SAMSUNG SDI CO., LTD. AND SUBSIDIARIES

Consolidated Financial Statements

December 31, 2017 and 2016

(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, 2017 and 2016, 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, 2017 and 2016 and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with International Financial Reporting Standards.

KPMG Samjong Accounting Corp.

Seoul, Korea
March 11, 2018

This report is effective as of March 11, 2018, 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, 2017 and 2016

(In thousands of won)	Note		2017	2016
Assets				
Cash and cash equivalents	4,6	₩	1,209,015,664	1,011,701,875
Trade and other receivables, net	4,7,30		1,218,252,689	1,046,794,724
Inventories, net	8		966,571,644	729,058,574
Other investments	4,9		113,795,180	932,699,740
Other assets	10		97,440,543	158,666,026
Non-current assets held for sale	33		-	79,344,788
Total current assets			**3,605,075,720**	**3,958,265,727**
Long-term trade and other receivables, net	4,7,30		3,379,614	5,145,658
Investments in equity-accounted investees	11		6,219,349,912	5,525,570,910
Property, plant and equipment, net	5,12		2,930,339,326	2,503,794,949
Intangible assets, net	5,13		897,447,248	941,686,030
Investment property	5,14		149,914,778	145,683,976
Employee benefit assets, net	18		-	15,732,303
Deferred tax assets	28		41,407,874	38,421,656
Other non-current investments, including derivatives	4,9,19		1,785,846,776	1,626,791,063
Other non-current assets	10,13		118,715,081	139,218,962
Total non-current assets			**12,146,400,609**	**10,942,045,507**
Total assets		₩	**15,751,476,329**	**14,900,311,234**
Liabilities				
Trade and other payables	4,15,17,19,30	₩	1,485,918,600	1,658,167,210
Income taxes payable	28		20,807,948	43,097,066
Advance received			50,470,586	77,372,218
Unearned revenue			33,857,200	50,198,580
Short-term borrowings	4,16		1,079,305,198	383,960,819
Total current liabilities			**2,670,359,532**	**2,212,795,893**
Trade and other payables	4,15,17,19,30		181,119,004	218,037,567
Long-term unearned revenue			47,612,643	69,135,390
Long-term borrowings	4,16		345,303,351	566,585,622
Employee benefit liabilities, net	18		25,621,629	-
Derivative liabilities	4,19		20,220,578	19,211,000
Deferred tax liabilities	28		1,009,240,095	850,435,535
Total non-current liabilities			**1,629,117,300**	**1,723,405,114**
Total liabilities			**4,299,476,832**	**3,936,201,007**
Capital stock	1,20		356,712,130	356,712,130
Capital surplus	20		5,042,698,139	5,031,244,206
Other capital	21		(345,131,584)	(251,530,118)
Accumulated other comprehensive income	22		602,435,775	590,987,396
Retained earnings	23		5,600,587,220	4,994,717,278
Equity attributable to owners of the Parent Company	31		**11,257,301,680**	**10,722,130,892**
Non-controlling interests			**194,697,817**	**241,979,335**
Total equity			**11,451,999,497**	**10,964,110,227**
Total liabilities and equity		₩	**15,751,476,329**	**14,900,311,234**

See accompanying note to the consolidated financial statements.

For the years ended December 31, 2017 and 2016

(In thousands of won, except per share information)	***Note***		**2017**	**2016**
Revenue	*5,30*	₩	**6,321,560,922**	**5,200,822,510**
Cost of sales	*8,18,25,30*		(5,152,472,076)	(4,450,250,017)
Gross profit			**1,169,088,846**	**750,572,493**
Selling, general and administrative expenses	*13,18,24,25*		(1,052,194,059)	(1,676,905,127)
Operating income (loss)	*5*		**116,894,787**	**(926,332,634)**
Other income	*14,26,30,33*		196,226,647	522,463,322
Other expenses	*14,26,30*		(183,023,147)	(649,922,870)
Finance income	*27*		250,012,082	285,569,135
Finance costs	*27*		(251,450,264)	(297,649,579)
Share of profit of equity accounted investees	*11*		695,404,774	245,178,734
Profit(loss) before income taxes			**824,064,879**	**(820,693,892)**
Income tax expense(income)	*28*		180,871,016	57,809,853
Profit(loss) from continuing operations			**643,193,863**	**(878,503,745)**
Profit (loss) from discontinued operations	*29,32*		**-**	**1,089,614,935**
Profit (loss) for the year		₩	**643,193,863**	**211,111,190**
Other comprehensive income (loss)				
Items that will never be reclassified to profit or loss:				
Defined benefit plan actuarial losses	*18*		21,529,602	(9,891,812)
Related tax			(5,108,488)	2,377,272
Items that are or may be reclassified to profit or loss:				
Effective portion of unrealized changes in fair values of cash flow hedges			-	-
Unrealized net changes in fair values of available-for-sale financial assets	*9*		171,461,576	(319,318,208)
Change in equity of equity-method accounted investees	*11*		(1,625,771)	107,468,284
Change in gain (loss) on translation of foreign operations			(156,923,295)	(54,772,639)
Related tax			(35,488,073)	51,961,660
Other comprehensive income (loss) for the year, net of tax			**(6,154,450)**	**(222,175,443)**
Total comprehensive income (loss)		₩	**637,039,413**	**(11,064,253)**
Profit(loss) attributable to:				
Owners of the Parent Company	*29*	₩	657,236,341	219,405,853
Non-controlling interests	*31*		(14,042,478)	(8,294,663)
Total comprehensive income (loss) attributable to:				
Owners of the Parent Company			685,105,834	21,129,717
Non-controlling interests	*31*		(48,066,421)	(32,193,970)
Earnings per share	*29,32*			
Basic earnings per share (won) - Ordinary share		₩	9,824	3,133
Earnings per share -Continuing operations			9,824	(12,434)
Earnings per share -Discontinued operations			-	15,567
Basic earnings per share (won) - Preferred share			9,874	3,183
Earnings per share -Continuing operations			9,874	(12,384)
Earnings per share -Discontinued operations			-	15,567

See accompanying note to the consolidated financial statements.

For the years ended December 31, 2017 and 2016

(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, 2017 and 2016

(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, 2017	₩	**356,712,130**	**5,031,244,206**	**(251,530,118)**	**590,987,396**	**4,994,717,278**	**241,979,335**	**10,964,110,227**
Comprehensive income								
Profit (loss) for the year		-	-	-	-	657,236,340	(14,042,478)	643,193,862
Defined benefit plan actuarial gain		-	-	-	-	16,421,114	-	16,421,114
Changes in fair values of available-for-sale financial assets		-	-	-	131,892,876	-	82,974	131,975,850
Change in equity of equity-accounted investees		-	-	-	(1,283,622)	-	-	(1,283,622)
Change in gain (loss) on translation of foreign operations		-	-	-	(119,160,875)	-	(34,106,916)	(153,267,791)
Total comprehensive income (loss)		**-**	**-**	**-**	**11,448,379**	**673,657,454**	**(48,066,420)**	**637,039,413**
Transactions with shareholders directly recognized in equity								
Dividends to owners of the Company		-	-	-	-	(67,787,512)	(2,239,924)	(70,027,436)
Capital contribution from non-controlling interests		-	-	-	-	-	3,094,550	3,094,550
Capital reduction to non-controlling interests		-	-	-	-	-	(4,260)	(4,260)
Liquidation of subsidiary		-	-	-	-	-	(49,297)	(49,297)
Acquisition of non-controlling interest		-	(14,010)	-	-	-	(16,167)	(30,177)
Acquisition of interests in subsidiary		-	-	-	-	-	20,817,663	20,817,663
Acquisition of treasury stock		-	-	(94,056,523)			-	(94,056,523)
Disposal of treasury stock		-	120,689	455,057	-	-	-	575,746
Others		-	11,347,254	-	-	-	-	11,347,254
Balance at December 31, 2017	₩	**356,712,130**	**5,042,698,139**	**(345,131,584)**	**602,435,775**	**5,600,587,220**	**194,697,817**	**11,451,999,497**

See accompanying notes to the consolidated financial statement.

For the years ended December 31, 2017 and 2016

(In thousands of won)	*Note*		2017	2016
Cash flows from operating activities				
Profit for the year		₩	643,193,863	211,111,190
Adjustments for expense (benefit)	34		28,551,061	150,042,110
Changes in assets and liabilities	34		(841,269,492)	(1,412,929,478)
Interest received			24,795,842	26,597,529
Interest paid			(17,222,347)	(41,711,984)
Dividends received			7,792,823	11,784,589
Income taxes paid			(95,956,087)	(254,413,455)
Net cash provided by (used in) operating activities		₩	**(250,114,337)**	**(1,309,519,499)**
Cash flows from investing activities				
Sale of other investments		₩	859,175,556	102,684,289
Disposal of non-current assets held for sale			126,950,296	947,177,078
Proceeds from sale of property, plant and equipment			34,385,213	79,348,617
Proceeds from sale of intangible assets			18,704,303	158,378
Proceeds from sale of investment property			304,383	2,568,199
Proceeds from sale of investments in equity-accounted investees			-	3,794,963
Government grants received			58,107,104	-
Disposal of discontinued operation, net of cash disposed of			-	2,084,194,057
Acquisition of other investment assets			(12,990,584)	(514,869,800)
Acquisition of other non-current assets			(1,130)	(9,148,836)
Acquisition of property, plant and equipment			(991,466,936)	(832,629,248)
Acquisition of intangible assets			(3,618,464)	(9,013,857)
Acquisition of investment property			(224,470)	-
Net cash from investing activities		₩	**89,325,271**	**1,854,263,840**
Cash flows from financing activities				
Proceeds from short-term borrowings		₩	708,535,313	506,456,967
Proceeds from long-term borrowings			197,870,436	67,928,374
Capital contribution from non-controlling interest			3,094,551	49,592,089
Dividends paid			(70,027,436)	(72,677,363)
Repayment of short-term borrowings			(92,724,839)	(615,069,069)
Repayment of current portion of long-term borrowings			(200,000,000)	(500,000,000)
Repayment of long-term borrowings			(99,909,005)	-
Capital reduction from non-controlling interesting			(4,260)	(14,251,654)
Acquisition of treasury stock			(94,056,523)	(240,681,445)
Sale of treasury stock			614,277	-
Net cash used in financing activities		₩	**353,392,514**	**(818,702,101)**
Net increase (decrease) in cash and cash equivalents		₩	192,603,449	(273,957,760)
Cash and cash equivalents at January 1			1,011,701,875	1,287,968,374
Effect of exchange rate fluctuations on cash held			4,710,340	(2,308,739)
Cash and cash equivalents at December 31		₩	**1,209,015,664**	**1,011,701,875**

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 23, 2018 and will be submitted for approval to general shareholders meeting to be held on March 23, 2018.

(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, 2017 and 2016 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) 2017	2016
Samsung SDI Japan Co., Ltd. ("SDIJ")	Japan	Supporting sales and purchase in Japan	100%	100%
Samsung SDI America, Inc. ("SDIA")	U.S.A.	Manufacturing and sales of automotive battery and sales of rechargeable battery	91.7%	91.7%
Subsidiary of SDIA				
Samsung SDI Mexico, S.A. de C.V. ("SDIM")(*3)	Mexico	-	-	91.7%
Samsung SDI Hungary Rt. ("SDIHU")	Hungary	Manufacturing and sales of automotive battery	100%	100%
Samsung SDI Europe GmbH ("SDIEU")	Germany	Supporting sales and purchase in Europe	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				
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 and purchase in China	100.0%	100.0%
Samsung SDI-ARN (Xi'An) Power Battery Co., Ltd. ("SAPB")(*5)	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")(*5)	China	Manufacturing and sales of automotive battery	50.0%	50.0%
Samsung SDI (Tianjin) Battery Co., Ltd. ("SDITB')(*5)	China	Manufacturing and sales of rechargeable battery	50.0%	50.0%
Samsung SDI (Wuxi) Battery Systems Co., Ltd.("SWBS")(*2) (*5)	China	Manufacturing and sales of automotive battery	50.0%	-
Samsung SDI Brazil Ltda. ("SDIB")*4)	Brazil	-	96.3%	96.1%
STM Co., Ltd. ("STM")	Korea	Manufacturing and sales of cathode active material for rechargeable battery	100%	100%
Samsung Chemical Electronic Materials (SuZhou) Co., Ltd. ("SCES")	China	Manufacturing and sales of electronic materials products	100%	100%
Samsung SDI Wuxi Co., Ltd. ("SDIW")	U.S.A.	Manufacturing and sales of electronic materials products	100%	100%
SVIC 15 Fund ("SVIC 15")	Korea	Investments in new technology venture business	99.0%	99.0%
SVIC 24 Fund ("SVIC24")	China	Investments in new technology venture business	99.0%	99.0%

3. Significant Accounting Policies, Continued

(1) Consolidation, continued

3) Subsidiaries, continued

(i) The list of subsidiaries as of December 31, 2017 and 2016 are as follows: All subsidiaries' fiscal year end is December 31, continued

(*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 established SWBS, and included in consolidation

(*3) The Group has completed liquidation process of its subsidiary, SDIM.

(*4) The Group's interest in SDIB has increased to 96.3% during the period ended December 31, 2017, due to additional acquisition by SDIHK.

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

(ii) Summary of financial information of subsidiaries as of and for the year ended December 31, 2017 is as follows:

(In thousands of won)

Subsidiaries	Assets	Liabilities	Equity	Revenue	Net profit (loss)	Total comprehensive income (loss)
SDIJ	9,077,821	3,766,645	5,311,176	20,780,500	476,853	(42,382)
SDIA	71,742,320	31,462,329	40,279,991	51,364,711	(10,334,810)	(16,613,660)
SDIM	-	-	-	353,568	220,518	283,189
SDIHU	363,874,895	322,564,722	41,310,173	-	(2,533,187)	(2,809,702)
SDIEU	18,750,746	10,330,305	8,420,441	20,243,084	2,333,256	2,378,781
SDIBS	268,881,798	215,997,331	52,884,467	334,301,108	(817,989)	(1,676,825)
SDI(M)	906,718	-	906,718	-	(31,477)	(52,803)
SDIV	325,097,654	208,145,451	116,952,203	1,095,101,558	39,258,013	26,255,335
SDIEM	465,938,573	182,707,508	283,231,065	790,589,331	28,290,797	5,965,127
SDIHK	517,866,138	42,597,841	475,268,297	451,980,086	5,465,024	(22,398,279)
TSDI	541,057,962	232,053,786	309,004,176	507,360,970	13,280,626	(4,814,363)
SDIC	8,057,893	767,046	7,290,847	16,643,312	2,113,050	1,737,202
SAPB	542,626,617	447,246,853	95,379,764	160,865,462	(53,236,842)	(60,692,491)
SSEB	34,822,361	13,369,301	21,453,060	16,191,769	(1,536,742)	(2,853,128)
SCPB	14,776,996	8,799,953	5,977,043	4,956,791	(788,432)	(1,173,273)
SDITB	157,633,150	147,623,716	10,009,434	161,376,572	8,352,417	7,943,765
SWBS	7,305,770	2,233,048	5,072,722	-	(584,634)	(909,278)
SDIB	24,386,141	1,044,995	23,341,146	-	513,558	(2,919,462)
STM	90,566,360	12,981,251	77,585,109	87,004,958	3,033,279	3,094,749
SCES	7,107,478	4,178,039	2,929,439	18,993,864	(3,611,730)	(4,004,780)
NOVALED	260,166,651	33,345,879	226,820,772	107,521,822	39,672,538	38,573,167
SDIW	528,568,624	270,103,923	258,464,701	610,616,348	14,705,227	(343,231)
SVIC15	24,577,637	326,138	24,251,499	-	(333,680)	6,112,528
SVIC24	27,131,881	338,889	26,792,992	-	486,735	2,337,944

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.

Re-measurement 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 404 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) Changes in accounting policies

The recent changes to K-IFRS that are required to be adopted in annual periods beginning on January 1, 2017.

Disclosure Initiative (Amendments to K-IFRS 1007)
K-IFRS 1007 Statement of Cash Flows has been amended to improve presentation and disclosure in financial statements. This new disclosure requirement is to provide a reconciliation between the opening and closing balances for liabilities arising from financing activities. However, the objective could also be achieved in other ways, which might be a relief for financial institutions or other entities that already present enhanced disclosures in this area.

The amendments are effective for periods beginning on or after 1 January 2017, with earlier application permitted.

Recognition of Deferred Tax Assets for Unrealized Losses (Amendments to K-IFRS 1012)

The amendments to K-IFRS 1012 Income Taxes bring some clarity that the existence of a deductible temporary difference depends solely on a comparison of the carrying amount of an asset and its tax base at the end of the reporting period, and is not affected by possible future changes in the carrying amount or expected manner of recovery of the asset. Therefore, assuming that the tax base remains at the original cost of the debt instrument, there is a temporary difference.

The amendments are effective for annual periods beginning on or after January 1, 2017.

(25) 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.

The following standards are expected to have a material impact on the Group's financial statements in the period of initial application.

K-IFRS No. 1109, Financial Instruments

K-IFRS 1109 Financial Instruments sets out requirements for recognizing and measuring financial assets, financial liabilities and some contracts to buy or sell non-financial items. This standard replaces K-IFRS 1039 Financial Instruments: Recognition and Measurement.

I. Classification – Financial assets

K-IFRS 1109 contains a new classification and measurement approach for financial assets that reflects the business model in which assets are managed and their cash flow characteristics. K-IFRS 1109 contains three principal classification categories for financial assets: measured at amortized cost, FVOCI and FVTPL. The standard eliminates the existing K-IFRS 1039 categories of held to maturity, loans and receivables and available for sale.

Under K-IFRS 1109, derivatives embedded in contracts where the host is a financial asset in the scope of the standard are never bifurcated. Instead, the hybrid financial instrument as a whole is assessed for classification.

3. Significant Accounting Policies, Continued

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

Based on its assessment, the Group does not believe that the new classification requirements will have a material impact on its accounting for trade receivables, loans, investments in debt securities and investments in equity securities that are managed on a fair value basis. The Group has equity investments classified as available-for-sale that are held for long-term strategic purposes. Under K-IFRS 1109, the Group has designated these investments as measured at FVOCI. Consequently, all fair value gains and losses will be reported in OCI, no impairment losses will be recognized in profit or loss and no gains or losses will be reclassified to profit or loss on disposal.

II. Impairment – Financial assets and contract assets

K-IFRS 1109 replaces the 'incurred loss' model in K-IFRS 1039 with a forward-looking 'expected credit loss' (ECL) model. This will require considerable judgment about how changes in economic factors affect ECLs, which will be determined on a probability-weighted basis.

The new impairment model will apply to financial assets measured at amortized cost or FVOCI, except for investments in equity instruments, and to contract assets.

Under K-IFRS 1109, loss allowances will be measured on either of the following bases:
– 12-month ECLs: these are ECLs that result from possible default events within the 12 months after the reporting date; and
– lifetime ECLs: these are ECLs that result from all possible default events over the expected life of a financial instrument.

Lifetime ECL measurement applies if the credit risk of a financial asset at the reporting date has increased significantly since initial recognition and 12-month ECL measurement applies if it has not. An entity may determine that a financial asset's credit risk has not increased significantly if the asset has low credit risk at the reporting date. However, lifetime ECL measurement always applies for trade receivables and contract assets without a significant financing component; the Group has chosen to apply this policy also for trade receivables and contract assets with a significant financing component.

The Group believes that impairment losses are not likely to increase for assets in the scope of the K-IFRS 1109 impairment model.

III. Classification – Financial liabilities

K-IFRS 1109 largely retains the existing requirements in K-IFRS 1039 for the classification of financial liabilities.

However, under K-IFRS 1039 all fair value changes of liabilities designated as at FVTPL are recognised in profit or loss, whereas under K-IFRS 1109 these fair value changes are generally presented as follows:
– the amount of change in the fair value that is attributable to changes in the credit risk of the liability is presented in OCI; and
– the remaining amount of change in the fair value is presented in profit or loss.

The Group has not designated any financial liabilities at FVTPL and it has no current intention to do so. The Group's assessment did not indicate any material impact regarding the classification of financial liabilities at 1 January 2018.

3. Significant Accounting Policies, Continued

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

IV. Disclosures

K-IFRS 1109 will require extensive new disclosures, in particular about hedge accounting, credit risk and ECLs. The Group's assessment included an analysis to identify data gaps against current processes and the Group is in the process of implementing the system and controls changes that it believes will be necessary to capture the required data.

V. Transition

Changes in accounting policies resulting from the adoption of K-IFRS 1109 will generally be applied retrospectively, except as described below.

– The Group will take advantage of the exemption allowing it not to restate comparative information for prior periods with respect to classification and measurement (including impairment) changes. Differences in the carrying amounts of financial assets and financial liabilities resulting from the adoption of K-IFRS 1109 will generally be recognized in retained earnings and reserves as at 1 January 2018.

– The following assessments have to be made on the basis of the facts and circumstances that exist at the date of initial application.
- The determination of the business model within which a financial asset is held.
- The designation and revocation of previous designations of certain financial assets and financial liabilities as measured at FVTPL.
- The designation of certain investments in equity instruments not held for trading as at FVOCI.

K-IFRS 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 1018 Revenue, K-IFRS 1011 Construction Contracts, K-IFRS 2031 Revenue: Barter Transactions Involving Advertising Services, K-IFRS 2113 Customer Loyalty Programs, K-IFRS 2115 Agreements for the Construction of Real Estate, K-IFRS 2118 Transfers of Assets from Customers. The Group plans to adopt K-IFRS 1115 in its consolidated financial statements for the year ended December 31, 2018, using the retrospective approach for the comparative prior reporting periods in accordance with K-IFRS 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 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.

3. Significant Accounting Policies, Continued

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

I. Sale of goods

For the sale of lithium batteries and electronic material products, revenue is currently recognized when the goods are delivered to the customers' premises, which is taken to be the point in time at which the customer accepts the goods and the related risks and rewards of ownership transfer. Revenue is recognized at this point provided that the revenue and costs can be measured reliably, the recovery of the consideration is probable and there is no continuing management involvement with the goods.

Under K-IFRS 1115, revenue will be recognized when a customer obtains control of the goods. The Group's assessment indicates that adoption of K-IFRS 1115 would not result in change in timing of revenue recognition

II. Rendering of services
The Group is involved in installation and maintenance of ESS products. The Group recognizes revenue for installation and maintenance upon completion of provision of service.

When the contract includes both development and production phase, the Group defers revenue for development phase and amortizes the revenue in accordance with the number of products manufactured. K-IFRS 1115 requires revenue to be recognized upon completion of each performance obligation.

Based on its assessment, upon adoption of K-IFRS 1115, the Group expects the revenue for development service to be recognized upon completion of development project.

III. Royalties

The Group receives royalties on a percentage of the revenue generated from the intellectual property rights licensed by the Group. The Group recognizes revenue when the Group's right for receipt of royalty arises as the customer uses or sells relevant products.

Based on its assessment, the Group does not expect the application of K-IFRS 1115 to result in a significant impact on its consolidated financial statements

IV. Transition

The Group plans to adopt K-IFRS 1115 using the full-retrospective method, with the effect of initially applying this standard recognized at the date of initial application (i.e. January 1st, 2017). As a result, the Group will apply the requirements of K-IFRS 1115 to the comparative period presented.

3. Significant Accounting Policies, Continued

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

K-IFRS 1116 Leases

K-IFRS 1116 replaces existing leases guidance, including K-IFRS 1017 Leases, K-IFRs 2004 Determining whether an Arrangement contains a Lease, SIC-15 Operating Leases – Incentives and SIC-27 Evaluating the Substance of Transactions Involving the Legal Form of a Lease.

The standard is effective for annual periods beginning on or after 1 January 2019. Early adoption is permitted for entities that apply K-IFRS 1115 at or before the date of initial application of IFRS 16.

K-IFRS 16 introduces a single, on-balance sheet lease accounting model for lessees. A lessee recognizes a right-of-use asset representing its right to use the underlying asset and a lease liability representing its obligation to make lease payments. There are recognition exemptions for short-term leases and leases of low-value items. Lessor accounting remains similar to the current standard – i.e.lessors continue to classify leases as finance or operating leases.

In addition, the nature of expenses related to those leases will now change as IFRS 16 replaces the straight-line operating lease expense with a depreciation charge for right-of-use assets and interest expense on lease liabilities.

No significant impact is expected for the Group's finance leases.

I. Determining whether an arrangement contains a lease

The Group has an arrangement that was not in the legal form of a lease, for which it concluded that the arrangement contains a lease of equipment under IFRIC 4. On transition to IFRS 16, the Group can choose whether to:
- apply the IFRS 16 definition of a lease to all its contracts; or
- apply a practical expedient and not reassess whether a contract is, or contains, a lease.

The Group plans to apply the practical expedient to grandfather the definition of a lease on transition. This means that it will apply IFRS 16 to all contracts entered into before 1 January 2019 and identified as leases in accordance with IAS 17 and IFRIC 4.

II. Transitions

As a lessee, the Group can either apply the standard using a:
- retrospective approach; or
- modified retrospective approach with optional practical expedients.

The lessee applies the election consistently to all of its leases.

The Group plans to apply IFRS 16 initially on 1 January 2019, using the modified retrospective approach. Therefore, the cumulative effect of adopting IFRS 16 will be recognized as an adjustment to the opening balance of retained earnings at 1 January 2019, with no restatement of comparative information.

When applying the modified retrospective approach to leases previously classified as operating leases under IAS 17, the lessee can elect, on a lease-by-lease basis, whether to apply a number of practical expedients on transition. The Group is assessing the potential impact of using these practical expedients.

The Group is not required to make any adjustments for leases in which it is a lessor except where it is an intermediate lessor in a sub-lease.

3. Significant Accounting Policies, Continued

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

K-IFRS 2022 Foreign Currency Transactions and Advance Consideration

When foreign currency consideration is paid or received in advance of the item it relates to – which may be an asset, an expense or income – K-IFRS 1021 The Effects of Changes in Foreign Exchange Rates is not clear on how to determine the transaction date for translating the related item. This has resulted in diversity in practice regarding the exchange rate used to translate the related item.

K-IFRS 2022 clarifies that the transaction date is the date on which the company initially recognizes the prepayment or deferred income arising from the advance consideration. For transactions involving multiple payments or receipts, each payment or receipt gives rise to a separate transaction date.

The interpretation applies for annual reporting periods beginning on or after 1 January 2018. Early adoption is permitted.

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, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Cash and cash equivalents	₩	1,209,015,664	1,011,701,875
Trade and other receivables, net		1,231,537,192	1,052,536,296
Held-to-maturity financial assets		1,081,965	382,050
Non-derivative financial instruments		52,436,080	875,886,507
Guarantee deposits		141,155,912	144,594,868
Total	₩	2,635,226,813	3,085,101,596

The maximum exposure to credit risk for trade and other receivables at the reporting date by geographic region as of December 31, 2017 and 2016 are as follows:

(In thousands of won)		2017	2016
Domestic	₩	290,803,139	197,417,857
North America		71,582,497	87,044,685
Europe		163,265,372	155,692,705
China		469,161,783	366,523,878
Other		236,724,401	245,857,171
Total	₩	1,231,537,192	1,052,536,296

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, 2017 and 2016 are as follows:

		2017		2016	
(In thousands of won)		**Gross**	**Impairment**	**Gross**	**Impairment**
Not past due	₩	1,192,424,933	-	979,218,165	-
Past due 1-30 days		25,044,432	-	43,214,478	-
Past due 31-60 days		1,662,369	-	1,406,974	-
Past due over 61 days		12,405,458	9,577,177	28,696,679	34,120
Total	₩	1,231,537,192	9,577,177	1,052,536,296	34,120

3) Financial assets that are past due but not impaired

Financial assets that are past due but not impaired as of December 31, 2017 are as follows:

(In thousands of won)		**Carrying amount**	**Less than 6 months**	**Over 6 months**
Trade and other receivables	₩	29,535,082	17,246,654	12,288,428

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

(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, 2017 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
Trade and other payable	₩	1,049,572,027	1,049,572,027	1,047,096,402	2,475,625
Short-term borrowings		1,079,305,198	1,092,190,944	1,092,190,944	-
Long-term borrowings		345,303,352	353,113,980	3,534,420	349,579,560
Forward exchange(*)		9,131,578	10,692,721	10,692,721	-
Total	₩	2,483,312,155	2,505,569,672	2,153,514,487	352,055,185

(*) 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, 2017 and 2016 are as follows:

(In thousands of won)		2017			2016		
		USD	EUR	JPY, etc.	USD	EUR	JPY, etc.
Monetary assets :							
Cash and cash equivalents	₩	101,391,616	1,026,655	41,168,572	316,396,684	2,623,658	44,680,023
Trade and other receivables		1,119,591,426	50,064,198	9,736,891	787,373,129	15,129,804	280,640
Other investments		207,170	2,898	499,201	233,681	2,871	81,650
Total	₩	1,221,190,212	51,093,751	51,404,664	1,104,003,494	17,756,333	45,042,313
Monetary liabilities:							
Trade and other payables	₩	766,392,605	13,603,429	73,794,212	283,169,526	11,631,786	42,028,270
Borrowings		703,806,331	25,451,617	-	206,335,842	1,021,364	-
Total	₩	1,470,198,936	39,055,046	73,794,212	489,505,368	12,653,150	42,028,270

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, 2017 and 2016:

(In Won)

	Average rate		Reporting date spot rate	
Currency	**2017**	**2016**	**2017**	**2016**
USD	1,131.1	1,160.4	1,071.4	1,208.5
EUR	1,276.6	1,284.0	1,279.3	1,267.6
JPY	10.09	10.68	9.49	10.37

Effects on income (loss) after income taxes as a result of change in exchange rate as of December 31, 2017 and 2016 are as follows:

(In thousands of won)

	2017		2016	
Currency	**If increased by 5%**	**If decreased by 5%**	**If increased by 5%**	**If decreased by 5%**
USD	(9,437,431)	9,437,431	23,289,479	(23,289,479)
EUR	456,267	(456,267)	193,411	(193,411)
JPY, etc.	(848,564)	848,564	114,232	(114,232)

The Group entered into 6 foreign exchange forwards contracts to hedge the currency risk of SAPB and TSDI's repayment of long-term borrowings. Details of the Group's foreign exchange forwards are as follows:

(In CNY, USD)

Subsidiaries	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
SAPB	CNY	68,760,000	USD	10,000,000	6.876
	CNY	176,350,000	USD	25,000,000	7.054
	CNY	138,300,000	USD	20,000,000	6.915
TSDI	CNY	90,784,836	USD	13,535,430	6.707

As of December 31, 2017, the carrying amount of the foreign exchange forwards is ₩ 9,132 million, and the Group recognized loss on valuation of derivatives amounting ₩ 14,617 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, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Fixed interest rate:			
Short-term borrowings	₩	211,071,350	205,237,725
Long-term borrowings		99,778,128	299,252,552
Sub-total	₩	310,849,478	504,490,277
Floating interest rate:			
Short-term borrowings	₩	868,233,848	178,723,094
Long-term borrowings		245,525,223	267,333,070
Sub-total		1,113,759,071	446,056,164
Total	₩	1,424,608,549	950,546,441

(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, 2017 and 2016.

(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%
2017	₩	(8,442,294)	8,442,294	(8,442,294)	8,442,294
2016		(3,381,106)	3,381,106	(3,381,106)	3,381,106

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, 2017 is as follows:

(In thousands of won)		**December 31, 2017**	
		If increased by 5%	**If decreased by 5%**
Total comprehensive income, net of tax effect	₩	47,773,541	(47,773,541)

(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)		**2017**	**2016**
Debt to equity ratio:			
Total liabilities	₩	4,299,476,832	3,936,201,007
Total equity		11,451,999,497	10,964,110,227
Debt to equity ratio		37.5%	35.9%
Net borrowings to equity ratio:			
Borrowings	₩	1,424,608,549	950,546,441
Less : Cash and cash equivalents		(1,209,015,664)	(1,011,701,875)
Less : Short-term financial instruments		(51,901,636)	(875,861,007)
Net borrowings	₩	163,691,249	(937,016,441)
Net borrowings to equity ratio		1.4%	(8.5%)

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, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017		2016	
		Carrying amount	**Fair value**	**Carrying amount**	**Fair value**
Financial assets:					
Assets carried at fair value					
Available-for-sale financial assets(*)	₩	1,399,062,235	1,399,062,235	1,224,037,462	1,224,037,462
Financial assets designated at fair value through profit or loss		251,271,000	251,271,000	250,009,000	250,009,000
Derivative financial assets		29,160,000	29,160,000	41,077,566	41,077,566
Subtotal	₩	1,679,493,235	1,679,493,235	1,515,124,028	1,515,124,028
Assets carried at amortized cost					
Cash and cash equivalents	₩	1,209,015,664	1,209,015,664	1,011,701,875	1,011,701,875
Trade receivables and other receivables		1,221,632,304	1,221,632,304	1,051,940,382	1,051,940,382
Available-for-sale financial assets		25,474,764	25,474,764	23,503,350	23,503,350
Held-to-maturity financial assets		1,081,965	1,081,965	382,050	382,050
Financial instruments		52,436,080	52,436,080	875,886,507	875,886,507
Guarantee deposits		141,155,912	141,155,912	144,594,868	144,594,868
Subtotal	₩	2,650,796,689	2,650,796,689	3,108,009,032	3,108,009,032
Total financial assets	₩	4,330,289,924	4,330,289,924	4,623,133,060	4,623,133,060
Financial liabilities:					
Liabilities carried at fair value					
Derivative financial liabilities	₩	20,220,578	20,220,578	19,211,000	19,211,000
Liabilities carried at amortized cost					
Borrowings	₩	1,424,608,549	1417437972	950,546,441	953,326,040
Trade and other payables		1,049,572,027	1,049,572,027	971,677,249	971,677,249
Subtotal		2,474,180,576	2,467,009,999	1,922,223,690	1,925,003,289
Total financial liabilities	₩	2,494,401,154	2,489,903,395	1,941,434,690	1,944,214,289

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:

	2017	2016
Borrowings	2.51%	2.06%

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., Samsung Venture Investment Corporation, and iMarket Asia Co., Ltd. are estimated 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, 2017 and 2016 are summarized as follows:

(In thousands of won)		Level 1	Level 2	Level 3	Total
December 31, 2017:					
Financial assets					
Available-for-sale financial assets	₩	1,260,515,592	-	138,546,643	1,399,062,235
Financial assets designated at fair value through profit and loss		-	-	251,271,000	251,271,000
Derivative assets		-	-	29,160,000	29,160,000
Financial liabilities					
Derivative liabilities		-	9,131,578	11,089,000	20,220,578
December 31, 2016:					
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

(*) 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, 2017 and 2016 are as follows:

(In thousands of won)		Trade receivables	
		2017	2017
Carrying amount of assets	₩	519,546,534	89,648,227
Carrying amount of associated liabilities		519,546,534	89,648,227

5. Segments Information

(1) Operating segments

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

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

(*) 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, 2017 and 2016.

(i) 2017

(In thousands of won)		Revenues	Depreciation	Amortization	Operating profit (loss)
Energy solutions	₩	4,304,130,368	276,383,717	40,124,331	(108,576,865)
Electronic material		2,017,430,554	92,888,549	50,486,272	225,471,651
Total	₩	6,321,560,922	369,272,266	90,610,603	116,894,786

(ii) 2016

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

(*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 during the years ended December 31, 2017 and 2016.

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, 2017 and 2016.

(In thousands of won)

		2017		2016	
		Revenue(*1)	**Non-current Assets(*2)**	**Revenue(*1)**	**Non- current assets**
Korea	₩	1,142,893,790	2,382,741,372	1,020,106,024	2,298,090,583
North America		360,740,026	17,807,602	354,319,961	14,649,695
Europe and South America		1,285,843,569	426,488,607	853,326,757	140,095,153
China		1,431,566,976	872,459,909	1,233,903,366	793,865,665
South-eastern Asia and etc.		2,100,516,560	305,050,254	1,739,166,402	335,003,243
Consolidation adjustments		-	(26,846,393)	-	9,460,617
Total	₩	6,321,560,921	3,977,701,351	5,200,822,510	3,591,164,956

(*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, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Cash on hand	₩	1,346,724	1,706,452
Demand deposits		1,173,335,866	996,481,334
Short-term investments		34,333,074	13,514,089
Total	₩	1,209,015,664	1,011,701,875

7. Trade and Other Receivables

(1) Trade and other receivables as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017		2016	
		Current	Non-current	Current	Non-current
Loans	₩	1,540,989	3,629,111	1,123,236	5,578,657
Present value discount		-	(251,091)	-	(432,999)
Other account receivables		60,505,081	-	131,184,014	-
Allowance		(157)	-	(157)	-
Accrued income		55,509,665	-	13,427,259	-
VAT receivables		112,955,678	-	120,681,465	-
Trade account receivable		997,395,074	1,594	780,541,665	-
Allowance		(9,653,641)	-	(162,758)	-
Total	₩	1,218,252,689	3,379,614	1,046,794,724	5,145,658

(2) Changes in allowance for trade and other receivables for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017		2016	
		Current	Non-current	Current	Non-current
Balance at beginning	₩	162,915	-	1,373,367	720,045
Business combination(Spin-off)		-	-	(753,712)	(485,715)
Write off		(11,750)	-	(513,193)	(234,330)
(Reversal of) Bad debt expense		9,514,503	-	56,453	-
Exchange rate fluctuation		(11,870)	-	-	-
Balance at ending	₩	9,653,798	-	162,915	-

8. Inventories

(1) Inventories as of December 31, 2017 and 2016 are summarized as follows:

1) 2017

(In thousands of won)		Acquisition cost	Allowance for valuation	Carrying amount
Merchandize	₩	569,633	-	569,633
Finished goods		300,171,122	(41,899,832)	258,271,290
Semi-finished goods		357,531,139	(46,570,019)	310,961,120
Raw materials		290,648,685	(7,132,733)	283,515,952
Supplies		17,521,793	-	17,521,793
Materials-in-transit		95,437,068	-	95,437,068
Other inventories		294,788	-	294,788
Total	₩	1,062,174,228	(95,602,584)	966,571,644

8. Inventories, Continued

(1) Inventories as of December 31, 2017 and 2016 are summarized as follows: Continued,

2) 2016

(In thousands of won)		Acquisition cost	Allowance for valuation	Book value
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

(2) The amount of inventories expensed as cost of sales and loss on valuation of inventories for the years ended December 31, 2017 and 2016 are as follows:

(In thousands of won)		2017	2016
Inventories recognized as cost of sales	₩	5,125,229,872	4,431,517,874
Loss on valuation of inventories		27,242,204	18,732,144
Total	₩	5,152,472,076	4,450,250,018

9. Other Investments

(1) Other investments as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017		2016	
		Current	Non-current	Current	Non-current
Held for maturity financial assets	₩	-	1,081,965	-	382,050
Available-for-sale financial assets		-	1,424,536,999	-	1,247,540,812
Financial assets designated at fair value through profit and loss		-	251,271,000	-	250,009,000
Financial instruments		51,901,636	534,444	875,861,007	25,500
Guarantee deposits		61,893,544	79,262,368	56,838,733	87,756,135
Derivatives financial assets		-	29,160,000	-	41,077,566
Total	₩	113,795,180	1,785,846,776	932,699,740	1,626,791,063

9. Other Investments, Continued

(2) Available-for-sale financial assets as of December 31, 2017 and 2016 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, 2017							
Listed equity securities	₩	1,025,363,499	467,353,509	130,066,679	597,420,188	(362,268,096)	1,260,515,591
Unlisted equity securities		135,587,673	(12,961,162)	41,394,897	28,433,735	-	164,021,408
Total	₩	1,160,951,172	454,392,347	171,461,576	625,853,923	(362,268,096)	1,424,536,999
Tax effect	₩		(110,188,901)	(39,485,726)	(149,674,627)		
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)		

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 ₩ 84,617 million, respectively, as of December 31, 2017. 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 ₩7,784 million, respectively, as of December 31, 2017.

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 ₩16,245 million, respectively, as of December 31, 2017.

The fair value of iMarket Asia Co., Ltd. is estimated using the free cash flows to equity method. The acquisition cost and the carrying value of the unlisted security are ₩4,028 million and ₩9,098 million, respectively, as of December 31, 2017.

12 equity securities of unlisted companies, including Reshine, and a debt securities 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 ₩25,474 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, 2017.

3) The Group recognized impairment loss of ₩1,667 million due to significant and prolonged decrease of fair value of Samsung Heavy Industries Co., Ltd. below its acquisition cost.

9. Other Investments, Continued

(3) During the year ended December 31, 2016, the Group 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, 2017 are ₩ 258,500 million and ₩ 251,271 million, respectively.

10. Other Current Assets and Non-current Assets

Other current and non-current assets as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017		2016	
		Current	Non-current	Current	Non-current
Advance payments	₩	53,630,374	18,520,723	125,082,968	19,709,347
Prepaid expenses		30,456,540	100,194,358	29,034,736	119,509,615
Prepaid income tax		13,353,629	-	4,548,322	-
Total	₩	97,440,543	118,715,081	158,666,026	139,218,962

11. Equity-method-accounted Investees

(1) The equity-method accounted investees of the Group as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)			2017		2016	
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%	₩ 6,175,255,630	15.2%	₩ 5,477,456,629
Samsung Economic Research Institute Ltd. ("SERI")	Korea	Management advisory consulting	29.6%	23,130,678	29.6%	22,905,607
Intellectual Keystone Technology ("IKT")	U.S.A	Investing in new technology	41.0%	11,619,735	41.0%	12,937,228
Sungrow-Samsung SDI Energy Storage Power Supply Co., Ltd. ("SSEP")	China	Manufacturing ESS products	35.0%	-	35.0%	3,296,794
SD Flex Co., Ltd.	Korea	Manufacturing printed-circuit board	50.0%	9,343,869	50.0%	8,974,652
Total				₩ 6,219,349,912		₩ 5,525,570,910

(*) 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, 2017.

11. Equity-accounted Investees, Continued

(2) The summarized financial information of equity-accounted investees as of and for the years ended December 31, 2017 and 2016 are summarized as follows:

1) 2017

(In thousands of won)	SDC	SERI	IKT	SSEP	SDFLEX
Current assets	₩ 21,316,244,224	71,981,435	5,686,916	26,084,837	16,195,903
Non-current assets	37,884,399,241	47,612,842	27,867,611	11,872,624	4,625,561
Current liabilities	12,145,376,928	26,587,211	5,213,709	32,859,818	2,133,726
Non-current liabilities	5,962,475,945	14,862,881	-	1,877,884	-
Revenue	34,293,154,971	167,682,467	7,069,449	9,991,534	10,476,913
Operating profit (loss)	5,268,395,104	484,233	561,998	(4,570,216)	761,351
Net income (loss)	4,645,694,815	225,571	386,731	(3,741,563)	738,443
Other comprehensive income (loss)	(25,170,872)	-	(618,774)	(2,353,751)	-
Total comprehensive income (loss)	4,620,523,943	225,571	(232,043)	(6,095,315)	738,443

2) 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	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

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, 2017 and 2016 are summarized as follows:

1) 2017

(In thousands of won)	SDC	SERI	IKT	SSEP	SDFLEX
Net assets (a)(*)	₩40,573,072,061	78,144,185	28,340,817	3,219,759	18,687,738
Percentage of ownership(b)	15.2%	29.6%	41.0%	35.0%	50.0%
Equity to net assets(axb)	6,176,277,906	23,130,678	11,619,735	1,126,916	9,343,869
Unrealized gains(losses)	(1,022,276)	-	-	(1,126,916)	-
Carrying amount	6,175,255,630	23,130,678	11,619,735	-	9,343,869

2) 2016

(In thousands of won)	SDC	SERI	IKT	SSEP	SDFLEX
Net assets(a)(*)	₩35,982,390,352	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)	5,469,323,334	22,905,607	12,937,228	3,296,794	8,974,652
Unrealized gains(losses)	8,133,295	-	-	-	-
Carrying amount	5,477,456,629	22,905,607	12,937,228	3,296,794	8,974,652

(*) 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, 2017 and 2016 are as follows:

1) 2017

(In thousands of won)

Company		January 1, 2017	Share of profits(loss)	Other capital movements	December 31, 2017
SDC	₩	5,477,456,629	697,944,768	(145,767)	6,175,255,630
SERI		22,905,607	17,653	207,418	23,130,678
IKT		12,937,228	158,000	(1,475,493)	11,619,735
SSEP (*)		3,296,794	(3,084,864)	(211,930)	-
SDFLEX		8,974,652	369,217	-	9,343,869
Total	₩	5,525,570,910	695,404,774	(1,625,772)	6,219,349,912

(*) Loss of ₩ 567 million from equity-method accounting of SSEP has not been recognized as of December 31, 2017, as the Group's share in the equity-accounted investee's net asset is less than zero.

11. Equity-accounted Investees, Continued

(4) Changes in investments in equity-accounted investees for the years ended December 31, 2017 and 2016 are as follows: continued

2) 2016

(In thousands of won)

Company		January 1, 2016	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

(5) None of the equity-accounted investees is a listed company as of December 31, 2017.

(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, 2017.

12. Property, Plant and Equipment

Changes in property, plant and equipment for the years ended December 31, 2017 and 2016 are summarized as follows:

(1) 2017

(In thousands of won)

		Land	Buildings and structures	Machinery	Tools, furniture and fixtures	Construction in progress	Total
Beginning 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)
Acquisitions and capital expenditure		1,496,875	171,316,555	30,735,731	31,902,654	824,237,454	1,059,689,269
Depreciation		-	(71,308,030)	(226,598,142)	(71,180,914)	-	(369,087,086)
Disposals		(519,294)	(13,184,334)	(31,072,189)	(4,485,355)	(1,501,784)	(50,762,956)
Impairment losses		-	(2,935,164)	(27,805,562)	(5,468,708)	-	(36,209,434)
Government grant		-	(609,260)	(57,474,199)	(269,690)	-	(58,353,149)
Other		264,949	161,796,060	488,919,797	61,642,883	(745,224,560)	(32,600,871)
Exchange rate fluctuation		(1,181,842)	(36,637,892)	(37,659,372)	(7,710,173)	(2,942,117)	(86,131,396)
Ending balance	₩	277,183,588	1,200,577,455	810,624,946	126,610,988	515,342,349	2,930,339,326
Acquisition cost		277,183,588	2,701,066,541	2,732,963,107	490,386,136	515,342,349	6,716,941,721
Accumulated depreciation		-	(1,500,489,086)	(1,922,338,161)	(363,775,148)	-	(3,786,602,395)

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) 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 divestment		(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.

13. Intangible Assets

Changes in intangible assets for the years ended December 31, 2017 and 2016 are summarized as follows:

(1) 2017

(In thousands of won)		Industrial property	Development costs	Others	Goodwill	Total
Beginning 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	633,184,021	1,407,138,905
Accumulated depreciation		(48,092,183)	(4,649,231)	(383,388,480)	(29,322,981)	(465,452,875)
Acquisitions		390,186	-	3,739,290	-	4,129,476
Amortization		(8,386,701)	(334,886)	(81,889,016)	-	(90,610,603)
Disposals		(2,910,082)	-	(149,680)	-	(3,059,762)
Impairment losses		-	-	(5,719,043)	-	(5,719,043)
Other		14,788,668	-	38,004,548	-	52,793,216
Exchange rate fluctuation		(229,478)	(91,061)	(1,786,754)	335,227	(1,772,066)
Ending balance	₩	55,743,792	1,326,148	236,181,041	604,196,267	897,447,248
Acquisition cost		112,222,676	6,310,265	701,458,536	633,519,248	1,453,510,725
Accumulated depreciation		(56,478,884)	(4,984,117)	(465,277,495)	(29,322,981)	(556,063,477)

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

13. Intangible Assets, Continued

Changes in intangible assets for the years ended December 31, 2017 and 2016 are summarized as follows:, continued

(2) 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	633,184,021	1,407,138,905
Accumulated depreciation		(48,092,183)	(4,649,231)	(383,388,480)	(29,322,981)	(465,452,875)

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.

(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, 2017 and 2016 are ₩ 525,934 million and ₩ 552,529 million, respectively.

13. Intangible Assets, Continued

(5) Impairment of CGU including goodwill

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

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 at 1% for both CGUs, and discount rate of 11.1% and 9.9% 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, 2017, the Group has allocated ₩ 500,381 million of its goodwill to its electronic material business, and ₩ 103,815 million to Novaled.

14. Investment Property

Changes in investment property for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)	2017			2016		
	Land	**Buildings**	**Total**	**Land**	**Buildings**	**Total**
Beginning balance	₩ 145,628,515	55,461	145,683,976	207,812,651	20,369,004	228,181,655
Acquisition	106,759	117,711	224,470			
Reclassification	-	3,725,000	3,725,000	(60,728,826)	(20,018,163)	(80,746,989)
Disposal	(78,372)	-	(78,372)	(770,935)	-	(770,935)
Depreciation	-	(185,181)	(185,181)	-	(295,380)	(295,380)
Exchange rate fluctuations	544,885	-	544,885	(684,375)	-	(684,375)
Ending balance	₩ 146,201,787	3,712,991	149,914,778	145,628,515	55,461	145,683,976

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

15. Trade Payables and Other Liabilities

Trade payables and other liabilities as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017		2016	
		Current	**Non-current**	**Current**	**Non-current**
Trade payables	₩	461,279,987	-	341,755,706	-
Accounts payable		309,780,664	523,396	179,814,403	31,740
Accrued expenses		276,035,751	1,952,229	279,221,871	-
Other		438,822,198	178,643,379	857,375,230	218,005,827
Total	₩	1,485,918,600	181,119,004	1,658,167,210	218,037,567

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

16. Borrowings

(1) Borrowings of the Group as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Short-term borrowings			
Current portion of debentures in Korean won	₩	199,813,649	199,948,098
Current portion of long-term borrowings in foreign currency		111,353,116	-
Disposals of trade receivable		519,546,534	89,648,227
Short-term borrowings in foreign currency		248,591,899	94,364,494
Sub total	₩	1,079,305,198	383,960,819
Long-term borrowings			
Debentures	₩	99,778,128	299,252,552
Long-term borrowings in foreign currency		245,525,223	267,333,070
Sub total		345,303,351	566,585,622
Total	₩	1,424,608,549	950,546,441

16. Borrowings, Continued

(2) Debentures issued by the Parent company as of December 31, 2017 and 2016 are as follows:

(In thousands of won)

Type	Classification	Date of maturity	Annual Interest rate (%)		2017	2016
Corporate Bonds	Unsecured	2017.02.02	4.03	₩	-	100,000,000
		2017.08.16	3.31		-	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				₩	300,000,000	500,000,000
Less discount on debentures					(408,223)	(799,350)
Less current portion of long-term borrowings					(199,813,649)	(199,948,098)
Total				₩	99,778,128	299,252,552

(3) Long-term borrowings as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)

Borrower	Description	Financial institution	Date of maturity	Annual interest rate (%)		2017	2016
SDIBS	Facility loan	Sumitomo Mitsui Banking Corp. Europe Limited	2018.04.27	EURIBOR 3M+0.78		67,800,250	92,534,800
SAPB	Facility loan	Bank of China	2018.04.10	LIBOR 3M+1.45		26,369,366	107,643,785
SDITB	Facility loan	Bank of Communication Tianjin Branch	2019.02.04	PBOC*0.95		17,100,373	16,450,485
SDIHU	Facility loan	Unicredit Bank	2019.12.15	EURIBOR 3M+0.80		245,608,350	50,704,000
Sub total						356,878,339	267,333,070
Less current portion of long-term borrowings						(111,353,116)	-
Total					₩	245,525,223	267,333,070

17. Provisions

Changes in provisions for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)

		Current			Non-current				
		Quality assurance	Onerous contract	Others	Incentives	Quality assurance	Onerous contract	Others	Total
Balance at Jan. 1,2016	₩	31,989,696	-	15,914,109	23,966,813	-	-	1,326,141	73,196,759
Business divestment		-	-	-	-	-	-	(19,893)	(19,893)
Provisions made		146,968,014	67,707,623	6,427,605	22,320,559	9,298,107	39,586,698	143,362	292,451,968
Provisions used		(51,787,892)	(26,767,621)	(9,429,176)	(11,910,192)	-	-	(297,598)	(100,192,479)
Balance at Dec. 31,2016	₩	127,169,818	40,940,002	12,912,538	34,377,180	9,298,107	39,586,698	1,152,012	265,436,355
Balance at Jan. 1, 2017	₩	127,169,818	40,940,002	12,912,538	34,377,180	9,298,107	39,586,698	1,152,012	265,436,355
Provisions made		28,841,291	29,589,407	695	9,160,318	4,000,275	-	7,707,930	79,299,916
Provisions used		(27,209,040)	(40,820,878)	(11,403,024)	(33,802,828)	(4,220,470)	(29,589,407)	-	(147,045,647)
Balance at Dec. 31,2017	₩	128,802,069	29,708,531	1,510,209	9,734,670	9,077,912	9,997,291	8,854,942	197,690,624

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, 2017 and 2016 are summarized as follows:

1) Present value of defined obligations

(In thousands of won)		2017	2016
Defined Benefit Obligations:			
Beginning balance	₩	489,035,175	565,777,906
Current service cost		64,661,532	67,694,427
Interest cost		15,226,250	15,010,761
Obligations transferred from(to) related parties		7,665,739	767,149
Gross benefit payments		(27,542,064)	(90,875,482)
Actuarial loss (gain) arising from assumptions		(29,295,757)	2,104,163
Contribution to the defined contribution plan		(14,889,477)	(15,894,232)
Obligations transferred in business combination(disposal)		-	(55,511,911)
Exchange rate fluctuations		155,001	(37,606)
Ending balance	₩	505,016,400	489,035,175
Plan Assets		(479,394,771)	(504,767,478)
Net defined benefit liability(asset)		25,621,629	(15,732,303)

2) Fair value of plan assets

(In thousands of won)		2017	2016
Beginning balance	₩	504,767,478	486,503,674
Contributions paid into plan		303,921	155,966,209
Obligations paid by the plan		(18,571,600)	(87,156,358)
Plan assets transferred from(to) related parties		(96,447)	(407,987)
Contribution to the defined contribution plan		(14,889,477)	(15,894,232)
Interest income		15,703,282	15,362,245
Actuarial gain (loss) arising from assumptions		(7,766,156)	(7,787,649)
Obligations transferred in business combination (disposal)		-	(41,889,760)
Exchange rate fluctuations		(56,230)	71,336
Ending balance	₩	479,394,771	504,767,478

3) Other liabilities for employee benefits as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Liabilities for paid absence	₩	39,486,720	44,746,940
Long-term incentive provisions		9,025,100	34,377,180
Other long-term employee benefits		39,626,277	25,361,704
Total	₩	88,138,097	104,485,824

18. Employee Benefits, Continued

(2) Expenses for employee benefits for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Current service costs	₩	64,661,532	67,694,427
Interest cost		15,226,250	15,010,761
Interest income		(15,703,282)	(15,362,245)
Settlement loss		-	(12,169,711)
Payment on defined contribution plans		1,810,247	1,527,843
Total	₩	65,994,747	56,701,075

(3) Fair value of plan assets as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Severance insurance bonds (*)	₩	479,108,786	504,471,708
National pension fund		285,985	295,770
Total	₩	479,394,771	504,767,478

(*) 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, 2017 and 2016 are summarized as follows:

	2017	2016
Expected rate of salary increase	4.81%	4.83%
Discount rate for defined benefit obligations	3.70%	3.20%

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, 2017, 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 of salary increase	53,719,995	(46,825,853)
Discount rate	(45,873,058)	53,559,163

19. Commitment and Contingencies

(1) As of December 31, 2017, the Group has been provided a guarantee of ₩21,915 million by Seoul Guarantee Insurance Co., Ltd. in relation to a court deposit and licensing procedures.

(2) The Group is 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 outcome of pending litigations.

(3) Other than cases described in (2) and (3) of this note to the consolidated financial statements, the Group is defendant of 29 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, 2017.

(In thousands of USD and hundred millions of won)

	Currency	Credit limit	Name of financial institution
Bank overdrafts	KRW	265	Shinhan and 2 others
General purpose loans	KRW	4,586	KEB Hana and 11 others
Note receivable discount	KRW	200	KEB Hana
Trade financing(Local L/C)	KRW	350	KEB Hana and 1 others
A/S, Usance	USD	57,900	Woori and 5 others
Loans for Import trade	USD	55,000	Deutsche and 1 other
Guarantee payments for foreign currency	USD	172,718	Woori and 5 others
D/A, D/P, O/A	USD	852,000	Woori and 7 others
Secured loan of credit sales	KRW	1,440	Woori and 5 others
Total	KRW	6,841	
	USD	1,137,618	

(7) In accordance with technical license agreements, the Group recorded royalty expenses of ₩10,627 million and ₩6,042 million for the years ended December 31, 2017 and 2016, respectively.

(8) As of December 31, 2017, 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, 2017, carrying amount of put option (derivative assets) and call option (derivative liabilities) are ₩ 29,160 million and ₩ 11,089 million, respectively.

20. Capital Stock and Capital Surplus

(1) Capital stock

Ordinary shares and preferred shares issued and outstanding as of December 31, 2017 and 2016 are summarized as follows:

1) 2017

(In shares)	Shares issued	Treasury shares	Shares outstanding
Ordinary shares	68,764,530	(3,331,391)	65,433,139
Preferred shares	1,617,896	(178,400)	1,439,496

2) 2016

(In shares)	Shares issued	Treasury shares	Shares outstanding
Ordinary shares	68,764,530	(2,507,244)	66,257,286
Preferred shares	1,617,896	(160,538)	1,457,358

(2) Capital surplus as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Additional paid-in-capital	₩	4,838,550,738	4,838,550,738
Other capital surpluses		204,147,401	192,693,468
Total	₩	5,042,698,139	5,031,244,206

(3) Dividends by the Parent Company for the reporting periods ending December 31, 2017 and 2016 are summarized as follows. Dividends for the year ended December 31, 2017 will be presented to the general shareholders' meeting of the Parent Company.

(In thousands of won)		2017	2016
Ordinary shares (2017: ₩1,000 per share, 2016: ₩1,000 per share)	₩	65,433,139	66,257,286
Preferred shares (2017: ₩1,050 per share, 2016: ₩1,050 per share)		1,511,471	1,530,226
	₩	66,944,610	67,787,512

For the years ended December 31, 2017 and 2016

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, 2017 and 2016 are as follows:

(In thousands of won)	2017			2016		
	Ordinary shares	Preferred shares	Total	Ordinary shares	Preferred shares	Total
Number of shares	3,331,391	178,400	3,509,791	2,507,244	160,538	2,667,782
Carrying amount	₩ 336,813,481	8,318,103	345,131,584	244,212,008	7,318,110	251,530,118

22. OCI accumulated in reserves

OCI accumulated in reserves, net of tax, as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Available-for-sale financial assets – net change in fair value		476,105,659	344,212,783
Unrealized gain on equity method investments		587,810,606	553,148,270
Unrealized loss on equity method investments		(272,368,257)	(236,422,299)
Loss on translation of foreign operations		(189,112,233)	(69,951,358)
Total	₩	602,435,775	590,987,396

23. Retained earnings

Retained earnings as of December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Legal reserve	₩	144,729,813	137,764,496
Discretionary reserve		4,536,828,000	4,663,178,000
Unappropriated retained earnings		919,029,407	193,774,782
Total	₩	5,600,587,220	4,994,717,278

24. Selling, General, and Administrative Expenses

Details of selling, general and administrative expenses for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Salaries and wages	₩	135,494,580	322,549,691
Severance and retirement benefits		14,331,298	375,822,165
Employee fringe benefits		70,197,888	86,701,022
Depreciation		87,800,316	77,565,303
Research and development expenses		525,933,696	552,529,353
Selling and distribution cost		59,645,552	45,459,280
Fees and commissions		74,011,518	86,948,765
Bad debt expenses		9,580,406	231,381
Others		75,198,805	129,098,167
Total	₩	1,052,194,059	1,676,905,127

25. The Nature of Expenses

The nature of expenses for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Salaries and wages	₩	759,356,050	970,241,113
Severance and retirement benefits		65,489,044	428,380,521
Employee benefits		255,012,918	282,778,734
Depreciation		369,272,266	354,983,645
Amortization		90,610,603	92,889,292
Total	₩	1,539,740,881	2,129,273,305

26. Other Income and Other Expenses

(1) Other income for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Dividends income	₩	7,792,823	11,784,589
Commission income		10,751	-
Rental income		2,187	999,366
Reversal of other bad debt expenses		97,836	130,621
Gain on sale of available-for-sale assets		1,801,570	332,205,341
Gain on disposal of associates and joint ventures		-	134,082,952
Gain on sale of property, plant and equipment		3,693,894	13,006,004
Gain on sale of intangible assets		18,596,376	86,867
Gain on sale of investment property		226,011	1,797,264
Gain on sale of non-current assets held-for-sale		47,605,322	-
Gain on disposal of trade receivables		75	1,690
Miscellaneous income		116,399,802	28,368,628
Total	₩	196,226,647	522,463,322

(2) Other expenses for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Other bad debt expenses	₩	31,934	1,347
Loss on sale of available-for-sale assets		152	-
Loss on impairment of available-for-sale assets		1,666,879	1,627,720
Loss on disposal of associates and joint ventures		4,737,900	-
Donations		2,683,073	3,597,990
Loss on sale of property, plant and equipment		29,678,647	9,208,957
Loss on impairment of property, plant and equipment		36,209,434	366,672,303
Loss on restoration of property, plant and equipment		-	4,205
Loss on sale of intangible assets		2,970,481	12,618,623
Loss on impairment of intangible assets		5,719,043	113,467,364
Legal expenses and other miscellaneous expenses		99,325,604	142,724,361
Total	₩	183,023,147	649,922,870

27. Financial Income and Financial Cost

Finance income and costs for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Financial income			
Interest income	₩	17,845,715	32,856,653
- Bank deposit		13,331,485	29,296,638
- Other		4,514,230	3,560,015
Gain on foreign currency transaction		150,241,321	192,924,874
Gain on foreign currency translation		78,985,936	38,052,490
Gain on valuation of derivatives		1,677,111	21,735,118
Gain on valuation of financial assets at fair value through profit or loss		1,262,000	-
Subtotal	₩	250,012,083	285,569,135
Financial expense			
Interest expense	₩	22,777,478	
- Borrowing		12,127,758	9,100,646
- Debentures		8,922,905	24,376,815
- Other		1,726,815	1,662,455
Loss on foreign currency transactions		170,380,494	215,813,449
Loss on foreign currency translation		43,674,988	38,205,214
Loss on valuation of derivatives		14,617,304	-
Loss on valuation of financial assets at fair value through profit or loss		-	8,491,000
Subtotal	₩	251,450,264	297,649,579
Net financial expense	₩	1,438,181	12,080,444

28. Income Tax Expense

(1) Income tax expense for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Current income taxes	₩	63,449,721	303,116,057
Deferred income taxes from changes in temporary differences		216,925,211	(141,847,906)
Deferred income taxes from changes in unused tax losses		(33,242,216)	153,830,742
Deferred income taxes from changes in tax credit carry forward		(66,034,805)	82,309,418
Deferred income taxes recognized directly in equity		(38,531)	-
Others		(188,364)	745,558
Income tax expense	₩	180,871,016	398,153,868
Continuing operations		180,871,016	57,809,851
Discontinued operations		-	340,344,017

(2) Deferred tax assets and liabilities recognized at stockholders' equity as of December 31, 2017 and 2016 are summarized as follows:

1) 2017

(In thousands of won)		Before tax	Deferred tax assets (liabilities)	After tax
Capital surplus of equity-accounted investees	₩	23,237,831	10,545,896	33,783,727
Actuarial gain (losses) from defined benefit plan		(101,780,848)	24,737,749	(77,043,099)
Change in equity of equity-accounted investees		329,928,289	(99,938,409)	229,989,879
Gain on valuation of available-for-sale securities		625,780,286	(149,674,627)	476,105,659
Total	₩	877,165,558	(214,329,391)	662,836,166

2) 2016

(In thousands of won)		Before tax	Deferred tax assets (liabilities)	After tax
Capital surplus of equity-accounted investees	₩	23,237,831	(2,407,857)	20,829,973
Actuarial gain (losses) from defined benefit plan		(123,331,559)	29,846,237	(93,485,322)
Change in equity of equity-accounted investees		467,220,860	(105,564,452))	361,656,409
Gain on valuation of available-for-sale securities		454,401,684	(110,188,901))	344,212,783
Total	₩	821,528,816	(188,314,973))	633,213,843

Income tax related to actuarial gain(loss) from defined benefit plan and gains(loss) on valuation of available-for-sale financial assets were recognized in other comprehensive income. Income tax effect of ₩ 39 million related to gain on sale of treasury stock was deducted directly from equity. Income tax effect of ₩ 11,347 million was added directly to equity as a result of assessment on recoverability of temporary differences from investment in subsidiaries.

28. Income Tax Expense, Continued

(3) Reconciliation of effective tax rate for the years ended December 31, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017	2016
Profit (loss) before income tax	₩	824,064,879	609,265,060
Statutory tax rate		24.2%	24.2%
Income tax using the Group's statutory tax rate		199,423,701	147,442,144
Adjustments			
Foreign withholding tax		(2,709,605)	12,409,281
Permanent differences		(3,428,991)	109,936,638
Unrecognized temporary differences		57,615,675	191,761,780
Tax credits		(73,688,531)	(66,927,079)
Difference in tax rate		3,612,303	(9,730,766)
Consolidation adjustments, and others		46,464	13,261,871
Income tax expense (income)	₩	180,871,016	398,153,869
Average effective tax rate		21.9%	65.3%

(4) As of December 31, 2017, 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, 2017 and 2016 are summarized as follows:

(In thousands of won)		2017			2016		
		Beginning balance	Changes	Ending balance	Beginning balance	Changes	Ending balance
Tangible/Intangible assets	₩	102,503,469	20,576,317	123,079,786	(12,649,588)	115,153,057	102,503,469
Investment in subsidiaries and associates		(1,004,491,951)	(165,097,033)	(1,169,588,984)	(915,473,828)	(89,018,123)	(1,004,491,951)
Inventories		15,346,761	(3,670,648)	11,676,113	9,616,360	5,730,401	15,346,761
Accrued expenses		251,889,536	(114,420,515)	137,469,021	184,173,368	67,716,168	251,889,536
Available-for-sale financial assets		(135,631,616)	(634,024)	(136,265,640)	(172,957,644)	37,326,028	(135,631,616)
Others		13,729,693	10,748,528	24,478,222	1,635,818	12,093,875	13,729,693
Sub total	₩	(756,654,108)	(252,497,374)	(1,009,151,482)	(905,655,513)	149,001,406	(756,654,108)
Deferred tax added to capital		(188,314,973)	(26,014,418)	(214,329,391)	(239,415,868)	51,100,895	(188,314,973)
Loss carry forwards		-	33,242,216	33,242,216	153,830,740	(153,830,740)	-
Tax credit		134,885,387	66,034,805	200,920,192	217,194,806	(82,309,419)	134,885,387
Temporary differences of subsidiaries		(1,930,186)	23,416,430	21,486,244	12,406,310	(14,336,496)	(1,930,186)
Total	₩			(967,832,221)			(812,013,880)

(6) The Group did not recognize deferred tax liabilities for temporary difference of ₩ 232,585 million and deferred tax liabilities of ₩ 57,866 million, 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, 2017 and 2016 are calculated as follows:

(i) Ordinary Shares

(In thousands of won, except earnings per share)		2017	2016
Profit (loss) attributable to the owners of the Company	₩	657,236,341	219,405,853
Profit (loss) attributable to ordinary shares		643,017,943	214,617,170
Profit (loss) from continuing operations attributable to ordinary shares		643,017,943	(851,647,392)
Profit (loss) from discontinued operations attributable to ordinary shares		-	1,066,264,562
Weighted average number of ordinary shares (basic)		65,456,683	68,496,506
Basic earnings per share (won)		9,824	3,133
Basic earnings per share of continuing operations (won)		9,824	(12,434)
Basic earnings per share of discontinued operations (won)		-	15,567

(ii) Preferred Shares

(In thousands of won, except earnings per share)		2017	2016
Profit (loss) attributable to the owners of the Company	₩	657,236,341	219,405,853
Profit (loss) attributable to preferred shares		14,218,398	4,788,683
Profit (loss) from continuing operations attributable to preferred shares		14,218,398	(18,629,892)
Profit (loss) from discontinued operations attributable to preferred shares		-	23,418,575
Weighted average number of preferred shares (basic)		1,440,054	1,504,402
Basic earnings per share (won)		9,874	3,183
Basic earnings per share of continuing operations (won)		9,874	(12,384)
Basic earnings per share of discontinued operations (won)		-	15,567

29. Earning per Share, Continued

(1) Basic earnings per share, continued

2) Weighted average number of shares for the years ended December 31, 2017 and 2016 are calculated as follows:

(i) Ordinary Shares

(In shares)	**2017**	**2016**
Issued ordinary shares at January 1	68,764,530	68,764,530
Treasury stock	(3,307,847)	(268,024)
Weighted-average number of common shares outstanding (basic)	65,456,683	68,496,506

(ii) Preferred Shares

(In shares)	**2017**	**2016**
Issued preferred shares at January 1	1,617,896	1,617,896
Treasury stock	(177,842)	(113,494)
Weighted-average number of common shares outstanding (basic)	1,440,054	1,504,402

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, 2017 and 2016.

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, 2017 and 2016 are summarized as follows:

1) 2017

(In thousands of won)		Revenues	Other Income	Inventory purchase	Purchase of property plant and equipment	Other expenses
Associates						
SDC	₩	670,009,459	39,052,120	328,343	1,599,800	4,545,329
SERI		-	-	-	-	4,476,966
SD FLEX CO., LTD.		137,232	867,541	9,164,312	-	61,503
SSEP		18,655,157	101,256	-	-	-
Conglomerate entities						
SEC		1,265,429,327	6,905,243	1,223,382	6,921,050	37,582,489
Others		12,770,258	11,425,520	680,697	90,059,776	173,958,164
Total	₩	1,967,001,433	58,351,680	11,396,734	98,580,626	220,624,451

2) 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

30. Related Parties, Continued

(3) Details of significant account balances with related parties as of December 31, 2017 and 2016 are summarized as follows:

1) 2017

(In thousands of won)		Account receivable	Other receivable, etc	Account payable	Other payable, etc
Associates					
SDC	₩	63,239,847	42,004	-	910,830
SERI		-	-	-	759,489
SDFLEX		-	107,319	2,210,243	3,443
SSEP		12,540,099	-	-	-
Conglomerate entities					
SEC		129,643,904	7,320,156	135,469	90,076,843
Others		1,693,493	27,471,699	199,279	41,639,744
Total	₩	207,117,343	34,941,178	2,544,991	133,390,349

2) 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

(4) Personnel compensation to registered officers (the "key management") who have the authority and responsibility in planning, directing, and control of the Group are ₩3,245 million and ₩4,418 million, for the years ended December 31, 2017 and 2016, respectively.

As of December 31, 2017 and 2016, liabilities related to long-term employee benefits for key management are ₩1,670 million and ₩4,238 million, respectively. In addition, liabilities related to retirement benefits for key management as of December 31, 2017 and 2016 are ₩6,128 million and ₩4,848 million, respectively.

31. Non-controlling Interest

Non-controlling interests as of and for the years ended December 31, 2017 and 2016 are summarized as follows:

(1) 2017

(In millions of won)

		NOVALED	America (SDIA and 2 others)	China (TSDI and 7 others)	Others	Total
Current assets	₩	68,766	47,517	989,790	18,706	1,124,779
Non-current assets		191,401	24,225	826,299	58,297	1,100,222
Current liabilities		13,430	23,458	840,873	1,480	879,241
Non-current liabilities		19,916	8,004	53,051	230	81,201
Net assets		226,821	40,280	922,164	75,292	1,264,557
Carrying amount of non-controlling interests		54,704	3,552	132,167	4,275	194,698
Sales		107,522	51,718	1,302,732	-	1,461,972
Net income (loss)		39,673	(10,114)	(29,049)	635	1,145
Total comprehensive income		38,573	(16,330)	(84,897)	5,478	(57,176)
Net income (loss) distributed to non-controlling interests		19,854	(906)	(24,182)	(8,808)	(14,042)
Cash flow from operating activities		(20,979)	(9,106)	48,016	(2,546)	15,385
Cash flow from investing activities		(15,587)	5,810	(234,471)	(5,225)	(249,473)
Cash flow from Financing activities before payment of dividends to non-controlling interest		6,889	(676)	53,899	9,979	67,851
Dividends attributed to non-controlling equity		-	-	(2,240)	-	(2,240)
Exchange rate changes		289	(1,527)	(19,971)	(1,642)	(22,851)
Changes on cash and cash equivalents	₩	(29,388)	(5,499)	(154,767)	566	(189,088)

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, 2017 and 2016 are summarized as follows: Continued

(2) 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 of dividends to 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.

32. Discontinued Operation

The Group performed physical division and sale of its chemical business during the year ended December 31, 2016. Details of results from discontinued operation are as follows:

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

(In thousands of won)		**2016**
Profit (loss) of discontinued operation:	₩	
Revenue		897,035,893
Expense		(746,352,219)
Income from discontinued operation before tax		150,683,674
Income tax expense		(30,759,400)
Income from discontinued operation, after tax		119,924,274
Gain on disposal of discontinued operations		1,279,275,278
Income tax expense on gain on disposal of discontinued operations		(309,584,617)
Profit (loss) from discontinued operations	₩	1,089,614,935
Basic earnings per share for ordinary shares (won)		15,567
Basic earnings per share for preferred shares (won)		15,567

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

(In thousands of won)		**2016**
Cash flows from (used in) operating activities	₩	(316,092,084)
Cash flows from (used in) investing activities		1,202,043,877
Cash flows from (used in) financing activities		113,398,866
Cash flows from (used in) discontinued operation	₩	999,350,659

33. Non-current Assets Held for Sale

Details of non-current assets held for sale as of December 31, 2016 are summarized as follows:

(In thousands of won)		2016
Property, plant and equipment, net	₩	1,343,510
Investment property		78,001,278
Total	₩	79,344,788

The Group sold its investment property located in Gimpo, Gyeonggi-do, during year ended December 31, 2017, and recognized gain of ₩ 47,605 million.

34. Statement of Cash Flows

Adjustment and changes in assets and liabilities for cash flows from operating activities for the years ended December 31, 2017 and 2016 are summarized as follows:

(1) Adjustment for cash flows from operating activities

(In thousands of won)	2017	2016
Severance & retirement benefits	64,184,501	55,173,231
Loss on valuation of inventories	27,242,204	17,721,191
Depreciation	369,272,266	360,464,448
Amortization	90,610,603	94,541,952
Bad debt expense	9,580,406	231,381
Reversal of other bad debt expense	(65,903)	(129,431)
Fees and Commissions	604,858	5,015,668
Share of profit of equity accounted investees	(695,404,774)	(245,178,734)
Gain on disposal of subsidiary	-	(134,082,952)
Loss on disposal of subsidiary	4,737,900	-
Gain on sale of available-for-sale financial assets	(1,801,570)	(332,205,341)
Impairment losses on available-for-sale financial assets	1,666,879	1,627,720
Gain on sale of investment property	(226,011)	(1,797,264)
Loss on foreign currency translations	43,674,988	41,428,856
Gain on foreign currency translations	(78,985,936)	(42,661,356)
Gain on valuation of derivatives	(1,677,111)	(21,735,118)
Loss on valuation of derivatives	14,617,304	-
Loss on sale of property, plant and equipment	29,678,647	9,208,957
Gain on sale of property, plant and equipment	(3,693,894)	(13,006,004)
Impairment losses on property, plant and equipment	36,209,434	366,672,303
Loss on restoration of property, plant and equipment	-	4,205
Gain on sale of intangible assets	(18,596,376)	(86,867)
Loss on sale of intangible assets	2,970,481	12,618,623
Impairment losses on intangible assets	5,719,043	113,467,364
Gain on valuation of financial assets designated at fair value through profit or loss	(1,262,000)	-
Loss on valuation of financial assets designated at fair value through profit or loss	-	8,491,000
Gain on sale of discontinued operations	-	(1,279,275,278)
Gain on sale of non-current assets held-for-sale	(47,605,322)	-
Gain on disposal of trade receivables	(75)	(1,690)
Loss on disposal of trade receivables	152	-
Legal expenses, etc.	-	744,762,784
Miscellaneous income	(982,550)	(121,119)
Miscellaneous expense	72,961	85,447
Income tax expense	180,871,016	398,153,869
Interest expense	22,777,478	35,325,364
Interest income	(17,845,715)	(32,886,510)
Dividend income	(7,792,823)	(11,784,589)
Total	28,551,061	150,042,110

34. Statement of Cash Flows, Continued

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

(In thousands of won)	**2017**	**2016**
Changes in assets and liabilities:		
Trade receivables	(301,692,626)	(44,581,702)
Other receivables	88,683,399	(136,343,594)
Other current assets	648,537	(95,457,426)
Inventories	(116,306,199)	(177,873,372)
Non-current other receivables	(1,064,168)	1,043,061
Non-current other assets	(14,244,815)	(27,607,154)
Trade payables	177,184,801	(94,392,813)
Other payables	(624,708,911)	(774,650,482)
Advance received	(29,022,453)	39,048,250
Unearned revenue	(12,771,843)	32,477,874
Other non-current payables	(4,478,151)	11,205,417
Payment of retirement and employee benefits	(42,295,265)	(106,769,714)
Transfer of employee benefits from(to) related parties	7,709,967	1,175,136
Plan assets	33,009,015	(52,915,619)
Long-term unearned revenue	(1,920,780)	12,712,660
Total	(841,269,492)	(1,412,929,478)

(3) Reconciliation of movements of liabilities to cash flows arising from financing activities are as follows:

(In thousands of won)

			Non-cash changes			
	2016	**Cash flow from financing activities**	**Interest expense**	**Reclassify current portion**	**Changes in foreign exchange rates**	**2017**
Current portion of long-term liabilities	199,948,098	(200,000,000)	51,902	199,813,649	-	199,813,649
Short-term borrowings	184,012,722	613,328,588	-	111,353,116	(29,202,877)	879,491,549
Debentures	299,252,552	-	339,225	(199,813,649)	-	99,778,128
Long-term borrowings	267,333,070	100,431,881	-	(111,353,116)	(10,886,612)	245,525,223
Total	950,546,442	513,760,469	391,127	-	(40,089,489)	1,424,608,549

35. Events after the reporting date

On February 26, 2018, the Group was notified by the Fair Trade Commission of change in their review opinion on the circular equity investment after the merger of former Samsung C & T and Cheil Industries. The shares owned by the entity who contributed in circular equity investment formed by the merger shall be disposed within six months from the date of notification.