for employee benefits for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Current service costs	₩	67,694,427	80,228,762
Interest cost		15,010,761	18,324,074
Interest income		(15,362,245)	(17,820,446)
Settlement profit(loss)		(12,169,711)	-
Payment on defined contribution plans		1,527,843	958,655
Total	₩	56,701,075	81,691,045

(3) Fair value of plan assets as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Severance insurance bonds (*)	₩	504,471,708	485,774,121
National pension fund		295,770	729,553
Total	₩	504,767,478	486,503,674

(*) Plan assets include bank deposits, investment in government securities and corporate bond, etc.

(4) The Group determined the discount rate based on market returns of high quality corporate bonds consistent with currencies and estimated payment terms of defined benefit obligations as of the reporting date in order to calculate present value of the defined benefit obligations. Principal actuarial assumptions for the years ended December 31, 2016 and 2015 are summarized as follows:

	2016	2015
Expected rate of salary increase	4.83%	4.70% ~ 4.75%
Discount rate for defined benefit obligations	3.20%	3.30%

Assumptions regarding future mortality have been based on published statistics and mortality tables from Korea Insurance Development Institute. .

(5) Sensitivity analysis

Reasonably possible changes at the reporting date to one of the relevant actuarial assumptions as of December 31, 2016, holding other assumptions constant, would have affected the defined benefit obligation by the amounts shown below.

(In thousands of won)	Present value of Defined benefit obligations	
	If increased by 1%	If decreased by 1%
Expected rate salary increase	53,002,792	(47,399,660)
Discount rate for defined benefit obligations	(46,658,424)	53,125,330

19. Commitment and Contingencies

(1) As of December 31, 2016, the Group has been provided a guarantee of ₩26,007 million by Seoul Guarantee Insurance Co., Ltd. in relation to a court deposit and licensing procedures.

(2) In December 2012, the European Commission imposed fine of EUR 150,842 thousand to the Group for Cathode Ray Tubes (CRT) price fixing, and the Group is appealing the decision to court. The Group is also defending several claims in North America and Europe related to price fixing of CRT and lithium ion batteries. The Group has estimated its potential loss, but the actual compensation may differ significantly from the Group's estimation. The Group does not disclose details of on-going litigations considering the disclosure may have effect to pending litigations.

(3) The Group recognized provision for expected compensation for the litigation on ordinary wages. However, the compensation resulting from final judgment of the case may differ from the Group's estimation. The Group does not disclose details of the provision, as it may affect to the result of pending litigations.

(4) Other than cases described in (2) and (3) of this note to the consolidated financial statements, the Group is defendant of 13 pending litigations in local and foreign jurisdictions. The Group does not disclose details of the on-going litigations, as the disclosure may affect the result of the pending litigations. Effect of pending litigations on the Group's consolidated financial statements cannot be estimated reliably, as timing and amount of compensations is uncertain.

(5) The Group approved a detailed and formal restructuring plan, and has commenced the restructuring process during the period ended December 31, 2016. The Group has recognized provision for estimated costs directly attributable to restructuring. However, the Group does not disclose the details of the provision as disclosure may affect further proceeding of the restructuring plan.

(6) The Group has following borrowing commitments as of December 31, 2016.

(In thousands of USD and hundred millions of won)

	Currency	Credit limit	Name of financial institution
Bank overdrafts	KRW	1,977	Woori and 6 others
General purpose loans	KRW	1,056	KEB Hana and 5 others
Note receivable discount	KRW	200	KEB Hana
Trade financing(Local L/C)	KRW	2,092	Shinhan and 5 others
A/S, Usance	USD	116,600	Woori and 4 others
Loans for Import trade	USD	55,000	Deutsche and 1 other
Guarantee payments for foreign currency	USD	105,000	Woori and 4 others
D/A, D/P, O/A	USD	676,525	Woori and 5 others
Secured loan of credit sales	KRW	1,840	Woori and 5 others
Total	KRW	6,765	
	USD	953,125	

(7) In accordance with technical license agreements, the Group recorded royalty expenses of ₩6,042 million and ₩9,875 million for the years ended December 31, 2016 and 2015, respectively.

(8) As of December 31, 2016, the Group provides a guarantee of ₩11,412 million for its employees' borrowings for house rental.

19. Commitment and Contingencies, Continued

(9) In accordance with the Share Purchase Agreement between Hanwha Chemical Corporation, Hanwha Energy Corporation (together referred as "the Buyer") and the Group, dated November 26, 2014, if Hanwha General Chemical Corporation ("HGC") does not complete its public offerings within 6 years period beginning June 29, 2015, the Group and the Buyer owns put option and call option on the Group's 1,721,156 shares of HGC respectively. The exercise period of the options may be extended to 7 years, upon request of the Group. In case of the Group's decision to sell its HGC shares, the Buyer has pre-emptive right to purchase the Group's shares. The Group has sympathetic selling right when the Buyer decides to sell its HGC shares, while the Buyer has right to request the Group for sympathetic sale of the shares.

The Group did not measure the fair value of the options, as basis for fair value evaluation is unreliable and it may result in distortion of the fair value.

(10) In accordance with the Share Purchase Agreement, dated October 30, 2015, between the Group and Lotte Chemical Corporation, each party own a put option and a call option underlying the Group's 1,000,000 shares of Lotte Advanced Materials Co., Ltd.. Detailed information of these options are as follows:

Type	**Owner**	**Exercisable Period**	**Exercise Price**
Call Option	Lotte Chemical Corporation	From April 29th, 2016 to April 29th, 2020	Stock purchasing price with additional 3% of interest per annum, calculated on daily basis
Put Option	Samsung SDI	Earlier of : (1) From April 29th, 2019 to April 29th, 2020 (2) From the day BOD of spin-off company approves merger with Lotte Chemical Corporation to the day the merger is completed.	Stock purchasing price with additional 2% of interest per annum, calculated on daily basis

The Group evaluated fair value of put and call options using binomial trees. As of December 31, 2016, carrying amount of put option (derivative assets) and call option (derivative liabilities) are ₩ 35,605 million and ₩19,211 million, respectively.

20. Capital Stock and Capital Surplus

(1) Capital stock

Ordinary shares and preferred shares issued and outstanding as of December 31, 2016 and 2015 are summarized as follows:

1) 2016

(In shares)	Shares issued	Treasury shares	Shares outstanding
Ordinary shares			
January, 01	68,764,530	(35,891)	68,728,639
Acquisition of treasury shares	-	(2,471,353)	(2,471,353)
December, 31	68,764,530	(2,507,244)	66,257,286
Preferred shares	1,617,896	(160,538)	1,457,358

2) 2015

(In shares)	Shares issued	Treasury shares	Shares outstanding
Ordinary shares			
January, 1	68,764,530	(35,891)	68,728,639
December, 31	68,764,530	(35,891)	68,728,639
Preferred shares	1,617,896	(108,402)	1,509,494

(2) Capital surplus as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Additional paid-in-capital	₩	4,838,550,738	4,838,550,738
Other capital surpluses		192,693,468	192,693,468
Total	₩	5,031,244,206	5,031,244,206

(3) Dividends declared by board of directors after the reporting period as of December 31, 2016 and 2015 are summarized as follows. Dividends for 2016 are not yet paid and there are no income tax effect relating to these dividends.

(In thousands of won)		2016	2015
Ordinary shares (2016: ₩1,000 per share, 2015: ₩1,000 per share)	₩	66,257,286	68,728,639
Preferred shares (2016: ₩1,050 per share, 2015: ₩1,050 per share)		1,530,226	1,584,969
	₩	67,787,512	70,313,608

21. Other Capital

Other capital comprise treasury shares of the Parent Company, which were acquired to raise value of its shareholders. Number of treasury shares and its carrying amount as of December 31, 2016 and 2015 are as follows:

(In thousands of won)		2016			2015		
		Ordinary shares	**Preferred shares**	**Total**	**Ordinary shares**	**Preferred shares**	**Total**
Number of shares		2,507,244	160,538	2,667,782	35,891	108,402	144,293
Carrying amount	₩	244,212,008	7,318,110	251,530,118	6,114,053	4,734,620	10,848,673

22. OCI accumulated in reserves

OCI accumulated in reserves, net of tax, as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		**2016**	**2015**
Available-for-sale financial assets – net change in fair value		344,212,783	420,510,383
Available-for-sale financial assets (Non-current assets held for sale) – net change in fair value		-	166,452,645
Unrealized gain on equity method investments		553,148,270	445,747,328
Unrealized loss on equity method investments		(236,422,299)	(210,338,271)
Loss on translation of foreign operations		(69,951,358)	(40,623,093)
Total	₩	590,987,396	781,748,992

23. Retained Earnings

Retained earnings as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		**2016**	**2015**
Legal reserve	₩	137,764,496	130,733,135
Discretionary reserve		4,663,178,000	4,875,098,000
Unappropriated retained earnings (Undisposed accumulated deficit)		193,774,782	(152,691,563)
Total	₩	4,994,717,278	4,853,139,572

24. Selling, General, and Administrative Expenses

Details of selling, general and administrative expenses for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Salaries and wages	₩	322,643,698	203,832,628
Severance and retirement benefits		375,728,158	14,735,765
Employee benefits		86,701,022	52,304,133
Depreciation		77,565,303	77,271,485
Research and development		552,529,353	538,933,230
Supplies, repair and maintenance		16,830,880	7,891,598
Transportation		19,326,499	16,022,319
Insurance		8,934,108	10,157,900
Sales distribution		45,459,280	40,785,038
Fees and commissions		86,948,765	71,346,186
Rental		9,036,352	9,251,401
Others		75,201,709	65,081,069
Total	₩	1,676,905,127	1,107,612,752

25. The Nature of Expenses

The nature of expenses for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Salaries and wages	₩	970,241,113	843,905,278
Severance and retirement benefits		428,380,521	71,466,928
Employee benefits		282,778,734	248,640,638
Depreciation		354,983,645	456,228,249
Amortization		92,889,292	112,444,300
Total	₩	2,129,273,305	1,732,685,393

26. Other Income and Other Expenses

(1) Other income for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Dividends income	₩	11,784,589	19,378,257
Rental income		999,366	793,959
Reversal of allowance for doubtful accounts		130,621	81,123
Gain on sale of available-for-sale assets		332,205,341	621,643,676
Gain on disposal of associates and joint ventures		134,082,952	30,705,422
Gain on sale of property, plant and equipment		13,006,004	19,483,229
Gain on disposal of intangible assets		86,867	-
Gain on disposition of investment property		1,797,264	-
Gain on disposal of trade receivables		1,690	-
Damage compensation		-	69,105,595
Miscellaneous income		28,368,628	78,171,531
Total	₩	522,463,322	839,362,792

(2) Other expenses for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Other bad debt expenses	₩	1,347	57,919
Loss on sale of available-for-sale assets		-	2,514,419
Loss on impairment for available-for-sale assets		1,627,720	138,001,228
Donations		3,597,990	5,244,294
Loss on disposal of property, plant and equipment		9,208,957	37,593,486
Loss on impairment for property, plant and equipment		366,672,303	134,851,684
Loss on restoration for property, plant and equipment		4,205	15,326
Loss on disposal of intangible assets		12,618,623	8,266,608
Loss on impairment for intangible assets		113,467,364	3,097,050
Loss on impairment for investment property		-	55,757,054
Legal expenses and other miscellaneous expenses		142,724,361	615,333,452
Total	₩	649,922,870	1,000,732,520

27. Financial Income and Financial Cost

Finance income and costs for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Financial income			
Interest income	₩		
- Bank deposit		29,296,638	20,110,696
- Securities		2,598	250
- Other		3,557,417	(2,259,190)
Gain on foreign currency transaction		192,924,874	141,752,306
Gain on foreign currency translation		38,052,490	10,692,281
Gain on valuation of derivatives		21,735,118	-
Subtotal	₩	285,569,135	170,296,343
Financial expense			
Interest expense	₩		
- Borrowing		9,100,646	5,745,111
- Debentures		24,376,815	28,287,165
- Other		1,662,455	366,144
Loss on foreign currency transactions		215,813,449	136,971,937
Loss on foreign currency translation		38,205,214	18,830,649
Loss on transaction of derivatives		-	1,248,330
Loss on valuation of derivatives		-	-
Loss on valuation of financial assets at fair value through profit or loss		8,491,000	-
Subtotal	₩	297,649,579	191,449,336
Net financial expense	₩	12,080,444	21,152,993

28. Income Tax Expense

(1) Income tax expense for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Current income taxes	₩	303,116,057	67,518,471
Deferred income taxes from changes in temporary differences		11,982,835	(3,414,745)
Deferred income taxes from changes in tax credit carry forward		82,309,418	(50,662,582)
Others		745,558	(68,259)
Income tax expense	₩	398,153,869	13,372,885
Continuing operations		57,809,852	(39,218,617)
Discontinued operations		340,344,017	52,591,502

(2) Deferred tax assets and liabilities recognized at stockholders' equity as of December 31, 2016 and 2015 are summarized as follows:

1) 2016

(In thousands of won)

		Before tax	Deferred tax assets (liabilities)	After tax
Retained earnings, etc.	₩	14,270,465	18,489,557	32,760,022
Capital surplus of equity-accounted investees		23,237,831	(2,407,857)	20,829,974
Change in equity of equity-accounted investees		329,618,836	(105,564,452)	224,054,384
Gain on valuation of available-for-sale securities		454,401,684	(110,188,901)	344,212,783
Total	₩	821,528,816	(199,671,653)	621,857,163

2) 2015

(In thousands of won)

		Before tax	Deferred tax assets (liabilities)	After tax
Retained earnings, etc.	₩	24,178,463	16,091,821	40,270,284
Capital surplus of equity method investee		23,237,831	(2,407,857)	20,829,974
Change in equity of equity-accounted investees		230,877,400	(66,373,444)	164,503,956
Gain on valuation of available-for-sale securities		773,689,416	(186,726,388)	586,963,028
Total	₩	1,051,983,110	(239,415,868)	812,567,242

Income tax related to defined benefit plan actuarial gain(loss) and gains(loss) on valuation of available-for-sale financial assets were recognized in other comprehensive income.

28. Income Tax Expense, Continued

(3) Reconciliation of effective tax rate for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Profit (loss) before income tax	₩	609,265,060	39,058,651
Statutory tax rate		24.2%	24.2%
Income tax using the Group's statutory tax rate		147,442,144	9,452,194
Adjustments			
Foreign withholding tax		12,409,281	23,889,152
Permanent differences		109,936,638	54,580,062
Unrecognized temporary differences		191,761,780	(18,382,893)
Tax credits		(66,927,079)	(43,642,835)
Difference in tax rate		(9,730,766)	(1,727,934)
Consolidation adjustments, and others		13,261,871	(10,794,861)
Income tax expense (income)	₩	398,153,869	13,372,885
Average effective tax rate		65.3%	34.2%

(4) As of December 31, 2016, the tax effects of temporary differences were calculated by using expected tax rate for the year when the temporary differences are expected to be reversed. Applied tax rate is 24.2% for the realized portion after year of 2017.

(5) Change in deferred tax assets (liabilities) for the years ended December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016			2015		
		Beginning balance	Changes	Ending balance	Beginning balance	Changes	Ending balance
Tangible/Intangible assets	₩	(12,649,588)	115,153,057	102,503,469	16,973,766	(29,623,354)	(12,649,588)
Investment in subsidiaries and associates		(915,473,827)	(77,661,444)	(993,135,271)	(882,364,838)	(33,108,989)	(915,473,827)
Inventories		9,616,360	5,730,401	15,346,761	6,110,494	3,505,866	9,616,360
Accrued expenses		184,173,368	67,716,168	251,889,536	119,656,032	64,517,336	184,173,368
Available-for-sale financial assets		(172,957,644)	37,326,028	(135,631,616)	(81,909,623)	(91,048,021)	(172,957,644)
Others		1,635,818	12,093,875	13,729,693	(41,298,960)	42,934,778	1,635,818
Sub total	₩	(905,655,513)	160,358,085	(745,297,428)	(862,833,129)	(42,822,384)	(905,655,513)
Deferred tax added to capital		(239,415,868)	39,744,215	(199,671,653)	(419,410,142)	179,994,274	(239,415,868)
Loss carry forwards		153,830,742	(153,830,742)	-	112,362,258	41,468,482	153,830,740
Tax credit		217,194,806	(82,309,419)	134,885,387	166,532,224	50,662,582	217,194,806
Temporary differences of subsidiaries		12,406,310	(14,336,496)	(1,930,186)	4,884,991	7,521,319	12,406,310
Total	₩			(812,013,880)			(761,639,525)

(6) The Group did not recognize deferred tax liabilities for temporary difference of ₩ 156,339,164 thousand and deferred tax liabilities of ₩ 37,834,078 thousand, which are related to investment in subsidiaries, as the Group has control over the reversal of the temporary differences and it is probable that these temporary differences will not reverse in the foreseeable future.

29. Earning per Share

(1) Basic earnings per share

1) Basic earnings per share for the years ended December 31, 2016 and 2015 are calculated as follows:

(i) Ordinary Shares

(In thousands of won, except earnings per share)		2016	2015
Profit (loss) attributable to the owners of the Company	₩	219,405,853	53,846,138
Profit (loss) attributable to ordinary shares		214,617,170	52,615,073
Profit (loss) from continuing operations attributable to ordinary shares		(851,647,392)	(100,230,744)
Profit (loss) from discontinued operations attributable to ordinary shares		1,066,264,562	152,845,817
Weighted average number of ordinary shares (basic)		68,496,506	68,728,639
Basic earnings per share (won)		3,133	766
Basic earnings per share of continuing operations (won)		(12,434)	(1,458)
Basic earnings per share of discontinued operations (won)		15,567	2,224

(ii) Preferred Shares

(In thousands of won, except earnings per share)		2016	2015
Profit (loss) attributable to the owners of the Company	₩	219,405,853	53,846,138
Profit (loss) attributable to preferred shares		4,788,683	1,231,065
Profit (loss) from continuing operations attributable to preferred shares		(18,629,892)	(2,125,903)
Profit (loss) from discontinued operations attributable to preferred shares		23,418,575	3,356,968
Weighted average number of preferred shares (basic)		1,504,402	1,509,494
Basic earnings per share (won)		3,183	816
Basic earnings per share of continuing operations (won)		(12,384)	(1,408)
Basic earnings per share of discontinued operations (won)		15,567	2,224

29. Earning per Share, Continued

(1) Basic earnings per share, continued

2) Weighted average number of ordinary shares for the years ended December 31, 2016 and 2015 are calculated as follows:

(i) Ordinary Shares

(In shares)	2016	2015
Issued ordinary shares at January 1	68,764,530	68,764,530
Treasury stock	(268,024)	(35,891)
Weighted-average number of common shares outstanding (basic)	68,496,506	68,728,639

(ii) Preferred Shares

(In shares)	2016	2015
Issued ordinary shares at January 1	1,617,896	1,617,896
Treasury stock	(113,494)	(108,402)
Weighted-average number of common shares outstanding (basic)	1,504,402	1,509,494

The preferred shares are not entitled for priority rights other than additional dividend of 1% per annum, compared to ordinary shares, the Group considers the preferred shares as ordinary shares with different dividend ratio.

(2) Diluted earnings per share

Diluted earnings per share are same as basic earnings per share as there are no diluted effects for the years ended December 31, 2016 and 2015.

30. Related Parties

(1) List of the Group's related parties are as follows:

Associates	Samsung Display Co., Ltd. ("SDC") and subsidiaries
	Samsung Economic Research Institute ("SERI")
	SD FLEX CO., LTD. ("SDFLEX")
	Intellectual Keystone Technology LLC ("IKT")
	Sungrow-Samsung SDI Energy Storage Power Supply Co., Ltd. ("SSEP")
Conglomerate entities	Samsung Electronics Co., Ltd.("SEC"), Samsung C&T Corporation, and etc.

(2) Significant transactions with related parties for the years ended December 31, 2016 and 2015 are summarized as follows:

1) 2016

(In thousands of won)		Revenues	Disposal of property plant and equipment	Other Income	Inventory purchase	Purchase of property plant and equipment	Other expenses
Associates							
SDC	₩	616,366,897	-	41,718,173	346,629	-	4,266,676
SERI		-	-	-	-	-	4,300,793
SD FLEX CO., LTD.		137,232	6,000	856,318	8,794,516	-	50,355
SSEP		8,847,207	-	994,480	-	-	-
Conglomerate entities							
SEC		939,064,180	-	10,769,905	446,318	4,355,620	38,718,292
Others		13,759,302	12,936,592	87,639,832	1,057,922	104,667,817	139,227,659
Total	₩	1,578,174,818	12,942,592	141,978,708	10,645,385	109,023,437	186,563,775

2) 2015

(In thousands of won)		Revenues	Other Income	Inventory purchase	Purchase of property plant and equipment	Other expenses
Associates						
SDC	₩	645,204,721	56,366,641	-	306,494	3,656,498
SERI		-	-	-	-	5,964,067
SDFLEX		137,232	813,425	8,112,313	-	53,222
Conglomerate entities						
SEC		1,419,295,923	7,608,234	1,082,333	1,235,796	42,605,491
Others		96,623,610	16,947,741	1,633,038	39,347,896	179,220,899
Total	₩	2,161,261,486	81,736,041	10,827,684	40,890,186	231,500,177

30. Related Parties, Continued

(3) Details of significant account balances with related parties as of December 31, 2016 and 2015 are summarized as follows:

1) 2016

(In thousands of won)		Account receivable	Other receivable, etc	Account payable	Other payable, etc
Associates					
SDC	₩	41,894,674	-	156,761	12,299
SERI		-	-	-	706,134
SDFLEX		12,580	82,620	560,637	3,348
SSEP		4,187,010	24,430	-	-
Conglomerate entities					
SEC		75,807,543	2,117,418	68,479	90,420,235
Others		2,802,087	27,969,588	61,720	43,183,621
Total	₩	124,703,894	30,194,056	847,597	134,325,637

2) 2015

(In thousands of won)		Account receivable	Other receivable, etc	Account payable	Other payable, etc.
Associates					
SDC	₩	31,013,471	-	-	406,679
SERI		-	-	-	631,684
SDFLEX		12,580	79,240	716,638	7,811
Conglomerate entities					
SEC		102,843,569	3,951,409	120,889	3,078,206
Others		6,702,520	27,511,412	76,745	34,463,610
	₩	140,572,140	31,542,061	914,272	38,587,990

(4) Personnel compensation to registered officers (the "key management") who have the authority and responsibility in planning, directing, and control of the Group are ₩4,418 million and ₩4,800 million, for the years ended December 31, 2016 and 2015, respectively.

As of December 31, 2016 and 2015, liabilities related to long-term employee benefits for key management are ₩4,238 million and ₩5,253 million, respectively. In addition, liabilities related to retirement benefits for key management as of December 31, 2016 and 2015 are ₩4,848 million and ₩5,524 million, respectively.

31. Non-controlling Interest

Non-controlling interests as of and for the years ended December 31, 2016 and 2015 are summarized as follows:

(1) 2016

(In millions of won)

		NOVALED	America (SDIA and 2 others)	China(TSDI and 6 others)	Others	Total
Current assets	₩	104,578	66,568	820,341	17,807	1,009,294
Non-current assets		193,962	22,204	787,988	44,765	1,048,919
Current liabilities		11,982	22,694	374,543	2,687	411,906
Non-current liabilities		25,380	9,039	221,507	-	255,926
Net assets		261,178	57,039	1,012,279	59,885	1,390,381
Carrying amount of non-controlling interests		37,763	4,796	172,572	26,848	241,979
Sales		84,970	42,573	1,046,996	-	1,174,539
Net income (loss)		26,210	1,163	237,350	(5,244)	259,479
Total comprehensive income		9,045	(2,079)	403,953	83,219	494,138
Net income (loss) distributed to non-controlling interests		13,044	39	(21,412)	34	(8,295)
Cash flow from operating activities		39,550	(16,638)	46,160	(113,188)	(44,116)
Cash flow from investing activities		(3,421)	(2,092)	(220,276)	26,834	(198,955)
Cash flow from financing activities before payment on dividends of non-controlling Interest		-	(32)	106,690	66,890	173,548
Dividends attributed to non-controlling equity		-	-	(4,091)	-	(4,091)
Exchange rate changes		(2,408)	(1,879)	1,240	3,039	(8)
Changes on cash and cash equivalents	₩	33,721	(20,641)	(70,277)	(16,425)	(73,622)

The condensed information on cash flows is translated to Korean Won based on the cash flow of subsidiaries before consolidation adjustments.

31. Non-controlling Interest, Continued

Non-controlling interests as of and for the years ended December 31, 2016 and 2015 are summarized as follows: Continued

(2) 2015

(In millions of won)

		NOVALED	America (SDIA and 2 others)	China(TSDI and 6 others)	Others	Total
Current assets	₩	70,511	85,941	973,583	66,232	1,196,267
Non-current assets		109,058	12,805	594,470	42,365	758,698
Current liabilities		14,654	44,572	579,751	107,562	746,539
Non-current liabilities		31,317	16	112,653	20	144,006
Net assets		133,598	54,158	875,649	1,015	1,064,420
Carrying amount of non-controlling interests		66,669	4,616	189,537	(19,625)	241,197
Sales		65,891	20,320	1,200,118	6,724	1,293,053
Net income (loss)		20,859	(30,162)	(54,858)	(98,228)	(162,389)
Total comprehensive income		11,666	(9,734)	(36,303)	(109,662)	(144,033)
Distributed net income (loss) of non-controlling interests		10,419	(999)	(6,240)	(31,340)	(28,160)
Cash flow from operating activities		41,752	(32,735)	122,751	45,270	177,038
Cash flow from investing activities		(4,157)	6,928	41,934	(39,164)	5,541
Cash flow from financing activities before payment on dividends of non-controlling Interest		-	-	152,324	(2,910)	149,414
Dividends attributed to non-controlling equity		-	-	(1,779)	(12)	(1,791)
Exchange rate change effect		104	8,452	28,339	(10,345)	26,550
Changes on cash and cash equivalents	₩	37,699	(17,355)	343,569	(7,161)	356,752

The condensed information on cash flows is translated to Korean Won based on the cash flow of subsidiaries before consolidation adjustments.

32. Discontinued Operation

The Group performed physical division of its chemical business as of February 1st, 2016, and sold 90% of its ownership on the spin-off company, Lotte Advanced Materials Co., Ltd, to Lotte Chemical Corporation. The comparative consolidated statement of profit or loss and OCI has been restated to show the discontinued operation separately from continuing operations. Details of discontinued operation results and effect of disposal on the financial position of the Group are as follows:

(1) Result of discontinued operations for the year ended December 31, 2016 is summarized as follows:

(In thousands of won)		2016	2015
Profit (loss) of discontinued operation:	₩		
Revenue		897,035,893	2,721,378,793
Expense		(746,352,219)	(2,512,203,909)
Loss of discontinued operation before income tax		150,683,674	209,174,884
Income tax expense (benefit)		(30,759,400)	(52,591,502)
Income after deduction of income tax expense		119,924,274	156,583,382
Gain on disposal of discontinued operations		1,279,275,278	-
Income tax expense on disposal gains of discontinued operations		(309,584,617)	-
Profit (loss) from discontinued operations	₩	1,089,614,935	156,583,382
Basic earnings per share for ordinary shares (won)		15,567	2,224
Basic earnings per share for preferred shares (won)		15,567	2,224

(2) Cash flow from (used in) discontinued operations for the year ended December 31, 2016 is summarized as follows:

(In thousands of won)		2016	2015
Cash flows from (used in) operating activities	₩	(316,092,084)	342,301,645
Cash flows from (used in) investing activities		1,202,043,877	(32,269,363)
Cash flows from (used in) financing activities		113,398,866	(268,159,727)
Cash flows from (used in) discontinued operation	₩	999,350,659	41,872,555

32. Discontinued Operation, Continued

(3) Effect of disposal of chemical business on the financial position of the Group is as follows:

(In thousands of won)		
Cash and cash equivalents	₩	143,852,147
Financial instruments		8,134,037
Available-for-sale financial assets		1,091,046
Trade receivables and other receivables		342,366,286
Inventory		181,043,808
Tangible assets		725,891,387
Intangible assets		180,783,092
Other current and non-current assets		36,228,773
Trade payables and other liabilities		(213,325,368)
Borrowing		(153,825,812)
Other current and non-current liabilities		(39,114,801)
Accumulated foreign currency translation differences		(1,723,933)
Net assets and liabilities		1,211,400,662
Considerations received, satisfied in cash		2,585,000,000
Disposal expenses		(94,324,060)
Profit from disposal of discontinued operations	₩	1,279,275,278

33. Non-current Assets Held for Sale

Non-current assets held for sale as of December 31, 2016 and 2015 are summarized as follows:

(In thousands of won)		2016	2015
Property, plant and equipment, net	₩	1,343,510	12,504,954
Investment property		78,001,278	-
Other non-current assets		-	11,332,749
Available-for-sale financial assets		-	834,566,256
Total	₩	79,344,788	858,403,959

The Group classified its investment property, located in Gimpo, Gyeonggi-do, to non-current assets held-for-sale, as sale of the asset within a year is highly probable.

The Group has disposed its fixed assets and other non-current assets of the subsidiary that were classified as non-current assets held-for-sale on December 31, 2015. The Group also disposed investments in Samsung C&T Corporation and Hanwha General Chemical Co., Ltd., which were also classified as non-current assets held-for-sale, and recognized gain on disposal of available-for-sale financial assets amounting ₩ 332,205 million as other income.

34. Statement of Cash Flows

Adjustment and changes in assets and liabilities for cash flows from operating activities for the years ended December 31, 2016 and 2015 are summarized as follows:

(1) Adjustment for cash flows from operating activities

(In thousands of won)	**2016**	**2015**
Severance & retirement benefits	55,173,231	80,732,390
Loss(gain) on valuation of inventories	17,721,191	26,990,184
Depreciation	360,464,448	533,121,241
Amortization	94,541,952	130,321,915
(Reversal of) Bad debt expense	231,381	883,572
(Reversal of) Other bad debt expense	(129,431)	(82,894)
Fees and Commissions	5,015,668	5,156,716
Share of profit of equity accounted investees	(245,178,734)	(279,900,382)
Loss on sale of investments in equity-accounted investees	(134,082,952)	(30,705,422)
Loss on sale of available-for-sale financial assets	-	2,514,419
Gain on sale of available-for-sale financial assets	(332,205,341)	(621,643,676)
Impairment losses on available-for-sale financial assets	1,627,720	138,003,168
Gain on disposition of investment property	(1,797,264)	-
Loss on foreign currency translations	41,428,856	16,988,519
Gain on foreign currency translations	(42,661,356)	(10,263,701)
Gain on valuation of derivatives	(21,735,118)	-
Loss on derivatives transaction	-	1,248,330
Loss on sale of property, plant and equipment	9,208,957	39,314,575
Gain on sale of property, plant and equipment	(13,006,004)	(19,543,283)
Impairment losses on property, plant and equipment	366,672,303	135,969,586
Loss on restoration of property, plant and equipment	4,205	21,000
Gain on sale of intangible assets	(86,867)	-
Loss on sale of intangible assets	12,618,623	8,266,608
Impairment losses on intangible assets	113,467,364	3,866,307
Loss on valuation of financial assets designated at fair value through profit or loss	8,491,000	-
Gain on disposal of discontinued operations	(1,279,275,278)	-
Gain on disposal of trade receivables	(1,690)	-
Loss on disposal of investment property	-	55,757,054
Legal expenses, etc.	744,762,784	175,252,160
Miscellaneous income	(121,119)	(303,966)
Miscellaneous expense	85,447	-
Damage compensation	-	(69,105,595)
Income tax expense (income)	398,153,869	13,372,885
Interest expense	35,325,364	46,818,157
Interest income	(32,886,510)	(33,044,886)
Dividends income	(11,784,589)	(19,378,257)
Total	150,042,110	330,626,724

34. Statement of Cash Flows, Continued

(2) Changes in assets and liabilities for Cash Flows from Operating Activities

(In thousands of won)	**2016**	**2015**
Changes in assets and liabilities:		
Trade receivables	(44,581,702)	(31,946,018)
Other receivables	(136,343,594)	285,151,064
Other current assets	(95,457,426)	17,276,903
Inventories	(177,873,372)	17,413,607
Non-current trade receivables	-	(87,053)
Non-current other receivables	1,043,061	87,572,542
Non-current other assets	(27,607,154)	(72,620,093)
Trade payables	(94,392,813)	(20,459,354)
Other payables	(774,650,482)	154,044,330
Advance received	39,048,250	23,903,785
Unearned revenue	32,477,874	55,947,368
Non-current other payables	11,205,417	115,773,515
Payment of retirement and employee benefits	(106,769,714)	(34,086,928)
Transfer in from related parties for employee benefits	1,175,136	5,221,974
Plan assets	(52,915,619)	20,531,883
Long-term unearned revenue	12,712,660	-
Total	(1,412,929,478)	623,637,525

35. Subsequent Events

During February, 2017, the Group's manufacturing facilities in Tianjin, China, were damaged by fire. Surveyors are in the process of assessing the extent of the loss, following which the Group will file a claim for reimbursement with the insurance company. The Group is unable to estimate the incremental costs relating to refurbishment and temporary shift of production to other locations.