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S-OIL Corporation and Subsidiaries

Consolidated Financial Statements

December 31, 2017 and 2016

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Independent Auditor's Report

(English Translation of a Report Originally Issued in Korean)

To the Shareholders and Board of Directors of
S-OIL Corporation

We have audited the accompanying consolidated financial statements of S-OIL Corporation and its subsidiaries (collectively referred to as the "Group") which comprise the consolidated statements of financial position as at December 31, 2017 and 2016, 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 notes to the consolidated financial statements, including a summary of significant accounting policies and other explanatory information.

Management's responsibilities for the consolidated financial statements

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

Auditor's responsibilities

Our responsibility is to express an opinion on the consolidated financial statements based on our audits. We conducted our audits in accordance with Korean Standards on Auditing. Those standards require that we comply with ethical requirements, and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free 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 auditor's 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 significant 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 accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of S-OIL Corporation and its subsidiaries as at December 31, 2017 and 2016, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean IFRS.

Other matter

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

Samil PricewaterhouseCoopers

Seoul, Korea

March 15, 2018

This report is effective as of March 15, 2018, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that there is a possibility that the above audit report may have to be revised to reflect the impact of such subsequent events or circumstances, if any.

S-OIL Corporation and Subsidiaries
Consolidated Statements of Financial Position
December 31, 2017 and 2016

(In millions of Korean won)

	Notes		2017		2016
Assets					
Current assets					
Cash and cash equivalents	3,7,11	₩	480,052	₩	767,438
Trade receivables	3,8,11		1,538,758		1,154,608
Other receivables	3,8,11		219,631		181,249
Other current financial assets	3,4,9,11		1,711,098		3,433,772
Derivative financial instruments	3,4,10,11		24,312		2,078
Inventories	12		2,790,742		2,423,440
Other current assets	9		10,048		11,813
Current income tax assets			205		-
			6,774,846		7,974,398
Non-current assets					
Other receivables	3,8,11		62,941		64,895
Other non-current financial assets	3,4,9,11		49,843		49,308
Investments in associate and joint venture	13		32,353		33,295
Property, plant and equipment	6,14,16		7,968,693		5,710,804
Intangible assets	6,15		105,155		54,462
Other non-current assets	9		27,823		43,731
Net defined benefit assets	20		65,797		28,134
			8,312,605		5,984,629
Total assets		₩	15,087,451	₩	13,959,027
Liabilities					
Current liabilities					
Trade payables	3,11,17	₩	1,733,325	₩	1,140,725
Other payables	3,11,17		1,033,756		1,022,911
Borrowings	3,11,18		1,369,533		2,145,876
Derivative financial instruments	3,4,10,11		7,345		50,873
Current income tax liabilities			257,450		348,255
Provisions for other liabilities and charges	19		1,797		1,803
Deferred revenues	19		24,937		27,433
Other current liabilities	17		116,273		94,905
			4,544,416		4,832,781
Non-current liabilities					
Other payables	3,11,17		32,204		27,036
Borrowings	3,11,18		3,474,677		2,563,585
Deferred income tax liabilities	30		193,534		144,040
			3,700,415		2,734,661
Total liabilities			8,244,831		7,567,442
Equity					
Share capital	22		291,512		291,512
Share premium	22		379,190		379,190
Reserves	25		975,662		977,353
Treasury share	23		(1,876)		(1,876)
Retained earnings	24		5,198,132		4,745,406
Total equity			6,842,620		6,391,585
Total liabilities and equity		₩	15,087,451	₩	13,959,027

The above consolidated statements of financial position should be read in conjunction with the accompanying notes.

S-OIL Corporation and Subsidiaries
Consolidated Statements of Comprehensive Income
Years Ended December 31, 2017 and 2016

(In millions of Korean won, except per share data)	**Notes**	**2017**	**2016**
Sales	6	₩ 20,891,374	₩ 16,321,843
Cost of sales	26,31	(18,783,141)	(14,020,892)
Gross profit		2,108,233	2,300,951
Selling expenses	27,31	(620,744)	(576,645)
Administrative expenses	27,31	(114,224)	(107,417)
Operating profit		1,373,265	1,616,889
Other income	28	377,085	486,419
Other expenses	28	(314,010)	(475,037)
Finance income	29	330,283	185,006
Finance costs	29	(126,884)	(244,830)
Share of net profit of associates and joint ventures	13	5,130	6,649
Profit before income tax		1,644,869	1,575,096
Income tax expense	30	(398,380)	(369,732)
Profit for the period		1,246,489	1,205,364
Other comprehensive income, net of tax			
Items that will not be reclassified to profit or loss			
Remeasurements of net defined benefit liabilities	20	9,636	6,572
Items that may be subsequently reclassified to profit or loss			
Gains(losses) on valuation of available-for-sale financial assets	25	(307)	(646)
Cash flow hedges	25	(1,234)	-
Share of other comprehensive income of joint venture and associate	25	(37)	-
Currency translation differences	25	(113)	31
Other comprehensive income for the period		7,945	5,957
Total comprehensive income for the period		₩ 1,254,434	₩ 1,211,321
Earnings per share			
Basic and diluted earnings per ordinary share	32	₩ 10,706	₩ 10,353
Basic and diluted earnings per preferred share	32	₩ 10,731	₩ 10,378

The above consolidation statements of comprehensive income should be read in conjunction with the accompanying notes.

S-OIL Corporation and Subsidiaries
Consolidated Statements of Changes in Equity
Years ended December 31, 2017 and 2016

(In millions of Korean won)	Share Capital	Share Premium	Reserves	Treasury Stock	Retained Earnings	Total Equity
Balance at January 1, 2016	₩ 291,512	₩ 379,190	₩ 977,968	₩ (1,876)	₩ 3,743,123	₩ 5,389,917
Profit for the period	-	-	-	-	1,205,364	1,205,364
Other comprehensive income						
Losses on valuation of available-for-sale financial assets	-	-	(646)	-	-	(646)
Currency translation differences	-	-	31	-	-	31
Remeasurements of net defined benefit liabilities	-	-	-	-	6,572	6,572
Other comprehensive income for the period	-	-	(615)	-	6,572	5,957
Total comprehensive income for the period	-	-	(615)	-	1,211,936	1,211,321
Transactions with owners						
Dividends paid for 2015	-	-	-	-	(151,443)	(151,443)
Interim dividends paid for 2016	-	-	-	-	(58,210)	(58,210)
Balance at December 31, 2016	₩ 291,512	₩ 379,190	₩ 977,353	₩ (1,876)	₩ 4,745,406	₩ 6,391,585
Balance at January 1, 2017	₩ 291,512	₩ 379,190	₩ 977,353	₩ (1,876)	₩ 4,745,406	₩ 6,391,585
Profit for the period	-	-	-	-	1,246,489	1,246,489
Other comprehensive income						
Losses on valuation of available-for-sale financial assets	-	-	(307)	-	-	(307)
Cash flow hedges	-	-	(1,234)	-	-	(1,234)
Share of other comprehensive income in joint venture	-	-	(37)	-	-	(37)
Currency translation differences	-	-	(113)	-	-	(113)
Remeasurements of net defined benefit liabilities	-	-	-	-	9,636	9,636
Other comprehensive income for the period	-	-	(1,691)	-	9,636	7,945
Total comprehensive income for the period	-	-	(1,691)	-	1,256,125	1,254,434
Transactions with owners						
Dividends paid for 2016	-	-	-	-	(663,694)	(663,694)
Interim dividends paid for 2017	-	-	-	-	(139,705)	(139,705)
Balance at December 31, 2017	₩ 291,512	₩ 379,190	₩ 975,662	₩ (1,876)	₩ 5,198,132	₩ 6,842,620

The above consolidated statements of changes in equity should be read in conjunction with the accompanying notes.

S-OIL Corporation and Subsidiaries
Consolidated Statements of Cash Flows
Years ended December 31, 2017 and 2016

(In millions of Korean won)	Notes		2017		2016
Cash flows from operating activities					
Cash generated from operations	34	₩	1,629,614	₩	1,711,592
Interest received			62,778		44,023
Interest paid			(112,975)		(82,982)
Income tax received (paid)			(443,445)		39,635
Dividends received			7,322		9,723
Net cash inflow from operating activities		₩	1,143,294	₩	1,721,991
Cash flows from investing activities					
Proceeds from disposal of property, plant and equipment		₩	2,582	₩	7,121
Proceeds from disposal of intangible assets			460		2,203
Decrease in other receivables			21,235		16,632
Settlement of derivative financial instruments			-		23,132
Decrease in other financial assets			1,722,739		-
Payments for property, plant and equipment	14		(2,414,079)		(1,063,572)
Payments for intangible assets	15		(1,768)		(8,884)
Payment for acquisition of subsidiary, net of cash acquired	36		(120,459)		-
Payments for acquisition of associate	13		(103)		(138)
Increase in other receivables			(16,306)		(8,468)
Increase in other financial assets			-		(935,554)
Settlement of derivative assets and liabilities			(32,592)		-
Others			6,051		609
Net cash outflow from investing activities		₩	(832,240)	₩	(1,966,919)
Cash flows from financing activities					
Proceeds from borrowings		₩	923,125	₩	1,032,310
Repayment of borrowings			(717,994)		(11,544)
Dividends paid			(803,395)		(209,641)
Net cash inflow (outflow) from financing activities		₩	(598,264)	₩	811,125
Net increase (decrease) in cash and cash equivalents		₩	(287,210)	₩	566,197
Cash and cash equivalents at the beginning of the year	7		767,438		201,203
Effects of exchange rate changes on cash and cash Equivalents			(176)		38
Cash and cash equivalents at the end of the year in the consolidated statement of financial position	7	₩	480,052	₩	767,438

The above consolidated statements of cash flows should be read in conjunction with the accompanying notes.

1. General Information

The general information of S-OIL Corporation (the "Company" or the "Parent Company") and its subsidiaries, S-International Ltd., and North East Chemicals Co., Ltd. (collectively referred to as the "Group") under Korean IFRS 1110 *Consolidated Financial Statements*, are as follows:

The Company

S-OIL Corporation was established in 1976 to manufacture and sell oil refining products, lube products and petrochemical products, and to import and export crude oil and products. In 1987, the Company listed its stock on the Korea Exchange. The Company's headquarters is located in Mapo-gu, Seoul, Korea.

As at December 31, 2017, the major shareholders of the Company and their respective shareholdings are as follows:

	2017	
Name of shareholders	**Number of Ordinary shares**	**Percentage of Ownership (%)**
Aramco Overseas Co., B.V.	71,387,560	63.41
Institutional and individual investors	41,195,232	36.59
Total	112,582,792	100.00

Consolidated Subsidiaries

Details of the consolidated subsidiaries as at December 31, 2017 and 2016, are as follows:

	Number of Shares	Location	2017.12.31 Ownership interest held by the Group (%)	2016.12.31 Ownership interest held by the Group (%)	Main business	Closing Month
S-International Ltd.	10	Samoa	100	100	Purchasing and sales of crude oil and petroleum goods	December
North East Chemicals Co., Ltd.	473,000	Korea	100	-	Warehousing and handling of liquid chemicals	December

Summarized financial information for consolidated subsidiaries as at and for the years ended December 31, 2017 and 2016, is as follows:

(in millions of Korean won)	2017					
Subsidiary	Assets	Liabilities	Equity	Sales	Profit for the period	Total comprehensive income
S-International Ltd.	1,208	-	1,208	-	14	14
North East Chemicals Co., Ltd.[1]	60,570	1,025	59,545	2,535	543	543

[1] North East Chemicals Co., Ltd. became a consolidating subsidiary as at October 1, 2017, as the Group acquired de facto controls. Profit or loss for the three-month period after the acquisition was presented in the summarized statement of comprehensive income.

(in millions of Korean won)	2016					
Subsidiary	Assets	Liabilities	Equity	Sales	Profit for the period	Total comprehensive income
S-International Ltd.	1,347	-	1,347	-	7	7

Changes in Scope for Consolidation

A subsidiary newly included in the consolidation for the year ended December 31, 2017:

Subsidiary	Reason
North East Chemicals Co., Ltd.	Newly acquired

2. Significant Accounting Policies

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

2.1 Basis of Preparation

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

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

The preparation of consolidated financial statements requires the use of critical accounting estimates. Management also needs to exercise judgement in 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 5.

2.1.1 Changes in Accounting Policies and Disclosures

(a) New and amended standards adopted by the Group

The Group has applied the following standards and amendments for the first time for their annual reporting period commencing January 1, 2017. The adoption of these amendments did not have any material impact on the consolidated financial statements.

- Amendments to Korean IFRS 1007 *Statement of Cash Flows*

Amendments to Korean IFRS 1007 *Statement of Cash Flows* require to provide disclosures that enable users of the consolidated financial statements to evaluate changes in liabilities arising from financing activities, including both changes arising from cash flows and non-cash flows (Note 34).

- Amendments to Korean IFRS 1012 *Income Tax*

Amendments to Korean IFRS 1012 clarify how to account for deferred tax assets related to debt instruments measured at fair value. Korean IFRS 1012 provides requirements on the recognition and measurement of current or deferred tax liabilities or assets. The amendments issued clarify the requirements on recognition of deferred tax assets for unrealized losses, to address diversity in practice.

- Amendments to Korean IFRS 1112 *Disclosures of Interests in Other Entities*

Amendments to Korean IFRS 1112 clarify when an entity's interest in a subsidiary, a joint venture or an associate is classified as held for sales in accordance with Korean IFRS 1105, the entity is required to disclose other information except for summarized financial information in accordance with Korean IFRS 1112.

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

Certain new accounting standards and interpretations that have been published that are not mandatory for annual reporting period commencing January 1, 2017 and have not been early adopted by the Group are set out below.

- Amendments to Korean IFRS 1028 *Investments in Associates and Joint Ventures*

When an investment in an associate or a joint venture is held by, or it held indirectly through, an entity that is a venture capital organization, or a mutual fund, unit trust and similar entities including investment-linked insurance funds, the entity may elect to measure that investment at fair value through profit or loss in accordance with Korean IFRS 1109. The amendments clarify that an entity shall make this election separately for each associate of joint venture, at initial recognition of the associate or joint venture. These amendments will be effective for annual periods beginning on or after January 1, 2018, with early adoption permitted. The Group does not expect the amendments to have a significant impact on the consolidated financial statements because the Group is not a venture capital organization.

- Amendments to Korean IFRS 1040 *Transfers of Investment Property*

Paragraph 57 of Korean IFRS 1040 clarifies that a transfer to, or from, investment property, including property under construction, can only be made if there has been a change in use that is supported by evidence, and provides a list of circumstances as examples. The amendments will be effective for annual periods beginning on or after January 1, 2018, with early adoption permitted. The Group does not expect the amendments to have a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1102 *Share-based Payment*

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

- Enactment of Interpretation 2122 *Foreign Currency Transaction and Advance Consideration*

According to these enactments, the date of the transaction for the purpose of determining the exchange rate to use on initial recognition of the related asset, expense or income (or part of it) is the date on which an entity initially recognizes the non-monetary asset or non-monetary liability arising from the payment or receipt of advance consideration. If there are multiple payments or receipts in advance, the entity shall determine a date of the transaction for each payment or receipt of advance consideration. These enactments will be effective for annual periods beginning on or after January 1, 2018, with early adoption permitted. The Group does not expect the enactments to have a significant impact on the consolidated financial statements.

- Enactment of Korean IFRS 1116 *Leases*

Korean IFRS 1116 *Leases* issued on May 22, 2017 is effective for annual periods beginning on or after January 1, 2019, with early adoption permitted. This standard will replace Korean IFRS 1017 *Leases*, Interpretation 2104 *Determining whether an Arrangement contains a Lease*, Interpretation 2015 *Operating Leases-Incentives*, and Interpretation 2027 *Evaluating the Substance of Transactions Involving the Legal Form of a Lease*.

At inception of a contract, the Group shall assess whether the contract is, or contains, a lease. Also, at the date of initial application, the Group shall assess whether the contract is, or contains, a lease in accordance with the standard. However, the Group will not need to reassess all contracts with applying the practical expedient because the Group elected to apply the practical expedient only to contracts entered before the date of initial application.

For a contract that is, or contains, a lease, the Group shall account for each lease component within the contract as a lease separately from non-lease components of the contract. A lessee is required to recognize a right-of-use asset representing its right to use the underlying leased asset and a lease liability representing its obligation to make lease payments. The lessee may elect not to apply the requirements to short-term lease (a lease term of 12 months or less at the commencement date) and low value assets. In addition, as a practical expedient, the lessee may elect, by class of underlying asset, not to separate non-lease components from lease components, and instead account for each lease component and any associated non-lease components as a single lease component.

Lessee accounting

A lessee shall apply this standard to its leases either:

- retrospectively to each prior reporting period presented applying Korean IFRS 1008 *Accounting Policies, Changes in Accounting Estimates and Errors* (Full retrospective application); or

- retrospectively with the cumulative effect of initially applying the standard recognized at the date of initial application.

The Group has not yet elected the application method.

The Group is analyzing the effects on the consolidated financial statements; however, it is difficult to provide reasonable estimates of financial effects until the analyses is complete.

Lessor accounting

The Group expects the effect on the consolidated financial statements applying the new standard will not be significant as accounting for the Group, as a lessor, will not significantly change.

- Enactment of Korean IFRS 1109 *Financial Instruments*

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

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

Korean IFRS 1109 *Financial Instruments* requires three main areas including: (a) classification and measurement of financial assets on the basis of the entity's business model for managing financial assets and the contractual cash flow characteristics of the financial assets, (b) a new impairment model of financial instruments based on the expected credit losses, and (c) hedge accounting including expansion of the range of eligible hedging instruments and hedged items that qualify for hedge accounting or change of a method of hedge effectiveness assessment.

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

The Group performed an impact assessment to identify potential financial effects of applying Korean IFRS 1109. The assessment was performed based on available information as at December 31, 2017. And the Group expects the results of the assessment will not have a significant impact on the consolidated financial statements as at December 31, 2017. The Group plans to perform more detailed analyses on the financial effects based on additional information in the future; therefore, the results of the assessment may change due to additional information that the Group may obtain after the assessment.

(a) Classification and Measurement of Financial Assets

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

<table>
<tr><th>Business model for the contractual cash flows characteristics</th><th>Solely represent payments of principal and interest</th><th>All other</th></tr>
<tr><td>Hold the financial asset for the collection of the contractual cash flows</td><td>Measured at amortized cost[1]</td><td rowspan="3">Recognized at fair value through profit or loss[2]</td></tr>
<tr><td>Hold the financial asset for the collection of the contractual cash flows and sale</td><td>Recognized at fair value through other comprehensive income [1]</td></tr>
<tr><td>Hold for sale</td><td>Recognized at fair value through profit or loss</td></tr>
</table>

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

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

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

As at December 31, 2017, the Group owns loans and receivables of ₩ 3,925,990 million, available-for-sale financial assets of ₩ 49,931 million and financial assets at fair value through profit or loss of ₩ 24,312 million.

According to Korean IFRS 1109, a debt instrument is measured at amortized cost if: a) the objective of the business model is to hold the financial asset for the collection of the contractual cash flows, and b) the contractual cash flows under the instrument solely represent payments of principal and interest. As at December 31, 2017, the Group measured loans and receivables of ₩ 3,925,990 million at amortized costs.

According to Korean IFRS 1109, a debt instrument is measured at fair value through other comprehensive income if the objective of the business model is achieved both by collecting contractual cash flows and selling financial assets; and the contractual cash flows represents solely payments of principal and interest on a specific date under contract terms. As at December 31, 2017, the Group holds debt instruments of ₩ 4,119 million classified as available-for-sales financial assets in total and there are no debt instruments which contain host debt contracts separated from hybrid financial instruments.

According to Korean IFRS 1109, equity instruments that are not held for trading, the Group can make an irrevocable election at initial recognition to classify the instruments as assets measured at fair value through other comprehensive income, which all subsequent changes in fair value being recognized in other comprehensive income and not recycled to profit or loss. As at December 31, 2017, the Group holds equity instruments of ₩ 45,812 million classified as available-for-sale financial assets and there is no recycled unrealized gain or loss arose from the equity instruments to profit or loss.

According to Korean IFRS 1109, debt instruments those contractual cash flows do not represent solely payments of principal and interest and held for trading, and equity instruments that are not designated as instruments measured at fair value through other comprehensive income are measured at fair value through profit or loss. As at December 31, 2017, the Group holds debt instruments classified as financial assets at fair value through profit or loss that amount to ₩ 24,312 million.

(b) Classification and Measurement of Financial Liabilities

Korean IFRS 1109 requires the amount of the change in the liability's fair value attributable to changes in the credit risk to be recognized in other comprehensive income, unless this treatment of the credit risk component creates or enlarges a measurement mismatch. Amounts presented in other comprehensive income are not subsequently transferred to profit or loss.

Under Korean IFRS 1039, all financial liabilities designated at fair value through profit or loss recognized their fair value movements in profit or loss. However, under Korean IFRS 1109, certain fair value movements will be recognized in other comprehensive income and as a result profit or loss from fair value movements may decrease.

(c) Impairment: Financial Assets and Contract Assets

The new impairment model requires the recognition of impairment provisions based on expected credit losses (ECL) rather than only incurred credit losses as is the case under Korean IFRS 1039. It applies to financial assets classified at amortized cost, debt instruments measured at fair value through other comprehensive income, lease receivables, contract assets, loan commitments and certain financial guarantee contracts.

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

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

[1] A loss allowance for lifetime expected credit losses is required for a financial instrument if the credit risk on that financial instrument has increased significantly since initial recognition. It is also required for contract assets or trade receivables that are not, according to Korean IFRS 1115 *Revenue from Contracts with Customers*, considered to contain a significant financing component. Additionally, the Group can elect an accounting policy of recognizing lifetime expected credit losses for all contract assets and/or all trade receivables, including those that contain a significant financing component.

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

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

As at December 31, 2017, the Group owns debt investment carried at amortized cost of ₩ 3,925,990 million (loans and receivables of ₩ 3,925,990 million), debt investments carried at fair value through other comprehensive income, which classified as available-for-sale financial assets, of ₩ 4,119 million. And, the Group recognized loss allowance of ₩ 2,995 million for these assets.

(d) Hedge Accounting

Hedge accounting mechanics (fair value hedges, cash flow hedges and hedge of net investments in a foreign operations) required by Korean IFRS 1039 remains unchanged in Korean IFRS 1109, however, the new hedge accounting rules will align the accounting for hedging instruments more closely with the Group's risk management practices. As a general rule, more hedge relationships might be eligible for hedge accounting, as the standard introduces a more principles-based approach. Korean IFRS 1109 allows more hedging instruments and hedged items to qualify for hedge accounting, and relaxes the hedge accounting requirement by removing two hedge effectiveness tests that are a prospective test to ensure that the hedging relationship is expected to be highly effective and a quantitative retrospective test (within range of 80-125%) to ensure that the hedging relationship has been highly effective throughout the reporting period.

With implementation of Korean IFRS 1109, volatility in profit or loss may be reduced as some items that were not eligible as hedged items or hedging instruments under Korean IFRS 1039 are now eligible under Korean IFRS 1109.

As at December 31, 2017, the Group applies the hedge accounting to forecast transactions that amount to ₩ 1,703 million. With applying the hedge accounting, the Group recognized the fair value changes of fair value hedging instruments for ₩ 1 million in profit or loss. As at December 31, 2017, the changes in fair values of cash flow hedging instruments recognized in accumulated other comprehensive income amount to ₩ 1,702 million.

Furthermore, when the Group first applies Korean IFRS 1109, it may choose as its accounting policy choice to continue to apply all of the hedge accounting requirements of Korean IFRS 1039 instead of the requirements of Korean IFRS 1109.

- Enactment of Korean IFRS 1115 *Revenue from Contracts with Customers*

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

The Group must apply Korean IFRS 1115 *Revenue from Contracts with Customers* within annual reporting periods beginning on or after January 1, 2018, and will elect the modified retrospective approach which will recognize the cumulative impact of initially applying the revenue standard as an adjustment to retained earnings as at January 1 2018, the period of initial application.

Korean IFRS 1018 and other current revenue standard identify revenue as income that arises in the course of ordinary activities of an entity and provides guidance on a variety of different types of revenue, such as, sale of goods, rendering of services, interest, dividends, royalties and construction contracts. However, the new standard is based on the principle that revenue is recognized when control of a good or service transfers to a customer so the notion of control replaces the existing notion of risks and rewards. A new five-step process must be applied before revenue from contract with customers can be recognized:

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

The Group has prepared for implementing Korean IFRS 1115 and for internal management process since 2017. The Group developed accounting system by analyzing the Group's profit system. Korean IFRS 1115 affects to overall business practice including accounting treatment, sales strategy for products and manner in operating. Accordingly, the Group provides trainings for changes due to the application of new standards to employee, and periodically reports plan and process of the application to the managements.

The Group performed an impact assessment to identify potential financial effects of applying Korean IFRS 1115. The assessment was performed based on available information as at December 31, 2017. Despite of the application of Korean IFRS 1115, The Group expects the application will not have a material impact on the consolidated financial statements. The results of the assessment may change due to additional information that the Group may obtain after the assessment.

2.2 Consolidation

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

(a) Subsidiaries

Subsidiaries are all entities over which the Group has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power to direct the activities of the entity. Subsidiaries are fully consolidated from the date on which control is transferred to the Group. They are deconsolidated from the date that control ceases.

The acquisition method of accounting is used to account for business combinations by the Group. 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 measured initially at their fair values at the acquisition date. The Group recognizes any non-controlling interest in the acquired entity on an acquisition-by-acquisition basis either at fair value or at the non-controlling interest's proportionate share of the acquired entity's net identifiable assets. All other non-controlling interests are measured at fair values, unless otherwise required by other standards. Acquisition-related costs are expensed as incurred.

The excess of consideration transferred, amount of any non-controlling interest in the acquired entity and acquisition-date fair value of any previous equity interest in the acquired entity over the fair value of the net identifiable assets acquired is recoded as goodwill. If those amounts are less than the fair value of the net identifiable assets of the business acquired, the difference is recognized directly in the profit or loss as a bargain purchase.

Intercompany transactions, balances and unrealized gains on transactions between group companies are eliminated. Unrealized losses are also eliminated unless the transaction provides evidence of an impairment of the transferred asset. Accounting policies of subsidiaries have been changed where necessary to ensure consistency with the policies adopted by the Group.

(b) Associates

Associates are entities over which the Group has significant influence but not control or joint control. Investments in associates are accounted for using the equity method of accounting, after initially being recognized at cost. 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 an objective evidence of impairment for the investment in the associate, the Group recognizes the difference between the recoverable amount of the associate and its book amount 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 recognizes its direct right to the assets, liabilities, revenues and expenses of joint operations and its share of any jointly held or incurred assets, liabilities, revenues and expenses. Interests in joint ventures are accounted for using the equity method, after initially being recognized at cost in the consolidated statement of financial position.

2.3 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 each entity operates (the "functional currency"). The consolidated financial statements are presented in Korean won, which is the Parent Company's functional and presentation currency.

(b) Transactions and balances

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

Non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined. Translation differences on assets and liabilities carried at fair value are reported as part of the fair value gain or loss. For example, translation differences on non-monetary assets and liabilities such as equities held at fair value through profit or loss are recognized in profit or loss as part of the fair value gain or loss and translation differences on non-monetary assets such as equities classified as available-for-sale financial assets are recognized in other comprehensive income.

(c) Translation to presentation currency

The results and financial position of subsidiary that have a functional currency different from the presentation currency are translated into the presentation currency of 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 profit or loss are translated at average exchange rates,
- equity is translated at the historical exchange rate, and
- all resulting exchange differences are recognized in other comprehensive income.

2.4 Financial Assets

(a) Classification and measurement

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

At initial recognition, the Group measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial asset. Transaction costs of financial assets carried at fair value through profit or loss are expensed in profit or loss. Available-for-sale financial assets and financial assets at fair value through profit or loss are subsequently carried at fair value. And, loans and receivables and held-to-maturity investments are subsequently carried at amortized cost using the effective interest method.

Gains or losses arising from changes in the fair value of financial assets at fair value through profit or loss are recognized in profit or loss within other income or other expenses. Gains or losses arising from changes in the available-for-sale financial assets are recognized in other comprehensive income, and amounts are reclassified to profit or loss when the associated assets are sold or impaired.

(b) Impairment

The Group assesses at the end of each reporting period whether there is an 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 an 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, and that 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 Group considers that there is objective evidence of impairment if significant financial difficulties of the debtor, or delinquency in interest or principal payments for long term is indicated. Moreover, in the case of equity investments classified as available-for-sale financial assets, a significant decline in the fair value of the security below its cost, or prolonged decline is considered an objective evidence of impairment.

(c) Derecognition

If a transfer does not result in derecognition because the Group has retained substantially all the risks and rewards of ownership of the transferred asset, the Group continues to recognize the transferred asset in its entirety and recognizes a financial liability for the consideration received. The Group classified the financial liability as ‘borrowings’ in the consolidated statement of financial position.

(d) Offsetting of financial instruments

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

2.5 Derivative Instruments

Derivatives are initially recognized at fair value on the date when a derivative contract is entered into and are subsequently remeasured at their fair value at the end of each reporting period. Changes in the fair value of any derivative instrument that does not qualify for hedge accounting are recognized immediately in profit or loss within 'other income (expenses)' or 'finance income (costs)' based on the nature of transactions.

The Group applies cash flow hedge accounting to hedge the price risk associated with forecast asset purchase. The effective portion of changes in fair value of derivatives that are designated and qualify as cash flow hedges is recognized in other comprehensive income, and the ineffective portion is recognized in ‘other income (expenses)’. When the forecast transaction that is hedge results in the recognition of a non-financial asset, the gains and losses previously deferred in other comprehensive income are reclassified from other comprehensive income and included in the initial measurement of the cost of the assets. The deferred amounts are ultimately recognized in profit or loss as cost of sales. When a forecast transactions no longer to occur, the cumulative gain or loss that was reported in other comprehensive income is immediately reclassified to profit or loss within 'other income (expenses)’.

2.6 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost is determined using the first-in, first-out (FIFO) method except for in-transit inventories which are determined using the specific identification method and supplies which are determined using the moving weighted average method.

2.7 Property, Plant and Equipment

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

Depreciation of all property, plant and equipment, except for land, is calculated using the straight-line method to allocate their cost or revalued amounts, net of their residual values, over their estimated useful lives as follows:

	Estimated useful lives
Buildings	20 - 40 years
Structures	20 - 40 years
Machinery and equipment	15 - 30 years
Vehicles	5 years
Other property, plant and equipment	3 - 5 years
Catalysts	Units-of-production method

The assets' depreciation method, residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period.

2.8 Borrowing Costs

General and specific borrowing costs that are directly attributable to the acquisition, construction or production of a qualifying asset are capitalized during the period of time that is required to complete and prepare the asset for its intended use or sale. Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs eligible for capitalization. Other borrowing costs are expensed in the period in which they are incurred.

2.9 Intangible Assets

Goodwill is measured as described in Note 2.2 (a), and carried at cost less accumulated impairment losses.

Intangible assets, except for goodwill, are initially recognized at its historical cost and carried at its cost less accumulated amortization and accumulated impairment losses. Membership rights that have an indefinite useful life are not subject to amortization because there is no foreseeable limit to the period over which the assets are expected to be utilized. The Group amortizes intangible assets with a limited useful life using the straight-line method over the following periods:

	Estimated useful lives
Facility usage rights	Periods with exclusive supply rights or contract periods
Other intangible assets	5 years

2.10 Impairment of Non-financial Assets

Goodwill and intangible assets that have an indefinite useful life are not subject to amortization and are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired. Other assets are tested for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognized for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs of disposal and value in use. Non-financial assets other than goodwill that suffered an impairment are reviewed for possible reversal of the impairment at the end of each reporting period.

2.11 Financial Liabilities

(a) Classification and measurement

The Group's financial liabilities at fair value through profit or loss are financial instruments held for trading. A financial liability is held for trading if it is incurred principally for the purpose of repurchasing in the near term. A derivative that is not a designated as hedging instruments and an embedded derivative that is separated are also classified 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 present as 'trade payables', 'other payables' and 'borrowings' in the consolidated statement of financial position.

(b) Derecognition

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

2.12 Current and Deferred Tax

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

The tax expense is measured at the amount expected to be paid to the taxation authorities, using the tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period.

Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation. The Group recognizes current income tax on the basis of amounts expected to be paid to the tax authorities.

Deferred income tax is provided in full, using the liability method, on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements. However, deferred income tax is not accounted for if it arises 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 if it is probable that future taxable amounts will be available to utilize those temporary differences and losses.

The Group recognizes a deferred tax liability all taxable temporary differences associated with investments in subsidiaries, associates, and interests in joint arrangements, 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, The Group recognizes a deferred tax asset for all deductible temporary differences arising from such investments to the extent that it is probable the temporary difference will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilized.

Deferred tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets and liabilities and when the deferred tax balances relate to the same taxation authority. Current tax assets and tax liabilities are offset where the entity has a legally enforceable right to offset and intends either to settle on a net basis.

2.13 Post-employment Benefits

The Group operates both defined contribution and defined benefit pension plans.

For defined contribution plans, the Group pays contribution to publicly or privately administered pension insurance plans on mandatory, contractual or voluntary basis. The Group has no further payment obligation once the contribution have been paid. The contribution are recognized as employee benefit expense when they are due.

A defined benefit plan is a pension plan that is not a defined contribution plan. Generally, post-employment benefits are payable after the completion of employment, and the benefit amount depended on the employee's age, periods of service or salary levels. The liability recognized in the consolidated statement of financial position in respect of defined benefit pension plans is the present value of the defined benefit obligation at the end of the reporting period less the fair value of plan assets. The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid, and that have terms approximating to the terms of the related obligation. Remeasurement gains and losses arising from experience adjustments and changes in actuarial assumptions are recognized in the period in which they occur, directly in other comprehensive income.

Changes in the present value of the defined benefit obligation resulting from plan amendments or curtailments are recognized immediately in profit or loss as past service costs.

2.14 Provisions

Provisions are measured at the present value of management's best estimate of the expenditure required to settle the present obligation at the end of the reporting period, and the increase in the provision due to the passage of time is recognized as interest expense.

2.15 Customer Loyalty Program

The Group operates a customer loyalty program granting loyalty points and where members can redeem the points on future purchases. Some of the consideration received or receivable from the sales transaction related to customer loyalty program are recognized as deferred revenue.

2.16 Share Capital

Ordinary shares and preferred shares that are not mandatorily redeemable are classified as equity.

Where the Company purchases its own equity share capital (treasury share), the consideration paid, including any directly attributable incremental costs is deducted from equity attributable to the subsequently reissued, any consideration received is included in equity attributable to the Company's equity holders.

2.17 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 course of the business. Amounts disclosed as revenue are net of special consumption taxes, value added taxes, returns, and discounts and after elimination of inter-company transactions.

The Group recognizes revenue when the amount of revenue can be reliably measured, it is probable that future economic benefits will flow to the Group 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) Sale of goods

The Group recognizes revenue when the significant risks and rewards of ownership of goods are transferred to the buyer.

(b) Interest income

Interest income is recognized using the effective interest method according to the time passed.

(c) Dividend income

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

2.18 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 in which a significant portion of the risks and rewards of ownership are not transferred to the Group are classified as operating leases. Payments made under operating leases are charge to profit or loss on a straight-line basis over the period of lease.

Leases where the Group, as lessee, has substantially all the risks and rewards of ownership are classified as finance leases. Finance leases are capitalized at the lease's inception at the fair value of the leased property or, if lower, the present value of the minimum lease payments. The corresponding rental obligations, net of finance charges, are included in other short-term and long-term payables. Each lease payment is allocated between the liability and finance cost.

2.19 Dividend Distribution

Dividend distribution to the Group's shareholders is recognized as a liability in the consolidated financial statements in the period in which the dividends are approved by the Group's shareholders.

2.20 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 year. Basic earnings per preferred share is also calculated by dividing the profit attributable to participating shares with right to participate in distribution of earnings by the weighted average number of preferred shares in issue during the year.

2.21 Segment Reporting

Information of each operating segment is reported in a manner consistent with the internal business segment reporting provided to the chief operating decision-maker. The chief operating decision-maker, who is responsible for allocating resources and assessing performance of the operating segments, has been identified as the Board of Directors that makes strategic decisions.

2.22 Greenhouse Gas Emission Permits and Obligations

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

2.23 Approval of Issuance of the Consolidated Financial Statements

The issuance of the December 31, 2017 consolidated financial statements of the Group is expected to be approved by the Board of Directors on February 20, 2018, which is subject to change with the approval of shareholders at the general shareholders' meeting.

3. Financial Risk Management

3.1 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 overall risk management program focuses on the unpredictability of financial markets and seeks to minimize any adverse effects on the financial performance of the Group.

Risk management is carried out by each relevant department under policies approved by the Board of Directors. The Group identifies, evaluates and hedges financial risks in close co-operation with the Group's operating units.

(1) Market risk

a. Foreign exchange risk

The Group operates internationally and is exposed to foreign exchange risk arising from foreign currency transactions, primarily with respect to the US dollar. Foreign exchange risk arises from future commercial transactions, recognized assets and liabilities.

The purpose of foreign exchange risk management is to maximize the Group's value by minimizing the uncertainty and volatility of foreign exchange gains and losses from foreign exchange rate fluctuations.

The Group maintains foreign exchange risk management system to offset foreign exchange effects arising from recognized income/expense and assets/liabilities.

As at December 31, 2017, if the Korean won had weakened/strengthened by 10% against the foreign currencies with all other variables held constant, profit for the period would have been decreased/increased by ₩ 137,549 million (2016: ₩ 154,842 million) in relation to foreign currency-denominated trade receivables, trade payables, and usance borrowings. However, the Group's foreign exchange risk is controlled effectively as the above foreign exchange risk has offsetting effect with other foreign exchange effects affecting operating income.

The Group's financial instruments denominated in major foreign currencies as at December 31, 2017 and 2016, are converted into Korean won as follows:

(In millions of Korean won)		2017		2016
Trade receivables				
KRW	₩	419,993	₩	326,198
USD		1,112,769		825,567
EUR		5,317		1,620
AUD		679		1,223
Total	₩	1,538,758	₩	1,154,608
Trade payables				
KRW	₩	84,170	₩	44,707
USD		1,649,155		1,096,018
Total	₩	1,733,325	₩	1,140,725
Borrowings				
KRW	₩	3,488,860	₩	2,920,853
USD		1,355,350		1,788,608
Total	₩	4,844,210	₩	4,709,461

b. Product margin risk

The Group is exposed to product margin risk arising from difference in timing of purchase and sale.

The purpose of product margin risk management is to maximize the Group's value by minimizing the uncertainty of volatility of product margin.

In order to minimize the product margin risk, the Group tries to sell products produced within the month. For the products that need to be stored for a longer period, the Group secures the product margin by executing product swap to mitigate a risk of future price fluctuation.

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 on floating rate deposits and borrowings.

The objective of interest rate risk management lies in maximizing the Group's value by minimizing uncertainty caused by fluctuations in interest rates and minimizing net interest expense.

The table below summarizes the impact of increases/decreases of interest rate on the Group's equity and profit for the year. The analysis is based on the assumption that the interest rate has increased/decreased by 1% with all other variables held constant.

	2017				**2016**			
(In millions of Korean won)	**Impact on post-tax profit**		**Impact on equity**		**Impact on post-tax profit**		**Impact on equity**	
One percent increase	₩	(42)	₩	(42)	₩	(78)	₩	(78)
One percent decrease		42		42		78		78

d. Price risk of available-for-sale financial assets

The Group is exposed to equity securities price risk arises from investments held by the Group that are classified available-for-sale financial assets in the consolidated statement of financial position. To manage its price risk arising from investments in equity securities, the Group diversifies its portfolio.

The table below summarizes the impact of increases/decreases of these two indexes on the Group's other comprehensive income for the year. The analysis is based on the assumption that the equity indexes has increased/decreased by 10% with all other variables held constant, and that all the Group's equity instruments moved in line with the indexes.

(In millions of Korean won)		**2017**		**2016**
Listed stocks	₩	17	₩	12
Unlisted stocks		3,456		3,416

(2) Credit risk

Credit risk arises from receivables, cash and cash equivalents, derivative financial instruments and deposits with banks and financial institutions. For banks and financial institutions, only independently rated parties with high ratings are accepted. If customers are independently rated, these ratings are used. If there is no independent rating, the credit quality of the customer is evaluated taking into account its financial position, past experience and other factors.

Individual risk limits are set based on internal or external ratings in accordance with limits set by the Group. The utilization of credit limits is strictly executed.

The maximum exposure to credit risk as at December 31, 2017 and 2016, is as follows:

(In millions of Korean won)		**2017**		**2016**
Financial assets				
Cash and cash equivalents	₩	479,979	₩	767,368
Trade receivables		1,538,758		1,154,608
Other receivables		196,170		170,470
Other financial assets		1,715,129		3,437,853
Derivative financial assets		24,312		2,078
Total	₩	3,954,348	₩	5,532,377

With the exception of trade receivables and other receivables, none of financial assets is past due or impaired. There is no collateral held by the Group except for trade receivables and other receivables.

(3) Liquidity risk

Liquidity risk is defined as the risk that the Group is unable to meet its short-term payment obligations on time due to deterioration of its business performance or inability to access financing.

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 on any of its borrowing facilities. The Group's liquidity management policy involves projecting cash flows in major currencies and considering the level of liquid assets necessary to meet these, monitoring balance sheet liquidity ratios against internal and external regulatory requirements and maintaining debt financing plans.

Details of the Group's liquidity risk analysis as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	**Less than 1 year**	**Between 1 and 2 years**	**Over 2 years**	**Total**
December 31, 2017				
Trade payables	₩ 1,733,325	₩ -	₩ -	₩ 1,733,325
Other payables	542,435	6,861	13,288	562,584
Borrowings	1,463,057	631,495	3,158,447	5,252,999
Currency forward (gross)				
Inflow	1,002,683	-	-	1,002,683
Outflow	(982,258)	-	-	(982,258)
Commodity Swap (net)	5,627	-	-	5,627
Total	₩ 3,764,869	₩ 638,356	₩ 3,171,735	₩ 7,574,960

(In millions of Korean won)	**Less than 1 year**	**Between 1 and 2 years**	**Over 2 years**	**Total**
December 31, 2016				
Trade payables	₩ 1,140,725	₩ -	₩ -	₩ 1,140,725
Other payables	601,449	17,122	960	619,531
Borrowings	2,172,117	80,228	2,774,919	5,027,264
Currency forward (gross)				
Inflow	314,844	-	-	314,844
Outflow	(298,411)	-	-	(298,411)
Commodity Swap (net)	34,479	-	-	34,479
Total	₩ 3,965,203	₩ 97,350	₩ 2,775,879	₩ 6,838,432

The amounts disclosed in the above table are undiscounted cash flows.

3.2 Capital Risk Management

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

The Group monitors financial ratios, such as debt-to-equity ratio and net borrowings-to-equity ratio each month and implements required action plan to maintain or adjust the capital structure.

Debt-to-equity ratio and net borrowings-to-equity ratio as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won, except for ratios)	**2017**	**2016**
Interest bearing liabilities (A)	₩ 4,844,210	₩ 4,709,461
Cash and cash equivalents and current financial deposits (B)	2,191,052	4,201,098
Net borrowings (C=A-B)	2,653,158	508,363
Equity (D)	6,842,620	6,391,585
Debt-to-equity ratio (A/D)	71%	74%
Net borrowings-to-equity ratio (C/D)	39%	8%

4. Fair Value

(1) Fair Value of Financial Instruments by Category

Carrying amount and fair value of financial instruments by category as at December 31, 2017 and 2016, are as follows:

(in millions of Korean won)	**2017**		**2016**	
	Carrying amount	**Fair value**	**Carrying amount**	**Fair value**
Financial assets				
Available-for-sale financial assets	₩ 49,931	₩ 49,931	₩ 49,407	₩ 49,407
Derivative financial assets	24,312	24,312	2,078	2,078
Total	₩ 74,243	₩ 74,243	₩ 51,485	₩ 51,485
Financial liabilities				
Derivative financial liabilities	₩ 7,345	₩ 7,345	₩ 50,873	₩ 50,873
Total	₩ 7,345	₩ 7,345	₩ 50,873	₩ 50,873

Carrying amount of other financial assets and liabilities other than available-for-sale financial assets and derivative financial instruments is a reasonable approximation of fair value.

(2) Fair Value Hierarchy

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

- Quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1).
- All inputs other than quoted prices included in level 1 that are observable (either directly that is, prices, or indirectly that is, derived from prices) for the asset or liability (Level 2).
- Unobservable inputs for the asset or liability (Level 3).

Fair value hierarchy classifications of the financial instruments that are measured at fair value as at December 31, 2017, are as follows:

(in millions of Korean won)	Level 1	Level 2	Level 3	Total
Financial assets/liabilities that are measured at fair value				
Assets				
Available-for-sale financial assets				
Equity securities	₩ 218	₩ -	₩ 45,594	₩ 45,812
Debt securities	4,119	-	-	4,119
Financial assets at fair value through profit or loss				
Derivative financial assets held for trading	-	24,312	-	24,312
Total	₩ 4,337	₩ 24,312	₩ 45,594	₩ 74,243
Liabilities				
Financial liabilities at fair value through profit or loss				
Derivative financial liabilities held for trading	₩ -	₩ 7,345	₩ -	₩ 7,345
Total	₩ -	₩ 7,345	₩ -	₩ 7,345

Fair value hierarchy classifications of the financial instruments that are measured at fair value as at December 31, 2016, are as follows:

(in millions of Korean won)	Level 1	Level 2	Level 3	Total
Financial assets/liabilities that are measured at fair value				
Assets				
Available-for-sale financial assets				
Equity securities	₩ 164	₩ -	₩ 45,063	₩ 45,227
Debt securities	4,180	-	-	4,180
Financial assets at fair value through profit or loss				
Derivative financial assets held for trading	-	2,078	-	2,078
Total	₩ 4,344	₩ 2,078	₩ 45,063	₩ 51,485
Liabilities				
Financial liabilities at fair value through profit or loss				
Derivative financial liabilities held for trading	₩ -	₩ 50,873	₩ -	₩ 50,873
Total	₩ -	₩ 50,873	₩ -	₩ 50,873

(3) Transfers between Fair Value Hierarchy Levels of Recurring Fair Value Measurements

The Group's policy is to recognize transfers between levels of the fair value at the end of the reporting period. There were no transfers between levels 1 and 2 for recurring fair value measurements during the year. Changes in level 3 for recurring fair value measurements for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		2017		2016
Beginning balance	₩	45,063	₩	45,899
Gains (Losses) on valuation (other comprehensive income)		531		(836)
Ending balance	₩	45,594	₩	45,063

(4) Valuation Technique and the Inputs

Valuation techniques and inputs used in levels 2 and 3 fair value measurements are as follows:

1) Level 3

(in millions of Korean won)	**Fair value**	**Level**	**Valuation techniques**	**Inputs**	**Range of inputs**
Available-for-sale financial assets					
Equity securities	₩ 45,594	3	Present value technique (DCF[1])	Discount rate	7.11%

[1] DCF: Discounted Cash Flow method

2) Level 2

(in millions of Korean won)		**Fair value**	**Level**	**Valuation techniques**
Financial assets at fair value through profit or loss				
Currency forward	₩	24,312	2	Present value technique
Financial liabilities at fair value through profit or loss				
Currency forward	₩	1,718	2	Present value technique
Commodity swap	₩	5,627	2	Present value technique

(5) Valuation Processes for Fair Value Measurements Categorized as Level 3

The accounting department of the Group that performs the fair value measurements required for financial reporting purposes, including Level 3 fair values. This department discusses valuation processes and result with the management.

(6) Sensitivity Analysis for Recurring Fair Value Measurements Categorized as Level 3

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 most favorable or most unfavorable amounts are presented. Changes in fair value of financial instruments categorized as level 3 subject to sensitivity analysis; such as, unlisted equity securities, are recognized in other comprehensive income.

5. Critical Accounting Estimates and Assumptions

The preparation of consolidated financial statements requires the Group to make estimates and assumptions concerning the future. Estimates and judgements are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. 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 discussed below.

a. Net Defined Benefit Liabilities

The present value of net defined benefit liability depends on a number of factors that are determined on an actuarial basis using a number of assumptions including the discount rate (Note 20).

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 (Note 4).

c. Income Taxes

The Group’s taxable income generated from these operations are subject to income taxes based on tax laws and interpretations of tax authorities in numerous jurisdictions. There are many transactions and calculations for which the ultimate tax determination is uncertain (Note 30).

If certain portion of the taxable income is not used for investments or increase in wages or dividends in accordance with the Tax System For Recirculation of Corporate Income, the Group is liable to pay additional income tax calculated based on the tax laws. The new tax system is effective for three years from 2015. Accordingly, the measurement of current and deferred income tax is affected by the tax effects from the new tax system. As the Group’s income tax is dependent on the investments, increase in wages and dividends, there is an uncertainty measuring the final tax effects.

d. Provisions for Other Liabilities and Charges

As at December 31, 2017, the Group records environmental restoration provisions. These provisions are estimated based on past experience (Note 19).

e. Estimated Goodwill Impairment

The Group tests whether goodwill has suffered any impairment on an annual basis. The recoverable amount of a cash generating unit (CGU) is determined based on value-in-use calculations (Note 15).

6. Operating Segment Information

The reportable operating segments of the Group are oil refining business, lube oil business and petrochemical business.

Financial information by operating segments as at and for the years ended December 31, 2017 and 2016, is as follows:

(In millions of Korean won)	2017							
		Oil Refining Business		**Lube Oil Business**		**Petrochemical Business**		**Total**
Sales from external customers	₩	16,412,341	₩	1,614,907	₩	2,864,126	₩	20,891,374
Inter-segment sales		4,276,884		160,335		1,040,828		5,478,047
Total sales		20,689,225		1,775,242		3,904,954		26,369,421
Operating profit	₩	627,255	₩	420,238	₩	325,772	₩	1,373,265
Property, plant, equipment and intangible assets	₩	5,200,693	₩	254,715	₩	2,618,440	₩	8,073,848
Depreciation and amortization and others		200,642		15,635		77,895		294,172

(In millions of Korean won)	2016							
		Oil Refining Business		**Lube Oil Business**		**Petrochemical Business**		**Total**
Sales from external customers	₩	12,464,223	₩	1,313,663	₩	2,543,957	₩	16,321,843
Inter-segment sales		3,428,339		122,991		875,339		4,426,669
Total sales		15,892,562		1,436,654		3,419,296		20,748,512
Operating profit	₩	698,992	₩	412,013	₩	505,884	₩	1,616,889
Property, plant, equipment and intangible assets	₩	4,406,421	₩	139,106	₩	1,219,739	₩	5,765,266
Depreciation and amortization and others		190,127		11,066		85,553		286,746

Sales by geographic region for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		**2017**		**2016**
Korea	₩	8,866,880	₩	7,084,277
Southeast Asia		2,853,890		2,149,370
China		2,663,840		2,048,744
America		1,397,436		1,221,309
Japan		1,304,319		1,096,120
Australia		1,734,337		839,962
Europe		457,645		351,376
Others		1,613,027		1,530,685
Total	₩	20,891,374	₩	16,321,843

Details of a customer, who contributes more than ten percent of the Group sales for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		**2017**		**2016**	**Segments**
Customer 1 [1]	₩	1,884,412	₩	1,690,496	Oil refining business

[1] Saudi Aramco Products Trading Group, a related party of the Group

7. Cash and Cash Equivalents

Cash and cash equivalents as at December 31, 2017 and 2016, consists of:

(In millions of Korean won)		**2017**		**2016**
Cash on hand	₩	73	₩	70
Checking accounts		9		7
Passbook accounts		41,024		15,728
Foreign currency deposits		116,216		45,683
Time deposits		140,000		625,000
MMDA and others		182,730		80,950
Total	₩	480,052	₩	767,438

Cash and cash equivalents recognized in the consolidated statements of financial position and cash flows are identical.

8. Trade and Other Receivables

Trade and other receivables as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017		2016	
	Current	**Non-current**	**Current**	**Non-current**
Trade receivables	₩ 1,541,753	₩ -	₩ 1,157,974	₩ -
Less : provision for impairment	(2,995)	-	(3,366)	-
Trade receivables - net	1,538,758	-	1,154,608	-
Other receivables				
Non-trade receivables	205,721	-	153,967	-
Accrued revenues	6,956	-	17,345	-
Loans	6,954	42,447	9,937	40,781
Guaranty deposits	-	20,494	-	24,114
	219,631	62,941	181,249	64,895
Net book amount	₩ 1,758,389	₩ 62,941	₩ 1,335,857	₩ 64,895

The aging analysis of trade receivables as at December 31, 2017 and 2016, is as follows:

(In millions of Korean won)	2017	2016
Receivables not past due	₩ 1,537,024	₩ 1,152,954
Up to one month	3,214	3,265
One to three months	80	153
Three to six months	82	117
Six to twelve months	57	1
Over one year	1,296	1,484
Total	₩ 1,541,753	₩ 1,157,974

As at December 31, 2017, trade receivables of ₩ 786,861 million (2016: ₩ 501,961 million) have collateral provided by customers. Among those trade receivables, ₩ 2,945 million (2016: ₩ 3,013 million) is past due but not impaired.

The aging analysis of other receivables as at December 31, 2017 and 2016, is as follows:

(In millions of Korean won)	2017	2016
Receivables not past due	₩ 282,567	₩ 244,244
Up to one month	-	1,850
One to three months	5	50
Total	₩ 282,572	₩ 246,144

Movements on the provision for impairment of trade receivables for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017	2016
Beginning balance	₩ 3,366	₩ 4,025
Acquisition of subsidiary	282	-
(Reversal of) Impairment loss	(174)	243
Collected	21	16
Receivables written off	(500)	(918)
Ending balance	₩ 2,995	₩ 3,366

There are no movements on the provision for impairment of other receivables for the years ended December 31, 2017 and 2016.

As at December 31, 2017, the balance of trade receivables that are not past due amounts to USD 214 million (2016: USD 88 million). As at December 31, 2017, the Group transferred the trade receivables to Shinhan Bank and five other financial institutions and derecognized the transferred receivables as all the risks and rewards are substantially transferred (Note 21).

9. Other Financial Assets and Other Assets

Other financial assets as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017		2016	
Current				
Short-term available-for-sale financial assets	₩	98	₩	112
Short-term financial instruments (Time deposits, etc.) [1]		1,711,000		3,433,660
		1,711,098		3,433,772
Non-current				
Long-term deposit [1]		10		13
Long-term available-for-sale financial assets		49,833		49,295
		49,843		49,308
Total	₩	1,760,941	₩	3,483,080

[1] Short-term financial instruments include ₩ 21,811 million which are subject to restricted in relation to contractual guarantee (Note 16). Long-term deposit includes ₩ 10 million which are subject to restricted.

Other assets as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017				2016			
	Current		Non-current		Current		Non-current	
Advance payments	₩	3,204	₩	20,838	₩	4,236	₩	33,091
Prepaid expenses		6,844		6,985		7,577		10,640
Total	₩	10,048	₩	27,823	₩	11,813	₩	43,731

Available-for-sale financial assets as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017		2016	
Current				
Government and public bonds	₩	98	₩	112
Non-current				
Listed equities		218		164
Non-listed equities		45,594		45,063
Government and public bonds		4,021		4,068
		49,833		49,295
Total	₩	49,931	₩	49,407

The fair value of unlisted equities is determined using discounted cash flow analysis based on the risk adjusted yield.

Changes in available-for-sale financial assets for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	**2017**	**2016**
Beginning balance	₩ 49,407	₩ 53,919
Acquisitions	68	716
Disposals	(128)	(4,375)
Gains (Losses) on valuation (Other comprehensive income (loss))	584	(853)
Ending balance	₩ 49,931	₩ 49,407
Less: Non-current portion	₩ 49,833	₩ 49,295
Current portion	₩ 98	₩ 112

10. Derivative Financial Instruments

Details of derivative financial instruments as at December 31, 2017 and 2016, are as follows:

	2017		**2016**	
(In millions of Korean won)	**Assets**	**Liabilities**	**Assets**	**Liabilities**
Trading purpose				
Forward foreign exchange	₩ 24,312	₩ 15	₩ 819	₩ 16,394
Commodity Swap	-	5,627	1,259	34,479
Forward foreign exchange - cash flow hedges	-	1,703	-	-
	₩ 24,312	₩ 7,345	₩ 2,078	₩ 50,873
Current portion	₩ 24,312	₩ 7,345	₩ 2,078	₩ 50,873
Non-current portion	–	–	–	–

Derivatives financial instruments held for trading purposes are classified as current assets or liabilities.

In relation to cash flow hedges, the Group recognized other comprehensive income for ₩ 1,702 million. The ineffective portion of hedges recognized in profit or loss within other expenses amounts to ₩ 1 million.

11. Financial Instruments by Category

Carrying amounts of financial assets and liabilities by category as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017			
	Loans and receivables	**Financial assets at fair value through profit or loss**	**Available-for-sale financial assets**	**Total**
Assets				
Cash and cash equivalents	₩ 480,052	₩ -	₩ -	₩ 480,052
Trade receivables	1,538,758	-	-	1,538,758
Other receivables	196,170	-	-	196,170
Other financial assets	1,711,010	-	49,931	1,760,941
Derivative financial instruments	-	24,312	-	24,312
Total	₩ 3,925,990	₩ 24,312	₩ 49,931	₩ 4,000,233

(In millions of Korean won)	2017		
	Financial liabilities at amortized cost	**Financial liabilities at fair value through profit or loss**	**Total**
Liabilities			
Trade payables	₩ 1,733,325	₩ -	₩ 1,733,325
Other payables	562,584	-	562,584
Borrowings	4,844,210	-	4,844,210
Derivative financial instruments	-	7,345	7,345
Total	₩ 7,140,119	₩ 7,345	₩ 7,147,464

(In millions of Korean won)	2016			
	Loans and receivables	**Financial assets at fair value through profit or loss**	**Available-for-sale financial assets**	**Total**
Assets				
Cash and cash equivalents	₩ 767,438	₩ -	₩ -	₩ 767,438
Trade receivables	1,154,608	-	-	1,154,608
Other receivables	170,470	-	-	170,470
Other financial assets	3,433,673	-	49,407	3,483,080
Derivative financial instruments	-	2,078	-	2,078
Total	₩ 5,526,189	₩ 2,078	₩ 49,407	₩ 5,577,674

(In millions of Korean won)	2016		
	Financial liabilities at amortized cost	**Financial liabilities at fair value through profit or loss**	**Total**
Liabilities			
Trade payables	₩ 1,140,725	₩ -	₩ 1,140,725
Other payables	619,531	-	619,531
Borrowings	4,709,461	-	4,709,461
Derivative financial instruments	-	50,873	50,873
Total	₩ 6,469,717	₩ 50,873	₩ 6,520,590

Net gains or losses on each category of financial instruments for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		**2017**		**2016**
Loans and receivables				
Interest income	₩	52,317	₩	54,382
Foreign currency gains (losses)		(154,225)		38,728
Reversal of provision for Impairment (Impairment loss) (profit or loss)		174		(243)
Assets and liabilities at fair value through profit or loss				
Derivative financial instruments gain (loss)		34,873		(31,885)
Assets classified as available-for-sale				
Gains (Losses) on valuation (other comprehensive income)		584		(853)
Interest income		86		138
Dividend income		1,197		798
Financial liabilities at amortized cost				
Foreign currency gains (losses)		395,841		(105,936)
Interest expenses[1]		(58,254)		(56,306)

[1] Interest expenses exclude capitalized borrowing costs on qualifying assets.

12. Inventories

Inventories as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		**2017**		**2016**
Merchandise	₩	5,030	₩	18,562
Valuation allowance for merchandise		(55)		(23)
Finished goods		553,408		483,643
Valuation allowance for finished goods		(104)		(40)
Work in progress		279,124		274,302
Valuation allowance for work in progress		(1,530)		(85)
Raw materials and materials-in-transit		1,832,446		1,551,160
Valuation allowance for raw materials and materials-in-transit		(40)		(210)
Supplies		122,463		96,131
Total	₩	2,790,742	₩	2,423,440

Inventories at original cost that was recognized as cost of sales for the year ended December 31, 2017 amounted to ₩ 16,864,228 million (2016: ₩ 12,301,889 million). The Group recognized loss on valuation of inventories for ₩ 1,372 million for the year ended December 31, 2017 and reversed loss on valuation of inventories for ₩ 125,871 million for the year ended December 31, 2016.

13. Investments in Associate and Joint venture

Details of associate and joint venture as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won except number of shares) Investee	Location	Closing Month	Number of Shares	Percentage of Ownership (%)	Acquisition Cost	2017	2016
Joint venture							
S-OIL TOTAL Lubricants Co., Ltd.	Korea	December	3,500,001	50% plus one share	₩ 20,134	₩ 32,298	₩ 33,216
Associate							
Korea Oil Terminal Co., Ltd.[1]	Korea	December	18,910	18%	904	55	79
Total					₩ 21,038	₩ 32,353	₩ 33,295

[1] The Group acquired 18% ownership interest in Korea Oil Terminal Co., Ltd. Although the Group owns less than 20% of the voting rights of Korea Oil Terminal Co., Ltd., the Group is considered to have a significant influence over Korea Oil Terminal Co., Ltd., which is classified as an associate, as the Group has a seat in the investee's Board of Directors.

Details of adjustments from financial information of associate and joint venture to the book amount of investments in associate and joint venture for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		2017				
		Net assets at the end of the year	Group's share in (%)	Group's share in KRW	Intergroup transactions and etc.	Book amount
Joint venture	S-OIL TOTAL Lubricants Co., Ltd.	₩ 65,086	50% plus one share	₩ 32,543	₩ (245)	₩ 32,298
Associate	Korea Oil Terminal Co., Ltd.	(814)	18%	(147)	202	55

(In millions of Korean won)		2016				
		Net assets at the end of the year	Group's share in (%)	Group's share in KRW	Intergroup transactions, and etc.	Book amount
Joint venture	S-OIL TOTAL Lubricants Co., Ltd.	₩ 66,586	50% plus one share	₩ 33,293	₩ (77)	₩ 33,216
Associate	Korea Oil Terminal Co., Ltd.	(694)	18%	(125)	204	79

The tables below provide summarized financial information for those associate and joint venture for the years ended December 31, 2017 and 2016.

(In millions of Korean won)	S-OIL TOTAL Lubricants Co., Ltd.		Korea Oil Terminal Co., Ltd.	
	2017	2016	2017	2016
Current assets	₩ 75,637	₩ 75,824	₩ 462	₩ 593
Non-current assets	26,456	21,847	3,231	3,234
Total assets	₩ 102,093	₩ 97,671	₩ 3,693	₩ 3,827
Current liabilities	37,007	31,085	4,443	4,438
Non-current liabilities	-	-	64	83
Total liabilities	₩ 37,007	₩ 31,085	₩ 4,507	₩ 4,521
Total equity	₩ 65,086	₩ 66,586	₩ (814)	₩ (694)
Sales	₩ 274,610	₩ 269,431	₩ -	₩ -
Operating income (loss)	13,930	18,385	(724)	(1,280)
Profit (Loss) before income tax	13,831	17,527	(724)	(1,281)
Profit (Loss) for the year	10,815	13,638	(724)	(1,281)
Total comprehensive income (loss) for the year	10,712	13,643	(731)	(1,267)

Details of valuation of investments in associate and joint venture that are accounted for using the equity method for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017		
	S-OIL TOTAL Lubricants Co., Ltd.	Korea Oil Terminal Co., Ltd.	Total
Beginning balance	₩ 33,216	₩ 79	₩ 33,295
Acquisition	-	103	103
Share of profit (loss)	5,427	(128)	5,299
Unrealized gains (losses)	(169)	-	(169)
Dividend received	(6,125)	-	(6,125)
Other equity changes	(51)	1	(50)
Ending balance	₩ 32,298	₩ 55	₩ 32,353

(In millions of Korean won)	2016		
	S-OIL TOTAL Lubricants Co., Ltd.	Korea Oil Terminal Co., Ltd.	Total
Beginning balance	₩ 35,247	₩ 186	₩ 35,433
Acquisition	-	138	138
Share of profit (loss)	6,819	(243)	6,576
Unrealized gains (losses)	73	-	73
Dividend received	(8,925)	-	(8,925)
Other equity changes	2	(2)	-
Ending balance	₩ 33,216	₩ 79	₩ 33,295

14. Property, Plant and Equipment

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

	2017								
(In millions of Korean won)	Land	Buildings	Structures	Machinery and equipment	Vehicles	Others	Catalysts	Construction-in -progress	Total
At January 1, 2017									
Acquisition cost	₩ 1,291,643	₩ 296,144	₩ 964,012	₩ 3,901,553	₩ 13,694	₩ 551,226	₩ 951,417	₩ 2,087,472	₩ 10,057,161
Accumulated depreciation	-	(76,339)	(491,222)	(2,619,030)	(11,559)	(358,178)	(790,029)	-	(4,346,357)
Net book amount	₩ 1,291,643	₩ 219,805	₩ 472,790	₩ 1,282,523	₩ 2,135	₩ 193,048	₩ 161,388	₩ 2,087,472	₩ 5,710,804
Changes during 2017									
Beginning net book amount	₩ 1,291,643	₩ 219,805	₩ 472,790	₩ 1,282,523	₩ 2,135	₩ 193,048	₩ 161,388	₩ 2,087,472	₩ 5,710,804
Acquisition of subsidiary	31,842	1,324	41,022	-	-	86	-	-	74,274
Additions	-	35	1,082	-	542	23,052	65,020	2,383,966	2,473,697
Transfers	8,365	42,440	40,274	116,161	2	39,209	-	(248,035)	(1,584)
Disposals	(1,649)	(485)	(784)	-	-	(215)	-	-	(3,133)
Depreciation	-	(8,212)	(32,705)	(80,425)	(863)	(81,122)	(82,038)	-	(285,365)
Ending net book amount	₩ 1,330,201	₩ 254,907	₩ 521,679	₩ 1,318,259	₩ 1,816	₩ 174,058	₩ 144,370	₩ 4,223,403	₩ 7,968,693
At December 31, 2017									
Acquisition cost	₩ 1,330,201	₩ 339,503	₩ 1,067,523	₩ 4,017,714	₩ 14,177	₩ 607,402	₩ 1,016,437	₩ 4,223,403	₩ 12,616,360
Accumulated depreciation	-	(84,596)	(545,844)	(2,699,455)	(12,361)	(433,344)	(872,067)	-	(4,647,667)
Net book amount	₩ 1,330,201	₩ 254,907	₩ 521,679	₩ 1,318,259	₩ 1,816	₩ 174,058	₩ 144,370	₩ 4,223,403	₩ 7,968,693

(In millions of Korean won)	Land	Buildings	Structures	Machinery and equipment	Vehicles	Others	Catalysts	Construction-in -progress	Total
	2016								
At January 1, 2016									
Acquisition cost	₩ 1,254,614	₩ 255,819	₩ 916,002	₩ 3,589,497	₩ 13,422	₩ 362,159	₩ 875,820	₩ 1,541,711	₩ 8,809,044
Accumulated depreciation	-	(70,821)	(460,216)	(2,540,317)	(10,763)	(284,457)	(711,677)	-	(4,078,251)
Net book amount	₩ 1,254,614	₩ 184,998	₩ 455,786	₩ 1,049,180	₩ 2,659	₩ 77,702	₩ 164,143	₩ 1,541,711	₩ 4,730,793
Changes during 2016									
Beginning net book amount	₩ 1,254,614	₩ 184,998	₩ 455,786	₩ 1,049,180	₩ 2,659	₩ 77,702	₩ 164,143	₩ 1,541,711	₩ 4,730,793
Additions	-	67	202	-	343	14,278	65,011	1,197,725	1,277,626
Transfers	43,009	44,471	48,845	312,057	-	182,626	10,586	(651,964)	(10,370)
Disposals	(5,980)	(2,354)	(293)	-	-	(216)	-	-	(8,843)
Depreciation	-	(7,377)	(31,750)	(78,714)	(867)	(81,342)	(78,352)	-	(278,402)
Ending net book amount	₩ 1,291,643	₩ 219,805	₩ 472,790	₩ 1,282,523	₩ 2,135	₩ 193,048	₩ 161,388	₩ 2,087,472	₩ 5,710,804
At December 31, 2016									
Acquisition cost	₩ 1,291,643	₩ 296,144	₩ 964,012	₩ 3,901,553	₩ 13,694	₩ 551,226	₩ 951,417	₩ 2,087,472	₩ 10,057,161
Accumulated depreciation	-	(76,339)	(491,222)	(2,619,030)	(11,559)	(358,178)	(790,029)	-	(4,346,357)
Net book amount	₩ 1,291,643	₩ 219,805	₩ 472,790	₩ 1,282,523	₩ 2,135	₩ 193,048	₩ 161,388	₩ 2,087,472	₩ 5,710,804

Depreciation expense of ₩ 261,457 million (2016: ₩ 257,002 million) was charged to cost of sales, ₩ 20,690 million (2016: ₩ 19,133 million) to selling expenses and ₩ 3,218 million (2016: ₩ 2,267 million) to administrative expense.

As at December 31, 2017, a certain portion of property, plant and equipment is pledged as collateral for various borrowings and guarantees (Note 16).

During the year, the Group has capitalized borrowing costs amounting to ₩ 65,438 million (2016: ₩ 34,474 million) on property, plant and equipment that are qualifying assets. The capitalization rate of borrowings used to determine the amount of borrowing costs to be capitalized is 2.1% (2016: 1.93%) for general borrowings and 2.34% (2016: 2.45%) for specific borrowings.

As at December 31, 2017, construction in-progress consists of expenses related to facilities installation and land.

As at December 31, 2017, the Group entered into agreements with Samsung Fire & Marine Insurance Co., Ltd. and three other insurance companies in relation to plant construction. The insurance amount covered up to ₩ 2,520,000 million and USD 360 million are pledged as collaterals from Korea Development Bank and eight financial institutions.

15. Intangible Assets

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

(In millions of Korean won)	2017									
	Facility usage Rights		Others		Membership rights		Goodwill		Total	
At January 1, 2017										
Acquisition cost	₩	9,057	₩	78,268	₩	23,013	₩	-	₩	110,338
Accumulated amortization		(4,672)		(51,204)		-		-		(55,876)
Net book amount	₩	4,385	₩	27,064	₩	23,013	₩	-	₩	54,462
Changes during 2017										
Beginning net book amount	₩	4,385	₩	27,064	₩	23,013	₩	-	₩	54,462
Acquisition of subsidiary		-		917		-		57,080		57,997
Additions		-		639		1,129		-		1,768
Transfers		444		1,140		-		-		1,584
Decreases		-		(916)		(933)		-		(1,849)
Amortization		(477)		(8,330)		-		-		(8,807)
Ending net book amount	₩	4,352	₩	20,514	₩	23,209	₩	57,080	₩	105,155
At December 31, 2017										
Acquisition cost	₩	9,501	₩	80,400	₩	23,209	₩	57,080	₩	170,190
Accumulated amortization		(5,149)		(59,886)		-		-		(65,035)
Net book amount	₩	4,352	₩	20,514	₩	23,209	₩	57,080	₩	105,155

(In millions of Korean won)	2016							
	Facility usage Rights		Others		Membership rights		Total	
At January 1, 2016								
Acquisition cost	₩	8,113	₩	62,824	₩	23,838	₩	94,775
Accumulated amortization		(4,206)		(43,326)		-		(47,532)
Net book amount	₩	3,907	₩	19,498	₩	23,838	₩	47,243
Changes during 2016								
Beginning net book amount	₩	3,907	₩	19,498	₩	23,838	₩	47,243
Additions		-		6,018		2,866		8,884
Transfers		944		9,426		-		10,370
Disposals		-		-		(3,691)		(3,691)
Amortization		(466)		(7,878)		-		(8,344)
Ending net book amount	₩	4,385	₩	27,064	₩	23,013	₩	54,462
At December 31, 2016								
Acquisition cost	₩	9,057	₩	78,268	₩	23,013	₩	110,338
Accumulated amortization		(4,672)		(51,204)		-		(55,876)
Net book amount	₩	4,385	₩	27,064	₩	23,013	₩	54,462

Amortization expense of ₩ 1,814 million (2016: ₩ 2,033 million) is included in cost of sales, ₩ 538 million (2016: ₩ 642 million) in selling expenses and ₩ 6,455 million (2016: ₩ 5,669 million) in administrative expense.

Goodwill and membership impairment reviews are undertaken annually. As a result of the impairment test, the Group determined that the carrying value membership does not exceed the recoverable amount.

The Group recognized total research and development costs of ₩ 16,421 million (2016: ₩ 16,159 million) as expenses.

16. Assets Pledged as Collateral

As at December 31, 2017, assets pledged as collateral are as follows:

(In millions of Korean won and millions of other foreign currencies)

Pledged Assets as Collateral	Secured Amount	Creditors	Related Borrowings/ Guarantees	Balance of Borrowings
Land, Buildings, BTX and others	₩ 19,350 USD 144 FFR 155 JPY 11,781	Korea Development Bank	Usance Borrowings and others	₩ 407,066 (USD 380)
Construction-in-progress (Land)	₩ 75,168	Korea Development Bank	Loans for facility	₩ 72,321
Construction-in-progress (Land) [1]	₩ 2,520,000	Korea Development Bank and others	Loans for facility	₩ 740,705
Time deposits	₩ 25,000	Defense Acquisition Program Administration	Contractual Guarantee	-
Time deposits	₩ 5,000	Korea Industrial Complex Corporation	Contractual Guarantee	-
		Total (Including USD 379,938,214)		₩ 1,220,092

[1] The construction-in-progress (Land) has been pledged as collateral for stand-by credit line agreements with Korea Development Bank and seven other financial institutions of up to ₩ 300,000 million and agreements with Korea Development Bank and eight other financial institutions in relation to industry facilities fund of up to ₩ 1,500,000 million, and the outstanding amount is ₩ 740,705 million as at December 31, 2017.

17. Trade Payables, Other Payables and Other Liabilities

Trade payables and other payables as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017 Current	2017 Non-current	2016 Current	2016 Non-current
Trade payables	₩ 1,733,325	₩ -	₩ 1,140,725	₩ -
Other payables				
Non-trade payables	1,016,430	-	1,011,412	-
Accrued expenses	17,241	-	11,418	-
Dividend payables	85	-	81	-
Leasehold deposit received	-	32,204	-	27,036
	1,033,756	32,204	1,022,911	27,036
Total	₩ 2,767,081	₩ 32,204	₩ 2,163,636	₩ 27,036

Other liabilities as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017 Current	2017 Non-current	2016 Current	2016 Non-current
Advances from customers	₩ 106,985	₩ -	₩ 89,475	₩ -
Withholdings	9,288	-	5,430	-
Total	₩ 116,273	₩ -	₩ 94,905	₩ -

18. Borrowings

Details of borrowings as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017	2016
Current		
Short-term borrowings	₩ -	₩ 60,425
Banker's usance	1,355,350	1,728,183
Current maturities of debentures	-	349,862
Current maturities of long-term borrowings	14,183	7,406
	1,369,533	2,145,876
Non-current		
Debentures	2,670,275	1,971,165
Long-term borrowings	804,402	592,420
	3,474,677	2,563,585
Total	₩ 4,844,210	₩ 4,709,461

Details of carrying amount of borrowings as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	Creditor	Maturity date	Interest rates (%) Dec. 31, 2017	2017	2016
Short-term borrowings					
Short-term borrowings	KEB Hana Bank	-	1.25	₩ -	₩ 60,425
Banker's usance	Korea Development Bank and others	Jan. 16, 2018 and others	1.66 - 1.93	1,355,350	1,728,183
				1,355,350	1,788,608
Current maturities of long-term borrowings					
Loans for facilities from energy usage rationalization fund	KEB Hana Bank	Mar. 15, 2018 and others	1.75	2,826	4,085
Loans for environment	KEB Hana Bank	April 2, 2018	1.95	643	643

improvement supporting fund					
Loans for industry facilities fund	Korea Development Bank	Jan. 31, 2018	2.02 - 2.12	10,714	2,678
				14,183	7,406
Long-term borrowings					
Loans for facilities from energy usage rationalization fund	KEB Hana Bank	Mar. 15, 2020 and others	1.75	1,929	4,755
Loans for environment improvement supporting fund	KEB Hana Bank	Mar. 31, 2019	1.95	161	804
Loans for industry facilities fund	Korea Development Bank	July 31, 2024	2.02 - 2.12	61,607	72,321
Loans for industry facilities fund	Korea Development Bank and others	Dec. 30, 2025	2.91	740,705	514,540
				804,402	592,420
Total				₩ 2,173,935	₩ 2,388,434

Details of carrying amount of debentures as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	**Issuance date**	**Maturity Date**	**Interest Rates (%) Dec. 31, 2017**	**2017**	**2016**
Public bonds (45-1)	Aug. 28, 2012	Aug. 28, 2017	3.180	₩ -	₩ 350,000
Public bonds (45-2)	Aug. 28, 2012	Aug. 28, 2019	3.330	100,000	100,000
Public bonds (45-3)	Aug. 28, 2012	Aug. 28, 2022	3.530	50,000	50,000
Public bonds (46-1)	Jun. 26, 2014	Jun. 26, 2019	3.092	180,000	180,000
Public bonds (46-2)	Jun. 26, 2014	Jun. 26, 2021	3.234	110,000	110,000
Public bonds (46-3)	Jun. 26, 2014	Jun. 26, 2024	3.468	70,000	70,000
Public bonds (47-1)	Nov. 27, 2014	Nov. 27, 2019	2.471	155,000	155,000
Public bonds (47-2)	Nov. 27, 2014	Nov. 27, 2021	2.706	80,000	80,000
Public bonds (47-3)	Nov. 27, 2014	Nov. 27, 2024	2.990	130,000	130,000
Public bonds (48-1)	Oct. 29, 2015	Oct. 29, 2020	2.297	230,000	230,000
Public bonds (48-2)	Oct. 29, 2015	Oct. 29, 2022	2.391	70,000	70,000
Public bonds (48-3)	Oct. 29, 2015	Oct. 29, 2025	2.657	100,000	100,000
Public bonds (49-1)	Apr. 18, 2016	Apr. 18, 2021	1.930	230,000	230,000
Public bonds (49-2)	Apr. 18, 2016	Apr. 18, 2023	2.101	60,000	60,000
Public bonds (49-3)	Apr. 18, 2016	Apr. 18, 2026	2.225	60,000	60,000
Public bonds (50-1)	Sep. 02, 2016	Sep. 02, 2021	1.646	210,000	210,000
Public bonds (50-2)	Sep. 02, 2016	Sep. 02, 2023	1.722	80,000	80,000
Public bonds (50-3)	Sep. 02, 2016	Sep. 02, 2026	1.932	60,000	60,000
Public bonds (51-1)	Feb. 22, 2017	Feb. 22, 2022	2.197	230,000	-
Public bonds (51-2)	Feb. 22, 2017	Feb. 22, 2024	2.438	110,000	-
Public bonds (51-3)	Feb. 22, 2017	Feb. 22, 2027	2.559	60,000	-
Public bonds (52-1)	Sep. 19, 2017	Sep. 19, 2020	2.046	130,000	-
Public bonds (52-2)	Sep. 19, 2017	Sep. 19, 2022	2.317	110,000	-
Public bonds (52-3)	Sep. 19, 2017	Sep. 19, 2024	2.531	60,000	-
Less: Present value discount				(4,725)	(3,973)
Sub total				2,670,275	2,321,027
Less: Current maturities				-	(349,862)
Total				₩ 2,670,275	₩ 1,971,165

As at December 31, 2017 and 2016, a certain portion of property, plant and equipment and etc. is pledged as collateral for various borrowings (Note 16).

19. Provisions and Deferred revenues

Details and changes in provisions for other liabilities and charges for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	Environmental Restoration		Others		Total	
	2017	**2016**	**2017**	**2016**	**2017**	**2016**
Beginning balance	₩ 1,803	₩ 3,222	₩ -	₩ 1,456	₩ 1,803	₩ 4,678
Additional provision	3,745	4,320	8,173	7,591	11,918	11,911
Used during year	(3,751)	(5,739)	(8,173)	(9,047)	(11,924)	(14,786)
Ending balance	₩ 1,797	₩ 1,803	₩ -	₩ -	₩ 1,797	₩ 1,803

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

(In millions of Korean won)	**2017**	**2016**
Beginning balance	₩ 27,433	₩ 28,016
Additions	7,154	19,624
Used during year	(9,650)	(20,207)
Ending balance	₩ 24,937	₩ 27,433

Deferred revenue arises from customer loyalty program, and is adjusted from revenue.

20. Net Defined Benefit Assets/Liabilities

The majority of the plans are final salary pension plans, which provide benefit to employees in the form of a guaranteed level of pension payable for life. The level of benefits provided depends on employees' length of severance and their salary in the final years leading up to retirement. The majority of benefit payments are from trustee administered funds; however, there are also a number of unfunded plans. Plan assets held in trusts are governed by local regulations and practice in each country.

Details of net defined benefit liabilities recognized in the consolidated statements of financial position as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		**2017**		**2016**
Present value of funded defined benefit obligations	₩	312,834	₩	290,173
Fair value of plan assets [1]		(378,631)		(318,307)
Net defined benefit liabilities (Assets)	₩	(65,797)	₩	(28,134)

[1] The contributions to the National Pension Fund of ₩ 502 million are included in the fair value of plan assets as at December 31, 2017 (2016: ₩ 524 million).

Movements in the defined benefit obligations for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		**2017**		**2016**
Beginning balance	₩	290,173	₩	268,444
Acquisition of subsidiary		875		-
Current service cost		36,367		33,942
Interest expense		10,026		9,022
Remeasurements :				
Actuarial loss (gain) arising from change in financial assumptions		(9,092)		1,346
Actuarial loss (gain) from experience adjustments		(6,191)		(14,212)
Benefits payments		(9,324)		(8,369)
Ending Balance	₩	312,834	₩	290,173

Movements in the fair value of plan assets for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)		**2017**		**2016**
Beginning balance	₩	318,307	₩	263,921
Acquisition of subsidiary		835		-
Interest income		10,470		8,393
Remeasurements :				
Return on plan assets		(6,271)		(4,196)
Contributions		64,000		59,000
Benefits payments		(8,710)		(8,811)
Ending balance	₩	378,631	₩	318,307

Plan assets as at December 31, 2017 and 2016, consist of financial assets including deposits.

The significant actuarial assumptions as at December 31, 2017 and 2016, are as follows:

	2017	2016
Discount rate	3.80%	3.50%
Salary growth rate	5.49%	5.49%

The sensitivity of the defined benefit obligation to changes in the principal assumptions is:

	Changes in assumption	Impact on defined benefit obligations	
		December 31, 2017	December, 31 2016
Salary growth rate	One percent increase	9.98% increase	10.48% increase
	One percent decrease	8.75% decrease	11.06% decrease
Discount rate	One percent increase	8.81% decrease	9.27% decrease
	One percent decrease	10.26% increase	10.81% increase

The above sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. The sensitivity of the defined benefit obligation to changes in principal actuarial assumptions is calculated using the projected unit credit method, the same method applied when calculating the defined benefit obligations recognized on the consolidated statement of financial position. The methods and types of assumptions used in preparing the sensitivity analysis did not change compared to the prior period.

The Group reviews the funding level on an annual basis and has a policy of eliminating deficit from the fund.

The weighted average duration of the defined benefit obligation is 9.54 years and expected contributions to post-employment benefit plans for the year ending December 31, 2018 are ₩ 53,262 million.

The expense, etc. recognized in the current period in relation to defined contribution plan was ₩ 9,521 million (2016: ₩ 8,355 million).

21. Contingencies

As at December 31, 2017, the Group has overdraft agreements of up to ₩ 23,000 million with Shinhan Bank and one other bank, and general loan agreements of up to ₩ 14,750 million and USD 432 million with Shinhan Bank and two other banks.

As at December 31, 2017, the Group has banker's usance agreements and imported credit agreements of up to a maximum of USD 4,320 million with Korea Development Bank and 17 other banks.

As at December 31, 2017, Shinhan Bank has provided guarantees up to ₩ 30,000 million for the Group's obligation for repayment of remaining bonus points.

As at December 31, 2017, KEB Hana Bank has provided guarantees up to ₩ 4,000 million for the restoration responsibilities of Onsan National Industrial Complex.

As at December 31, 2017, Shinhan Bank has provided guarantees up to ₩ 330 million for the Group's payment of temporary electricity charge for project construction.

As at December 31, 2017, the Group offered one blank check to Korea National Oil Corporation ("KNOC") as payment guarantee.

As at December 31, 2017, the balance of trade receivables that are not past due amounts to USD 214 million (2016: USD 88 million). As at December 31, 2017, the Group transferred the trade receivables to Shinhan Bank and five other financial institutions and derecognized the transferred receivables as all the risks and rewards are substantially transferred (Note 8).

As at December 31, 2017, the Group has Stand-by credit line agreements, etc. with Korea Development Bank and eight other financial institutions for up to ₩ 500,000 million and USD 290 million.

As at December 31, 2017, the Group has agreements with Korea Development Bank and eight other financial institutions in relation to industry facilities fund of up to ₩ 1,500,000 million, and the outstanding amount is ₩ 740,705 million.

As at December 31, 2017, the Group entered into agreements with Samsung Fire & Marine Insurance Co., Ltd. and three other insurance companies in relation to plant construction. The insurance amount covered up to ₩ 2,520,000 million and USD 360 million are pledged as collaterals from Korea Development Bank and eight financial institutions.

As at December 31, 2017, the Group has been provided performance guarantee and others amounting to ₩ 6,987 million by Seoul Guarantee Insurance.

As at December 31, 2017, the Group's construction in-progress consists of expenses related to facilities installation and others. The Group entered into contractual commitments for the acquisition related to construction contract for some of those facilities. The estimated amount of expenditure on facilities installation is ₩ 1.5 trillion, which is subject to change depending on the progress of the construction.

As at December 31, 2017, there is no significant pending lawsuit.

22. Share Capital and Share Premium

Share capital and share premium as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won, except number of shares)	**Number of shares (Ordinary share)**	**Number of shares (Preferred share)**	**Share capital (Ordinary share)**	**Share capital (Preferred share)**	**Share premium**	**Total**
December 31, 2016	112,582,792	4,021,927	₩281,457	₩ 10,055	₩ 379,190	₩ 670,702
December 31, 2017	112,582,792	4,021,927	₩281,457	₩ 10,055	₩ 379,190	₩ 670,702

Under its Articles of Incorporation, the Company is authorized to issue 60 million cumulative, participating preferred shares that are non-voting and entitled to a minimum cash dividend at 9% of par value. As all of the preferred share as at December 31, 2017, was issued before March 27, 1998, it receives 1% more dividends over ordinary share under the Articles of Incorporation.

The Company is authorized to issue non-voting convertible share up to 4 million shares. Each share of this non-voting convertible share was converted to one ordinary share. As at December 31, 2017, there is no outstanding convertible share issued by the Company.

The Company may grant options to purchase the Company's ordinary share to key employees or directors. The grant limit of the options is 15% of outstanding shares and the options may be granted with the special resolution of the shareholders. As at December 31, 2017, no option has been granted.

The Company is authorized to issue 180,000,000 ordinary shares with a par value of ₩2,500 per share and 112,582,792 ordinary shares are issued. The Company is authorized to issue 60,000,000 preferred shares with par value of ₩2,500 per share and 4,021,927 preferred shares are issued.

23. Treasury Share

As at December 31, 2017, the Company holds 184,080 treasury share of preferred shares amounting to ₩ 1,876 million and is deducted from shareholders' equity. The Company intends to dispose of the treasury share depending on the market conditions.

24. Retained Earnings

Retained earnings as at December 31, 2017 and 2016, consist of:

(In millions of Korean won)	2017	2016
Legal reserve		
Earned surplus reserve[1]	₩ 145,756	₩ 145,756
Discretionary reserve		
Reserve for improvement of financial structure	55,700	55,700
Reserve for business rationalization	103,145	103,145
Reserve for market development	2,786,098	2,294,198
	2,944,943	2,453,043
Revaluation reserve	984,648	984,648
Retained earnings before appropriation	1,122,785	1,161,959
	₩ 5,198,132	₩ 4,745,406

[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 annual cash dividends paid, until such reserve equals 50% of its issued share capital. As the Company's reserve exceeds 50% of its issued share capital, additional reserve is unnecessary. The reserve is not available for cash dividends payment, but may be transferred to share capital or used to reduce accumulated deficit.

Year-end cash dividends for 2016 amounting to ₩ 641,722 million for ordinary share and ₩ 21,972 million for preferred share were paid out in April 2017 (Dividends paid in 2016: ₩ 146,358 million for ordinary share and ₩5,085 for preferred share).

In accordance with the Articles of Incorporation on August 10, 2017, the Board of Directors declared interim cash dividends of ₩ 1,200 per share with dividend date on June 30, 2017.

(In millions of Korean won, except number of shares)

	Number of shares	Amount	Dividend rate	Cash Dividends
Ordinary share	112,582,792	₩ 281,457	48%	₩ 135,099
Preferred share[1]	3,837,847	9,595	48%	4,606
	116,420,639	₩ 291,052		₩ 139,705

[1] The number of treasury share are excluded from the number of shares issued.

Year-end cash dividends for 2017 are ₩ 4,700 per ordinary share and ₩ 4,725 per preferred share, and total cash dividends amounting to ₩ 529,139 million for ordinary share and ₩ 18,134 million for preferred share will be proposed to shareholders' meeting on March 23, 2018. These dividends payables were not recognized in the financial statement as at December 31, 2017.

25. Reserves

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

(In millions of Korean won)		Gains on disposal of treasury share		Gains(losses) on valuation of available-for- sale financial assets		Share of other comprehensive income of joint venture and associate		Unrealized translation gains (losses) on foreign operation		Cash flow hedge		Total
Balance at January 1, 2017	₩	952,311	₩	16,792	₩	3	₩	8,247	₩	-	₩	977,353
Available-for-sale financial Assets		-		(307)		-		-		-		(307)
Currency translation difference		-		-		-		(113)		-		(113)
Share of other comprehensive income in joint venture and associate		-		-		(37)		-		-		(37)
Cash flow hedge		-		-		-		-		(1,234)		(1,234)
Balance at December 31, 2017	₩	952,311	₩	16,485	₩	(34)	₩	8,134	₩	(1,234)	₩	975,662
Balance at January 1, 2016	₩	952,311	₩	17,438	₩	3	₩	8,216	₩	-	₩	977,968
Available-for-sale financial Assets		-		(646)		-		-		-		(646)
Currency translation difference		-		-		-		31		-		31
Balance at December 31, 2016	₩	952,311	₩	16,792	₩	3	₩	8,247	₩	-	₩	977,353

26. Cost of Sales

Cost of sales for the years ended December 31, 2017 and 2016, consists of:

(In millions of Korean won)		2017		2016
Beginning balance of merchandise and finished goods	₩	502,142	₩	333,667
Purchases of merchandise		1,458,212		959,851
Manufacturing cost for the period		19,058,149		14,612,822
Transfer from other accounts		2,241		21,594
Transfer to other accounts		(972,165)		(758,678)
Ending balance of merchandise and finished goods		(558,279)		(502,142)
Adjustments		(707,159)		(646,222)
Total	₩	18,783,141	₩	14,020,892

27. Selling and Administrative Expenses

Selling and administrative expenses for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	Selling expenses		Administrative expenses	
	2017	**2016**	**2017**	**2016**
Salaries	₩ 64,690	₩ 58,367	₩ 30,197	₩ 30,984
Post-employment Benefits	10,164	9,338	4,822	4,933
Employee Benefits	49,856	41,840	22,637	19,950
Training Expenses	82	69	2,311	2,256
Travel Expenses	3,482	2,715	974	1,177
Miscellaneous Administrative Expenses	805	815	423	447
Communication Expenses	1,742	1,742	1,553	1,421
Vehicles Maintenance Expenses	466	445	352	344
Utility Expenses	1,240	1,082	1,186	862
Rental Expenses	9,055	8,408	2,481	2,383
Service expenses for oil storages	29,843	26,755	-	-
Service Fees	11,759	12,336	4,456	2,657
Entertainment Expenses	1,255	1,209	900	1,728
Export Expenses	187,380	176,008	-	-
Repairs and Maintenance Expenses	5,308	6,033	4,563	4,076
Supplies Expenses	301	76	7	3
Chemicals Expenses	377	285	-	-
Outsourcing Fees	15,980	11,303	13,107	12,219
Promotional and Advertising Expenses	26,832	25,554	7,748	7,195
Freight Expenses	170,605	163,882	25	-
Insurance Premium	2,979	3,059	146	112
Taxes and Dues	5,201	5,040	5,761	5,544
Depreciation Expenses	20,690	19,133	3,218	2,267
Amortization Expenses	538	642	6,455	5,669
Impairment loss (Reversal of provision for impairment)	(155)	243	(19)	-
Others	269	266	921	1,190
Total	₩ 620,744	₩ 576,645	₩ 114,224	₩ 107,417

28. Other Income and Expenses

Other income and expenses for the years ended December 31, 2017 and 2016, are as follows:

Other income

(In millions of Korean won)		2017		2016
Gains from disposal of property, plant and equipment	₩	773	₩	1,476
Dividend income		1,197		798
Others		21,268		81,287
Gains on foreign currency transactions		265,939		289,195
Gains on foreign currency translation		24,926		15,216
Gains on derivative transactions		38,670		96,369
Gains on valuation of derivatives		24,312		2,078
Total	₩	377,085	₩	486,419

Other expenses

(In millions of Korean won)		2017		2016
Losses on disposal of property, plant and equipment	₩	1,324	₩	3,197
Donations		14,140		22,787
Others		11,938		5,140
Losses on foreign currency transactions		241,253		291,598
Losses on foreign currency translation		17,246		21,983
Losses on derivative transactions		22,466		79,459
Losses on valuation of derivatives		5,643		50,873
Total	₩	314,010	₩	475,037

29. Finance Income and Costs

Finance income and costs for the years ended December 31, 2017 and 2016, consist of the following:

Finance income

(In millions of Korean won)		2017		2016
Interest income	₩	52,403	₩	54,520
Gains on foreign currency transactions		205,210		130,486
Gains on foreign currency translation		72,670		-
Total	₩	330,283	₩	185,006

Finance costs

(In millions of Korean won)		2017		2016
Interest expenses[1]	₩	58,254	₩	56,306
Losses on foreign currency transactions		68,585		96,465
Losses on foreign currency translation		45		92,059
Total	₩	126,884	₩	244,830

[1] Interest expenses exclude capitalized borrowing costs on qualifying assets (Note 14).

30. Tax Expense and Deferred Tax

Income tax expense for the years ended December 31, 2017 and 2016, consists of:

(in millions Korean won)		**2017**		**2016**
Current tax				
Current tax on profit for the period	₩	363,353	₩	375,510
Adjustments in respect of prior years		(10,560)		178
Total current tax		352,793		375,688
Deferred tax				
Origination and reversal of temporary differences		45,587		(5,956)
Income tax expense	₩	398,380	₩	369,732

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

(In millions of Korean won)		**2017**		**2016**
Profit before income tax	₩	1,644,869	₩	1,575,096
Tax at domestic tax rates applicable to profits in the respective countries	₩	398,550	₩	380,712
Income not subject to tax		(934)		(1,448)
Expenses not deductible for tax purposes		5,148		3,999
Adjustments in respect of prior years		(10,560)		178
Tax credit and others		(17,739)		(13,707)
Subsidiaries' results reported net of tax		(778)		-
Associates' results reported net of tax		(1)		(2)
Re-measurement of deferred tax – change in the Korean tax rate		24,694		-
Income tax expense	₩	398,380	₩	369,732

The weighted average applicable tax rate of the Group was 24.23% (2016: 24.17%).

The tax effect relating to components of other comprehensive income (expenses) for the years ended December 31, 2017 and 2016, is as follows:

(in millions Korean won)	2017		
	Before Tax	**Tax effect**	**After tax**
Gains(losses) on valuation of available-for-sale financial assets	₩ 584	₩ (892)	₩ (308)
Share of other comprehensive income of joint venture and associate	(50)	13	(37)
Currency translation differences	(154)	41	(113)
Cash flow hedge	(1,702)	468	(1,234)
Remeasurements of net defined benefit liabilities	9,012	624	9,636
Total	₩ 7,690	₩ 254	₩ 7,944

(in millions Korean won)	2016		
	Before Tax	**Tax effect**	**After tax**
Gains(losses) on valuation of available-for-sale financial assets	₩ (852)	₩ 206	₩ (646)
Currency translation differences	42	(11)	31
Remeasurements of net defined benefit liabilities	8,670	(2,098)	6,572
Total	₩ 7,860	₩ (1,903)	₩ 5,957

The analysis of deferred tax assets and liabilities as at December 31, 2017 and 2016, is as follows:

(In millions of Korean won)	**2017**	**2016**
Deferred tax assets		
Deferred tax asset to be recovered after more than 12 months	₩ 33,320	₩ 31,953
Deferred tax asset to be recovered within 12 months	45,315	45,664
	78,635	77,617
Deferred tax liabilities		
Deferred tax liability to be recovered after more than 12 months	(232,649)	(201,477)
Deferred tax liability to be recovered within 12 months	(39,520)	(20,180)
	(272,169)	(221,657)
Deferred tax liabilities, net	₩ (193,534)	₩ (144,040)

The movements on the deferred income tax for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	**2017**	**2016**
Beginning balance	₩ (144,040)	₩ (148,093)
Acquisition of subsidiary	(4,161)	-
Deferred income tax charged to income	(45,587)	5,956
Deferred income tax charged to equity	254	(1,903)
Ending balance	₩ (193,534)	₩ (144,040)

The movements in deferred tax assets and liabilities for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	2017				
	Beginning Balance	**Acquisition of subsidiary**	**Statement of Profit or loss**	**Other comprehensive income**	**Ending Balance**
Depreciation	₩ 7,198	₩ -	₩ (1,177)	₩ -	₩ 6,021
Losses on impairment of investments	446	-	61	-	507
Salaries and wages payable	19,331	-	5,213	-	24,544
Bonus card point and etc.	7,403	-	294	-	7,697
Subsidiary and joint ventures	(1,378)	(4,161)	516	-	(5,023)
Gains (losses) on valuation of derivative instruments	8,039	-	(6,492)	-	1,547
Losses on impairment of property, plant and equipment	1,347	-	171	-	1,518
Customs duties receivable	(8,761)	-	(3,558)	-	(12,319)
Accrued interest income	(4,196)	-	2,285	-	(1,911)
Net defined benefit liabilities	(7,271)	-	(7,464)	-	(14,735)
Employee benefits	6,809	-	1,188	-	7,997
Revaluation of lands	(189,521)	-	(25,663)	-	(215,184)
Others	1,689	-	(10,961)	-	(9,272)
Gains(losses) on valuation of available-for-sale financial assets	(5,362)	-	-	(892)	(6,254)
Currency translation differences and share of other comprehensive income of associate and joint venture	(2,563)	-	-	54	(2,509)
Cash flow hedge	-	-	-	468	468
Remeasurements of net defined benefit liabilities	22,750	-	-	624	23,374
Total	₩ (144,040)	₩ (4,161)	₩ (45,587)	₩ 254	₩ (193,534)

(In millions of Korean won)	2016			
	Beginning Balance	**Statement of Profit or loss**	**Other comprehensive income**	**Ending Balance**
Depreciation	₩ 9,581	₩ (2,383)	₩ -	₩ 7,198
Losses on impairment of investments	446	-	-	446
Salaries and wages payable	14,449	4,882	-	19,331
Bonus card point and etc.	8,266	(863)	-	7,403
Subsidiary and joint ventures	(1,930)	552	-	(1,378)
Gains (losses) on valuation of derivative instruments	(3,393)	11,432	-	8,039
Losses on impairment of property, plant and equipment	1,395	(48)	-	1,347
Customs duties receivable	(8,229)	(532)	-	(8,761)
Accrued interest income	(1,655)	(2,541)	-	(4,196)
Net defined benefit liabilities	(2,585)	(4,686)	-	(7,271)
Employee benefits	6,356	453	-	6,809
Revaluation of lands	(189,579)	58	-	(189,521)
Others	2,057	(368)	-	1,689
Gains(losses) on valuation of available-for-sale financial assets	(5,568)	-	206	(5,362)
Currency translation differences and share of other comprehensive income of associate and joint venture	(2,552)	-	(11)	(2,563)
Remeasurements of net defined benefit liabilities	24,848	-	(2,098)	22,750
Total	₩ (148,093)	₩ 5,956	₩ (1,903)	₩ (144,040)

31. Breakdown of Expenses by Nature

Expenses by nature for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	**2017**	**2016**
Raw materials and merchandises used	₩ 16,923,742	₩ 12,488,826
Changes in inventories of finished goods, work in-progress and merchandise	(59,514)	(186,937)
Employee benefit expense	335,913	310,921
Utility expenses	1,133,467	973,994
Depreciation and amortization	294,172	286,746
Freight expenses	170,630	163,881
Advertising costs	20,332	18,060
Other expenses	699,367	649,463
Total cost of sales, selling and administrative expenses	₩ 19,518,109	₩ 14,704,954

32. Earnings per Share

Basic earnings per ordinary share is calculated by dividing the profit attributable to ordinary shareholders of the Group by the weighted average number of ordinary shares during the financial year. As the Group's preferred shares are participating shares with right to participate in distribution of earnings, earnings per share on preferred share is also calculated.

Basic earnings per ordinary share for the years ended December 31, 2017 and 2016, is calculated as follows:

(In millions of Korean won, except per share data and number of shares)		2017		2016
Profit for the period	₩	1,246,489	₩	1,205,364
Adjustments:				
Dividends for preferred share		(96)		(96)
Additional dividends for preferred share		(41,088)		(39,732)
Profit attributable to ordinary share shareholders		1,205,305		1,165,536
Weighted average number of shares of ordinary share		112,582,792		112,582,792
Basic earnings per ordinary share	₩	10,706	₩	10,353

Basic earnings per preferred share for the years ended December 31, 2017 and 2016, is calculated as follows:

(In millions of Korean won, except per share data and number of shares)		2017		2016
Profit attributable to preferred share shareholders	₩	41,184	₩	39,828
Weighted average number of shares of preferred share [1]		3,837,847		3,837,847
Basic earnings per preferred share	₩	10,731	₩	10,378

[1] The 184,080 treasury share are excluded in calculating weighted average number of shares of preferred share.

As there are no dilutive items outstanding, diluted earnings per share is identical to basic earnings per share.

33. Related Party Transactions

Details of related parties as at December 31, 2017 and 2016, are as follows:

	2017	2016
Ultimate parent company	Saudi Arabian Oil Company[1]	Saudi Arabian Oil Company[1]
Parent company	Aramco Overseas Co., B.V.	Aramco Overseas Co., B.V.
Joint venture	S-OIL TOTAL Lubricants Co., Ltd.	S-OIL TOTAL Lubricants Co., Ltd.
Associate	Korea Oil Terminal Co., Ltd.	Korea Oil Terminal Co., Ltd.
Other related parties who have transactions with the Group	Saudi Aramco Products Trading Company[2] Aramco Asia Japan K.K. [2]	Saudi Aramco Products Trading Company[2] -

[1] The ultimate parent of Aramco Overseas Co., B.V.

[2] Subsidiary of Saudi Arabian Oil Company

Significant transactions with related parties for the years ended December 31, 2017 and 2016, and the related receivables and payables as at December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	Sales		Purchases	
	2017	**2016**	**2017**	**2016**
Ultimate parent company				
Saudi Arabian Oil Company[1]	₩ -	₩ -	₩ 13,714,906	₩ 10,350,775
Joint venture				
S-OIL TOTAL Lubricants Co., Ltd.	89,865	82,212	30,617	21,341
Other related parties				
Saudi Aramco Products Trading Company	1,884,412	1,690,496	807,185	660,179
Aramco Asia Japan K.K.	4	-	-	-
Total	₩ 1,974,281	₩ 1,772,708	₩ 14,552,708	₩ 11,032,295

(In millions of Korean won)	Receivables		Payables	
	2017	**2016**	**2017**	**2016**
Ultimate parent company				
Saudi Arabian Oil Company[1]	₩ -	₩ -	₩ 1,384,762	₩ 830,729
Joint venture				
S-OIL TOTAL Lubricants Co., Ltd.	2,428	2,098	502	2,021
Other related parties				
Saudi Aramco Products Trading Company	114,495	96,579	95,881	31,822
Aramco Asia Japan K.K.	-	-	-	-
Total	₩ 116,923	₩ 98,677	₩ 1,481,145	₩ 864,572

[1] The Group is under a long-term purchasing agreement with Saudi Arabian Oil Company in relation with crude oil purchase as at December 31, 2017.

Financial transactions with related parties for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	**Equity contribution in cash**		**Dividends received**		**Dividends paid**	
	2017	**2016**	**2017**	**2016**	**2017**	**2016**
Parent company						
Aramco Overseas Co., B.V.	₩ -	₩ -	₩ -	₩ -	₩ 495,008	₩ 129,139
Joint venture						
S-OIL TOTAL Lubricants Co., Ltd.	-	-	6,125	8,925	-	-
Associate						
Korea Oil Terminal Co., Ltd.	103	138	-	-	-	-
Total	₩ 103	₩ 138	₩ 6,125	₩ 8,925	₩ 495,008	₩ 129,139

The compensation to key management for employee services for the years ended December 31, 2017 and 2016, consists of:

(In millions of Korean won)	**2017**	**2016**
Short-term employee benefits	₩ 1,848	₩ 1,482
Post-employment benefits	198	162
Total	₩ 2,046	₩ 1,644

Key management consists of registered executive officers who have the authority and responsibility in the planning, directing and control over the Group’s operations.

34. Cash Generated From Operations

Cash generated from operations for the years ended December 31, 2017 and 2016, is as follows:

(In millions of Korean won)	**2017**	**2016**
Profit for the period	₩ 1,246,489	₩ 1,205,364
Adjustments :		
Income tax expense	398,380	369,732
Depreciation expense	285,365	278,402
Amortization expense	8,807	8,344
Post-employment benefits	35,923	34,571
(Reversal of provision for) Impairment loss on receivables	(174)	243
Interest expense	58,254	56,306
Losses on foreign currency translation	17,291	114,043
Losses on derivative transactions	22,466	79,459
Losses on valuation of derivatives	5,643	50,873
Losses on disposal of property, plant and equipment	1,324	3,197
(Reversal of) Losses on valuation of inventories	1,372	(125,871)
Share of profit of joint venture	(5,259)	(6,892)
Share of loss of associate	129	243
Interest income	(52,403)	(54,520)
Gains on foreign currency translation	(97,596)	(15,216)
Gains on disposal of property, plant and equipment	(773)	(1,476)
Gains on derivative transactions	(38,670)	(96,369)
Gains on valuation of derivatives	(24,312)	(2,078)
Dividend income	(1,197)	(798)
Others	4,888	2,271
Changes in net working capital :		
Trade receivables	(400,596)	(109,915)
Other receivables	(51,860)	80,735
Other current assets	162	2,213
Inventories	(368,673)	(698,859)
Trade payables	615,999	530,135
Other payables	15,509	57,590
Other liabilities	20,242	11,880
Net defined benefit liabilities	(64,614)	(58,559)
Provisions for other liabilities and charges	(6)	(2,875)
Deferred revenues	(2,496)	(581)
Cash generated from operations	₩ 1,629,614	₩ 1,711,592

Significant transactions not affecting cash flows for the years ended December 31, 2017 and 2016, are as follows:

(In millions of Korean won)	**2017**	**2016**
Reclassification of construction in-progress to property, plant and equipment and intangible assets	₩ 248,035	₩ 651,964
Current portion of long-term borrowings and debentures	6,777	357,268
Current portion of long-term loans receivable	11,241	14,407
Increase in other payables related to acquisition of property, plant and equipment	9,383	48,223
Reclassification of long-term advance payments to property, plant and equipment	820	128,606
Reclassification of long-term prepaid expenses to property, plant and equipment	2,743	2,750
Reclassification of long-term advance payments to purchase consideration in the business combination	11,432	-

Changes in liabilities arising from financing activities for the period ended December 31, 2017, are as follows:

(In millions of Korean won)

	Beginning balance	Cash flows from financing activities	Changes in non-cash transaction: Current portion	Changes in non-cash transaction: Transfer in	Changes in non-cash transaction: Changes in foreign exchange rates	Ending balance
Short-term borrowings and banker's usance	₩ 1,788,608	₩ (360,588)	₩ -	₩ -	₩ (72,670)	₩ 1,355,350
Current maturities of debentures	349,862	(350,000)	-	138	-	-
Current maturities of long-term borrowings	7,406	-	6,777	-	-	14,183
Debentures	1,971,165	698,125	-	985	-	2,670,275
Long-term borrowings	592,420	217,594	(6,777)	1,165	-	804,402
	₩ 4,709,461	₩ 205,131	₩ -	₩ 2,288	₩ (72,670)	₩ 4,844,210

35. Greenhouse Gas Emission Permits and Obligations

Quantity of emission permits for the 1st plan period (2015–2017) as at December 31, 2017, is as follows:

(In thousandtCO2-eq)	Emission Permits[1]
2015	5,506
2016	5,544
2017	6,034
	17,084

[1]The quantity is estimated based on carry-forwards from the prior period, withdrawal by government, additional allocation, and credits for early reductions.

Changes in quantity of emission permits for the years ended December 31, 2017 and 2016, are as follows:

(In thousands of tCO2-eq)	**2017**	**2016**
Beginning balance	44	322
Allocation	6,034	5,544
Emission[1]	(5,567)	(5,822)
Ending balance	511	44

[1] This is the best estimate as at December 31, 2017 and subject to change with submission to government.

Greenhouse gas emissions obligations for the year ended December 31, 2017, is measured at zero and there are no emission permits pledged as collateral.

36. Business Combination

During 2017, the Group acquired 100% of the issued share capital of North East Chemicals Co., Ltd., engaged in warehousing and handling of liquid chemicals, for ₩ 132,708 million. The goodwill of ₩ 57,080 million arising from the acquisition is attributable to economic effects expected from combining the operations of the Group and North East Chemicals Co., Ltd. and the acquired customer relationships.

Details of the purchase consideration, the assets and liabilities recognized as a result of the acquisition, and fair value of the non-controlling interest at the acquisition date are as follows:

(in millions of Korean won)		**Amount**
Purchase consideration		
Cash	₩	121,276
Reclassification of long-term advance payments to purchase consideration in the business combination		11,432
Total consideration	₩	132,708
Recognized amounts of identifiable assets acquired and liabilities assumed		
Cash	₩	817
Current assets		2,380
Non-current assets		10
Property, plant and equipment		74,274
Relationship (included in intangibles)		917
Current liabilities		682
Non-current liabilities		4,200
Net identifiable assets acquired		73,516
Goodwill		57,080
	₩	130,596
Acquisition-related costs (charged to administrative expenses in the consolidated statement of comprehensive income for the year ended December 31, 2017)	₩	2,112