Celltrion, Inc. and its subsidiaries

Consolidated financial statements for the years ended December 31, 2016 and 2015 with the independent auditors' report



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Independent auditors' report

The Board of Directors and Shareholders Celltrion, Inc.

We have audited the accompanying consolidated financial statements of Celltrion, Inc. (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as at December 31, 2016 and 2015 and the consolidated statements of profit or loss and the consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the years then ended, and a summary of significant accounting policies and other explanatory notes.

Management's responsibility for the financial statements

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

Auditors' responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the Republic of Korea. 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 from 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 the auditors' judgment, 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, the auditor considers 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 at December 31, 2016 and 2015 and its financial performance and cash flow for the years then ended in accordance with Korean International Financial Reporting Standards.

Ernst Joung Han Young

March 09, 2017

This audit report is effective as at March 09, 2017, the independent auditors' report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the date of the independent auditors' report to the time this report is used. Such events and circumstances could significantly affect the accompanying consolidated financial statements and may result in modifications to this report.

Celltrion, Inc. and its subsidiaries

Consolidated financial statements for the years ended December 31, 2016 and 2015

[&]quot;The accompanying consolidated financial statements, including all footnotes and disclosures, have been prepared by, and are the responsibility of, the Company."

Celltrion, Inc. and its subsidiaries Consolidated statements of financial position as at December 31, 2016 and 2015

(Korean won in millions)					
	Notes		2016		2015
Assets					
Current assets					
Cash and cash equivalents	5,6,7	₩	268,408	₩	149,926
Short-term financial assets	5,6,8		5,765		6,001
Trade receivables	5,6,9,33,34		758,305		662,226
Other receivables	5,6,9,34		4,830		15,324
Inventories	10		184,759		233,766
Income tax refundable			9,903		9,903
Other current assets	14		22,099		19,691
Total current assets			1,254,069		1,096,837
Non-current assets		-		-	
Long-term financial assets	5,6,8	₩	15,342	₩	14,698
Long-term trade receivables	5,6,9		518		-
Long-term other receivables	5,6,9,34		8,502		9,236
Investments in associates	11		6,157		8,092
Property, plant and equipment	12		867,922		897,605
Intangible assets	13		848,323		697,774
Deferred tax asset	20		16,774		22,091
Other non-current assets	14		4,334		1,898
Total non-current assets			1,767,872		1,651,394
Total assets			3,021,941		2,748,231
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Liabilities					
Current liabilities					
Short-term financial liabilities	5,6,16	₩	470,981	₩	540,503
Trade payables	5,6,15		21,172		5,144
Other payables	5,6,15,34		58,204		60,705
Income tax payable			43,753		42,743
Other current liabilities	18,19		16,143		16,656
Total current liabilities			610,253		665,751
Non-current liabilities			<u>, </u>		· · · · · · · · · · · · · · · · · · ·
Long-term financial liabilities	5,6,16	₩	207,964	₩	270,909
Long-term other payables	5,6,15,19		993		978
Other provisions	17		764		752
Other non-current liabilities	18,19		3,000		-
Total non-current liabilities	•		212,721		272,639
Total liabilities			822,974		938,390
Equity			<u> </u>		<u>· </u>
Equity attributable to owners of the parent					
Issued capital	1,21	₩	116,598	₩	112,432
Share premium	21		729,423		647,186
Retained earnings	22		1,168,692		994,025
Accumulated other comprehensive income	8,23		6,513		8,513
Other components of equity	23		32,413		(67,922)
Non-controlling interest	35		145,328		115,607
Total equity			2,198,967		1,809,841
Total liabilities and equity		₩	3,021,941	₩	2,748,231
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Celltrion, Inc. and its subsidiaries

Consolidated statements of profit or loss

for the years ended December 31, 2016 and 2015

(Korean won in millions, except per share ar	nounts)				
	Notes		2016		2015
Revenue	25,33,34	₩	670,581	₩	603,413
Cost of sales	25,29,34		(273,978)		(234,569)
Gross profit			396,603		368,844
Selling and administrative expenses	26,29,34		(146,909)		(109,890)
Operating profit			249,694		258,954
Other income	27,34		8,328		4,533
Other expenses	27		(19,479)		(69,408)
Finance income	28,34		8,154		9,541
Finance costs	28		(17,944)		(40,719)
Share of profit or loss in associates	11		582		209
Profit before income tax			229,335		163,110
Income tax expense	20		(48,883)		(4,828)
Profit for the year		₩	180,452	₩	158,282
Attributable to:					
Equity holders of the Company		₩	177,995	₩	154,090
Non-controlling interest		₩	2,457	₩	4,192
Earnings per share					
Basic earnings per share	31	₩	1,535	₩	1,367
Diluted earnings per share	31	₩	1,526	₩	1,361

Celltrion, Inc. and its subsidiaries Consolidated statements of comprehensive income for the years ended December 31, 2016 and 2015

(Korean won in millions)	NI-4		2046		2045
	Notes		2016		2015
Profit for the year		₩	180,452	₩	158,282
Other comprehensive income (loss)			(2,000)		5,052
Other comprehensive income to be					
reclassified to profit or loss					
in subsequent periods:					
Gain (loss) on valuation					
of available-for-sale financial assets	8		245		3,815
Exchange differences on translation					
of foreign operations			(2,184)		2,162
Income tax effect relating to components					
of other comprehensive income (loss)	20		(59)		(925)
Total comprehensive income					
for the year, net of tax		₩	178,452	₩	163,334
Attributable to:					
Equity holders of the Company		₩	175,995	₩	159,166
Non-controlling interests		₩	2,458	₩	4,168

Celltrion, Inc. and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2016 and 2015
(Korean won in millions)

								Accur	Accumulated						
								ŏ	other	0	Other	ž	Non-		
		lssued	Þ	0,	Share	ď	Retained	compr	comprehensive	Com	components	conte	contolling		
	Notes	capital	al	pr	premium	9	earnings	inc	income	of	of equity	inte	interest		Total
As at January 1, 2015		W 10	103,570	A	374,602	A	845,040	A	3,435	A	(79,253)	· A	100,387	A	1,347,781
Comprehensive income															
Profit for the year			1		•		154,090		1		1		4,192		158,282
Gain on valuation of															
available-for-sale financial assets	∞		1		•		•		2,923		•		(33)		2,890
Currency translation differences			1		•		•		2,155		•		7		2,162
Total comprehensive income	-		1		•		154,090		5,078		•		4,166		163,334
Transactions with equity holders															
of the Company:															
Stock dividends	22		5,105		•		(5,105)		•		•		1		•
Exercise and forfeit of stock options	24		208		9,371		•		1		(2,641)		2,254		9,192
Recognition of stock options	24		1		•		1		1		4,921		87		5,008
Conversion of convertible bonds			3,549		263,213		1		1		1		986'6		276,748
Issuance of exchangeable bonds	23		1		1		•		1		8,474		1		8,474
Acquisition of treasury stock	23		1		1		•		1		(1,532)		(38)		(1,570)
Recognition of consideration															
for conversion rights			1		ı		1		1		ı		874		874
Changes in ownership of subsidiaries	-		'		1		1		1		2,109		(2,109)		•
Total transactions with equity holders															
of the Company			8,862		272,584		(5,105)		-		11,331		11,054		298,726
As at December 31, 2015		W 11	112,432	A	647,186	A	994,025	A	8,513	A	(67,922)	, A	115,607	AA	1,809,841
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Celltrion, Inc. and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2016 and 2015 (cont'd)
(Korean won in millions)

								Acc	Accumulated						
									other		Other		Non-		
			Issued		Share	_	Retained	COM	comprehensive	8	components	Ö	contolling		
	Notes		capital		premium	ŭ	earnings		income	J	of equity		interest		Total
As at January 1, 2016		A	112,432	*	647,186	*	994,025	*	8,513	*	(67,922)	*	115,607	*	1,809,841
Comprehensive income															
Profit for the year			•		1		177,995		ı		ı		2,457		180,452
Gain on valuation of															
available-for-sale financial assets	∞		•		•		•		184		•		•		184
Currency translation differences			•		•		•		(2,184)		•		•		(2,184)
Total comprehensive income			•		•		177,995		(2,000)		•		2,457		178,452
Transactions with equity holders															
of the Company:															
Stock dividends	22		3,328		•		(3,328)		•		•		•		•
Exercise and forfeit of stock options	24		180		9,399		•		•		(2,625)		915		7,869
Recognition of stock options	24		•		1		•		ı		6,048		104		6,152
Conversion of convertible bonds			658		72,838		•		•		•		30,799		104,295
Exchange of exchangeable bonds	23		•		•		•		•		95,973		•		95,973
Acquisition of treasury stock	23		•		1		•		ı		(3,566)		(49)		(3,615)
Changes in ownership of subsidiaries			-		1		•		ı		4,505		(4,505)		1
Total transactions with equity holders															
of the Company			4,166		82,237		(3,328)		1		100,335		27,264		210,674
As at December 31, 2016		A	116,598	A	729,423	A	1,168,692	A	6,513	A	32,413	A	145,328	A	2,198,967

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

Celltrion, Inc. and its subsidiaries Consolidated statements of cash flows for the years ended December 31, 2016 and 2015

(Korean won in millions)					
	Notes		2016		2015
Operating activities					
Cash generated from operations	32	₩	296,055	₩	98,245
Income tax paid			(45,167)		(20,678)
Net cash flows provided by operating activities			250,888		77,567
Investing activities					
Cash inflow from investing activities					
Interest received			1,562		2,100
Dividend received			770		770
Decrease in short-term financial assets			1,036		9,725
Decrease in other receivables			9,943		43,021
Decrease in long-term financial assets			-		645
Decrease in long-term other receivables			1,348		1,407
Decrease in investments in associates			2,157		2,421
Acquisition of other grants			1,461		6,139
Proceeds from disposal of property, plant and equipme	nt		16		28
Proceeds from disposal of intangible assets			180		714
Cash inflow from business combination			18		-
Cash outflow from investing activities					
Increase in short-term financial assets			(636)		(5,608)
Increase in other receivables			(40)		(30,004)
Increase in long-term financial assets			(400)		(3,702)
Increase in long-term other receivables			(1,214)		(2,422)
Acquisition of investments in associates			(410)		(7,590)
Acquisition of property, plant and equipment			(14,147)		(50,585)
Acquisition of intangible assets			(164,139)		(133,997)
Net cash flows used in investing activities		₩	(162,495)	₩	(166,938)

Celltrion, Inc. and Subsidiaries

Consolidated statements of cash flows

for the years ended December 31, 2016 and 2015 (cont'd)

(Korean won in millions)					
	Notes		2016		2015
Financing activities					
Cash inflow from financing activities					
Increase in short-term financial liabilities		₩	159,916	₩	143,448
Increase in long-term financial liabilities			104,490		241,000
Issuance of ordinary shares			7,903		9,201
Cash outflow from financing activities					
Interest paid			(23,158)		(35,237)
Dividend paid			-		(1)
Decrease in short-term financial liabilities			(216,223)		(170,134)
Issuance costs of long-term financial liabilities			-		(557)
Decrease in long-term financial liabilities			(613)		(55,714)
Stock issuance costs			(34)		(8)
Acquisition of treasury stock			(3,615)		(1,571)
Net cash flows from financing activities			28,666		130,427
Net increase in cash and cash equivalents			117,059		41,056
Net foreign exchange difference			1,423		118
Cash and cash equivalents as at January 1			149,926		108,752
Cash and cash equivalents as at December 31		₩	268,408	₩	149,926

1. Corporate information

General information about Celltrion, Inc. ("the Company") and its subsidiaries (collectively referred to as "the Group") is as follows:

The Company was incorporated on February 27, 1991, and listed its common stock on the Korea Stock Exchange (KOSDAQ) on July 19, 2005. The Company changed its name on August 19, 2008, from Orchem Co., Ltd. to Celltrion, Inc. after the merger with Celltrion, Inc., which was established on February 26, 2002.

The primary business objective of the Company is to engage in development and production of various therapeutic proteins including oncology treatment drugs through the Company's bioengineering and mammalian cell-culture technology. The Company's head office is located in the Incheon Free Economic Zone.

The Company's shareholders as at December 31, 2016 and 2015 are as follows:

	December	31, 2016	December	31, 2015
	Number of shares	Equity interest	Number of shares	Equity interest
Celltrion Holdings Co., Ltd.	22,565,000	19.35%	21,825,630	19.41%
Celltrion Skincure Co., Ltd. (*1)	2,494,033	2.14%	2,421,392	2.15%
Ion Investment B.V.	16,673,945	14.30%	16,188,297	14.40%
Others	74,831,358	64.18%	70,509,709	62.71%
Treasury stock	33,991	0.03%	1,486,635	1.33%
_	116,598,327	100.00%	112,431,663	100.00%

^(*1) In 2016, Celltrion GSC Co., Ltd. merged with Celltrion Skincure Co., Ltd. and subsequently changed its name to Celltrion Skincure Co., Ltd..

1. Corporate information (cont'd)

1.1 Consolidated subsidiaries

Consolidated subsidiaries as at December 31, 2016 and 2015 are as follows:

	Equity i	nterest			
Subsidiary	December 31, 2016	December 31, 2015	Domicile	Year-end	Primary business activity
Celltrion Pharm, Inc. (*1)	55.29%	45.82%	Korea	December	Manufacturing and sales of medicine
Celltrion Chemical Research Institute (*2)	55.29%	45.82%	Korea	December	Research and development of new medicine and pharmaceutial raw material
Celltrion Pharma USA, Inc. (*2)	55.29%	45.82%	USA	December	Marketing in the U.S. and establishing distribution network
Celltrion ST	100.00%	-	Korea	December	Development and supply of system and application software
Celltrion Don LLC	100.00%	100.00%	Russia	December	Agriculture in Russia
Celltrion Eurasia LLC	100.00%	100.00%	Russia	December	Agriculture in Russia
Celltrion Europe Limited	100.00%	100.00%	United Kingdom	December	Bio-similar clinical trial

^(*1) As at December 31, 2015, although the Company holds less than 50% equity interest, the subsidiary was consolidated due to the Company's stock warrants granting potential voting rights. As at December 31, 2016, the Company's equity interest was increased to 55.29% following the exercise of the warrants amounting to \(\pm 70,000\) million.

1.2 Changes in scope for consolidation

Subsidiary newly included in the consolidation for the year ended December 31, 2016 was as follows:

	Newly included/excluded	
Subsidiary	in consolidation	Description
Celltrion ST	Newly included	Acqusition

^(*2) The subsidiary is wholly owned by Celltrion Pharm, Inc.

1. Corporate information (cont'd)

1.3 Financial information of subsidiaries (before elimination of intercompany transactions)

The summarized statements of financial position of subsidiaries as at December 31, 2016 and 2015, and the related condensed statements of profit or loss and other comprehensive income of subsidiaries for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

				December 31, 2016		
Subsidiary		Assets		Liabilities		Equity
Celltrion Pharm, Inc. Celltrion Chemical	₩	511,020,911	₩	166,479,631	₩	344,541,280
Research Institute Celltrion Pharma USA, Inc.		4,882,440 71,537		1,306,870		3,575,570 71,537
Celltrion ST		564,245		208,303		355,942
Celltrion Don LLC		4,124,401		14,148,663		(10,024,262)
Celltrion Eurasia LLC		393		-		393
Celltrion Europe Limited		2		-		2
				December 31, 2016		
Subsidiary		Revenue		Profit (loss)	Compre	ehensive income (loss)
Celltrion Pharm, Inc. Celltrion Chemical Research Institute	₩	101,569,415 7,159,769	₩	2,778,215 28,130	₩	2,778,215 28,130
Celltrion Pharma USA, Inc.		-		(117,763)		(116,769)
Celltrion ST		773,730		415,871		415,871
Celltrion Don LLC		1,153,037		1,428,843		(756,609)
Celltrion Eurasia LLC		-		-		-
Celltrion Europe Limited		-		-		-

1. Corporate information (cont'd)

1.3 Financial information of subsidiaries (before elimination of intercompany transactions) (cont'd)

December	31	2015

Subsidiary	Assets			Liabilities	Equity	
Celltrion Pharm, Inc.	₩	468,519,989	₩	232,253,566	₩	236,266,423
Research Institute Celltrion Pharma		4,904,291		1,356,851		3,547,440
USA, Inc.		188,307		-		188,307
Celltrion Don LLC		4,324,252		13,565,008		(9,240,756)
Celltrion Eurasia LLC		393		-		393
Celltrion Europe Limited		2		-		2

December 31, 2015

Subsidiary		Revenue		Profit (loss)	Com	prehensive income (loss)
Celltrion Pharm, Inc. Celltrion Chemical	₩	72,578,429	₩	7,386,732	₩	7,328,024
Research Institute		6,196,700		(569,725)		(569,725)
Celltrion Pharma USA, Inc.		-		(83,093)		(69,025)
Celltrion Don LLC		2,049,907		(4,403,460)		(2,255,390)
Celltrion Eurasia LLC		-		-		-
Celltrion Europe Limited		-		-		-

2. Summary of significant accounting policies

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

2.1 Basis of preparation

The Group maintains its accounting records in Korean won and prepares statutory financial statements in the Korean language in accordance with Korean International Financial Reporting Standards (KIFRS). The accompanying consolidated financial statements have been condensed, restructured and translated into English from the Korean language financial statements.

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

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

2.1 Basis of preparation (cont'd)

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

2.1.1 Changes in accounting policy and disclosures

(1) New and amended standards adopted by the Group

KIFRS 1114 Regulatory Deferral Accounts

KIFRS 1114 is an optional standard that allows an entity, whose activities are subject to rate-regulation, to continue applying most of its existing accounting policies for regulatory deferral account balances upon its first-time adoption of KIFRS. Entities that adopt KIFRS 1114 must present the regulatory deferral accounts as separate line items on the statement of financial position and present movements in these account balances as separate line items in the statement of profit or loss and OCI. The standard requires disclosure of the nature of, and risks associated with, the entity's rate-regulation and the effects of that rate-regulation on its financial statements. Since the Group is an existing KIFRS preparer and is not involved in any rate-regulated activities, this standard does not apply.

Amendments to KIFRS 1111 Joint Arrangements: Accounting for Acquisitions of Interests

The amendments to KIFRS 1111 require that a joint operator accounting for the acquisition of an interest in a joint operation, in which the activity of the joint operation constitutes a business, must apply the relevant KIFRS 1103 Business Combinations principles for business combination accounting. The amendments also clarify that a previously held interest in a joint operation is not remeasured on the acquisition of an additional interest in the same joint operation if joint control is retained. In addition, a scope exclusion has been added to KIFRS 1111 to specify that the amendments do not apply when the parties sharing joint control, including the reporting entity, are under common control of the same ultimate controlling party. The amendments apply to both the acquisition of the initial interest in a joint operation and the acquisition of any additional interests in the same joint operation and are applied prospectively. These amendments do not have any impact on the Group as there has been no interest acquired in a joint operation during the period.

Amendments to KIFRS 1016 and KIFRS 1038 Clarification of Acceptable Methods of Depreciation and Amortisation

The amendments clarify the principle in KIFRS 1016 Property, Plant and Equipment and KIFRS 1038 Intangible Assets that revenue reflects a pattern of economic benefits that are generated from operating a business (of which the asset is a part) rather than the economic benefits that are consumed through use of the asset. As a result, a revenue-based method cannot be used to depreciate property, plant and equipment and may only be used in very limited circumstances to amortise intangible assets. The amendments are applied prospectively and do not have any impact on the Group, given that it has not used a revenue-based method to depreciate its non-current assets.

2.1 Basis of preparation (cont'd)

2.1.1 Changes in accounting policy and disclosures (cont'd)

Amendments to KIFRS 1016 and KIFRS 1041 Agriculture: Bearer Plants

The amendments change the accounting requirements for biological assets that meet the definition of bearer plants. Under the amendments, biological assets that meet the definition of bearer plants will no longer be within the scope of KIFRS 1041 Agriculture. Instead, KIFRS 1016 will apply. After initial recognition, bearer plants will be measured under KIFRS 1016 at accumulated cost (before maturity) and using either the cost model or revaluation model (after maturity). The amendments also require that produce that grows on bearer plants will remain in the scope of KIFRS 1041 measured at fair value less costs to sell. For government grants related to bearer plants, KIFRS 1020 Accounting for Government Grants and Disclosure of Government Assistance will apply. The amendments are applied retrospectively and do not have any impact on the Group as it does not have any bearer plants.

Annual Improvements 2012-2014 Cycle

These amendments do not have any impact on the Group's consolidated financial statements. The improvements include:

KIFRS 1105 Non-current Assets Held for Sale and Discontinued Operations

Assets (or disposal groups) are generally disposed of either through sale or distribution to the owners. The amendment clarifies that changing from one of these disposal methods to the other would not be considered a new plan of disposal, rather it is a continuation of the original plan. There is, therefore, no interruption of the application of the requirements in KIFRS 1105. This amendment is applied prospectively.

KIFRS 1107 Financial Instruments: Disclosures

(i) Servicing contracts

The amendment clarifies that a servicing contract that includes a fee can constitute continuing involvement in a financial asset. An entity must assess the nature of the fee and the arrangement against the guidance for continuing involvement in KIFRS 1107 in order to assess whether the disclosures are required. The assessment of which servicing contracts constitute continuing involvement must be made retrospectively. However, the required disclosures need not be provided for any period beginning before the annual period in which the entity first applies the amendments.

(ii) Applicability of the amendments to KIFRS 1107 to condensed interim financial statements. The amendment clarifies that the offsetting disclosure requirements do not apply to condensed interim financial statements, unless such disclosures provide a significant update to the information reported in the most recent annual report. This amendment is applied retrospectively.

KIFRS 1019 Employee Benefits

The amendment clarifies that market depth of high quality corporate bonds is assessed based on the currency in which the obligation is denominated, rather than the country where the obligation is located. When there is no deep market for high quality corporate bonds in that currency, government bond rates must be used. This amendment is applied prospectively.

KIFRS 1034 Interim Financial Reporting

The amendment clarifies that the required interim disclosures must either be in the interim financial statements or incorporated by cross-reference between the interim financial statements and wherever they are included within the interim financial report (e.g., in the management commentary or risk report). The other information within the interim financial report must be available to users on the same terms as the interim financial statements and at the same time. This amendment is applied retrospectively.

2.1 Basis of preparation (cont'd)

2.1.1 Changes in accounting policy and disclosures (cont'd)

Amendments to KIFRS 1001 Disclosure Initiative

The amendments to KIFRS 1001 clarify, rather than significantly change, existing KIFRS 1001 requirements. The amendments clarify:

- The materiality requirements in KIFRS 1001
- That specific line items in the statement(s) of profit or loss and OCI and the statement of financial p
 osition may be disaggregated
- That entities have flexibility as to the order in which they present the notes to financial statements
- That the share of OCI of associates and joint ventures accounted for using the equity method must be presented in aggregate as a single line item, and classified between those items that will or will not be subsequently reclassified to profit or loss

Furthermore, the amendments clarify the requirements that apply when additional subtotals are presented in the statement of financial position and the statement(s) of profit or loss and OCI. These amendments do not have any impact on the Group.

Amendments to KIFRS 1110, KIFRS 1112 and KIFRS 1028 *Investment Entities: Applying the Consolidation Exception*

The amendments address issues that have arisen in applying the investment entities exception under KIFRS 1110 Consolidated Financial Statements. The amendments to KIFRS 1110 clarify that the exemption from presenting consolidated financial statements applies to a parent entity that is a subsidiary of an investment entity, when the investment entity measures all of its subsidiaries at fair value.

Furthermore, the amendments to KIFRS 1110 clarify that only a subsidiary of an investment entity that is not an investment entity itself and that provides support services to the investment entity is consolidated. All other subsidiaries of an investment entity are measured at fair value. The amendments to KIFRS 1028 *Investments in Associates and Joint Ventures* allow the investor, when applying the equity method, to retain the fair value measurement applied by the investment entity associate or joint venture to its interests in subsidiaries.

KIFRS 1011 Construction Contract and KIFRS 2115 Agreements for the Construction of Real Estate

The amendments require additional disclosures of information on construction contracts when the percentage of work completed is measured based on the ratio of the total costs incurred to date to the total estimated contract costs, and the contract revenue exceeds 5% of the preceding year's total revenue. The amendments are effective for annual periods beginning on or after 1 January 2016, and require prospective application in the year in which an entity adopts it for the first time. These amendments are not relevant for the Group as it did not enter into any construction contract during the current period.

2.1 Basis of preparation (cont'd)

2.1.1 Changes in accounting policy and disclosures (cont'd)

(2) New standards and interpretations not yet adopted

The standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's financial statements are disclosed below.

KIFRS 1109 Financial Instruments

The KASB issued the final version of KIFRS 1109 Financial Instruments that replaces KIFRS 1039 Financial Instruments: Recognition and Measurement and all previous versions of KIFRS 1109. KIFRS 1109 brings together all three aspects of the accounting for financial instruments project: classification and measurement, impairment and hedge accounting. KIFRS 1109 is effective for annual periods beginning on or after January 1, 2018, with early application permitted. Except for hedge accounting, retrospective application is required but providing comparative information is not compulsory. For hedge accounting, the requirements are generally applied prospectively, with some limited exceptions. The Group plans to adopt the new standard on the required effective date.

Under KIFRS 1109, retrospective application is required, but providing comparative information is not compulsory for certain cases such as classification and measurement of financial instruments, and impairment. For hedge accounting, the requirements are generally applied prospectively, with some limited exceptions such as accounting for time value of options.

The main features of KIFRS 1109 include: a business model for the managing financial assets; classification and measurement of financial assets based on contractual cash flow characteristics of financial assets; an impairment model for financial instruments based on expected credit losses; the hedged item that meet the requirements of hedge accounting, increases in hedging instruments, or changes in the evaluation method for hedge effectiveness.

The effective implementation of KIFRS 1109 will likely require analyses on financial effects, establishment of accounting policies, development of an accounting system, and stabilization of the system. The effect on the financial statements for the first-time adoption of the standard may differ depending on the selection and judgment of accounting policies in accordance with the standard, as well as the Group's financial instruments and economic conditions during the year.

In order to assess the financial impact of the initial adoption of KIFRS 1109, the Group performed a preliminary assessment of its potential impact on the financial statements for 2016 based on the current situation and available information as of December 31, 2016. The potential impact of adoption of the standard on the financial statements are as follows. The Group will analyze more specific financial impacts based on additional information in the future, which may change the results of the preliminary assessment as of December 31, 2016.

2.1 Basis of preparation (cont'd)

2.1.1 Changes in accounting policy and disclosures (cont'd)

1) Classification and measurement of financial assets

The new KIFRS 1109 requires the Group to classify financial instruments as subsequently measured at amortized cost, fair value through other comprehensive income (FVOCI), or fair value through profit or loss (FVTPL), on the basis of the holder's business model and instrument's contractual cash flow characteristics as shown below. Hybrid contracts with hosts that are assets, are classified in their entirety instead of bifurcating the embedded derivatives.

	flow characteristics	
Business model	Composed solely of principal and interest	Other
Purpose of collecting contractual cash flows	Amortized cost measurement (*1)	
Purpose of collecting and selling contractual cash flows	FVOCI measurement (*1)	FVTPL measurement (*2)
Purpose of selling, etc.	FVTPL measurement	

- (*1) An entity may irrevocably designate a financial asset as measured at FVTPL if doing so eliminates or reduces an accounting mismatch
- (*2) An entity may make an irrevocable election to present in other comprehensive income changes in the fair value of an investment in an equity instrument that is not held for short term trading.

The requirements for classifying the financial assets as measured at amortized cost or FVOCI under KIFRS 1109 are more stringent than the requirements of the current KIFRS 1039; as a result, the increase in the proportion of financial assets subject to FVTPL measurement may increase the volatility in profit or loss upon adoption of KIFRS 1109.

As at December 31, 2016, the Group has Loans and receivables of \$1,047,031 million and Available-for-sale financial assets of \$14,640 million.

According to KIFRS 1109, the contractual terms of the debt instruments give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding, and the standard requires debt instruments held to collect contractual cash flows to be measured at amortized cost. As at December 31, 2016, the Group measures Loans and receivables of \$1,047,031 million at amortized cost.

On the basis of the preliminary assessment, when KIFRS 1109 is applied to financial instruments, the cash flows relating to solely payments of principal and interest on the principal amount outstanding on specified dated per the contractual terms will be risen. Furthermore the instruments that are held to collect cash flows are measured at amortized cost. Hence, they will not have a material impact on the financial statements.

According to KIFRS 1109, the debt instruments that give rise on specified dates per the contractual terms to cash flows that are solely payments of principal and interest on the principal amount outstanding, and the debt instruments held to collect and sell contractual cash flows are to be measured at FVOCI. As of December 31, 2016, the Group does not hold such assets.

2.1 Basis of preparation (cont'd)

2.1.1 Changes in accounting policy and disclosures (cont'd)

According to KIFRS 1109, the Group may make an irrevocable election to present an investment in an equity instrument that is not held for trading as FVOCI. Items of comprehensive income are not subsequently recycled to profit or loss. As at December 31, 2016, the Group holds equity instruments of \text{\text{\text{W14,640}} million, classified as available-for-sale financial instruments. Furthermore, unrealized gains and losses of available-for-sale equity instruments are not recycled to profit or loss for the year ended December 31, 2016.

On the basis of the preliminary assessment, the Group plans to opt to designate equity instruments w that are held for long term investments which make up the majority of available-for-sale financial instruments as measured at FVOCI. As a result, the adoption of KIFRS 1109 will not have a material impact on the financial statements.

In accordance with KIFRS 1109, the Company measures the following instruments at FVTPL: 1) cash flows that do not represent solely payments of principal and interest on the principal amount outstanding; or 2) debt instruments held for the purpose of trading; and 3) other equity instruments that are not designated as measured at FVOCI. The Group does not have any debt or equity instruments classified as financial assets measured at FVTPL as at December 31, 2016.

2) Classification and measurement of financial liabilities

Based on KIFRS 1109, changes in the fair value of a financial liability designated as measured at FVTPL that arise from changes in the liability's credit risk, are presented in other comprehensive income, instead of profit or loss. Other comprehensive income items are not subsequently recycled to profit or loss; however, this applies unless the treatment would create or enlarge an accounting mismatch, in which case all changes in fair value are presented in profit or loss.

Some of the changes in the fair value of financial liabilities designated as at FVTPL, which were recognized in profit or loss under the current KIFRS 1039, are presented in other comprehensive income; therefore, gains and losses on valuation of financial liabilities may decrease.

Out of total financial liabilities of \$759,314million the Group holds none designated as measured at FVTPL as at December 31, 2016.

3) Impairment: financial assets and contract assets

Under the current KIFRS 1039, impairment losses are recognized when there is objective evidence of impairment based on an incurred loss model; however, under the new KIFRS 1109, impairment losses are recognized for debt instruments that were accounted for at amortized cost, or FVOCI, lease receivables, contract assets, loan commitment, and financial guarantee contracts, based on an expected credit loss impairment model.

2.1 Basis of preparation (cont'd)

2.1.1 Changes in accounting policy and disclosures (cont'd)

After the initial recognition of financial assets KIFRS 1109 allowss 12-month expected credit losses, or lifetime expected credit losses to be recognized based on changes in credit risk as per the three-stage model table below; as a result, credit losses can be recognized earlier than the current KIFRS 1039.

	Classification (*1)	Loss allowance
Stage 1	The credit risk on a financial instrument has not increased significantly since initial recognition (*2)	12-month expected credit losses: The expected credit losses that result from default events on a financial instrument that are possible within the 12 months after the reporting date.
Stage 2	The credit risk on a financial instrument has increased significantly since initial recognition	Lifetime expected credit losses: The expected credit losses that result from all possible default events over the expected life of a
Stage 3	Credit-impaired	financial instrument.

- (*1) For trade receivables or contract assets in accordance with KIFRS 1115 Revenue from Contracts with Customers, which does not contain a significant financing component, the Group is to measure the loss allowance at an amount equal to lifetime expected credit losses; however, if it contains a significant financial component, the Group can choose as its accounting policy to measure the loss allowance at an amount equal to lifetime expected credit losses. For lease receivables, the Group can also choose as its accounting policy to measure the loss allowance at an amount equal to lifetime expected credit losses.
- (*2) For financial instruments with low credit risk at the reporting date, it may be considered that the credit risk did not increase significantly.

Under KIFRS 1109, the Group is to recognize the cumulative changes in lifetime expected credit losses since initial recognition as a loss allowance for a financial asset that is considered credit-impaired at initial recognition.

As at December 31, 2016, the Group holds debt instruments of \$1,047,031 million (Loans and receivables of \$1,047,031 million) designated as measured at amortized cost, and recognized a loss allowance of \$8,264 million for the instruments.

The Group measured a loss allowance at an amount equal to lifetime expected credit losses for trade receivables, contracts assets and lease receivables, which contain a significant financing component. Based on the preliminary assessment using the low credit risk simplification for an instrument deemed to have low credit risk at the end of the current reporting date, it is expected that there will be no variability in the loss allowance of \$8,264 million as at December 31, 2016.

4) Hedge accounting

KIFRS 1109 continuously applies mechanics of hedge accounting (fair value hedge accounting, cash flow hedge, foreign entities net investment hedge) specified in the current KIFRS 1039; however, the standard was changed from the complex and rule-based hedge accounting requirements of KIFRS 1039 to the principle-based approach which focuses on the risk management activities. Requirements for application of hedge accounting are relaxed by enlarging items designated as hedges and hedging instruments, eliminating the high risk avoidance effects evaluation, and the quantitative effectiveness criteria testing (80 ~ 125%).

2.1 Basis of preparation (cont'd)

2.1.1 Changes in accounting policy and disclosures (cont'd)

Upon application of hedge accounting of KIFRS 1109, some transactions that do not meet the criteria for hedge accounting of the current KIFRS 1039 may be accounted for using the hedge accounting; therefore, volatility in profit or loss may be reduced.

As at December 31, 2016, the Group did not apply hedge accounting.

The Group can elect to continue to apply the current KIFRS 1039 hedge accounting requirements upon initial application of KIFRS 1109.

KIFRS 1115 Revenue from Contracts with Customers

KIFRS 1115 establishes a five-step model to account for revenue arising from contracts with customers. Under KIFRS 1115, revenue is recognized at an amount that reflects the consideration to which an entit y expects to be entitled in exchange for transferring goods or services to a customer. The new revenue standard will supersede all current revenue recognition requirements under KIFRS. Either a full retrosp ective application or a modified retrospective application is required for annual periods beginning on or after 1 January 2018. Early adoption is permitted. The Group plans to adopt the new standard on the re quired effective date using the full retrospective method. During 2016, the Group performed a prelimina ry assessment of KIFRS 1115, which is subject to changes arising from a more detailed ongoing analys is.

The current KIFRS 1018 provides the criteria for the recognition of revenue relating to: sale of goods, rendering of services, interest, royalties, dividends and construction contracts; however, under the new KIFRS 1115, revenue is recognized by applying a five-stage revenue recognition model (① Identify a contract with a customer. \rightarrow ② Identify the performance obligations in the contract. \rightarrow ③ Determine the transaction price \rightarrow ④ Allocate the transaction price to the separate performance obligations in the contract. \rightarrow ⑤ Recognize revenue when the entity satisfies a performance obligation) to its all contracts with customers.

As at December 31, 2016, the Group has not made changes to its internal control procedures, or the accounting system related to the adoption of KIFRS 1115, and did not analyze the effect of KIFRS 1115 on its consolidated financial statements. The Group is planning to analyse the impact related to the adoption of KIFRS 1115 by the period ended September 30, 2017, and its results will be disclosed within accounts note.

General impacts on the Group's financial statements upon the adoption of the standard are as follows;

1) Identifying performance obligation

The Group develops, manufactures and sells various protein therapeutics including animal cell culture technology and biotechnology-based anticancer drugs. For the year ended December 31, 2016, the Group recognized revenue of \$577,546 million for the protein therapeutics segment, accounting for 86.13% of the Group's total revenue.

Upon application of KIFRS 1115, the Group identifies performance obligations in the contracts with customers for the goods and services. Depending on whether each performance obligation is satisfied at a point in time or over time, the timing of recognition of revenue may change.

2) Allocating transaction price

Where a contract has multiple performance obligations, upon application of KIFRS 1115 the transaction price will be allocated to the performance obligations in the contract by reference to their relative standalone selling prices. The Group will implement the most appropriate approach to estimate a standalone selling price of each performance obligation.

- 2. Summary of significant accounting policies (cont'd)
- 2.1 Basis of preparation (cont'd)
- 2.1.1 Changes in accounting policy and disclosures (cont'd)

Amendments to KIFRS 1110 and KIFRS 1028 Sale or Contribution of Assets between an Investor and its Associate or Joint Venture

The amendments address the conflict between KIFRS 1110 and KIFRS 1028 in dealing with the loss of control of a subsidiary that is sold or contributed to an associate or joint venture. The amendments clarify that the gain or loss resulting from the sale or contribution of assets that constitute a business, as defined in KIFRS 1103, between an investor and its associate or joint venture, is recognized in full. Any gain or loss resulting from the sale or contribution of assets that do not constitute a business, however, is recognized only to the extent of unrelated investors' interests in the associate or joint venture. The IASB has deferred the effective date of these amendments indefinitely, but an entity that early adopts the amendments must apply them prospectively. These amendments are not expected to have an impact on the Group.

Amendments to KIFRS 1007 Statement of Cash Flows: Disclosure Initiative

The amendments to KIFRS 1007 Statement of Cash Flows are part of the IASB's Disclosure Initiative and require an entity to provide disclosures that enable users of financial statements to evaluate changes in liabilities arising from financing activities, including both changes arising from cash flows and non-cash changes. On initial application of the amendment, entities are not required to provide comparative information for preceding periods. These amendments are effective for annual periods beginning on or after 1 January 2017, with early application permitted. Application of the amendments will result in additional disclosures provided by the Group.

Amendments to KIFRS 1012 Recognition of Deferred Tax Assets for Unrealised Losses

The amendments clarify that an entity needs to consider whether tax law restricts the sources of taxable profits against which it may make deductions on the reversal of that deductible temporary difference. Furthermore, the amendments provide guidance on how an entity should determine future taxable profits and explain the circumstances in which taxable profit may include the recovery of some assets for more than their carrying amount. Entities are required to apply the amendments retrospectively. However, on initial application of the amendments, the change in the opening equity of the earliest comparative period may be recognized in the opening retained earnings (or in another component of equity, as appropriate), without allocating the change between opening retained earnings and other components of equity. Entities applying this relief must disclose that fact. These amendments are effective for annual periods beginning on or after 1 January 2017 with early application permitted. If an entity applies the amendments for an earlier period, it must disclose that fact. These amendments are not expected to have any impact on the Group.

Amendments to KIFRS 1102 Classification and Measurement of Share-based Payment Transactions

The IASB issued amendments to KIFRS 1102 Share-based Payment that address three main areas: the effects of vesting conditions on the measurement of a cash-settled share-based payment transaction; the classification of a share-based payment transaction with net settlement features for withholding tax obligations; and accounting where a modification to the terms and conditions of a share-based payment transaction changes its classification from cash settled to equity settled.

2.2 Consolidation

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

(a) Subsidiaries

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

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

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

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

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

(b) Associates

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

(c) Joint Arrangements

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

2.3 Segment Reporting

Management performs the allocation of resources and assessment of performance by each operating segment. The operating segment of the Group is recognized based on the method of organizing and generating income. As at December 31, 2016, the Group's segment consists of manufacturing and sales of biopharmaceutical medicines and chemical medicines. The Group had one operating segment of manufacturing and sales of biopharmaceutical medicines, until the prior period, however, the chemical medicines segment is newly included in the current period as a result of adjustment of consolidation scope.

Business objective of biopharmaceutical medicines segment is to develop, manufacture and sell various therapeutic proteins including oncology treatment drugs by bioengineering and mammalian cell-culture technology. Business objective of chemical medicines segment is to develop, manufacture and sell chemical medicines.

The Group assesses the performance of each operating segment based on operating profit, and there is no difference with the amounts reported on the condensed consolidated statement of profit or loss, except for intergroup transactions.

The following table summarizes the results of financial performance of the Group by operating segments for the years ended December 31, 2016 and 2015 (Korean won in thousands):

						December	31, 2016			
		Biopharma- ceutical medicines		Chemical medicines		Others	Tota	I	Adjustment of intergroup transactions	Amount after adjustment
Revenue	₩	577,574,962	₩	101,569,415	₩	8,898,896	₩ 688,043	3,273	₩(17,462,311)	₩ 670,580,962
Depreciation		30,675,434		8,801,592		457,666	39,934	,692	-	39,934,692
Amortization		43,881,651		4,844,806		14,178	48,740	,635	-	48,740,635
Operating profit		252,481,742		5,796,480		(471,263)	257,806	,959	(8,112,717)	249,694,242
Non-current assets (*1)		1,434,787,827		285,855,735		2,900,609	1,723,544	,171	(7,299,720)	1,716,244,451
						Decembe	r 31, 2015			
		Biopharma-							Adjustment	Amount
		ceutical medicines		Chemical medicines		Others	Tota	I	of intergroup transactions	after adjustment
		ceutical medicines		medicines					of intergroup transactions	after adjustment
Revenue	₩	ceutical medicines 528,784,433	₩		₩	Others 8,246,607	Tota ₩ 609,609		of intergroup transactions	after
Depreciation		ceutical medicines		medicines			₩ 609,60		of intergroup transactions	after adjustment W 603,412,769 31,698,985
		ceutical medicines 528,784,433		72,578,429		8,246,607	₩ 609,609 31,69	9,469	of intergroup transactions W (6,196,700)	after adjustment W 603,412,769
Depreciation		ceutical medicines 528,784,433 30,244,750		72,578,429 896,918		8,246,607 557,317	₩ 609,609 31,69	9,469 8,985 5,098	of intergroup transactions W (6,196,700)	after adjustment W 603,412,769 31,698,985

^(*1) The amount is the sum of property, plant and equipment and intangible assets.

2.4 Foreign currency translation

(a) Functional and presentation currency

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

(b) Transactions and balances

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

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

(c) Translation into the presentation currency

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

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

2.5 Financial assets

(a) Classification and measurement

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

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

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

2.5 Financial assets (cont'd)

(b) Impairment

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

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

The objective evidence that a financial asset is impaired includes significant financial difficulty of the issuer or obligor; a delinquency in interest or principal payments over three months; or the disappearance of an active market for that financial asset because of financial difficulties. In addition, an objective evidence includes a significant or a consistent decrease of fair value of available-for-sale securities.

(c) Derecognition

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

(d) Offsetting of financial instruments

Financial assets and liabilities are offset and the net amount reported in the consolidated statements of financial position where there is a legally enforceable right to offset the recognized amounts and there is an intention to settle on a net basis to realize the assets and settle the liability simultaneously. The legally enforceable right must not be contingent on future events and must be enforceable in the normal course of business and in the event of default, insolvency or bankruptcy of the Group or the counterparty.

2.6 Derivative instruments

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

2.7 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost is determined using the periodic average method.

2.8 Property, plant and equipment

All property, plant and equipment are stated at historical cost less depreciation and accumulated impairment loss. Historical cost includes expenditures directly attributable to the acquisition of the items.

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

	Estimated Useful Lives
Buildings	30 - 40 years
Facilities	16 years
Structures	20 - 30 years
Machinery	5 - 15 years
Vehicles	5 years
Furniture	5 years

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

2.9 Borrowing costs

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

2.10 Government grants

Government grants are recognized at their fair values when there is reasonable assurance that the grant will be received and the Group will comply with the conditions attached to it. Government grants related to assets are presented by deducting the grants in arriving at the carrying amount of the assets, and grants related to income are deferred and presented by deducting the related expenses for the purpose of the government grants.

2.11 Intangible assets

Intangible assets acquired separately are measured on initial recognition at cost. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and accumulated impairment losses. Internally generated intangibles, excluding capitalized development costs, are not capitalized and the related expenditure is reflected in profit or loss in the period in which the expenditure is incurred.

The useful lives of intangible assets are assessed as either finite or indefinite. Intangible assets with finite lives are amortized over the useful economic life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset are reviewed at least at the end of each reporting period. If the modification of the amortization method are required due to changes in the expected useful life or the expected pattern of consumption of future economic benefits embodied in the asset, then they are treated as changes in accounting estimates. The amortization expense on intangible assets is recognized in the statement of profit or loss in the expense category that is consistent with the function of the intangible assets.

Intangible assets with indefinite useful lives are not amortized, but are tested for impairment annually, either individually or at the CGU level. The assessment of indefinite life is reviewed annually to determine whether the indefinite life continues to be supportable. If not, the change in useful life from indefinite to finite is made on a prospective basis.

Intangible assets with definite useful life that are amortized using the straight-line method over their estimated useful lives are as follows:

Estimated Hooful Lives

	Estimated Useful Lives
Software	5 years
Intellectual property	16 years
Development expenses	10 - 15 years
Industrial property rights	5 years
Patents	5 years

Research costs are recognized as an expense when it is incurred. Development costs which are individually identifiable and directly related to a new technology or to new products which carry probable future benefits are capitalized as intangible assets when the following criteria are met:

- it is technically feasible to complete the intangible assets so that it will be available for use;
- management intends to complete the intangible assets and use or sell it;
- there is an ability to use or sell the intangible assets:
- it can be demonstrated how the intangible assets will generate probable future economic benefits;
- adequate technical, financial and other resources to complete the development and to use or sell the intangible assets are available; and
- the expenditure attributable to the intangible assets during its development can be reliably measured.

Other development expenditures that do not meet these criteria are recognized as an expense as incurred. Development costs previously recognized as an expense are not recognized as an asset in a subsequent period.

2.12 Impairment of non-financial assets

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

2.13 Financial liabilities

(a) Classification and measurement

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

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

(b) Derecognition

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

2.14 Financial guarantee contract

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

- 1) amount calculated in accordance with KIFRS 1037, *Provisions, Contingent Liabilities and Contingent Assets*; or
- 2) the initial amount, less accumulated amortization recognized in accordance with KIFRS 1018, *Revenue*.

2.15 Compound financial instruments

Compound financial instruments are exchangeable bonds and convertible bonds that can be converted into equity instruments at the option of the holder.

The liability component of a compound financial instrument is recognized initially at the fair value of a similar liability that does not have an equity conversion option. The equity component is recognized initially on the difference between the fair value of the compound financial instrument as a whole and the fair value of the liability component. Any directly attributable transaction costs are allocated to the liability and equity components in proportion to their initial carrying amounts.

In accordance with the Interpretation Statements No.00094 issued by the Financial Supervisory Service in Korea, in relation to exchangeable bonds and convertible bonds. This accounting treatment is applicable within KIFRS in accordance with Item 1 under Paragraph 1 of Article 13 in the Act on External Audit for Stock Companies.

2.16 Provisions

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

The Group receives free emission rights as a result of emission trading schemes. The rights are received on an annual basis and, in return, the Group is required to remit rights equal to its actual emissions. The Group has adopted the net liability approach to the emission rights granted. Therefore, a provision is recognized only when actual emissions exceed the emission rights granted and still held. The emission costs are recognized as expenses.

2.17 Current and deferred income tax

The tax expense for the period consists of current and deferred tax. Tax is recognized on the profit for the period in the statement of income, except to the extent that it relates to items recognized in other comprehensive income or directly in equity. The tax expense is calculated on the basis of the tax laws enacted or substantively enacted at the end of the reporting period.

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

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

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

Deferred tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets against current tax liabilities and when the deferred income taxes assets and liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities where there is an intention to settle the balances on a net basis.

2.18 Employee benefits

(a) Post-employment benefits

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

(b) Share-based payments

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

2.18 Employee benefits (cont'd)

When the options are exercised, the Group issues new shares. The proceeds received net of any directly attributable transaction costs are credited to share capital (nominal value) and share premium.

2.19 Revenue recognition

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

The subsidiaries share a return obligation if the product specifications are not satisfied or a clear defect exists in relation to the sale of goods. However, as at December 31, 2016, an estimated return does not exist upon the products sold.

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

(a) Sales of goods

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

(b) Rendering of services

When the outcome of a transaction involving rendering of services can be estimated reliably, revenue associated with the transaction is recognized by the percentage of completion of the transaction. When the outcome of the transaction involving the rendering of services cannot be estimated reliably, revenue is recognized only to the extent of the costs that are recoverable.

(c) Interest income

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

(d) Dividend income

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

2.20 Lease

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

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

2.21 Approval of financial statements

The 2016 financial statements of the Group were approved by the Board of Directors on February 16, 2017, which is subject to approval at the annual shareholders' meeting.

2.22 Dividend distribution

Dividend distribution to the Group's shareholders is recognized as a liability in the financial statements in the period in which the dividends are approved at the annual meeting of shareholders.

3. Critical accounting estimates and assumptions

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

(a) Income taxes

The Group is subject to income taxes based on tax laws and interpretations of tax authorities. There are many transactions and calculations for which the ultimate tax determination is uncertain.

In addition, The Group shall pay an additional surtax where the use of corporate earnings on qualifying investments, wage increase and dividend payments fall below a certain portion of its taxable income for 3 years from 2015. As the Group considers the surtax on its undistributed earnings when computing its corporate income tax, the Group's income tax may change depending on changes in investment, wage growth, or dividend payouts.

(b) Fair value of financial instruments

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

4. Financial risk management

4.1 Financial risk factors

The Group's activities expose it to a variety of financial risks: market risk, credit risk and liquidity risk. The Group's risk management policies focuses on the unpredictability of financial markets and seeks to minimize potential adverse effects on the Group's financial performance.

Risk management is carried out by the Office of Planning & Coordination and the Group's finance and accounting department which establishes management policies identifies, evaluates and hedges financial risks.

4.1 Financial risk factors (cont'd)

4.1.1 Market risk

(a) Foreign exchange risk

The Group is exposed to foreign exchange risks arising from the usual transactions. Most of this risk arises from purchases traded in currencies other than the functional currency. Major currencies which the Group is exposed to foreign exchange risk are the US dollar and Euro.

The Group manages foreign exchange risk in advance to minimize currency risk. Basic strategy for foreign exchange management is to reduce volatility of gain (loss). Since the risk mostly arises from payments denominated in foreign currency for imports, finance and accounting department reduces currency risk by Lead and Lag method of monitoring foreign exchange market with reference to foreign exchange market trends issued by authorities.

As at December 31, 2016, if the foreign exchange rate of the Korean won fluctuated by 7% (2015: 7%) while other variables were fixed, the effects on income before tax would be as follows (Korean won in thousands):

		December	[.] 31,	2016	December 31, 2015					
	7%	% increase		7% decrease		7% increase		% decrease		
USD	₩	3,749,764	₩	(3,749,764)	₩	(7,351,715)	₩	7,351,715		
EUR		2,496,174		(2,496,174)		(571,718)		571,718		
GBP		683		(683)		(5,330)		5,330		
JPY		(186,950)		186,950		-		-		
CHF		(376)		376		-				
	₩	6,059,295	₩	(6,059,295)	₩	(7,928,763)	₩	7,928,763		

(b) Price risk

The Group is exposed to equity securities price risk because of investments held by the Group and classified on the consolidated statement of financial position either as available-for-sale or at fair value through profit or loss. The Group is not exposed to commodity price risk. To manage its price risk arising from investments in equity securities, the Group diversifies its portfolio. The portfolio is diversified in accordance with the policies set by the Group.

Stocks owned by the Group entity are traded in the Korea Exchange and stock price is included in KOSDAQ index.

The effect on the equity and after-tax profit by price fluctuations of listed equities index and unlisted stock as at December 31, 2016 and 2015 are as follows (Korean won in thousands). The analysis is based on the assumption that the price of listed stock held by the Group had increased/decreased by 10%(2015: 17%) with all other variables held constant and all the Group's equity instruments moved according to the historical correlation with the index, but the unlisted equity instruments that have significantly deviating estimated cash flows, and various estimates' occurrence probability cannot be reliably evaluated. Thus, the unlisted equity instruments are excluded from the analysis.

- 4. Financial risk management (cont'd)
- 4.1 Financial risk factors (cont'd)
- 4.1.1 Market risk (cont'd)

		Effect on the after-tax profit										
	Decembe	r 31, 2016	December 31, 2015									
	10% increase	10% decrease	17% increase	17% decrease								
KOSDAQ	₩ -	₩ -	₩ -	₩ -								
		Effect on	the equity									
	Decembe	r 31, 2016	December 31, 2015									
	10% increase	10% decrease	17% increase	17% decrease								

(c) Interest rate risk

Interest rate risk is defined as the risk that the interest income or expenses arising from deposits and borrowings will fluctuate because of changes in future market interest rate. The interest rate risk mainly arises through floating rate deposits and borrowings. The objective of interest rate risk management lies in maximizing corporate value by minimizing uncertainty caused by fluctuations in interest rates and minimizing net interest expense.

Based on the simulations performed, the impact on the profit of a 10 basis points (2015: 30bps) shift would be as follows (Korean won in thousands):

		Effect on the after-tax profit											
	<u></u>	December 31, 2016				December 31, 2015							
	10 b	p increase	10 b	p decrease	30 b	p increase	30 b	p decrease					
Interest expenses	₩	(329,789)	₩	329,789	₩	(831,283)	₩	831,283					
		Effect on the equity											
		Decembe	2016	December 31, 2015									
	10 b	10 bp increase		10 bp decrease		p increase	30 bp decrease						
Interest expenses	₩	(329,789)	₩	329,789	₩	(831,283)	₩	831,283					

4.1 Financial risk factors (cont'd)

4.1.2 Credit risk

Credit risk arises when the customer or counter party to the transaction fails to perform contractual obligations in transactions and investment. Credit risk arises from cash and cash equivalents, derivative financial instruments and deposits with banks and financial institutions, as well as credit exposures to wholesale and retail customers, including outstanding receivables and committed transactions.

The Group has deposited its cash and cash equivalents in several financial institutions such as Korea Development Bank and Woori Bank. The Group maintains business relationship with those financial institutions with high credit ratings evaluated by independent credit rating institutions and accordingly, credit risks associated with these financial institutions are limited. Customers with high credit that are expected to have stable and long-term relationship are selected and entered into exclusive distributorship rights.

The maximum exposure to credit risk as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Dece	ember 31, 2016	December 31, 2015		
Cash and cash equivalents (*1)	₩	268,405,240	₩	149,921,017	
Short-term financial instruments		5,765,335		6,000,720	
Trade receivables		758,822,950		662,225,999	
Other receivables		13,332,202		24,559,842	
Financial guarantee contracts		93,247,072		68,962,360	
Put option		-		30,000,000	

^(*1) The difference between cash and cash equivalents on consolidated statements of financial position is cash on hand.

4.1.3 Liquidity risk

Maintaining optimal liquidity is very important due to the characteristic of the business which requires significant investment on product development. The Group monitors rolling forecasts of the Group's liquidity requirements to ensure it has sufficient cash to meet operational needs while maintaining sufficient headroom on its undrawn committed borrowing facilities at all times so that the Group does not breach borrowing limits or covenants (where applicable) on any of its borrowing facilities. Such forecasting takes into consideration the Group's debt financing plans, covenant compliance, compliance with internal statement of financial position ratio targets and currency, if applicable external regulatory or legal requirements.

Finance and accounting department invests surplus cash in interest bearing current accounts, time deposits, money market deposits and marketable securities, choosing instruments with appropriate maturities or sufficient liquidity to provide sufficient head-room as determined by the above mentioned forecasts.

The Group secures credit lines for trade finance and bank overdraft. In case of significant facility investments, liquidity risk is reduced as maturities are matched by using internally held funds and long-term borrowings.

4.1 Financial risk factors (cont'd)

4.1.3 Liquidity risk (cont'd)

The analysis of the Group's liquidity risk as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	December 31, 2016									
		6 months and less	Over 6 months ~ 1 year	Over 1 ~ 5 years		Over 5 years	Total			
Finance liabilities	₩	237,030,569	₩ 246,024,262	₩ 216,881,214	₩	7,749,388 ₩	707,685,433			
Trade payables		21,172,394	-	-		-	21,172,394			
Other payables		58,204,032	-	993,000		-	59,197,032			
Financial guarantee contracts		93,247,072	-	-		-	93,247,072			
				December 31, 20	15					

		December 31, 2015										
		6 months and less	Over 6 months ~ 1 year		Over 1 ~ 5 years		Over 5 years		Total			
Finance liabilities	₩	229,894,065	₩ 294,453,585	₩	319,300,189	₩	12,797 ₩	Z.	843,660,636			
Trade payables		5,144,118	-		-		-		5,144,118			
Other payables		60,705,032	-		978,000		-		61,683,032			
Financial guarantee contracts		68,962,360	-		-		-		68,962,360			
Put option		15,000,000	-		15,000,000		-		30,000,000			

4.2 Capital risk management

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

In order to maintain or adjust the capital structure, the Group may adjust the amount of dividends paid to shareholders, return capital to shareholders, make borrowings, issue new shares or sell assets to increase and reduce debt.

Consistent with others in the industry, the Group monitors capital on the basis of the gearing ratio. This ratio is calculated as net debt divided by total capital. Net debt is calculated as total borrowings less cash and cash equivalents. Total capital is calculated as 'equity' as shown in the consolidated statement of financial position plus net debt.

4.2 Capital risk management (cont'd)

Gearing ratios as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Dec	ember 31, 2016	D	ecember 31, 2015
Total borrowings (a)	₩	678,944,287	₩	795,861,531
Less: cash and cash equivalents (b)		(268,408,116)		(149,926,060)
Net debt (c)=(a)+(b)		410,536,171		645,935,471
Total liabilities (d)		822,974,207		938,389,810
Total equity(e)		2,198,966,801		1,809,840,731
Total capital (f)=(c)+(e)		2,609,502,972		2,455,776,202
Gearing ratio (c)/(f)		15.73%		26.30%
Debt to equity ratio (d)/(e)		37.43%		51.85%

5. Fair value

5.1 Fair value of financial instruments by category

Carrying amount and fair value of financial instruments by category as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	December 31, 2016					December 31, 2015			
	Ca	Carrying amount		Fair value	Ca	rrying amount		Fair value	
Financial assets									
Cash and cash equivalents	₩	268,408,116	₩	268,408,116	₩	149,926,060	₩	149,926,060	
Short-term financial instruments Available-for-sale financial		5,765,335		5,765,335		6,000,720		6,000,720	
assets (*1)		9,446,400		9,446,400		9,201,730		9,201,730	
Trade receivables		758,822,950		758,822,950		662,225,999		662,225,999	
Other receivables		13,332,202		13,275,802		24,559,842		24,451,680	
Long-term financial assets		702,100		702,100		702,100		702,100	
	₩	1,056,477,103		1,056,420,703	₩	852,616,451	₩	852,508,289	
Financial liabilities									
Trade payables	₩	21,172,394	₩	21,172,394	₩	5,144,118	₩	5,144,118	
Borrowings and bonds		678,944,287		678,865,804		795,861,531		796,465,566	
Derivative financial instruments		-		-		15,549,642		15,549,642	
Other payables		59,197,032		59,197,032		61,683,032		61,683,032	
	₩	759,313,713	₩	759,235,230	₩	878,238,323	₩	878,842,358	

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

5. Fair value (cont'd)

5.2 Financial instruments measured at cost

Details of financial instruments measured at cost as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Decen	December 31, 2016		mber 31, 2015
Available-for-sale financial assets				
MBN	₩	1,475,167	₩	1,475,167
Others		3,718,599		3,318,599
	₩	5,193,766	₩	4,793,766

The financial instruments are measured at cost as they are unlisted equity securities whose various estimates' occurrence probability cannot be reliably measurable and their estimated cash flows deviate significantly.

5.3 Fair value hierarchy

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

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

Fair value hierarchy classifications of the financial assets and financial liabilities that are measured at fair value or its fair value is disclosed as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

,	December 31, 2016								
		Level 1		Level 2		Level 3		Total	
Financial assets and liabilities measured at fair value Available-for-sale financial assets Financial assets and liabilities not measured at fair value Borrowings and bonds	₩	9,215,907	₩	- 678,865,804	₩	230,493	₩	9,446,400	
Borrowings and borids		_		070,003,004		_		070,003,004	
	December 31, 2015								
		Level 1		Level 2		Level 3		Total	
Financial assets and liabilities measured at fair value Available-for-sale financial assets Derivative financial liabilities Financial assets and liabilities not measured at fair value	₩	8,971,237 -	₩	-	₩	230,493 15,549,642	₩	9,201,730 15,549,642	
Borrowings and bonds		-		796,465,566		-		796,465,566	

5. Fair value (cont'd)

5.4 Valuation technique and the Inputs

Valuation techniques and inputs used in recurring fair value measurements categorized within Level 3 of the fair value hierarchy as at December 31, 2015 are as follows (Korean won in thousands):

	December 31, 2015							
		Fair value	Level	Valuation technique	Inputs	Range of inputs		
Derivative financial liabilities (consideration for conversion	W 13.343.04Z		3	Monte Carlo model	KRW risk free rate	1.63% ~ 1.82%		
rights and others)					USD risk free rate	0.60% ~ 1.78%		
,					Fluctuation of stock price Fluctuation of	47.77%		
					foreign exchange rate	7.02%		

5.5 Valuation processes for fair value measurements categorized within level 3

The Group uses fair values, classified as level 3 for financial reporting purpose, calculated by external professional valuation institutions.

5.6 Sensitivity analysis for recurring fair value measurements categorized within level 3

The sensitivity analysis of financial instruments is performed to measure favorable and unfavorable changes in the fair value of financial instruments which are affected by the unobservable parameters, using a statistical technique. When the fair value is affected by more than two input parameters, the amounts represent the most favorable or most unfavorable. The Group does not have a financial instrument that is subject to the sensitivity analysis.

In 2015, the sensitivity analysis on how 10% change in stock price of the underlying asset affects profit or loss before tax, analyzed based on correlation in stock volatility, which is a significant unobservable input variable, is as follows (Korean won in thousands):

	December 31, 2015				
		10% increase	10% decrease		
Derivative financial liabilities (consideration for conversion rights and others)	₩	(4,673,658)	₩	4,040,663	

6. Financial instruments by category

6.1 Carrying amounts of financial instruments by category

Categorizations of financial instruments as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

			Dece	mber 31, 2016		
		Loans and receivables	_	ilable-for-sale ancial assets		Total
Current assets						
Cash and cash equivalents	₩	268,408,116	₩	-	₩	268,408,116
Short-term financial assets		5,765,335		-		5,765,335
Trade receivables		758,305,091		-		758,305,091
Other receivables		4,830,010				4,830,010
	₩	1,037,308,552	₩	_	₩	1,037,308,552
Non-current assets						
Long-term financial assets	₩	702,100	₩	14,640,166	₩	15,342,266
Trade receivables		517,859		-		517,859
Other receivables		8,502,191		_		8,502,191
	₩	9,722,150	₩	14,640,166	₩	24,362,316
	₩	1,047,030,702	₩	14,640,166	₩	1,061,670,868
					Fin	cember 31, 2016 ancial liabilities amortized cost
Current liabilities						
Short-term financial liabilities					₩	470,980,787
Trade payables						21,172,394
Other payables						58,204,032
					₩	550,357,213
Non-current liabilities						
Long-term financial liabilities					₩	207,963,500
Other payables						993,000
					₩	208,956,500
					₩	759,313,713

6. Financial instruments by category (cont'd)

6.1 Carrying amounts of financial instruments by category (cont'd)

December	31,	2015
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	Loans	and receivables		lable-for-sale		Total
Current assets					-	
Cash and cash equivalents	₩	149,926,060	₩	-	₩	149,926,060
Short-term financial assets		6,000,720		-		6,000,720
Trade receivables		662,225,999		-		662,225,999
Other receivables		15,324,341		-		15,324,341
	₩	833,477,120	₩	-	₩	833,477,120
Non-current assets						
Long-term financial assets	₩	702,100	₩	13,995,496	₩	14,697,596
Other receivables		9,235,501				9,235,501
	₩	9,937,601	₩	13,995,496	₩	23,933,097
	₩	843,414,721	₩	13,995,496	₩	857,410,217

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		_		150. 01, 2010				
	Financial liabilities at fair value through profit or loss			Financial liabilities at nortized cost		Total		
Current liabilities								
Short-term financial liabilities	₩	15,549,642	₩	524,953,011	₩	540,502,653		
Trade payables		-		5,144,118		5,144,118		
Other payables		-		60,705,032		60,705,032		
	₩	15,549,642	₩	590,802,161	₩	606,351,803		
Non-current liabilities						_		
Long-term financial liabilities	₩	-	₩	270,908,520	₩	270,908,520		
Other receivables		-		978,000		978,000		
	₩	-	₩	271,886,520	₩	271,886,520		
	₩	15,549,642	₩	862,688,681	₩	878,238,323		

6. Financial instruments by category (cont'd)

6.2 Net income or losses by category of financial instruments

Net income and loss of financial instruments by category for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

						2016				
		n (loss) on demption	va com	in (loss) on iluation of (other) iprehensive ome (loss)		Interest income (expenses)		Gain (loss) on disposal		Impairment
Financial assets										
Loans and receivables Available-for-sale financial	₩	-	₩	-	₩	3,241,476	₩	-	₩	(1,329,095)
assets				185,460		<u> </u>				
	₩	-	₩	185,460	₩	3,241,476	₩		₩	(1,329,095)
Financial liabilities Financial liabilities at fair value through profit or loss Financial liabilities measured at	₩	-	₩	-	₩	-	₩	(15,634,038)	₩	-
amortized cost		(78,803)		-		(14,088,661)		-		
	₩	(78,803)	₩	-	₩	(14,088,661)	₩	(15,634,038)	₩	
	₩	(78,803)	₩	185,460	₩	(10,847,185)	₩	(15,634,038)	₩	(1,329,095)

6. Financial instruments by category (cont'd)

6.2 Net income or losses by category of financial instruments (cont'd)

						20	15					
		iin (loss) on valuation		n (loss) on edemption	COI	ain (loss) on raluation of (other) mprehensive come (loss)		Interest income (expenses)	G	ain (loss) on disposal	<u>In</u>	npairment
Financial assets Financial assets at fair value through profit or loss	₩	-	₩	-	₩	-	₩	-	₩	(20,700)	₩	-
Loans and receivables Available-for-sale		-		-		-		756,363		-		(856,092)
financial assets						2,890,105		6,300,951	_	89,814	_	
	₩		₩		₩	2,890,105	₩	7,057,314	₩	69,114	₩	(856,092)
Financial liabilities Financial liabilities at fair value through profit or loss Financial liabilities measured at	₩	(9,729,300)	₩	-	₩	-	₩	-	₩	(54,313,582)	₩	-
amortized cost		-		(553,649)		-		(29,714,500)		-		
	₩	(9,729,300)	₩	(553,649)	₩		₩	(29,714,500)	₩	(54,313,582)	₩	
	₩	(9,729,300)	₩	(553,649)	₩	2,890,105	₩	(22,657,186)	₩	(54,244,468)	₩	(856,092)

7. Cash and cash equivalents

Details of cash and cash equivalents as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Decei	December 31, 2015			
Cash on hand	₩	2,876	₩	5,043	
Bank deposits and others (*1)	268,405,240			149,921,017	
	₩	268,408,116	₩	149,926,060	

(*1) Cash and cash equivalents amounting to $\mbox{$W602}$ million (2015: $\mbox{$W$1,866$}$ million) are restricted in use for the molecular techniques and researches for the development of the MERS coronavirus antibodies and others (See Note 19).

8. Financial assets

Details of financial assets as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Dece	mber 31, 2016	December 31, 2015		
Current assets Short-term financial instruments (*1)	₩	5,765,335	₩	6,000,720	
Non-current assets					
Long-term financial instruments (*1)		702,100		702,100	
Available-for-sale financial assets		14,640,166		13,995,496	
	₩	21,107,601	₩	20,698,316	

^(*1) As at December 31, 2016, short-term financial instruments and long-term financial instruments are restricted to use for the Group's borrowings and subsidies.

Movements in financial assets classified as available-for-sale for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

	2016			2015		
Beginning	₩	13,995,496	₩	7,735,342		
Acquisition		400,000		3,000,000		
Disposal		-		(554,834)		
Valuation		244,670		3,814,988		
Ending	₩	14,640,166	₩	13,995,496		

Financial assets classified as available-for-sale as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Dece	December 31, 2015		
Marketable securities	₩	9,215,907	₩	8,971,237
Non-marketable securities		5,424,259		5,024,259
	₩	14,640,166	₩	13,995,496

9. Trade and Other Receivables

Details of trade receivables as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Current		No	on-current	Total		
December 31, 2016				_			
Original amount	₩	761,104,487	₩	718,349	₩	761,822,836	
Allowance for doubtful accounts		(2,799,396)		(200,490)		(2,999,886)	
Carrying amount	₩	758,305,091	₩	517,859	₩	758,822,950	
December 31, 2015							
Original amount	₩	665,226,713	₩	680,295	₩	665,907,008	
Allowance for doubtful accounts		(3,000,714)		(680,295)		(3,681,009)	
Carrying amount	₩	662,225,999	₩	-	₩	662,225,999	

Details of other receivables as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

		Current								
	Loans		Sub-total		Loans		Deposits		Sub-total	Total
December 31, 2016										
Original amount	₩ 6,292,746	₩ 3,653,424	₩ 9,946,170	₩	382,564	₩	8,836,569	₩	9,219,133	₩ 19,165,303
Present value discount	-	-	-		-		(569,418)		(569,418)	(569,418)
Allowance for doubtful accounts	(4,481,616)	(634,544)	(5,116,160)		-		(147,524)		(147,524)	(5,263,684)
Carrying amount	₩ 1,811,130	₩ 3,018,880	₩ 4,830,010	₩	382,564	₩	8,119,627	₩	8,502,191	₩ 13,332,201
December 31, 2015										
Original amount Present value	₩ 15,970,513	₩ 4,390,064	₩ 20,360,577	₩	654,357	₩	8,922,396	₩	9,576,753	₩ 29,937,330
discount Allowance for	-	-	-		-		(193,728)		(193,728)	(193,728)
doubtful accounts	(4,481,616)	(554,620)	(5,036,236)		-		(147,524)		(147,524)	(5,183,760)
Carrying amount	₩ 11,488,897	₩ 3,835,444	₩ 15,324,341	₩	654,357	₩	8,581,144	₩	9,235,501	₩ 24,559,842

(*1) Others include non-trade receivables, accrued income and others.

Movements in the Group's bad debts allowance for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016	2015			
Beginning	₩	8,864,768	₩	11,346,676		
Increase		1,329,095		841,945		
Decrease		(1,930,293)		(3,322,278)		
Currency translation differences and others		-		(1,575)		
Ending	₩	8,263,570	₩	8,864,768		

The Group does not hold any collateral for trade receivables as at December 31, 2016.

10. Inventories

Details of inventories as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	December 31, 2016							D				
		Acquisition cost		llowance for luation losses	Carrying amounts			Acquisition cost	Allowance for valuation losses			Carrying amounts
Finished product	₩	68,749,231	₩	(18,386,260) ₩	50,	362,971 ¹	₩	111,511,576	₩	(23,403)	₩	111,488,173
Work in process		11,735,163		-	11,	735,163		4,473,363		-		4,473,363
Raw materials		62,034,845		(6,480,223)	55,	554,622		49,174,169		(7,211,123)		41,963,046
Sub-materials		2,099,569		(106,259)	1,	993,310		1,944,171		(9,216)		1,934,955
Merchandise		57,077,741		-	57,	077,741		65,694,474		-		65,694,474
Analysis materials		289,381		-		289,381		156,996		-		156,996
Supplies		7,740,609		(37,866)	7,	702,743		7,369,811		(7,396)		7,362,415
Materials in-transit		42,615				42,615		692,224		-		692,224
	₩	209,769,154	₩	(25,010,608) ₩	184,	758,546	₩	241,016,784	₩	(7,251,138)	₩	233,765,646

The cost of inventories recognized as expense and included in cost of sales amounted to \$238,331 million (2015: \$200,498 million). Loss on valuation of inventories amounting to \$20,292 million (2015: \$8,210 million) is recognized during the year.

As at December 31, 2016, certain finished product, raw materials and sub-materials have been pledged as collateral for certain bank loans (See Note 16).

11. Associates

Details of associates of the Group as at December 31, 2016 are as follows:

Associate	Equity interest	Domicile	Year-end
	/		
Boston Incubation Investment Association	25.00%	Republic of Korea	December
2014 Growth Ladder-IMM Venture Fund	20.00%	Republic of Korea	December

Details of valuation of investments in associates under the equity method for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016												
Associate		January 1	Acc	quisitions		Disposals	_	ividends eceived		Share of of of loss	De	ecember 31		
Boston Incubation Investment Association	₩	716,352	₩	-	₩	(450,000)	₩	-	₩	(85,212)	₩	181,140		
2014 Growth Ladder-IMM Venture Fund		7,375,435		410,000		(1,707,000)		(770,200)		667,731		5,975,966		
	₩	8,091,787	₩	410,000	₩	(2,157,000)	₩	(770,200)	₩	582,519	₩	6,157,106		

11. Associates (cont'd)

•	n	4	
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Associate	January 1	Acquisitions	Disposals	Dividends received	Share of profit or loss	December 31
Boston Incubation Investment Association	₩ 1,557,001	₩ -	₩ (205,000)	₩ -	₩ (635,649)	₩ 716,352
2014 Growth Ladder-IMM Venture Fund	1,926,913 ₩ 3,483,914	7,590,000 ₩7,590,000	(2,216,400) \(\psi\) (2,421,400)	(770,200) \(\psi\) (770,200)	845,122 ₩ 209,473	7,375,435 ₩ 8,091,787

Summarized financial information of associates as at December 31, 2016 and 2015, and for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016												
Associate	Current assets		Non-current assets		Current liabilities		Non- current liabilities		Revenue		Gain(loss) for the year		Total comprehensive gain(loss) for the year	
Boston Incubation Investment Association 2014 Growth Ladder-	₩	628,592	₩	637,268	₩	541,300	₩	-	₩	100,257	₩	(306,515)	₩	(306,515)
IMM Venture Fund		40,324	;	30,089,508		250,000		-		4,412,151		3,337,057		3,337,057
	₩	668,916	₩;	30,726,776	₩	791,300	₩	-	₩	4,512,408	₩	3,030,542	₩	3,030,542

		2015												
Associate	Current assets			on-current assets	Current liabilities		Non- current liabilities		Revenue		Gain(loss) for the year		Total comprehensiv gain(loss) for the year	
Boston Incubation Investment Association	₩	1,309,854	₩	2,009,347	₩	453,792	₩	-	₩	50,433	₩	(2,542,596)	₩	(2,542,596)
2014 Growth Ladder- IMM Venture Fund		3,485,669		33,400,128		8,621		-		5,260,915		4,225,609		4,225,609
	₩	4,795,523	₩	35,409,475	₩	462,413	₩	-	₩	5,311,348	₩	1,683,013	₩	1,683,013

11. Associates (cont'd)

Details of adjustments from financial information of associates to the book value of investments in associates for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

				2016						
Associate		Net assets at the end of the period	ir	Net assets n investments	Carrying amount					
Boston Incubation Investment Association	₩	724,560	₩	181,140	₩	181,140				
2014 Growth Ladder-IMM Venture Fund		29,879,832		5,975,966		5,975,966				
	₩	30,604,392	₩	6,157,106	₩	6,157,106				
	2015									
Associate		Net assets at the end of the period	ir	Net assets n investments		Carrying amount				
Boston Incubation Investment Association	₩	2,865,409	₩	716,352	₩	716,352				
2014 Growth Ladder-IMM Venture Fund		36,877,176		7,375,435		7,375,435				
	₩	39,742,585	₩	8,091,787	₩	8,091,787				

12. Property, plant and equipment

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

	2016												
	January 1	Acquisitions	Transfer	Disposals	Depreciation	Others	December 31	Accumulated depreciation					
Land	₩ 291,583,635	₩ 405,365	₩ -	₩ -	₩ -	₩ -	₩ 291,989,000	₩ -					
Buildings	265,621,996	90,921	1,655,161	-	8,445,576	-	258,922,502	(44,763,291)					
Facilities	220,674,156	-	200,000	-	21,099,197	-	199,774,959	(133,577,349)					
Structures	13,384,546	75,800	-	_	917,070	372,281	12,915,557	(4,191,879)					
Machinery	74,357,559	2,018,120	25,351,671	-	9,616,447	117,106	92,228,009	(39,281,942)					
Vehicles	125,168	29,000	23,575	2,990	48,050	4,333	131,036	(286,302)					
Furniture Construc- tion in	8,907,369	1,745,237	513	356	2,737,536	-	7,915,227	(15,665,047)					
progress	22,950,638	8,339,315	(27,244,561)				4,045,392						
	₩ 897,605,067	₩ 12,703,758	₩ (13,641)	₩ 3,346	₩ 42,863,876	₩ 493,720	₩ 867,921,682	₩ (237,765,810)					

	January 1	Acquisitions	Transfer	Disposals	Depreciation	Others	December 31	Accumulated depreciation					
Land		₩ 135,277 ₩	₩ -	₩ -	₩ -	₩ -	₩ 291,583,635	₩ -					
Buildings	276,696,086	1,372,215	16,000	-	8,399,728	(4,062,577)	265,621,996	(36,317,714)					
Facilities	224,547,631	-	16,929,283	-	20,802,758	-	220,674,156	(112,478,152)					
Structures	14,870,105	8,000	12,455	-	924,315	(581,699)	13,384,546	(3,048,260)					
Machinery	14,108,177	1,581,837	64,207,362	885	5,414,375	(124,557)	74,357,559	(29,327,265)					
Vehicles	143,044	-	36,219	411	50,752	(2,932)	125,168	(252,291)					
Furniture Construc- tion in	5,221,285	3,032,208	3,244,095	2,489	2,587,730	-	8,907,369	(12,929,363)					
progress	71,194,182	34,475,981	(85,752,542)			3,033,017	22,950,638						
	₩ 898,228,868	₩ 40,605,518 ₩	₩ (1,307,128)	₩ 3,785	₩ 38,179,658	₩ (1,738,748)	₩ 897,605,067	₩ (194,353,045)					

12. Property, plant and equipment (cont'd)

Depreciation of property, plant and equipment for the years ended December 31, 2016 and 2015 is allocated as follows (Korean won in thousands):

		2016		2015
Cost of sales	₩	36,402,921	₩	28,677,935
Selling and administrative expenses		3,531,771		3,021,050
Development expenses		2,929,184		3,410,645
Construction in progress		<u>-</u>		3,070,028
	₩	42,863,876	₩	38,179,658

The carrying amounts of property, plant and equipment that are provided as collateral as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

Collateral (*1)		December 31, 2016	December 31, 2015
Land	₩	284,436,145 W	283,412,958
Buildings		242,708,757	242,971,025
Facilities		199,774,747	220,664,275
Machinery		71,009,137	7,072,170

(*1) Property, plant and equipment are provided as collateral for borrowings and payment guarantees..

Details of borrowings and payment guarantees for which property, plant and equipment is provided as collateral as at December 31, 2016 and 2015 are as follows (Korean won in thousands and US dollar in thousands):

	December 31, 2016								
Creditor	Borrowing amount	Guarantee amount	Collateral value						
Shinhan Bank	₩ 156,046,245	USD 3,400	₩ 215,784,000						
Woori Bank	89,634,003	USD 2,900	146,360,000						
KEB Hana Bank	20,000,000	-	24,000,000						
Korea Development Bank	243,014,691	-	355,000,000						
Suhyup Bank	2,000,000	-	2,400,000						
Citibank Korea	11,622,389	-	19,200,000						
Industrial Bank of Korea	18,757,057	-	5,230,000						
		-	USD 251						
Nonghyup Bank	17,465,163	-	20,988,000						
Shinhan Capital	5,000,000	-	6,500,000						
KDB Capital	12,000,000	-	15,600,000						
IBK Capital	17,000,000	-	22,100,000						
Cheong-ju City	-	-	2,306,900						

12. Property, plant and equipment (cont'd)

D	ece	mbe	r 31	1 2	N 1	5

Creditor	Borr	owing amount	Guarantee amount	Co	ollateral value
Shinhan Bank	₩	169,407,121	USD 3,400	₩	215,784,000
Woori Bank		116,334,462	USD 2,900		171,360,000
KEB Hana Bank		11,905,000	-		52,000,000
Korea Development Bank		115,647,542	-		120,000,000
Suhyup Bank		2,000,000	-		2,400,000
Industrial Bank of Korea		15,313,647	-		5,230,000
			-		USD 251
Nonghyup Bank		16,965,302	-		20,400,000
Cheong-ju City		-	-		2,306,900

13. Intangible Assets

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

					2016				
	January 1, 2016	Changes in consolidation scope	Acquisitions	Transfer	Disposals	Amortization	December 31, 2016	Accumulated amortization	Accumulated impairment loss
Goodwill	₩ 3,025,845	₩ 477,288	₩ -	₩ -	₩ -	₩ -	₩ 3,503,133	₩ -	₩ -
Software	2,543,618	-	210,828	13,643	107,816	813,639	1,846,634	(4,944,251)	-
Intellectual property	16,835,000	-	-	-	-	2,418,000	14,417,000	(28,899,700)	-
Development costs (*1)	660,459,172	-	198,605,233	_	-	43,821,853	815,242,552	(159,324,799)	(1,068,756)
Other intangible assets	7,092,842	-	4,763	333,976	-	1,755,665	5,675,916	(1,559,732)	-
Facility usage rights	7,817,534				180,000		7,637,534		
	₩ 697,774,011	₩ 477,288	₩ 198,820,824	₩ 347,619	₩ 287,816	₩ 48,809,157	₩ 848,322,769	₩ (194,728,482)	₩ (1,068,756)

(*1) Due to significant fluctuation in expected consuming patterns of future economic benefits embedded in development costs, the Group changed development costs' residual useful life for the December 31, 2016 and the changes in accounting estimates are accounted prospectively. Resulting from these changes of useful life, amortization for the year ended December 31, 2016 decreased W8,253 million.

	2015														
	Jan	nuary 1, 2015	Α	cquisitions		Transfer	D	isposals		Amortization		December 31, 2015	Accumulated amortization		ccumulated pairment loss
Goodwill	₩	3,025,845	₩	-	₩	-	₩	-	Ŧ	₩ -	₩	3,025,845	₩ -	₩	-
Software		1,530,710		402,763		1,307,128		-		696,983		2,543,618	(4,130,611)		-
Intellectual property		19,253,000		-		-		-		2,418,000		16,835,000	(25,042,800)		-
Development costs		560,396,447		145,498,776		-		-		45,436,051		660,459,172	(114,579,606)		(1,068,756)
Other intangible assets		8,389,420		1,128		694,053		-		1,991,759		7,092,842	(1,242,966)		-
Facility usage rights		8,962,566		75,434				1,220,466	_			7,817,534			
	₩	601,557,988	₩	145,978,101	₩	2,001,181	₩	1,220,466	Ŧ	₹ 50,542,793	₩	697,774,011	₩ (144,995,983)	₩	(1,068,756)

13. Intangible Assets (cont'd)

The details of significant intangible assets as at December 31, 2016 are as follows:

		Residual useful
	Description	lives
Software	ERP and other operating support software	1 ~ 5 years
Intellectual property	Rights to manufacture biomedicine and antigen and usage of mass production technology	7 years
Development costs	Development of products	8 ~ 15 years
Other intangible assets	Patents, Industrial property rights	1 ~ 5 years
Facility usage rights	Condominium, golf club membership	Indefinite

Material expenditures that are not recognized as assets because the Group does not exercise control, but from which future economic benefits are expected, for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016	2015
Marketing costs	$\overline{\mathbb{W}}$	11,359,713 ₩	10,730,150
Training costs		1,180,734	802,864

Amortization of intangible assets for the years ended December 31, 2016 and 2015 is allocated as follows (Korean won in thousands):

		2016		2015
Cost of sales	₩	44,077,085	₩	45,694,966
Selling and administrative expenses		4,663,550		4,780,132
Development costs (*1)		68,522		55,213
Construction in progress		-		12,482
	₩	48,809,157	₩	50,542,793

(*1) The amount only includes amortization of software.

Capitalized borrowing costs which included in the acquisition of intangible assets and property, plant and equipment are $\mathbb{W}11,417$ million (2015: $\mathbb{W}9,809$ million) and nil (2015: $\mathbb{W}1,811$ million), respectively. Borrowing costs were capitalized using the weighted average interest rate of its general borrowings of 4.03% (2015: 5.60%).

14. Other Assets

Details of other assets as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Dece	December 31, 2016		ember 31, 2015
Current				
Advance payments	₩	5,879,184	₩	4,999,975
Prepaid expenses		6,927,648		3,795,015
Others		9,291,723		10,896,073
	₩	22,098,555	₩	19,691,063
Non-current				
Advance payments	₩	3,622,446	₩	1,530,179
Prepaid expenses		711,710		368,441
	₩	4,334,156	₩	1,898,620
	₩	26,432,711	₩	21,589,683

15. Trade and Other Payables

Details of trade payables as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	December 31, 2016		Dece	ember 31, 2015
Trade payables	₩	21,172,394	₩	5,144,118

Details of other payables as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	December 31, 2016		Dece	ember 31, 2015
Current				
Non-trade payables	₩	13,345,049	₩	17,324,532
Accrued expenses		31,562,076		33,511,200
Value added tax withheld		13,286,061		9,858,453
Dividends payable		10,846		10,846
	₩	58,204,032	₩	60,705,031
Non-current				
Non-trade payables	$lackworldsymbol{W}$	993,000	₩	978,000
	₩	59,197,032	₩	61,683,031

16. Financial Liabilities

Details of the book value of financial liabilities as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

December 31, 2016			December 31, 2015		
₩	344,015,487	₩	324,725,626		
	126,965,300		144,950,600		
	-		55,276,785		
	-		15,549,642		
₩	470,980,787	₩	540,502,653		
₩	207,963,500	₩	157,581,800		
	-		15,089,055		
	-		98,237,665		
₩	207,963,500	₩	270,908,520		
₩	678,944,287	₩	811,411,173		
	₩ ₩	₩ 344,015,487 126,965,300 - - - - - - - - - - - - - - - - - -	₩ 344,015,487 ₩ 126,965,300 ₩ 470,980,787 ₩ ₩ 207,963,500 ₩		

^(*1) As at December 31, 2016, there is no outstanding balance of convertible bonds as they were redeemed or converted into ordinary shares during the year.

^(*2) As at December 31, 2016, there is no outstanding balance of exchangeable bonds as they were redeemed or exchanged with treasury stock during the year.

Details of borrowings as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

			Annual interest rate (%)	Carrying	g amount
		Latest		December 31,	December 31,
	Creditor	maturity date	December 31, 2016	2016	2015
Current liabilities Short-term borrowings					
General term loans	Shinhan Bank	August 1, 2017	Bank debenture (6 month) + 2.15% Bank debenture	₩ 20,000,000	₩ 20,000,000
	Shinhan Bank	March 3, 2017	(1 year) + 2.20% Industrial financial	7,000,000	7,000,000
	Shinhan Bank	March 15, 2017	debentures + 1.35% Bank debenture (6 month) +	15,000,000	15,000,000
	Shinhan Bank	August 29, 2017	2.20% Bank debenture (1 year) +	10,000,000	10,000,000
	Shinhan Bank	November 22, 2017	2.10% Bank debenture (6 month) +	15,000,000	15,000,000
	Shinhan Bank	May 19, 2017	1.80% Bank debenture (1 year) +	8,000,000	8,000,000
	Shinhan Bank	March 6, 2017	1.80% Bank debenture (1 year) +	10,000,000	10,000,000
	Shinhan Bank	May 27, 2017	2.10% Bank debenture (1 year) +	7,000,000	-
	Shinhan Bank	May 27, 2017	2.10%	5,000,000	-
	Shinhan Bank	May 10, 2017	Libor + 1.10%	3,637,594	3,489,624
	Shinhan Bank	April 26, 2017	Libor + 1.10% Floating-rate loans (6 month)	1,151,905	1,105,047
	Woori Bank	July 25, 2017	+ 2.64%	30,000,000	30,000,000
	Woori Bank	March 30, 2017	Koribor (3 month) + 1.69%	20,000,000	20,000,000
	Woori Bank	February 28, 2017	Koribor + 5.36%	2,000,000	2,000,000
	Woori Bank	June 15, 2017	Libor + 1.10%	4,122,607	3,954,907
	Woori Bank	July 5, 2017	Libor + 1.10%	3,516,341	3,373,303
	Woori Bank	February 11, 2017	Libor + 1.10%	363,759	348,962
	Woori Bank Korea Development	November 29, 2017	Libor + 1.10% Industrial financial debentures (1 year) +	1,212,531	-
	Bank Korea Development	May 20, 2017	1.92% Industrial financial debentures (1 year) +	5,000,000	5,000,000
	Bank Korea Development	December 12, 2017	1.82% Industrial financial debentures (1 year) +	5,000,000	5,000,000
	Bank Korea Development	November 2, 2017	1.82%	20,000,000	20,000,000
	Bank Kookmin Bank	March 6, 2017	3.56%	10,000,000	10,000,000
	Industrial Bank of Korea	September 18,2017	3.06%	3,000,000	3,000,000
	Industrial Bank of Korea	November 6, 2017	5.10%	4,000,000	4,000,000
	Industrial Bank of Korea	November 4, 2017	5.72%	2,534,126	4,000,000
	Suhyup Bank	October 23, 2017	COFIX (6 month) + 2.85%	2,000,000	2,000,000
	Surryup Darik	OCIODEI 23, 2017	COLIX (0 HIGHLII) + 2.00%	2,000,000	2,000,000

			Annual interest rate (%)	Carrying	g amount		
		Latest		December 31,	December 31,		
	Creditor	maturity date	December 31, 2016	2016	2015		
Current liabilities Short-term borrowings General term							
loans	Citibank Korea Korea EXIM	July 22, 2017	3.50%	₩ 10,000,000	₩ -		
	Bank	-	-	-	1,168,208		
Loans for	Other	November 4, 2017	4.08%	150,000	-		
import	Korea EXIM						
financing	Bank Korea EXIM	June 29, 2017	3.06%	20,000,000	15,000,000		
	Bank Korea EXIM	December 23, 2017	2.86%	15,000,000	15,000,000		
	Bank	October 10, 2017	2.55%	5,000,000	5,000,000		
Loans for							
export financing Note discount	Korea EXIM Bank Industrial Bank	December 23, 2017	2.86%	20,000,000	20,000,000		
(*1)	of Korea	November 06, 2017	4.13%	8,988,630	7,966,246		
	Nonghyup Bank Industrial Bank	October 27, 2017	5.06%	1,975,163	1,965,302		
D/A discount	of Korea	June 23, 2017	3.60%	234,302	301,107		
Usance	Woori Bank	February 3, 2017	2.68%~4.24%	1,718,503	14,776,962		
	Shinhan Bank Korea Development	June 23, 2017	1.80%~2.20%	14,106,245	19,587,121		
	Bank Industrial Bank	April 19, 2017	0.45%~1.99%	30,681,391	25,647,542		
	of Korea	-	-	-	46,295		
	Citibank Korea	March 20, 2017	1.52%	1,622,390			
				₩ 344,015,487	₩ 324,725,626		

	Annual interest rate (%)		Annual interest rate (%)		unt		
	Creditor	Latest maturity date	December 31, 2016	D	ecember 31, 2016	De	cember 31, 2015
Current portion of long-term borrowings							
General term loans	Korea Development Bank Korea Development	September 19, 2017	Industrial financial debentures (1 year) + 1.95%	₩	40,000,000	₩	40,000,000
	Bank	June 19, 2017	3.83% Bank debenture (1 year) +		20,000,000		-
	Shinhan Bank	October 19, 2017	1.80% Bank debenture (1 year) +		20,000,000		20,000,000
	Shinhan Bank	June 15, 2017	2.45% Bank debenture (6 month) +		20,000,000		20,000,000
Facility loans	Shinhan Bank Shinhan Bank	May 14, 2017 -	2.40%		4,940,000		9,880,000 10,000,000
	Woori Bank KEB Hana	December 26, 2017	Floating-rate loans (6 month) + 2.34%		7,600,000		7,600,000
	Bank	-	- Floating-rate loans (6		-		4,762,000
Borrowing for childcare facilities for	Woori Bank	December 28, 2017			6,000,000		6,000,000
employees	Woori Bank	December 20, 2017	1.00%		42,000		42,000
R&D	Woori Bank Korea Development	December 20, 2017	1.00% Korea Finance Corporation debenture (1 year) +		50,000		
financing Export financing for	Bank	May 11, 2017	1.87%		8,333,300		16,666,600
technology development	Korea EXIM Bank	-	-		-		10,000,000
on-current iabilities Long-term borrowings				₩	126,965,300	₩	144,950,600
	Korea						
General term loans	Development Bank	_	_		_		20,000,000
iodiis	IBK Capital	- August 29, 2018	4.30%		17,000,000		12,000,000
	ibit oupital	-	1.00/0		11,000,000		12,000,000
	KDB Capital	August 29, 2018	4.30%		12,000,000		12,000,000

			Annual interest rate (%)		Carrying amount				
		Latest		December 31,	December 31,				
	Creditor	maturity date	December 31, 2016	2016	2015				
Non-current liabilities Long-term borrowings									
Facility loans	Shinhan Bank Korea Development	-	-	₩ -	₩ 4,940,000				
	Bank Korea Development	June 17, 2022	4.20%	30,000,000	30,000,000				
	Bank Nonghyup	June 17, 2022	4.20%	10,000,000	10,000,000				
	Bank KEB Hana	June 17, 2022	KORIBOR+2.61%	15,000,000	15,000,000				
	Bank	-	-	-	7,143,000				
	KEB Hana Bank	November 15, 2019	Bank debenture (6 month) + 2.38% Floating-rate loans (6	20,000,000	-				
	Woori Bank	December 24, 2019	month) + 2.34% Floating-rate loans (6	15,200,000	22,800,000				
	Woori Bank Korea Development	June 28, 2019	month) + 2.34%	9,000,000	15,000,000				
R&D financing	Bank Korea	-	- Industrial financial	-	8,333,300				
Export	Development Bank	June 2, 2022	debentures (one year) + 1.68%	64,000,000	-				
financing for technology development Borrowing for childcare	Korea EXIM Bank	December 8, 2020	3.28%	10,000,000	-				
facilities for employees	Woori Bank	September 20, 2019	1.00%	73,500	115,500				
	Woori Bank Nonghyup	December 20, 2021	1.00%	200,000	250,000				
	Bank	November 15, 2021	2.00%	490,000					
				₩ 207,963,500	₩ 157,581,800				
				₩ 678,944,287	₩ 627,258,026				

^(*1) The Group entered into a trade receivable factoring agreement with the bank. Trade receivables are provided as collateral in relation to the Group's factoring. The factored amount was accounted for as borrowing because the Group is responsible for the payment to the bank in case of uncollected receivables.

As at December 31, 2016, the entity which exercises significant influence on the Group and the largest shareholder of the entity have provided payment guarantee for some of the above borrowings (See Note 34).

Changes in the derivative financial liabilities for years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

				20)16			
	Вє	eginning bala	ance	Conversi redempti		Er	Evaluanding b	ation palance
Consideration for conversion rights and others	₩	15,54	19,642	₩ (15	5,549,642)	₩		-
				20)15			
		Beginning balance	Conv	version (*1)	Evaluation	on (*1)	Endi	ng balance
Consideration for conversion rights and others	₩	37,926,102	₩	(32,105,760)	₩ 9,7	29,300	₩	15,549,642

^(*1) Profit or loss on valuation, conversion and redemption related to derivative financial liabilities is recognized as other income and expenses.

There was no cash inflow or outflow at the conversion or redemption of derivative financial instruments.

17. Provisions

The Group recognizes provisions for sales returns and changes in provisions for sales returns for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

				2	016			
	Jar	nuary 1	In	crease		ecrease	Dec	ember 31
Provisions for sales returns	₩	752,461	₩	383,929	₩	(372,046)	₩	764,344
				2	015			
	Jar	nuary 1	In	crease	D	ecrease	Dec	ember 31
Provisions for sales returns	₩	698,079	₩	261,705	₩	(207,323)	₩	752,461

18. Other liabilities

Details of other current liabilities as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

			December 31, 2016		December 31, 2015
Current	Advance received	₩	15,958,416	₩	13,072,624
	Government grants		185,016		3,582,954
		<u> </u>	16,143,432		16,655,578
Non-current	Government grants		3,000,000		<u>-</u>
		₩	19,143,432	₩	16,655,578

19. Government Grants

Details of development projects in progress which received government grants as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

Project for research and development of new materials and technologies of global cosmetics
Project for antibody development of restraining active C5
Transgenic soybean development for
manufacture of functional cosmetic materials
Therapeutic antibody development for MERS Corona virus

	2016									
	Received	Repayab	le (*1)	Un-repayable						
₩	50,000	₩	15,000	₩	35,000					
	100,000		-		100,000					
	60,000		-		60,000					
	150,000		-		150,000					
₩	360,000	₩	15,000	₩	345,000					

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	2015				
	Received	Repayable (*1)	Un-repayable		
The second secon	₩ 880,00	0 ₩ 264,000	₩ 616,000		
Project for development of oriental medicine cosmetics	80,00	0 24,000	56,000		
Project for research and development of new materials and technologies of global cosmetics	50,00	0 15,000	35,000		
Project for antibody development of restraining active C5	100,00	0 -	100,000		
Transgenic soybean development for manufacture of functional cosmetic materials	90,00	0 -	90,000		
Therapeutic antibody development for MERS Corona virus	150,00	0 -	150,000		
Investment attraction subsidy from Chung-ju City	3,000,00	0	3,000,000		
	₩ 4,350,00	<u>0</u> ₩ 303,000	₩ 4,047,000		

^(*1) Repayable government grants are the amounts that is expected to be paid and presented as other long-term liabilities (See Note 15).

Movements in repayable government grants for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

Project of trans-governmental
enterprise for pandemic influenza in Korea
Project for development of oriental
medicine cosmetics
Project for research and development of new
materials and technologies of global cosmetics

		2016	
January 1		Received	December 31
7	₩ 900,000	₩ -	₩ 900,000
	48,000	-	48,000
į	30,000	15,000	45,000
7	₩ 978,000	₩ 15,000	₩ 993,000

19. Government Grants (cont'd)

				2015		
		January 1		Received	D	ecember 31
Project of trans-governmental enterprise for pandemic influenza in Korea	₩	636,000	₩	264,000	₩	900,000
Project for development of oriental medicine cosmetics Project for research and development of new		24,000		24,000		48,000
materials and technologies of global cosmetics		15,000		15,000		30,000
, ,	₩	675,000	₩	303,000	₩	978,000

Movements in unrepayable government grants for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

				20	16			
	Ja	nuary 1	Received		Us	sed (*1)	De	cember 31
Project of trans-governmental enterprise for pandemic influenza in Korea Project for development of oriental	₩	347,655	₩	-	₩	347,655	₩	-
medicine cosmetics Project for research and development of new		50,268		-		50,268		-
materials and technologies of global cosmetics Project for antibody development of restraining		35,005	35,00	0		35,001		35,004
active C5 Transgenic soybean development for		4	100,00	00		100,000		4
manufacture of functional cosmetic materials Therapeutic antibody development for MERS		22	60,00	00		60,022		-
Corona virus		150,000	150,00	00		149,992		150,008
Investment attraction subsidy from Chung-ju City		3,000,000				-		3,000,000
	₩ ;	3,582,954	₩ 345,00	<u> 00</u>	₩	742,938	₩	3,185,016
				20)15			
	Ja	inuary 1	Received	20		sed (*1)	De	cember 31
Project of trans-governmental enterprise for pandemic influenza in Korea					Us	sed (*1) 352,385	De	
enterprise for pandemic influenza in Korea Project for development of oriental medicine cosmetics		nuary 1	Received	00	Us			cember 31
enterprise for pandemic influenza in Korea Project for development of oriental medicine cosmetics Project for research and development of new materials and technologies of global cosmetics		84,040	Received ₩ 616,00	00	Us	352,385		347,655
enterprise for pandemic influenza in Korea Project for development of oriental medicine cosmetics Project for research and development of new materials and technologies of global cosmetics Project for antibody development of restraining active C5		84,040 56,038	Received ₩ 616,00	00	Us	352,385 61,770		347,655 50,268
enterprise for pandemic influenza in Korea Project for development of oriental medicine cosmetics Project for research and development of new materials and technologies of global cosmetics Project for antibody development of restraining active C5 Transgenic soybean development for manufacture of functional cosmetic materials		84,040 56,038 35,006	Received ₩ 616,00 56,00 35,00	00	Us	352,385 61,770 35,001		347,655 50,268 35,005
enterprise for pandemic influenza in Korea Project for development of oriental medicine cosmetics Project for research and development of new materials and technologies of global cosmetics Project for antibody development of restraining active C5 Transgenic soybean development for		84,040 56,038 35,006	Received ₩ 616,00 56,00 35,00 100,00	000000000000000000000000000000000000000	Us	352,385 61,770 35,001 100,002		347,655 50,268 35,005

^(*1) The amount represents net expenditure after deduction of interest income.

The used portion of unrepayable government grants was directly deducted from related expenses.

₩ 175,090 ₩ 4,047,000 ₩ 639,136 ₩

20. Income tax expense and deferred tax

Income tax expense for the years ended December 31, 2016 and 2015 consists of (Korean won in thousands):

		2016		2015
Current tax:				_
Current tax on profits for the year	₩	53,695,252	₩	48,268,077
	₩	53,695,252	₩	48,268,077
Deferred tax:				
Origination and reversal of temporary differences	₩	11,513,581	₩	4,955,879
Tax credit carryforwards		(6,196,775)		(23,263,197)
	₩	5,316,806	₩	(18,307,318)
Deferred tax charged directly to equity		(10,128,765)		(25,131,646)
Income tax expense	₩	48,883,293	₩	4,829,113

The reconciliation between income tax expense and profit before income tax for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Profit before income tax	₩	229,335,279	₩	163,110,863
Tax calculated based on applicable tax rate	₩	55,037,137	₩	39,010,829
Adjustments for:				, ,
Expenses not deductible for tax purposes		313,393		3,667,248
Recognized deferred income tax for tax credit				, ,
in the current year		(20,816,266)		(38,843,470)
Unrecognized temporary differences		(345,780)		1,065,637
Others		14,694,809		(71,131)
Income tax expense	₩	48,883,293	₩	4,829,113
Effective tax rate				
(income tax expense / profit before income tax)		21.32%		2.96%

The analysis of deferred tax assets and deferred tax liabilities as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Dec	ember 31, 2016	Dec	cember 31, 2015
Deferred tax assets				
Deferred tax asset to be recovered after 12 months	₩	105,874,703	₩	72,710,612
Deferred tax asset to be recovered within 12 months		6,525,460		27,136,223
	₩	112,400,163	₩	99,846,835
				_
	Dec	ember 31, 2016	Dec	cember 31, 2015
Deferred tax liabilities				
Deferred tax liability to be recovered after more than				
12 months	₩	(95,587,432)	₩	(77,568,563)
Deferred tax liability to be recovered within 12 months		(38,975)		(187,709)
	₩	(95,626,407)	₩	(77,756,272)
Net deferred tax assets (liabilities)	₩	16,773,756	₩	22,090,563

20. Income tax expense and deferred tax (cont'd)

Changes in the carrying amount of deferred income tax assets (liabilities) for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Beginning balance	₩	22,090,563	₩	3,783,244
Charged (credited) to the statement of income		(5,257,597)		19,232,202
Charged (credited) to other comprehensive income		(59,210)		(924,883)
Ending balance	₩	16,773,756	₩	22,090,563

Movements in deferred income tax assets and liabilities for the years ended December 31, 2016 and 2015, without taking into consideration the offsetting of balances within the same jurisdiction are as follows (Korean won in thousands):

					2016			
	Beginning balance		Charged (credited) to the statement of income		(credi	Charged ited) to other prehensive income		Ending balance
Deferred tax assets								
Tax credit carryforwards	₩	76,198,137	₩	6,196,774	₩	-	₩	82,394,911
Accrued expenses		616,075		74,641		-		690,716
Inventory valuation loss		1,762,051		6,287,404		-		8,049,455
Amortization		9,120		(9,120)		-		-
Valuation of fair value		6,906,899		(4,823,923)		-		2,082,976
Others		14,354,553		4,827,552		_		19,182,105
	₩	99,846,835	₩	12,553,328	₩	-	₩	112,400,163
Deferred tax liabilities								
Land (revaluation gain)	₩	(49,665,094)	₩	-	₩	-	₩	(49,665,094)
Property, plant and equipment		(5,404,459)		226,377		-		(5,178,082)
Depreciation		(7,343,337)		(7,622,814)		-		(14,966,151)
Development costs		(514,239)		(998,646)		-		(1,512,885)
Valuation fair value Exchangeable bonds (exchange		(1,189,313)		(32,316)		(59,210)		(1,280,839)
rights adjustment) Convertible bonds (conversion		(4,165,238)		4,165,238		-		-
rights adjustment)		(1,158,130)		1,158,130		-		-
Others		(8,316,462)		(14,706,894)		-		(23,023,356)
	₩	(77,756,272)	₩	(17,810,925)	₩	(59,210)	₩	(95,626,407)
Net deferred tax assets	₩	22,090,563	₩	(5,257,597)	₩	(59,210)	₩	16,773,756

20. Income tax expense and deferred tax (cont'd)

					2015			
		Beginning balance		Charged credited) to the statement of income	(cred	Charged lited) to other aprehensive income		Ending balance
Deferred tax assets								
Tax credit carryforwards	₩	54,784,792	₩	21,413,345	₩	-	₩	76,198,137
Accrued expenses		803,788		(187,713)		-		616,075
Inventory valuation loss		1,360,513		401,538		-		1,762,051
Amortization		67,949		(58,829)		-		9,120
Valuation of fair value		11,306,436		(4,399,537)		-		6,906,899
Others		7,339,312		7,015,241		-		14,354,553
	₩	75,662,790	₩	24,184,045	₩		₩	99,846,835
Deferred tax liabilities								
Land (revaluation gain)	₩	(49,665,094)	₩	-	₩	-	₩	(49,665,094)
Property, plant and equipment		(5,585,175)		180,716		-		(5,404,459)
Depreciation		(40,250)		(7,303,087)		-		(7,343,337)
Development costs		(2,497,107)		1,982,868		-		(514,239)
Valuation fair value Exchangeable bonds (exchange		-		(264,430)		(924,883)		(1,189,313)
rights adjustment) Convertible bonds (conversion		-		(4,165,238)		-		(4,165,238)
rights adjustment)		(9,836,237)		8,678,107		-		(1,158,130)
Others		(4,255,683)		(4,060,779)		-		(8,316,462)
	₩	(71,879,546)	₩	(4,951,843)	₩	(924,883)	₩	(77,756,272)
Net deferred tax assets	₩	3,783,244	₩	19,232,202	₩	(924,883)	₩	22,090,563

The feasibility of deferred income tax assets depends on the various factors such as ability of the Group to generate taxable profit during the period the temporary difference can be utilized, the economic environment and the prospect of the industry. The Group considers those factors periodically. Deferred tax assets are recognized only to the extent that it is probable that future taxable profit will be available against which the temporary differences can be utilized, excluding deductible temporary differences related to subsidiaries and available-for-sale financial assets amounting to \$21,322 million (2015: \$22,751 million). In addition, deferred tax liabilities for temporary differences of goodwill amounting to \$3,503 million (2015: \$3,025 million) are not recognized.

20. Income tax expense and deferred tax (cont'd)

The income tax charged (credited) directly to equity for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

	December 31, 2016								5							
	Before tax		Before tax		Tax effect		Tax effect		After tax		Before tax		Tax effect			After tax
Change in value of available- for-sale financial assets	₩	244.670	₩	(59,210)	₩	185.460	₩	3.814.988	₩	(924,883)	₩	2,890,105				
Change in disposal of treasury stock	2	6,885,064		(6,506,185)		20,378,879		-		-		-				
Equity component of compound financial instruments	(1	2,176,913)		2.924.875		(9,252,038)		13.851.492		(3.293.282)		10,558,210				
Conversion of convertible bonds	•	6,810,929		(6,488,245)		20,322,684		86,419,342		20,913,481)		65,505,861				

The expiration of tax credit carryforwards is as follows (Korean won in thousands):

		2016	2015
Within 1 year	₩	- W	3,069,766
Within 2 years		13,636,937	5,496,193
Within 3 years		20,010,610	12,549,189
Over 3 years		48,747,364	55,082,989
·	₩	82,394,911	76,198,137

21. Capital stock

The Group is authorized to issue 400,000,000 shares (100,000 per share), of which 116,598,327 common shares have been issued as at December 31, 2016.

Changes in capital stock for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands, except shares):

	Number of shares		Issued capital		Share premium		Total
As at January 1, 2015	103,569,771	₩	103,569,771	₩	374,601,628	₩	478,171,399
Stock dividends	5,105,283		5,105,283		-		5,105,283
Exercise of stock warrants	207,713		207,713		9,372,124		9,579,837
Conversion of convertible bonds	3,548,896		3,548,896		263,212,637		266,761,533
As at December 31, 2015	112,431,663	₩	112,431,663	₩	647,186,389	₩	759,618,052
As at January 1, 2016	112,431,663	₩	112,431,663	₩	647,186,389	₩	759,618,052
Stock dividends	3,328,350		3,328,350		-		3,328,350
Exercise of stock warrants	179,916		179,916		9,398,891		9,578,807
Conversion of convertible bonds	658,398		658,398		72,838,191		73,496,589
As at December 31, 2016	116,598,327	₩	116,598,327	₩	729,423,471	₩	846,021,798

22. Retained earnings

Retained earnings as at December 31, 2016 and 2015 consist of the following (Korean won in thousands):

	2016		2015	
Legal reserves				
Legal appropriated retained earnings (*1)	₩	2,281,397	₩	2,281,397
Discretionary appropriated retained earnings (*2)				
Reserve for R&D		772,758,439		674,081,924
Reserve for facilities		160,117,927		160,117,927
Reserve for surtax on income tax		100,000,000		-
Unappropriated retained earnings		133,533,150		157,543,513
	₩	1,168,690,913	₩	994,024,761

- (*1) The Commercial Code of the Republic of Korea requires the Company to appropriate, as a legal reserve, an amount equal to a minimum of 10% of cash dividends paid until such reserve equals 50% of its issued capital stock. The reserve is not available for the payment of cash dividends, but may be transferred to capital stock or used to reduce accumulated deficit, if any, with the ratification of the Company's majority shareholders.
- (*2) The discretionary appropriated retained earnings are available to be distributed by the shareholders' approval.

The stock dividend, amounting $\mbox{$\mathbb{W}$}3,328$ million (number of outstanding common stocks: 3,328,350), for the year ended December 31, 2015 was transferred to issued capital on March 25, 2016.

The dividend, amounting \$5,828 million (number of outstanding common stocks: 5,828,216), for the year ended December 31, 2016 is expected to be proposed at the shareholders' meeting on March 17, 2017. The dividend is not included in the consolidated financial statements of the Group.

23. Accumulated other comprehensive income and other components of equity

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

				2016		
	Begi	nning balance	Inc	rease (decrease)		Ending balance
Available-for-sale assets – equity securities	₩	2,811,910	₩	185,460	₩	2,997,370
Currency translation differences		5,700,556		(2,184,912)		3,515,644
	₩	8,512,466	₩	(1,999,452)	₩	6,513,014
				2015		
	Begir	nning balance		Decrease		Ending balance
Available-for-sale assets – equity securities	***	(440.000)	***	0.004.040		
Available-101-sale assets – equity securities	₩	(110,000)	₩	2,921,910	₩	2,811,910
Currency translation differences	₩	(110,000) 3,545,597	₩	2,921,910 2,154,959	₩	2,811,910 5,700,556
• •	₩	, ,	₩	,- ,	₩	• •

Changes in accumulated other comprehensive income represent net of tax effect amounts.

Other components of equity as at December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Dece	ember 31, 2016	December 31, 2015		
Treasury stock	₩	(2,367,466)	₩	(82,868,895)	
Stock options		16,619,750		13,493,426	
Other capital surplus		18,160,420		1,453,819	
	₩	32,412,704	₩	(67,921,650)	

Changes in treasury stock for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands, except shares):

	Number of shares	Amount		
January 1, 2015	1,464,100	₩	81,336,477	
Acquisition of treasury stock (*1)	22,535		1,532,41	
December 31, 2015	1,486,635	₩	82,868,89	
January 1, 2016	1,486,635	₩	82,868,89	
Acquisition of treasury stock (*1)	33,579		3,566,179	
Exercise of exchange rights	(1,486,223)		(84,067,608)	
December 31, 2016	33,991	₩	2,367,466	

(*1) The number of shares included fractional shares arising from stock dividends.

24. Share-based payment

Share options are granted to the Company's directors and employees as follows:

- Stocks issued through share option: registered common stock
- Grant method: new shares of common stock
- Vesting period: options are conditional on the Company's director and employee completing a threeyear service after the grant date. The options have a contractual option term of five years at the rate of 20% per annum.

Movements in the number of share options outstanding and their related weighted average exercise prices for the year ended December 31, 2016 are as follows (Korean won, except shares):

	Options (unit: share) (*1)	Weighted average exercise price per share option (*1)
Beginning	1,481,861	₩ 43,919
Grant	272,999	106,500
Exercise	(179,916)	38,647
Forfeited	(76,571)	38,909
Ending	1,498,373	₩ 56,211

(*1) After adjustment of stock dividends during the year.

Out of the 1,498,373 outstanding options, 97,806 options were exercisable as at December 31, 2016. Options exercised in 2016 resulted in 179,976 shares being issued at a weighted average price of $\mbox{$W$}38,647$ each. The related weighted average share price at the time of exercise was $\mbox{$W$}98,936$ per share.

The weighted average fair value of options granted during the period using the Black-Scholes valuation model as at December 31, 2016 and 2015 were determined as follows (Korean won, except shares):

		15th		16th
Weighted average share price at the grant date (*1)	₩	63,810	₩	101,430
Exercise price (*1)	₩	65,045	₩	106,500
unit: share (*1)		294,842		272,999
Risk-free interest rate (*2)		1.82% ~ 2.04%		1.50%~1.70%
Expected volatility		43.9% ~ 49.0%		43.9%~51.2%
Expected life (years)		3.1 ~ 7.1		3.1 ~ 7.1
Expected forfeiting rate		4.30%		3.20%
Grant date		2015-03-20		2016-03-25
Assessment date		2015-03-20		2016-03-25
Expected date to exercise		2018-04-25 ~ 2022-04-25		2019-05-01 ~ 2023-05-01
Maturity		2025-03-19		2026-03-24

^(*1) It is adjusted to reflect the diluted effects of stock dividends during the current period.

^(*2) Risk-free interest rate was calculated by a maturity schedule of government bonds.

24. Share-based payment (cont'd)

Changes in share options for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016	2015		
Beginning	₩	13,493,426	₩	11,237,753	
Expense		6,048,217		4,921,378	
Exercised and canceled		(2,921,893)		(2,665,705)	
Ending	₩	16,619,750	₩	13,493,426	

25. Revenue and cost of sales

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

		2016		2015
Sales of goods	₩	631,415,363	₩	562,459,662
Rendering of services		39,165,599		40,953,107
	₩	670,580,962	₩	603,412,769

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

		2016		2015
Cost of finished products sold				
Inventory beginning	₩	111,511,576	₩	121,618,413
Cost of finished products		167,212,943		155,085,778
Transfer from other accounts		1,364,958		1,101,907
Transfer to other accounts		5,443,054		5,954,892
Inventory ending		68,749,231		111,511,576
Gain/loss on valuation of products and others		20,291,902		8,210,044
Loss on production level		2,363,006		21,955,494
	₩	228,552,100	₩	190,505,168
Cost of merchandise sold				
Inventory beginning		65,694,474		71,183,504
Cost of merchandise purchased		1,040,369		4,551,557
Transfer from other accounts		137,348		8,918
Transfer to other accounts		16,030		56,942
Inventory ending		57,077,741		65,694,474
	₩	9,778,420	₩	9,992,563
Cost of service	₩	35,647,167	₩	34,070,984
Total	₩	273,977,687	₩	234,568,715

26. Selling and administrative expenses

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

	2016		2015	
Wages, salaries and severance benefits	₩	24,170,493	₩	20,959,356
Welfare expense		1,751,696		2,696,106
Depreciation		1,499,398		1,181,920
Amortization		4,614,992		4,723,108
Rents		1,052,763		1,153,893
Travel		1,696,638		1,593,447
Commission		11,662,886		7,751,164
Service fees		981,964		1,127,405
Bad debt expenses		1,249,171		824,698
Entertainment		1,226,481		1,816,078
Advertising		11,355,076		10,719,615
Share-based payment		1,616,826		1,307,483
Research and development expense		65,358,027		37,319,979
Training		666,807		207,608
Sales commissions		10,888,048		8,316,822
Others		7,117,767		8,191,053
	₩	146,909,033	₩	109,889,735

27. Other income and expenses

Details of other income and expenses for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Other income			-	
Rental income	₩	495,880	₩	445,183
Gain on disposal of plant, property and equipment		12,834		24,796
Gain on foreign exchange translation		309,614		127,687
Gain on foreign currency transactions		2,196,605		2,631,539
Gain on disposal of financial assets at fair value		100,320		-
Gain on disposal of available-for-sale financial assets		-		89,814
Miscellaneous gain		5,212,714		1,213,600
	₩	8,327,967	₩	4,532,619
Other expenses				
Donations	₩	424,597	₩	230,909
Loss on disposal of property, plant and equipment		118		637
Loss on disposal of intangible assets		-		505,921
Other bad debt expenses		79,924		31,394
Loss on foreign exchange translation		215,635		21,271
Loss on foreign currency transactions		2,888,315		3,096,701
Loss on valuation of financial assets at fair value		-		9,729,300
Loss on disposal of financial assets at fair value		15,734,358		54,334,282
Miscellaneous loss		136,024		1,457,128
	₩	19,478,971	₩	69,407,543
Net other loss	₩	(11,151,004)	₩	(64,874,924)

28. Financial income and expenses

Details of financial income and expenses for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Financial income Interest income (*1)	₩	3,241,476	₩	7,057,314
Gain on foreign exchange translation		4,095,003		628,162
Gain on foreign currency transactions		817,183		1,855,718
	₩	8,153,662	₩	9,541,194
Financial expenses				
Interest expenses (*2)	₩	14,088,661	₩	29,714,500
Loss on foreign exchange translations		2,286,549		7,562,877
Loss on foreign currency transactions		1,490,127		2,888,172
Loss on retirement of bonds		78,803		553,649
	₩	17,944,140	₩	40,719,198
Financial income and expenses	₩	(9,790,478)	₩	(31,178,004)

(*1) Details of interest income included in financial income are as follows (Korean won in thousands):

		2016	2015
Loans to related parties	₩	- ₩	207,945
Other loans and receivables		1,279,469	2,466,338
Trade receivables		1,962,007	4,383,031
	₩	3,241,476 ₩	7,057,314

(*2) Details of interest expenses included in financial expenses are as follows (Korean won in thousands):

		2016	2015
Interest on bank overdraft and borrowings	₩	25,505,979 ₩	41,334,699
Capitalized interest for qualifying assets		(11,417,318)	(11,620,199)
	₩	14,088,661 ₩	29,714,500

29. Expenses by nature

Details of expenses by nature for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Changes in inventories	₩	32,534,166	₩	8,162,952
Employee benefit expense		99,333,589		84,885,069
Cost of raw materials		49,073,325		42,632,422
Purchase of reagent and supplies		3,125,895		2,830,151
Service costs		57,270,208		44,792,186
Bad debt expenses		1,249,171		824,698
Commission expenses		14,837,279		9,423,185
Taxes and dues		3,546,023		2,218,441
Rental expense		2,242,571		2,211,661
Depreciation		39,934,692		31,698,985
Amortization		48,740,635		50,475,098
Other expenses		68,999,166		64,303,602
Total (*1)	₩	420,886,720	₩	344,458,450

^(*1) The amount is the sum of cost of sales, and selling and administrative expenses on the consolidated statements of profit or loss.

30. Employee benefit expense

Details of employee benefit expense for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Wages and salaries	₩	94,968,002	₩	80,226,878
Post-employment benefit		7,049,870		5,965,316
Share based payment expense		6,151,993		5,008,529
Welfare expenses		13,211,118		12,204,980
Reclassification of development costs		(22,047,394)		(14,178,246)
Reclassification of construction in progress		-		(4,342,388)
		99,333,589		84,885,069

31. Earnings per share

Basic earnings per share is calculated by dividing the profit attributable to equity holders of the Group by the weighted average number of ordinary shares in issue during the period excluding ordinary shares purchased by the Group and held as treasury shares.

Basic earnings per share for the years ended December 31, 2016 and 2015 are as follows (Korean won in units, shares):

		2016		2015
Profit attributable to ordinary shares	₩	177,994,501,810	₩	154,089,612,464
Weighted average number of ordinary share	S			
outstanding (*1)		115,962,038		112,706,251
Basic earnings per share		1,535		1,367

(*1) It is adjusted reflecting effects of stock dividends during the current period.

Diluted earnings per share is calculated by adjusting the weighted average number of ordinary shares outstanding assuming conversion of all dilutive potential ordinary shares. The Group has dilutive potential ordinary shares: stock options. For stock options, a calculation is done to determine the number of shares that could have been acquired at fair value (determined as the average annual market share price of the Group's shares) based on the monetary value of the subscription rights attached to outstanding stock options. The number of shares calculated above is compared with the number of shares that would have been issued assuming the exercise of the stock options.

Diluted earnings per share for the years ended December 31, 2016 and 2015 are as follows (Korean won in units, shares):

		2016		2015 (*1)
Dilutive profit attributable to ordinary shares Weighted average number of ordinary shares	₩	177,994,501,810	₩	154,089,612,464 112,706,251
in issue (shares)		115,962,038		112,100,201
Adjustment for:				
Stock options		652,959		474,807
Weighted average number of ordinary				113,181,058
shares for diluted earnings per share		116,614,997		
Diluted earnings per share		1,526		1,361

(*1) It is adjusted reflecting effects of stock dividends during the current period.

32. Supplemental cash flow information

Details of adjustments and change of net working capital in cash generated from operations for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Profit for the year	₩	180,451,986	₩	158,281,750
Adjustments for:				
Income tax expense		48,883,293		4,829,113
Allowance for inventories		20,291,902		8,210,044
Share-based payment		4,839,645		4,175,101
Depreciation		39,934,692		31,698,985
Amortization		48,740,635		50,475,098
Bad debt expenses		1,249,171		824,698
Other bad debt expenses		79,924		31,394
Loss on relation of foreign currency		3,621,123		10,034,016
Gain on relation of foreign currency		(4,404,617)		(3,869,544)
Loss on valuation of financial assets at fair value		-		9,729,300
Gain on disposal of financial assets at fair value		(100,320)		-
Loss on disposal of financial assets at fair value		15,734,358		54,334,282
Gain on disposal of available-for-sale financial assets		-		(89,814)
Loss on debenture repayment		78,803		553,649
Share of gain (loss) of associates		(582,519)		(209,473)
Interest expenses		14,088,661		29,714,500
Interest income		(3,241,476)		(7,057,314)
Gain on disposal of property, plant and equipment		(12,834)		(24,796)
Loss on disposal of property, plant and equipment		118		637
Loss on disposal of intangible assets		-		505,921
Total adjustments	₩	189,200,559	₩	193,865,797
Change of net working capital				
Trade receivables	₩	(95,773,065)	₩	(280,238,578)
Other receivables		2,374,379		17,398,856
Inventories		5,495,636		(20,230,495)
Other current assets		(2,426,253)		9,770,163
Other non-current assets		(2,426,243)		(996,902)
Trade payables		15,874,780		750,275
Other payables		28,143		9,312,761
Other current liabilities		3,243,387		10,277,032
Provisions		11,883		54,381
Total change of net working capital		(73,597,353)		(253,902,507)
Cash generated from operations	₩	296,055,192	₩	98,245,040

32. Supplemental cash flows information (cont'd)

The principal non-cash transactions for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Transfer of construction-in-progress to property, plant and equipment	₩	27,244,561	₩	85,752,541
Transfer of current maturities of long-term loans		224,794		4,147,047
Transfer of current maturities of long-term borrowings		54,108,300		84,474,600
Transfer of current maturities of convertible bonds		-		250,826,083
Transfer of current maturities of exchangeable bonds		-		5,469,779
Transfer of current maturities of				
derivative financial liabilities		-		91,217,278
Exercise of convertible rights of convertible bonds		104,325,657		298,408,207
Exercise of exchangeable rights of exchangeable bonds		95,972,253		-
Transfer of equity by stock dividends		3,328,350		5,105,283

33. Contingencies and commitments

As at December 31, 2016, the Group has the exclusive sales and distribution rights agreement and the product supply agreement with Celltrion Healthcare Co., Ltd., the related party as at December 31, 2016, on the products that the Group is currently developing and will develop in the future. In addition, the Group has obligations for the development and supply of products in accordance with the Master Service Agreement contracted with Celltrion Healthcare Co., Ltd.

The Group sold and supplied $\mbox{$W551,279$}$ million, representing 82.21% of total sales, (the year ended December 31, 2015: $\mbox{$W502,619$}$ million) of products and services in accordance with the above agreements for the year ended December 31, 2016. Related receivables from Celltrion Healthcare Co., Ltd. are $\mbox{$W667,303$}$ million as at December 31, 2016 (December 31, 2015: $\mbox{$W612,814$}$ million) (See Note 34).

On request of Celltrion Healthcare Co., Ltd., in accordance with the exclusive sales and distribution rights agreement between Celltrion Healthcare Co., Ltd. and the Company, the Company is to store products sold to Celltrion Healthcare Co., Ltd., which represents a significant portion of products sold to Celltrion Healthcare Co., Ltd. at the Company's warehouse having specifically-designed refrigeration units, approved by local safety regulators. These products have been separately partitioned from the Company's inventories.

As at December 31, 2016, the subsidiary, Celltrion Pharm, Inc., has the exclusive sales and distribution rights agreement for domestic market and the product supply agreement with Celltrion Healthcare Co., Ltd. Celltrion Pharm, Inc. and paid advance payments of $\mbox{$\mathbb{W}$25,000}$ million in 2008 for the agreement. The advance payment has been offset by inventory purchase cost, and the remaining balance of $\mbox{$\mathbb{W}$14,460}$ million was collected as cash in 2015.

33. Contingencies and commitments (cont'd)

The guarantees that the Company provided to its subsidiaries as at December 31, 2016 and December 31, 2015 are as follows (US dollar in thousands):

			Amo	ounts
Purpose	Warrantee	Providing financial institution	December 31, 2016	December 31, 2015
O construction for the construction		Korea EXIM Bank	-	USD 1,000
Guarantee for borrowing of subsidiary	Celltrion Don LLC	Woori Bank	USD 3,200	USD 3,200
		Shinhan Bank	USD 8,356	USD 7,350

In addition, the Company has entered into commitments to provide additional collateral to Korea Securities Finance Corporation in case of shortage of collateral for borrowings by the Employee Stock Ownership Association and Empoyee Stock Ownership members Korea Securities Finance Corporation which have employees' stockholding as collateral, and the related joint surety of \$79,282 million are provided to Korea Securities Finance Corporation (December 31, 2015: \$33,249 million to Korea Securities Finance Corporation and \$22,177 million to Daewoo Securities Co., Ltd.).

The Group was provided with a $\mathbb{W}139$ million (December 31, 2015: $\mathbb{W}3,041$ million) guarantee from Seoul Guarantee Insurance Co., Ltd. related to the refund of the support fund for childcare facilities for employees.

As at December 31, 2016, the Group has entered into loan commitments with Shinhan Bank, Woori Bank, Korea Development Bank and others and was provided with a guarantee from financial institutions related to the issuance of letter of credit and letter of guarantee from financial institutions.

As at December 31, 2016, the Group is a defendant in pending lawsuits involving 3 claims for infringement of patent and others. As at the reporting date, the outcome of the pending litigation cannot be reasonably estimated.

As at December 31, 2016, Celltrion Pharm, Inc., a subsidiary of the Company, was imposed additional corporate income tax amounting to orall 10,991 million for the omission of goodwill income in 2009 by Korean tax authorities. Celltrion Pharm, Inc. is in the process of claim for tax appeal and file an administrative litigation. The Group recognized related assets and liabilities on the consolidated financial statements.

34. Related parties

Details of the Group and its related parties as at December 31, 2016 and 2015 are as follows:

Category	2016	2015
Chief executive officers	Woo Sung Kee, Hyoung Ki Kim	Woo Sung Kee, Hyoung Ki Kim
Entity with significant influence on the Group	Celltrion Holdings Co., Ltd.	Celltrion Holdings Co., Ltd.
Associates	Boston Incubation Investments Association	Boston Incubation Investments Association
	2014 growth-ladder-IMM venture fund	2014 growth-ladder-IMM venture fund
Other related parties	Celltrion Healthcare Co., Ltd.	Celltrion Healthcare Co., Ltd.
·	Celltrion Skincure Co., Ltd. (*1)	Celltrion Skincure Co., Ltd. (*1)
	Others	Others

(*1) In 2016, Celltrion GSC Co., Ltd. merged with Celltrion Skincure Co., Ltd. and subsequently changed its name to Celltrion Skincure Co., Ltd.

Significant transactions, which occurred in the normal course of business with related parties for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

							201	6				
		Sales	Otl	ner income		Interest income	ta	sposal of angible assets	Purchase		iterest penses	Others
Entity which exercises significant influence on the Group Celltrion Holdings Co., Ltd.	₩		₩	5,707	₩	-	₩	_	₩ -	₩	5,842	₩ 4,479
Other related parties Celltrion Healthcare				2,. 2.							-,	.,
Co., Ltd. Celltrion Skincure		551,278,701		720,062		1,962,007		355	10,790,452		-	1,280,074
Co., Ltd.		31,043		338,808		-		-	404,608		-	
Others		116,677		6,232		-		-	29,007		-	350,000
	₩	551,426,421	₩	1,070,809	₩	1,962,007	₩	355	₩ 11,224,067	₩	5,842	₩ 1,634,553

	Sales	Other income	Interest income	Disposal of intangible assets	Purchase	Others
Entity which exercises significant influence on the Group Celltrion Holdings		Sans. moonie	omo	23010		3010
Co., Ltd. Other related parties	₩ -	₩ 4,939	₩ 160,685	₩ -	₩ - ₩	₹ -
Celltrion Healthcare Co., Ltd. Celltrion Skincure	502,619,256	1,553,545	5,358,903	122,727	244,832	2,295,450
Co., Ltd.	_	436,328	47,260	_	133,858	-
Others	58,530	6,327	· -	-	435,710	200,000
	₩ 502,677,786	₩ 2,001,139	₩ 5,566,848	₩ 122,727	₩ 814,400 ₩	₹ 2,495,450

34. Related parties (cont'd)

Balances of receivables from and payable to related parties as at December 31, 2016 and 2015 are as follows (Korean won in thousands):;

				201	6			
	rec	Trade eivables (*1)		Other eivables		Trade payables		Other payables
Entity which exercises significant influence on the Group		, ,						
Celltrion Holdings Co., Ltd.	₩	-	₩	842	₩		- ₩	-
Other related parties Celltrion Healthcare Co., Ltd.		668,481,895		43,899		11,819,962	2	-
Celltrion Skincure Co., Ltd.		32,035		236,575		-	-	5,545
Others		7,815		560		-	-	4,245
_	₩	668,521,745	₩	281,876	₩	11,819,962	₩	9,790
				201	5			
	Tra	de receivable	s (*1)	Other re	eceiv	ables	Othe	r payables
Entity which exercises significant influence on the Group								
Celltrion Holdings Co., Ltd.	₩		-	₩		478 ₩		-
Other related parties Celltrion Healthcare Co.,								
Ltd.		614,63	33,874		34	l,757		8,386
Celltrion Skincure Co., Ltd.			-		242	2,150		6,579
Others						<u> </u>		95,920
	₩	614,63	33,874	₩	277	′ ,385 ₩	: 	110,885

(*1) Includes allowance for doubtful accounts of $\mbox{$W$1,179$}$ million (December 31, 2015: $\mbox{$W$1,820$}$ million) (See Note 9).

The Group is provided with payment guarantees amounting to \$449,243 million (December 31, 2015: \$271,477 million) and collateral amounting \$34,000 million (December 31, 2015: \$38,400 million) from the entity which exercises significant influence on the Group regarding certain borrowings and the Group is provided with payment guarantees for borrowings \$326,143 million (December 31, 2015: \$520,346 million) from the largest shareholder of the entity as at December 31, 2016.

34. Related parties (cont'd)

Changes in loans to related parties for the year period ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

						2016				
		Interest rate	January 1	,	Changes in consolidation scope	Redemption	Interest charged	Interest paid	Decemb 31	er
	Celltrion Holdings Co.,Ltd.	8.50%	₩	- :	₩ 138,955	₩ (96,667)	₩ 5,644	₩ (47,932)	₩	-
						2015				
		Interest rate	January 1		Loans granted	Redemption	Interest charged	Interest received	Decemb 31	er
on the Group Other related parties C	Celltrion Holdings Co.,Ltd. Celltrion Skincure	6.90%	W	-	₩ 20,000,000	₩ (20,000,000)	₩ 160,685	₩ (160,685)	₩	_
	Co., Ltd.	6.90%		-	10,000,000	(10,000,000)	47,260	(47,260)		-
			₩ .	-	₩ 30,000,000	₩ (30,000,000)	₩ 207,945	₩ (207,945)	₩	-

The Group invested in cash amounting to \$410 million to 2014 Growth Ladder-IMM Venture Fund, one of the related parties, and received principal and dividend amounting to \$2,477 million for the year ended December 31, 2016. In addition, the Group received principal of \$450 million from Boston Incubation Investments Association, a related party.

34. Related parties (cont'd)

Key management personnel include directors (standing and non-standing) and audit committee members who have significant control and responsibilities on the Group's operation and business.

The compensations paid or payable to key management personnel for employee services for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

		2016		2015
Salaries and other short-term employee benefits and other	₩	9,598,861	₩	9,877,953
Post-employment benefit		1,105,137		1,227,832
Total	₩	10,703,998	₩	11,105,785

Major commitments and guarantees with related parties are described in Note 33.

35. Non-controlling interest

Details of changes in non-controlling interest for the years ended December 31, 2016 and 2015 are as follows (Korean won in thousands):

	Non-controlling interest				
Accumulated amount as at January 1, 2016	₩	115,607,102			
Profit for the period distributed to					
non-controlling interest		2,457,484			
Other comprehensive income distributed to					
non-controlling interest		454			
Others (*1)		27,263,332			
Accumulated amount as at December 31, 2016	₩	145,328,372			

	N	on-controlling interest
Accumulated amount as at January 1, 2015	₩	100,386,953
Profit for the period distributed to		
non-controlling interest		4,192,138
Other comprehensive income distributed to		
non-controlling interest		(24,626)
Others (*1)		11,052,637
Accumulated amount as at December 31, 2015	₩	115,607,102

(*1) Others represent the change of non-controlling interest share due to the exercise of stock warrants, exercise of convertible rights of convertible bonds and exercise of subscription rights of bonds with warrant granted by Celltrion Pharm, Inc., a subsidiary of the Group, and also represent the changed amount of net assets according to the recognition of stock warrants and acquisition of treasury stocks.

36. Business combination

The Group acquired 100% share of Celltrion ST for core information security reinforcement in relation of product development as at April 1, 2016.

During the year, Celltrion ST's financial performance was included in the Group's consolidated statements of profit or loss recognized sales amounting to \$586 million and profit amounting to \$33 million. It is estimated that the Group's sales would be \$670,589 million and profit would be \$180,535 million as if the acquisition were as at January 1, 2016.

Consideration transferred and amounts of assets and liabilities on the acquisition date are as follows (Korean won in thousands):

		Amount
Consideration transferred		
Cash and cash equivalents	₩	5
Total consideration transferred	₩	5
Amounts of acquired assets and accepted liabilities Current assets		
Cash and cash equivalents		18,250
Trade receivables		5,533
Other receivables		4,301
Current tax assets		10
Non - current assets		
Long-term other receivables		1,000
Current liabilities		
Short-term financial liabilities		371,667
Other payables		134,710
Fair value of identifiable net assets	₩	(477,284)
Goodwill	₩	477,288

Fair value of trade receivables and other receivables amounts to $\mathbb{W}11$ million. The gross amount of trade receivables and other receivables on the acquisition date was $\mathbb{W}11$ million. None of the trade receivables are assessed to be impaired and it is expected that the full contractual amounts are collectable.

37. Events after the reporting period

After the reporting period, the resolution to dissolve Celltrion ST, a subsidiary, was adopted by the shareholders' meeting held on January 31, 2017.