S-OIL Corporation and Subsidiaries

Consolidated Financial Statements
December 31, 2018 and 2017

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Independent Auditor's Report

(English Translation of a Report Originally Issued in Korean)

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

Opinion

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, 2018 and 2017, 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.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at December 31, 2018 and 2017, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with International Financial Reporting Standards as adopted by the Republic of Korea (Korean IFRS).

Basis for Opinion

We conducted our audits in accordance with Korean Standards on Auditing. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Consolidated Financial Statements* section of our report. We are independent of the Group in accordance with the ethical requirements of the Republic of Korea that are relevant to our audit of the consolidated financial statements and we have fulfilled our other ethical responsibilities in accordance with the ethical requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Related Party Transactions - Existence and Disclosure

Why it is determined to be a key matter

Sales and purchases transactions with related parties of the Group in 2018 are ₩ 3,010,854 million and ₩ 18,760,897 million, respectively. These amounts represent 12% of total sales and 83% of total purchases. We focused on impact of these significant related party transactions on the consolidated financial statements. See Note 33 for details.

More specifically, sales transactions with Saudi Aramco Products Trading and its subsidiaries amount to ₩ 2,917,606 million and purchase transactions with Saudi Arabian Oil Company and Saudi Aramco Products Trading Company and its subsidiaries amount to ₩ 18,727,811 million. Given the significant size of transactions, we considered related party transactions with these particular related parties (existence and disclosure) as key audit matter.

How our audit addressed the key audit matter

Our procedures with respect to existence and disclosure of sales and purchases from related parties include:

· Obtaining an understanding and evaluating process and relevant controls relating to the related party transactions

· Examining supporting documents , in a sample basis, to substantively test sales and purchases at transaction level

· Evaluating appropriateness of disclosure in accordance with the applicable financial reporting framework.

Inventory Valuation

Why it is determined to be a key matter

Valuation allowance for inventories of ₩ 243,890 million and loss on valuation of inventories of ₩ 242,161 million were recognized as at and for the year ended December 31, 2018. See Note 12 for details.

In measuring allowance for inventories, significant management's estimates and judgment are made as to future sales price. Given the size of the balance and the extent of judgment involved, we considered inventory valuation to be a key audit matter.

How our audit addressed the key audit matter

Our procedures with respect to inventory valuation include:

· Obtaining an understanding and evaluating process and relevant controls relating to inventory valuation

· Examining supporting documents and assessing appropriateness of future sales price which is one of the assumptions management used

· Recalculating mathematical accuracy of allowance for inventories

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.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with 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.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations.

Those charged with governance are responsible for overseeing the Group's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Korean Standards on Auditing will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Korean Standards on Auditing, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

· Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

· Obtain an understanding of internal control relevant to the audit 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.

· Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

· Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.

· Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

· Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The engagement partner on the audit resulting in this independent auditor's report is Sangho Kang, Certified Public Accountant.

Seoul, Korea

March 20, 2018

This report is effective as of March 20, 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, 2018 and 2017

(In millions of Korean won)

	Notes		2018		2017
Assets					
Current assets					
Cash and cash equivalents	3,7,11	₩	664,506	₩	480,052
Trade receivables	3,8,11		1,641,468		1,538,758
Other receivables	3,8,11		189,509		133,229
Other current financial assets	3,4,9,11		46,254		1,711,098
Derivative financial instruments	3,4,10,11		4,590		24,312
Inventories	12		3,139,082		2,790,742
Other current assets	9		125,767		96,450
Current income tax assets			43,330		205
			5,854,506		6,774,846
Non-current assets					
Other receivables	3,8,11		66,394		62,941
Other non-current financial assets	3,4,9,11		47,684		49,843
Investments in associate and joint venture	13		31,552		32,353
Property, plant and equipment	6,14,16		9,740,727		7,968,693
Intangible assets	6,15		104,447		105,155
Other non-current assets	9		73,171		27,823
Net defined benefit assets	20		36,394		65,797
Deferred income tax assets	30		169		-
			10,100,538		8,312,605
Total assets		₩	15,955,044	₩	15,087,451
Liabilities					
Current liabilities					
Trade payables	3,11,17	₩	1,437,254	₩	1,733,325
Other payables	3,11,17		756,609		530,380
Borrowings	3,11,18		2,934,770		1,369,533
Derivative financial instruments	3,4,10,11		9,768		7,345
Current income tax liabilities			13,124		257,450
Provisions for other liabilities and charges	19		2,768		1,797
Contract liabilities	19		23,080		-
Deferred revenues	19		-		24,937
Other current liabilities	17		611,674		619,649
			5,789,047		4,544,416
Non-current liabilities					
Other payables	3,11,17		99,039		32,204
Borrowings	3,11,18		3,400,627		3,474,677
Deferred income tax liabilities	30		197,097		193,534
			3,696,763		3,700,415
Total liabilities			9,485,810		8,244,831
Equity					
Share capital	22		291,512		291,512
Share premium	22		379,190		379,190
Reserves	25		977,351		975,662
Treasury share	23		(1,876)		(1,876)
Retained earnings	24		4,823,057		5,198,132
Total equity			6,469,234		6,842,620
Total liabilities and equity		₩	15,955,044	₩	15,087,451

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, 2018 and 2017

(In millions of Korean won, except per share data)	Notes	2018	2017
Sales	6	₩ 25,463,295	₩ 20,891,374
Cost of sales	26,31	(24,200,246)	(18,783,141)
Gross profit		1,263,049	2,108,233
Selling expenses	27,31	(510,557)	(620,744)
Administrative expenses	27,31	(113,032)	(114,224)
Operating profit		639,460	1,373,265
Other income	28	261,777	377,085
Other expenses	28	(452,899)	(314,010)
Finance income	29	116,667	330,283
Finance costs	29	(237,336)	(126,884)
Share of net profit of associates and joint ventures	13	4,120	5,130
Profit before income tax		331,789	1,644,869
Income tax expense	30	(73,754)	(398,380)
Profit for the year		258,035	1,246,489
Other comprehensive income, net of tax			
Items that will not be reclassified to profit or loss			
Remeasurements of net defined benefit liabilities	20	(15,977)	9,636
Gains on valuation of financial assets at fair value through other comprehensive income		432	-
Losses on disposal of financial assets at fair value through other comprehensive income		(8)	-
Items that may be subsequently reclassified to profit or loss			
Losses on valuation of available-for-sale financial assets	25	-	(307)
Cash flow hedges	25	1,234	(1,234)
Share of other comprehensive income of joint venture and associate	25	(15)	(37)
Currency translation differences	25	38	(113)
Other comprehensive income for the year		(14,296)	7,945
Total comprehensive income for the year		₩ 243,739	₩ 1,254,434
Earnings per share			
Basic and diluted earnings per ordinary share	32	₩ 2,216	₩ 10,706
Basic and diluted earnings per preferred share	32	₩ 2,241	₩ 10,731

The above consolidated 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, 2018 and 2017

(In millions of Korean won)	Share Capital	Share Premium	Reserves	Treasury Stock	Retained Earnings	Total Equity
Balance at January 1, 2017	₩ 291,512	₩ 379,190	₩ 977,353	₩ (1,876)	₩ 4,745,406	₩ 6,391,585
Profit for the year	-	-	-	-	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 year	-	-	(1,691)	-	9,636	7,945
Total comprehensive income for the year	-	-	(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

S-OIL Corporation and Subsidiaries
Consolidated Statements of Changes in Equity
Years ended December 31, 2018 and 2017

(In millions of Korean won)	Share Capital	Share Premium	Reserves	Treasury Stock	Retained Earnings	Total Equity
Balance at January 1, 2018	₩ 291,512	₩ 379,190	₩ 975,662	₩ (1,876)	₩ 5,198,132	₩ 6,842,620
Profit for the year	-	-	-	-	285,035	285,035
Other comprehensive income						
Gains on valuation of financial assets at fair value through other comprehensive income	-	-	432	-	-	432
Losses on disposal of financial assets at fair value through other comprehensive income	-	-	-	-	(8)	(8)
Cash flow hedges	-	-	1,234	-	-	1,234
Share of other comprehensive income in joint venture	-	-	(15)	-	-	(15)
Currency translation differences	-	-	38	-	-	38
Remeasurements of net defined benefit liabilities	-	-	-	-	(15,977)	(15,977)
Other comprehensive income for the year	-	-	1,689	-	(15,985)	(14,296)
Total comprehensive income for the year	-	-	1,689	-	242,050	243,739
Transactions with owners						
Dividends paid for 2017	-	-	-	-	(547,273)	(547,273)
Interim dividends paid for 2018	-	-	-	-	(69,852)	(69,852)
Balance at December 31, 2018	₩ 291,512	₩ 379,190	₩ 977,351	₩ (1,876)	₩ 4,823,057	₩ 6,469,234

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, 2018 and 2017

(In millions of Korean won)	Notes		2018		2017
Cash flows from operating activities					
Cash generated from operations	34	₩	174,707	₩	1,629,614
Interest received			30,644		62,778
Interest paid			(153,465)		(112,975)
Income tax paid			(346,008)		(443,445)
Dividends received			5,937		7,322
Net cash inflow (outflow) from operating activities		₩	(288,185)	₩	1,143,294
Cash flows from investing activities					
Proceeds from disposal of property, plant and equipment		₩	462	₩	2,582
Proceeds from disposal of intangible assets			330		460
Decrease in other receivables			19,856		21,235
Decrease in other financial assets			1,673,099		1,722,739
Payments for property, plant and equipment	14		(2,041,370)		(2,414,079)
Payments for intangible assets	15		(339)		(1,768)
Payments for acquisition of subsidiary, net of cash acquired	36		-		(120,459)
Payments for acquisition of associate	13		-		(103)
Increase in other receivables			(27,545)		(16,306)
Settlement of derivative assets and liabilities			(36,597)		(32,592)
Increase in other financial assets			(5,472)		-
Others			2,373		6,051
Net cash outflow from investing activities		₩	(415,203)	₩	(832,240)
Cash flows from financing activities					
Proceeds from borrowings		₩	1,520,510	₩	923,125
Repayment of borrowings			(14,183)		(717,994)
Decrease in other payables			(1,430)		-
Dividends paid			(617,109)		(803,395)
Net cash inflow (outflow) from financing activities		₩	887,788	₩	(598,264)
Net increase (decrease) in cash and cash equivalents		₩	184,400	₩	(287,210)
Cash and cash equivalents at the beginning of the year	7		480,052		767,438
Effects of exchange rate changes on cash and cash equivalents			54		(176)
Cash and cash equivalents at the end of the year in the consolidated statement of financial position	7	₩	664,506	₩	480,052

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, 2018, the major shareholders of the Company and their respective shareholdings are as follows:

	2018	
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, 2018 and 2017, are as follows:

	Number of Shares	Location	2018 Ownership interest held by the Group (%)	2017 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	100	Warehousing and handling of liquid chemicals	December

Summarized financial information for consolidated subsidiaries as at and for the years ended December 31, 2018 and 2017, is as follows:

(In millions of Korean won)

	2018					
Subsidiary	Assets	Liabilities	Equity	Sales	Profit for the year	Total comprehensive income
S-International Ltd.	₩ 1,283	₩ -	₩ 1,283	₩ -	₩ 22	₩ 75
North East Chemicals Co., Ltd.	148,691	73,331	75,360	7,910	21,776	21,619

(In millions of Korean won)

	2017					
Subsidiary	Assets	Liabilities	Equity	Sales	Profit for the year	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.

Changes in Scope for Consolidation

There are no subsidiaries newly included in the consolidation for the year ended December 31, 2018.

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.

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

The consolidated financial statements of the Group have been prepared in accordance with 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.

Meanwhile, certain amounts in the financial statements for the year ended December 31, 2017, have been reclassified to conform to the December 31, 2018 presentation. These reclassifications had no effect on previously reported profit or loss or net assets for the year or equity.

2.1.1 Changes in Accounting Policies and Disclosures

(1) 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, 2018.

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

When an investment in an associate or a joint venture is held by, or is 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 select to measure each investment separately at fair value through profit or loss. The amendment does not have a significant impact on the financial statements because the Group is not a venture capital organization.

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

The amendment to 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 the list of evidence for a change of use in the standard was re-characterized as a non-exclusive list of example. The amendment does not have a significant impact on the financial statements.

- Amendment 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 amendment does not have a significant impact on the financial statements.

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

According to the enactment, 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. The enactment does not have a significant impact on the financial statements.

- Korean IFRS 1109 *Financial Instruments*

The Group has applied Korean IFRS 1109 *Financial Instruments* on January 1, 2018, the date of initial application. In accordance with the transitional provisions in Korean IFRS 1109, comparative figures have not been restated. See Note 35 for further details on the impact of the application of the standard. The amendment does not have a significant impact on the financial statements.

- Korean IFRS 1115 *Revenue from Contracts with Customers*

The Group has applied to apply Korean IFRS 1115 *Revenue from Contracts with Customers*. In accordance with the transition provisions in Korean IFRS 1115, comparative figures have not been restated. See Note 35 for further details on the impact of the application of the standard. The amendment does not have a significant impact on the financial statements.

(2) 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, 2018 and have not been early adopted by the Group are set out below.

- 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*. The Group will apply the standards for annual periods beginning on or after January 1, 2019.

Under the new standard, with implementation of a single lease model, lessee is required to recognize assets and liabilities for all lease which lease term is over 12 months and underlying assets are not low value assets. A lessee is required to recognize a right-of-use asset and a lease liability representing its obligation to make lease payments.

The Group performed an impact assessment to identify potential financial effects of applying Korean IFRS 1116. The Group is analyzing the effects on the financial statements based on available information as at December 31, 2018 to identify effects on 2018 financial statements; however, it is difficult to provide reasonable estimates of financial effects until the analysis is complete.

- Korean IFRS 1109 *Financial Instruments*

The narrow-scope amendments made to Korean IFRS 1109 *Financial Instruments* enable entities to measure certain prepayable financial assets with negative compensation at amortized cost. When a modification of a financial liability measured at amortized cost that does not result in the derecognition, a modification gain or loss shall be recognized in profit or loss. These amendments will be applied for annual periods beginning on or after January 1, 2019, with early adoption permitted.

- Amendments to Korean IFRS 1019 *Employee Benefits*

The amendments require that an entity shall calculate current service cost and net interest for the remainder of the reporting period after a plan amendment, curtailment or settlement based on updated actuarial assumptions from the date of the change. The amendments also require that a reduction in a surplus must be recognized in profit or loss even if that surplus was not previously recognized because of the impact of the asset ceiling. The amendments are effective for plan amendments, curtailments and settlements occurring in reporting periods that begin on or after 1 January 2019.

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

The amendments clarify that an entity shall apply Korean IFRS 1109 to financial instruments in an associate or joint venture to which the equity method is not applied. These include long-term interests that, in substance, form part of the entity's net investment in an associate or joint venture. These amendments will be applied for annual periods beginning on or after January 1, 2019, with early adoption permitted. In accordance with the transitional provisions in Korean IFRS 1109, the restatement of the comparative information is not required and the cumulative effects of initially applying the amendments retrospectively should be recognized in the beginning balance of retained earnings (or other components of equity, as appropriate) at the date of initial application.

- Enactment to Interpretation of Korean IFRS 2123 *Uncertainty over Income Tax Treatments*

The Interpretation explains how to recognize and measure deferred and current income tax assets and liabilities where there is uncertainty over a tax treatment, and includes guidance on how to determine whether each uncertain tax treatment is considered separately or together. It also presents examples of circumstances where a judgement or estimate is required to be reassessed. This Interpretation will be applied for annual periods beginning on or after January 1, 2019, and an entity can either restate the comparative financial statements retrospectively or recognize the cumulative effect of initially applying the Interpretation as an adjustment in the beginning balance at the date of initial application.

- Annual Improvements to Korean IFRS 2015 – 2017 Cycle:

· Korean IFRS 1103 *Business Combination*

The amendments clarify that when a party to a joint arrangement obtains control of a business that is a joint operation, and had rights to the assets and obligations for the liabilities relating to that joint operation immediately before the acquisition date, the transaction is a business combination achieved in stages. In such cases, the acquirer shall remeasure its entire previously held interest in the joint operation. These amendments will be applied to business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after 1 January 2019, with early adoption permitted.

- Korean IFRS 1111 *Joint Agreements*

The amendments clarify that when a party that participates in, but does not have joint control of, a joint operation might obtain joint control of the joint operation in which the activity of the joint operation constitutes a business. In such cases, previously held interests in the joint operation are not remeasured. These amendments will be applied to transactions in which an entity obtains joint control on or after the beginning of the first annual reporting period beginning on or after 1 January 2019, with early adoption permitted.

- Paragraph 57A of Korean IFRS 1012 *Income Tax*

The amendment is applied to all the income tax consequences of dividends and requires an entity to recognize the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where the entity originally recognized those past transactions or events. These amendments will be applied for annual reporting periods beginning on or after January 1, 2019, with early adoption permitted.

- Korean IFRS 1023 *Borrowing Costs*

The amendments clarify that if a specific borrowing remains outstanding after the related qualifying asset is ready for its intended use (or sale), it becomes part of general borrowings. These amendments will be applied to borrowing costs incurred on or after the beginning of the first annual reporting period beginning on or after January 1, 2019, with early adoption permitted.

2.2 Consolidation

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

(1) 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.

(2) Associates

Associates are entities over which the Group has significant influence. 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.

(3) 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

(1) 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.

(2) 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 held at fair value through other comprehensive income are recognized in other comprehensive income.

(3) 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

(1) Classification

From January 1, 2018, the Group classifies its financial assets in the following measurement categories:

- those to be measured at fair value through profit or loss
- those to be measured at fair value through other comprehensive income, and
- those to be measured at amortized cost.

The classification depends on the Group’s business model for managing the financial assets and the contractual terms of the cash flows.

For financial assets measured at fair value, gains and losses will either be recorded in profit or loss or other comprehensive income. For investments in debt instruments, this will depend on the business model in which the investment is held. The Group reclassifies debt investments when, and only when its business model for managing those assets changes.

For investments in equity instruments that are not held for trading, this will depend on whether the Group has made an irrevocable election at the time of initial recognition to account for the equity investment at fair value through other comprehensive income. Changes in fair value of investments in equity instruments for those the Group did not make an irrevocable election, are recognized in profit or loss.

(2) Measurement

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.

Financial assets with embedded derivatives are considered in their entirety when determining whether their cash flows are solely payment of principal and interest.

A. Debt instruments

Subsequent measurement of debt instruments depends on the Group's business model for managing the asset and the cash flow characteristics of the asset. The Group classifies its debt instruments into one of the following three measurement categories:

- Amortized cost: Assets that are held for collection of contractual cash flows where those cash flows represent solely payments of principal and interest are measured at amortized cost. A gain or loss on a debt investment that is subsequently measured at amortized cost and is not part of a hedging relationship is recognized in profit or loss when the asset is derecognized or impaired. Interest income from these financial assets is included in 'finance income' using the effective interest rate method.

- Fair value through other comprehensive income: Assets that are held for collection of contractual cash flows and for selling the financial assets, where the assets' cash flows represent solely payments of principal and interest, are measured at fair value through other comprehensive income. Movements in the carrying amount are taken through other comprehensive income, except for the recognition of impairment loss (reversal of impairment loss), interest income and foreign exchange gains and losses which are recognized in profit or loss. When the financial asset is derecognized, the cumulative gain or loss previously recognized in other comprehensive income is reclassified from equity to profit or loss. Interest income from these financial assets is included in 'finance income' using the effective interest rate method. Foreign exchange gains and losses are presented in 'other income or expenses' and impairment losses are presented in 'other expenses'.

- Fair value through profit or loss: Assets that do not meet the criteria for amortized cost or fair value through other comprehensive income are measured at fair value through profit or loss. A gain or loss on a debt investment that is subsequently measured at fair value through profit or loss and is not part of a hedging relationship is recognized in profit or loss and presented net in the statement of profit or loss within 'other income or expenses' in the year in which it arises.

B. Equity instruments

The Group subsequently measures all equity investments at fair value. Where the Group's management has elected to present fair value gains and losses on equity investments, which held for long-term investment or strategic purpose, in other comprehensive income, there is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition of the investment. Dividend income from such investments continue to be recognized in profit or loss as 'finance income' when the right to receive payments is established.

Changes in the fair value of financial assets at fair value through profit or loss are recognized in 'other income and expenses' in the statement of profit or loss as applicable. Impairment loss (reversal of impairment loss) on equity investments measured at fair value through other comprehensive income are not reported separately from other changes in fair value.

(3) Impairment

The Group assesses on a forward-looking basis the expected credit losses associated with its debt instruments carried at amortized cost and fair value through other comprehensive income. The impairment methodology applied depends on whether there has been a significant increase in credit risk. For trade receivables and lease receivables, the Group applies the simplified approach, which requires expected lifetime credit losses to be recognized from initial recognition of the receivables.

(4) Recognition and Derecognition

Regular way purchases and sales of financial assets are recognized or de-recognized on trade-date, the date on which the Group commits to purchase or sell the asset. Financial assets are derecognized when the rights to receive cash flows from the financial assets have expired or have been transferred and the Group has transferred substantially all the risks and rewards of ownership.

(5) Offsetting of financial instruments

Financial assets and liabilities are offset and the net amount reported in the 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

(1) 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.

(2) 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 award credits ("points") provide the customers with benefits that they would not have if there is no contract entered into. Accordingly, providing points to customers is a separate performance obligation. Transaction price per performance obligation is allocated based on relative stand-alone selling price of goods and points. The management estimates the stand-alone selling price of points based on discounts to be provided when the points are redeemed and the probability of redemption from past experience. Stand-alone selling price of goods are estimated based on the retail price.

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

From January 1, 2018, the Group has applied Korean IFRS 1115 *Revenue from Contracts with Customers.*

The Group manufactures and sells oil refining products, lube products and petrochemical products, and imports and exports crude oil and products. Revenue from the sale of goods is recognized when the Group sells a product to the customer based on the contract.

The Group estimates an amount of variable consideration by using the expected value which the Group expects to better predict the amount of consideration. The Group recognize revenue with transaction price including variable consideration only to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the refund period has lapsed. The refund liability is measured at the amount of consideration received for which the Group does not expect to be entitled.

The transaction price in an arrangement must be allocated to each separate performance obligation based on the relative stand-alone selling prices of the goods or services being provided to a customer. The Group determines the stand-alone selling price for each separate performance obligation by using 'adjust market assessment approach'. In limited circumstances, the Group plans to use 'expected cost plus a margin approach' to estimate expected cost plus a reasonable margin.

A gross contract liability (refund liability) for the expected refunds to customers is recognized and sales are adjusted. At the same time, the Group has a right to collect the product from the customer when the customer exercises the right of return and recognizes an asset and adjusts cost of sales.
Right to collect the product from the customer is measured by previous book amount of the product less cost to collect the product.

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.

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, 2018 consolidated financial statements of the Group is expected to be approved by the Board of Directors on March 7, 2019, 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 when future commercial transactions, recognized asset and liabilities are presented in currencies other than the functional currency.

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, 2018, 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 ₩ 156,747 million (2017: ₩ 137,618 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, 2018 and 2017, are converted into Korean won as follows:

(In millions of Korean won)		**2018**		**2017**
Trade receivables				
KRW	₩	326,541	₩	419,993
USD		1,309,591		1,112,769
EUR		4,770		5,317
AUD		566		679
Total	₩	1,641,468	₩	1,538,758
Trade payables				
KRW	₩	51,754	₩	84,170
USD		1,384,514		1,649,155
JPY		986		-
Total	₩	1,437,254	₩	1,733,325
Borrowings				
KRW	₩	3,976,189	₩	3,488,860
USD		2,359,208		1,355,350
Total	₩	6,335,397	₩	4,844,210

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. As a result, the Group is exposed to cash flow interest rate risk.

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.

(In millions of Korean won)	2018		2017	
	Impact on post-tax profit	**Impact on equity**	**Impact on post-tax profit**	**Impact on equity**
One percent increase	₩ (15)	₩ (15)	₩ (42)	₩ (42)
One percent decrease	15	15	42	42

d. Price risk of financial assets at fair value through other comprehensive income and financial assets at fair value through profit or loss

The Group is exposed to equity securities price risk arises from investments held by the Group that are classified as financial assets at fair value through other comprehensive income and financial assets at fair value through profit or loss 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 total 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)	**2018**	**2017**
Listed stocks	₩ 15	₩ 17
Unlisted stocks	3,349	3,456
Fund	70	-

(2) Credit risk

a. Risk management

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, 2018 and 2017, is as follows:

(In millions of Korean won)		**2018**		**2017**
Financial assets				
Cash and cash equivalents	₩	664,411	₩	479,979
Trade receivables		1,641,468		1,538,758
Other receivables		255,903		196,170
Other financial assets		46,567		1,715,129
Derivative financial assets		4,590		24,312
Total	₩	2,612,939	₩	3,954,348

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.

b. Impairment of financial assets

The Group has three types of financial assets that are subject to the expected credit loss model:

- trade receivables for sales of goods and provision of services,
- other receivables and other financial assets at amortized cost, and
- debt investments carried at fair value through other comprehensive income.

While cash equivalents are also subject to the impairment requirement, the identified impairment loss was immaterial.

(i) Trade receivables

The Group applies the simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables.

Expected credit losses are estimated based on the information that has impact on credit risk related to customers.

On that basis, the loss allowance as at December 31, 2018 and January 1, 2018 was determined as follows for both trade receivables:

(In millions of Korean won)		**December 31, 2018**		**January 1, 2018**
Gross carrying amount – trade receivables	₩	1,643,955	₩	1,541,753
Loss allowance provision		(2,487)		(2,995)

Movements in the loss allowance provision for trade receivables for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	Trade receivables			
	2018		**2017**[1]	
Beginning balance	₩	2,995	₩	3,366
Acquisition of subsidiaries		-		282
Increase in loss allowance recognized in profit or loss during the year		1		-
Receivables written off during the year as uncollectible		(267)		(479)
Unused amounts reversed		(242)		(174)
Ending balance	₩	2,487	₩	2,995

[1] The amounts as at December 31, 2017, were calculated under Korean IFRS 1039 and have no difference with the restatement on transition to Korean IFRS 1109 as a result of applying the expected credit risk model.

Trade receivables are written off when there is no reasonable expectation of recovery.

Impairment losses on trade receivables are presented as net impairment losses within impairment loss in the statement of comprehensive income. Subsequent recoveries of amounts previously written off are credited against the same line item.

(ii) Other receivables and other financial assets at amortized cost

There are no movements in loss allowance provision for other receivables and other financial assets at amortized cost for the year ended December 31, 2018.

All of the other receivables and other financial assets at amortized costs are considered to have low credit risk, and the loss allowance recognized during the period was, therefore, limited to 12 months expected losses. Other instruments are considered to be low credit risk when they have a low risk of default and the issuer has a strong capacity to meet its contractual cash flow obligations in the near term.

(iii) Debt investments at fair value through other comprehensive income

Debt investments at fair value through other comprehensive income include government bonds, corporate bonds and trade receivables subject to be sold or discounted. The loss allowance for debt investments at fair value through other comprehensive income is recognized in profit or loss and reduces the fair value loss otherwise recognized in other comprehensive income.

All of the debt investments at fair value through other comprehensive income other than trade receivables subject to be sold or discounted are considered to have low credit risk, and the loss allowance recognized during the period was, therefore, limited to 12 months expected losses. Management consider ‘low credit risk’ for listed bonds to be an investment grade credit rating with at least one major rating agency. Other instruments are considered to be low credit risk when they have a low risk of default and the issuer has a strong capacity to meet its contractual cash flow obligations in the near term.

The Group applies the simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables. There are no movements in loss allowance provision for other financial assets at fair value through other comprehensive income other than trade receivables subject to be sold or discounted for the year ended December 31, 2018.

c. Impairment loss

Following losses are recognized in profit or loss in relation to impaired financial assets for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	Trade receivables			
	2018		**2017**	
Impairment loss	₩	(1)	₩	-
Reversal of impairment loss		242		174
Net impairment loss	₩	241	₩	174

(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, 2018 and 2017, are as follows:

(In millions of Korean won)	**Less than 1 year**	**Between 1 and 2 years**	**Over 2 years**	**Total**
December 31, 2018				
Trade payables	₩ 1,437,254	₩ -	₩ -	₩ 1,437,254
Other payables	766,525	28,327	77,490	872,342
Borrowings	3,066,880	589,584	3,086,114	6,742,578
Currency forward (gross)				
Inflow	795,144	-	-	795,144
Outflow	(795,784)	-	-	(795,784)
Commodity Swap (net)	7,163	-	-	7,163
Total	₩ 5,277,182	₩ 617,911	₩ 3,163,604	₩ 9,058,697

(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

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, 2018 and 2017, are as follows:

(In millions of Korean won, except for ratios)	2018	2017
Interest bearing liabilities (A)	₩ 6,403,069	₩ 4,844,210
Cash and cash equivalents and current financial deposits (B)	707,031	2,191,052
Net borrowings (C=A-B)	5,696,038	2,653,158
Equity (D)	6,469,234	6,842,620
Debt-to-equity ratio (A/D)	99%	71%
Net borrowings-to-equity ratio (C/D)	88%	39%

4. Fair Value

4.1 Fair Value of Financial Instruments by Category

Carrying amount and fair value of financial instruments by category as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018		2017	
	Carrying amount	**Fair value**	**Carrying amount**	**Fair value**
Financial assets				
Available-for-sale financial assets	₩ -	₩ -	₩ 49,931	₩ 49,931
Financial assets at fair value through other comprehensive income	50,431	50,431	-	-
Financial assets at fair value through profit or loss	5,562	5,562	24,312	24,312
Total	₩ 55,993	₩ 55,993	₩ 74,243	₩ 74,243
Financial liabilities				
Derivative financial liabilities	₩ 9,768	₩ 9,768	₩ 7,345	₩ 7,345
Total	₩ 9,768	₩ 9,768	₩ 7,345	₩ 7,345

Carrying amount of other financial assets and liabilities other than financial assets at fair value and derivative financial instruments is a reasonable approximation of fair value.

4.2 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, 2018, 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				
Financial assets at fair value through other comprehensive income				
Equity securities	₩ 207	₩ -	₩ 46,192	₩ 46,399
Debt securities	4,032	12,859	-	16,891
Financial assets at fair value through profit or loss				
Derivative financial assets held for trading	-	4,590	-	4,590
Equity securities	-	-	972	972
Total	₩ 4,239	₩ 17,449	₩ 47,164	₩ 68,852
Liabilities				
Financial liabilities at fair value through profit or loss				
Derivative financial liabilities held for trading	₩ -	₩ 9,768	₩ -	₩ 9,768
Total	₩ -	₩ 9,768	₩ -	₩ 9,768

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

4.3 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, 2018 and 2017, are as follows:

(In millions of Korean won)		2018		2017
Beginning balance	₩	45,594	₩	45,063
Acquisition		972		-
Total profit or loss				
Gains on valuation (other comprehensive income)		606		-
Gains (losses) on disposal (other comprehensive income)		(8)		531
Ending balance	₩	47,164	₩	45,594

4.4 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
Equity instruments at fair value through other comprehensive income					
Equity securities	₩ 46,192	3	Present value technique	Discount rate	9.40%
Financial assets at fair value through profit or loss					
Equity securities	₩ 972	3	Net asset value approach	Discount rate	N/A

(2) Level 2

(In millions of Korean won)	Fair value	Level	Valuation techniques
Debt instruments at fair value through other comprehensive income			
Trade receivables	₩ 12,859	2	Present value technique
Financial assets at fair value through profit or loss			
Currency forward	3,427	2	Present value technique
Commodity swap	1,163	2	Present value technique
Financial liabilities at fair value through profit or loss			
Currency forward	2,605	2	Present value technique
Commodity swap	7,163	2	Present value technique

4.5 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.

4.6 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, equity securities, are recognized in other comprehensive income or profit or loss.

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.

5.1 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).

5.2 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).

5.3 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 in accordance with the investment and mutual aid promotion tax, 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 2018. 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 or increase in wages, there is an uncertainty measuring the final tax effects.

5.4 Provisions for Other Liabilities and Charges

As at December 31, 2018, the Group records environmental restoration provisions. These provisions are estimated based on past experience (Note 19).

5.5 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).

5.5 Impairment of Financial Assets

The provision for impairment for financial assets are based on assumptions about risk of default and expected loss rates. The Group uses judgment in making these assumptions and selecting the inputs to the impairment calculation based on the Group's past history, existing market conditions as well as forward looking estimates at the end of each reporting period (Note 3.1 (2) b).

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, 2018 and 2017, is as follows:

(In millions of Korean won)	2018							
	Oil Refining Business		**Lube Oil Business**		**Petrochemical Business**		**Total**	
Sales from external customers	₩	20,126,477	₩	1,635,366	₩	3,701,452	₩	25,463,295
Inter-segment sales		5,437,814		170,087		1,296,074		6,903,975
Total sales		25,564,291		1,805,453		4,997,526		32,367,270
Operating profit	₩	33,015	₩	255,569	₩	350,876	₩	639,460
Property, plant, equipment and intangible assets	₩	6,702,630	₩	195,226	₩	2,947,318	₩	9,845,174
Depreciation and amortization and others		235,726		15,084		103,351		354,161

(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

Sales by geographic region for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**		**2017**	
Korea	₩	10,470,542	₩	8,866,880
Southeast Asia		3,839,204		2,853,890
China		3,612,165		2,663,840
America		1,453,466		1,397,436
Japan		1,828,850		1,304,319
Australia		1,845,348		1,734,337
Europe		262,291		457,645
Others		2,151,429		1,613,027
Total	₩	25,463,295	₩	20,891,374

Details of a customer, who contributes more than ten percent of the Group sales for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**	**2017**	**Segments**
Customer 1 [1]	₩ 2,917,606	₩ 1,884,412	Oil refining and petrochemical business

[1] Saudi Aramco Products Trading Group and Aramco Trading Singapore PTE. LTD., related parties of the Group

7. Cash and Cash Equivalents

Cash and cash equivalents as at December 31, 2018 and 2017, consists of:

(In millions of Korean won)	**2018**	**2017**
Cash on hand	₩ 95	₩ 73
Checking accounts	16	9
Passbook accounts	6,095	41,024
Foreign currency deposits	273,190	116,216
Time deposits	280,500	140,000
MMDA and others	104,610	182,730
Total	₩ 664,506	₩ 480,052

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

8. Trade and Other Receivables

As explained in Note 2, the Group has applied Korean IFRS 1109 *Financial Instruments* from January 1, 2018. See Note 35 for the impact of the changes in accounting policies on the classification of financial assets and financial statements.

Trade and other receivables as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**		**2017**	
	Current	**Non-current**	**Current**	**Non-current**
Trade receivables	₩ 1,643,955	₩ -	₩ 1,541,753	₩ -
Less : provision for impairment	(2,487)	-	(2,995)	-
Trade receivables - net	1,641,468	-	1,538,758	-
Other receivables				
Non-trade receivables	177,709	-	119,319	-
Accrued revenues	607	-	6,956	-
Loans	11,193	41,185	6,954	42,447
Guaranty deposits	-	25,209	-	20,494
	189,509	66,394	133,229	62,941
Net book amount	₩ 1,830,977	₩ 66,394	₩ 1,671,987	₩ 62,941

The aging analysis of trade receivables as at December 31, 2018 and 2017, is as follows:

(In millions of Korean won)		**2018**		**2017**
Receivables not past due	₩	1,637,233	₩	1,537,024
Up to one month		5,025		3,214
One to three months		290		80
Three to six months		184		82
Six to twelve months		230		57
Over one year		993		1,296
Total	₩	1,643,955	₩	1,541,753

As at December 31, 2018, trade receivables of ₩ 871,864 million (2017: ₩ 786,861 million) have collateral provided by customers. Among those trade receivables, ₩ 4,299 million (2017: ₩ 2,945 million) is past due but not impaired.

The aging analysis of other receivables as at December 31, 2018 and 2017, is as follows:

(In millions of Korean won)		**2018**		**2017**
Receivables not past due	₩	255,872	₩	196,165
Up to one month		23		-
One to three months		8		5
Total	₩	255,903	₩	196,170

See Note 3.1 (2) b for the impairment of trade receivables, other financial assets at amortized cost and the Group's exposure to credit risk.

As at December 31, 2018, the balance of trade receivables that are not past due amounts to USD 149 million (2017: USD 214 million). As at December 31, 2018, the Group transferred the trade receivables to Shinhan Bank and four other financial institutions and derecognized the transferred receivables as all the risks and rewards are substantially transferred (Note 21).

The Group holds the trade receivables with the objective to collect the contractual cash flows and, therefore, the Group's business model for managing trade receivables is to collect the contractual cash flows. When discount agreements have been made on certain types of trade receivables, judgment on the business model is assessed. If selling price is infrequently observed or individually or collectively not significant, it is probable that the judgment is consistent with the business model with the objective of collecting the contractual cash flows. Portfolio for certain types of trade receivables which are discounted are classified as business model for selling or for collection of contractual cash flows, while undiscounted portfolio are classified as business model with the objective of collection of contractual cash flows. Trade receivables that are held for selling or for collection of contractual cash flows are measured at fair value and gains or losses on valuation are recognized as other comprehensive income.

9. Other Financial Assets and Other Assets

As explained in Note 2, the Group has applied Korean IFRS 1109 *Financial Instruments* from January 1, 2018. See Note 35 for the impact of the changes in accounting policies on the classification of financial assets and financial statements.

9.1 Other financial assets fair value through profit or loss

Other financial assets fair value through profit or loss as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)		**2018**		**2017**
Non-current				
Fund	₩	972	₩	-

9.2 Other financial assets at fair value through other comprehensive income

Other financial assets at fair value through other comprehensive income as at December 31, 2018 and 2017, are as follows:

(1) Equity investments at fair value through other comprehensive income

(In millions of Korean won)		**2018**		**2017**[1]
Non-current				
Listed equities	₩	207	₩	218
Non-listed equities		46,192		45,594
Total	₩	46,399	₩	45,812

[1] In the prior financial year, the Group had designated the equity investments as available-for-sale with adoption of Korean IFRS 1039 *Financial Instruments: Recognition and Measurement*.

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

Upon disposal of these equity investments, any balance within the accumulated other comprehensive income for these equity investments is reclassified to retained earnings and is not reclassified to profit or loss.

(2) Debt investments at fair value through other comprehensive income

Debt investments at fair value through other comprehensive income comprise the following investments in bonds having solely payments of principal and interest:

(In millions of Korean won)		**2018**		**2017**[1]
Government bonds				
Current	₩	3,729	₩	98
Non-current		303		4,021
Total	₩	4,032	₩	4,119

[1] In the prior financial year, the Group had designated the debt investments as available-for-sale with adoption of Korean IFRS 1039 *Financial Instruments: Recognition and Measurement*.

Upon disposal of these debt investments, any balance within the accumulated other comprehensive income for these debt investments is reclassified to profit or loss.

9.3 Other financial assets at amortized cost

Other financial assets at amortized cost as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018			2017		
	Current	**Non-current**	**Total**	**Current**	**Non-current**	**Total**
Short-term financial instruments (Time deposits, etc.) [1]	₩ 42,525	₩ -	₩ 42,525	₩ 1,711,000	₩ -	₩ 1,711,000
Long-term deposit [1]	-	10	10	-	10	10
	42,525	10	42,535	1,711,000	10	1,711,010
Less: provision for impairment	-	-	-	-	-	-
	₩ 42,525	₩ 10	₩ 42,535	₩ 1,711,000	₩ 10	₩ 1,711,010

[1] Short-term financial instruments include ₩ 31,362 million which are subject to restricted in relation to contractual guarantee (Note 16). Long-term deposit includes ₩ 10 million which are subject to restricted.

Movements in financial assets at fair value through other comprehensive income for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**	**2017[1]**
Beginning balance	₩ 49,931	₩ 49,407
Acquisition	23	68
Disposal	(119)	(128)
Other comprehensive income	596	584
Ending balance	₩ 50,431	₩ 49,931
Less: non-current portion	₩ 46,702	₩ 49,833
Current portion	3,729	98

[1] In the prior financial year, the Group had designated the debt investments as available-for-sale with adoption of Korean IFRS 1039 *Financial Instruments: Recognition and Measurement*.

Other assets at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018		2017	
	Current	**Non-current**	**Current**	**Non-current**
Advance payments	₩ 3,806	₩ 1,108	₩ 3,204	₩ 20,838
Prepaid expenses	7,078	4,630	6,844	6,985
Tax receivables	114,883	-	86,402	-
Finance lease assets	-	67,433	-	-
	₩ 125,767	₩ 73,171	₩ 96,450	₩ 27,823

Details of machinery classified as a finance lease as at December 31, 2018, are as follows and the lease terms are 15 years.

(In millions of Korean won)		2018
		Machinery
Cost- capitalized finance leases	₩	68,576
Accumulated depreciation		(1,143)
Net book amount	₩	67,433

The lease agreements do not include terms of renewal or purchase options. Meanwhile, there are no other restrictions imposed under lease arrangements relating to dividends, additional debt and further leasing.

(In millions of Korean won)		2018
		Machinery
Total minimum lease payments		
Within one year	₩	5,720
Later than one year but not later than five years		22,879
Later than five years		55,766
		84,365
Unearned finance income		(16,693)
Net minimum lease payments		
Within one year		5,625
Later than one year but not later than five years		20,841
Later than five years		41,206
	₩	67,672

10. Derivative Financial Instruments

Details of derivative financial instruments as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018		2017	
	Assets	**Liabilities**	**Assets**	**Liabilities**
Trading purpose				
Forward foreign exchange	₩ 3,427	₩ 2,605	₩ 24,312	₩ 15
Commodity Swap	1,163	7,163	-	5,627
Forward foreign exchange - cash flow hedges	-	-	-	1,703
	₩ 4,590	₩ 9,768	₩ 24,312	₩ 7,345
Current portion	₩ 4,590	₩ 9,768	₩ 24,312	₩ 7,345

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

11. Financial Instruments by Category

Carrying amounts of financial assets and liabilities by category as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018			
	Financial assets at amortized cost	**Financial assets at fair value through other comprehensive income**	**Financial assets at fair value through profit or loss**	**Total**
Assets				
Cash and cash equivalents	₩ 664,506	₩ -	₩ -	₩ 664,506
Trade receivables	1,628,609	12,859	-	1,641,468
Other receivables	255,903	-	-	255,903
Other financial assets	42,535	50,431	972	93,938
Derivative financial instruments	-	-	4,590	4,590
Total	₩ 2,591,553	₩ 63,290	₩ 5,562	₩ 2,660,405

(In millions of Korean won)	2018		
	Financial liabilities at amortized cost	**Financial liabilities at fair value through profit or loss**	**Total**
Liabilities			
Trade payables	₩ 1,437,254	₩ -	₩ 1,437,254
Other payables	855,648	-	855,648
Borrowings	6,335,397	-	6,335,397
Derivative financial instruments	-	9,768	9,768
Total	₩ 8,628,299	₩ 9,768	₩ 8,638,067

(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

Net gains or losses on each category of financial instruments for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)		2018		2017
Loans and receivables				
Interest income	₩	24,209	₩	52,317
Foreign currency gains (losses)		64,940		(154,225)
Reversal of provision for impairment (impairment loss)		241		174
Assets and liabilities at fair value through profit or loss				
Derivative financial instruments gains (losses)		(60,444)		34,873
Assets classified as available-for-sale				
Gains on valuation and disposal (other comprehensive income)		596		-
Interest income		86		-
Dividend income		1,037		-
Available-for-sale financial assets				
Gains on valuation (other comprehensive income)		-		584
Interest income		-		86
Dividend income		-		1,197
Financial liabilities at amortized cost				
Foreign currency gains (losses)		(195,447)		395,841
Interest expenses[1]		(72,309)		(58,254)

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

12. Inventories

Inventories as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)		2018		2017
Merchandise	₩	71,855	₩	5,030
Valuation allowance for merchandise		(1,658)		(55)
Finished goods		819,669		553,408
Valuation allowance for finished goods		(120,024)		(104)
Work in progress		451,897		279,124
Valuation allowance for work in progress		(74,062)		(1,530)
Raw materials and materials-in-transit		1,857,565		1,832,446
Valuation allowance for raw materials and materials-in-transit		(48,146)		(40)
Supplies		181,986		122,463
Total	₩	3,139,082	₩	2,790,742

Inventories at original cost that was recognized as cost of sales for the year ended December 31, 2018 amounted to ₩ 21,974,321 million (2017: ₩ 16,864,228 million). The Group recognized losses on valuation of inventories for ₩ 242,161 million for the year ended December 31, 2018 (2017: ₩ 1,372 million).

13. Investments in Associate and Joint venture

Details of associate and joint venture as at December 31, 2018 and 2017, are as follows:

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

Investee	Location	Closing Month	Number of Shares	Percentage of Ownership (%)	Acquisition Cost	2018	2017
Joint venture							
S-OIL TOTAL Lubricants Co., Ltd.	Korea	December	3,500,001	50% plus one share	₩ 20,134	₩ 31,536	₩ 32,298
Associate							
Korea Oil Terminal Co., Ltd.[1]	Korea	December	18,910	18%	904	15	55
Total					₩ 21,038	₩ 31,551	₩ 32,353

[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, 2018 and 2017, are as follows:

(In millions of Korean won)

		2018				
		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.	₩ 63,608	50% plus one share	₩ 31,804	₩ (268)	₩ 31,536
Associate	Korea Oil Terminal Co., Ltd.	(1,040)	18%	(187)	202	15

(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

The tables below provide summarized financial information for those associate and joint venture for the years ended December 31, 2018 and 2017.

(In millions of Korean won)	S-OIL TOTAL Lubricants Co., Ltd.		Korea Oil Terminal Co., Ltd.	
	2018	**2017**	**2018**	**2017**
Current assets	₩ 74,810	₩ 75,637	₩ 261	₩ 462
Non-current assets	26,764	26,456	3,228	3,231
Total assets	₩ 101,574	₩ 102,093	₩ 3,489	₩ 3,693
Current liabilities	37,966	37,007	4,529	4,443
Non-current liabilities	-	-	-	64
Total liabilities	₩ 37,966	₩ 37,007	₩ 4,529	₩ 4,507
Total equity	₩ 63,608	₩ 65,086	₩ (1,040)	₩ (814)
Sales	₩ 268,339	₩ 274,610	₩ -	₩ -
Operating income (loss)	11,280	13,930	(226)	(724)
Profit (Loss) before income tax	10,817	13,831	(226)	(724)
Profit (Loss) for the year	8,317	10,815	(226)	(724)
Total comprehensive income (loss) for the year	8,274	10,712	(226)	(731)

Details of valuation of investments in associate and joint venture that are accounted for using the equity method for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018		
	S-OIL TOTAL Lubricants Co., Ltd.	**Korea Oil Terminal Co., Ltd.**	**Total**
Beginning balance	₩ 32,298	₩ 55	₩ 32,353
Acquisition	-	-	-
Share of profit (loss)	4,182	(40)	4,142
Unrealized gains (losses)	(22)	-	(23)
Dividend received	(4,900)	-	(4,900)
Other equity changes	(21)	-	(21)
Ending balance	₩ 31,537	₩ 15	₩ 31,551

(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

14. Property, Plant and Equipment

Changes in property, plant and equipment for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018								
	Land	**Buildings**	**Structures**	**Machinery and equipment**	**Vehicles**	**Others**	**Catalysts**	**Construction-in-progress**	**Total**
At January 1, 2018									
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
Changes during 2018									
Beginning 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
Additions	-	266	4,813	1,390	593	24,421	124,113	1,973,420	2,129,016
Transfers	444,434	182,987	708,841	3,929,506	74	93,010	47,822	(5,416,707)	(10,033)
Disposals	-	(6)	(223)	(561)	-	(220)	-	-	(1,010)
Depreciation	-	(11,413)	(42,474)	(101,626)	(811)	(96,107)	(93,508)	-	(345,939)
Ending net book amount	₩ 1,774,635	₩ 426,741	₩ 1,192,636	₩ 5,146,968	₩ 1,672	₩ 195,162	₩ 222,797	₩ 780,116	₩ 9,740,727
At December 31, 2018									
Acquisition cost	₩ 1,774,635	₩ 522,818	₩ 1,780,536	₩ 7,947,627	₩ 14,800	₩ 713,691	₩ 1,188,372	₩ 780,116	₩ 14,728,595
Accumulated depreciation	-	(96,077)	(593,900)	(2,800,659)	(13,128)	(518,529)	(965,575)	-	(4,987,868)
Net book amount	₩ 1,774,635	₩ 426,741	₩ 1,192,636	₩ 5,146,968	₩ 1,672	₩ 195,162	₩ 222,797	₩ 780,116	₩ 9,740,727

(In millions of Korean won)	2017								
	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

Depreciation expense of ₩ 316,509 million (2017: ₩ 261,457 million) was charged to cost of sales, ₩ 22,851 million (2017: ₩ 20,690 million) to selling expenses and ₩ 6,579 million (2017: ₩ 3,218 million) to administrative expense.

As at December 31, 2018, 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 ₩ 94,659 million (2017: ₩ 65,438 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 2.46% (2017: 2.1%) for general borrowings and 2.52% (2017: 2.34%) for specific borrowings.

As at December 31, 2018, construction in-progress consists of expenses related to facilities installation and land.

As at December 31, 2018, 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 is pledged as collateral from the Korea Development Bank and eight financial institutions.

15. Intangible Assets

Changes in intangible assets for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018				
	Facility usage Rights	**Others**	**Membership rights**	**Goodwill**	**Total**
At January 1, 2018					
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
Changes during 2018					
Beginning net book amount	₩ 4,352	₩ 20,514	₩ 23,209	₩ 57,080	₩ 105,155
Additions	-	213	126	-	339
Transfers	-	10,033	-	-	10,033
Decreases	-	-	(387)	-	(387)
Amortization	(488)	(7,734)	-	-	(8,222)
Impairment losses	-	-	(2,471)	-	(2,471)
Ending net book amount	₩ 3,864	₩ 23,026	₩ 20,477	₩ 57,080	₩ 104,447
At December 31, 2018					
Acquisition cost	₩ 9,501	₩ 90,646	₩ 22,948	₩ 57,080	₩ 180,175
Accumulated amortization[1]	(5,637)	(67,620)	(2,471)	-	(75,728)
Net book amount	₩ 3,864	₩ 23,026	₩ 20,477	₩ 57,080	₩ 104,447

[1] The amounts include accumulated impairment losses.

(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

Amortization expense of ₩ 2,222 million (2017: ₩ 1,814 million) is included in cost of sales, ₩ 538 million (2017: ₩ 538 million) in selling expenses and ₩ 5,462 million (2017: ₩ 6,455 million) in administrative expense.

Membership impairment reviews are undertaken annually. As a result of the impairment test, the Group recognized ₩ 2,471 million of impairment losses on the memberships that carrying amount exceeds the recoverable amount.

The Group recognized total research and development costs of ₩ 21,011 million (2017: ₩ 16,421 million) as expenses.

16. Assets Pledged as Collateral

As at December 31, 2018, 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 FRF 155 JPY 11,781	The Korea Development Bank	Usance Borrowings and others	₩ 587,020 (USD 525)
Construction-in-progress (Land)	₩ 75,168	The Korea Development Bank	Loans for facility	₩ 61,607
Land, Buildings, Facilities, Construction-in-Progress and others[1]	₩ 2,520,000	The Korea Development Bank and others	Loans for facility	₩ 941,815
Time deposits[2]	₩ 27,000	Defense Acquisition Program Administration	Contractual Guarantee	-
Time deposits[2]	₩ 5,000	Korea Industrial Complex Corporation	Contractual Guarantee	-
		Total (Including USD 525)		₩ 1,590,442

[1] The land, buildings, facilities and construction-in-progress have been pledged as collateral for agreements with the 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 ₩ 941,815 million as at December 31, 2018.

[2] Short-term financial instruments include ₩ 31,362 million which are subject to restricted in relation to contractual guarantee.

17. Trade Payables, Other Payables and Other Liabilities

Trade payables and other payables as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018		2017	
	Current	Non-current	Current	Non-current
Trade payables	₩ 1,437,254	₩ -	₩ 1,733,325	₩ -
Other payables				
Non-trade payables	727,542	470	513,054	-
Accrued expenses	25,285	-	17,241	-
Dividend payables	102	-	85	-
Finance lease liabilities (Note 9)	3,680	63,992	-	-
Leasehold deposit received	-	34,577	-	32,204
	756,609	99,039	530,380	32,204
Total	₩ 2,193,863	₩ 99,039	₩ 2,263,705	₩ 32,204

Other liabilities as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018		2017	
	Current	Non-current	Current	Non-current
Advances from customers	₩ 101,605	₩ -	₩ 106,985	₩ -
Withholdings	16,392	-	9,288	-
Non-trade payables and tax	493,677	-	503,376	-
Total	₩ 611,674	₩ -	₩ 619,649	₩ -

18. Borrowings

Details of borrowings as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018	2017
Current		
Short-term borrowings	₩ 122,991	₩ -
Banker's usance	2,236,217	1,355,350
Current maturities of debentures	434,861	-
Current maturities of long-term borrowings	140,701	14,183
	2,934,770	1,369,533
Non-current		
Debentures	2,535,816	2,670,275
Long-term borrowings	864,811	804,402
	3,400,627	3,474,677
Total	₩ 6,335,397	₩ 4,844,210

Details of carrying amount of borrowings as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**Creditor**	**Maturity date**	**Interest rates (%) Dec. 31, 2018**	**2018**	**2017**
Short-term borrowings					
Short-term borrowings	KEB Hana Bank	Oct. 17, 2019	2.98	₩ 122,991	₩ -
Banker's usance	The Korea Development Bank and others	Jan. 16, 2019 and others	2.80 - 3.17	2,236,217	1,355,350
				2,359,208	1,355,350
Current maturities of long-term borrowings					
Loans for facilities from energy usage rationalization fund	KEB Hana Bank	Mar. 15, 2019 and others	1.75	1,649	2,826
Loans for environment improvement supporting fund	KEB Hana Bank	Apr. 30, 2019 and others	2.27	161	643
Loans for industry facilities fund	The Korea Development Bank	Jan. 31, 2019 and others	2.42 - 2.46	10,714	10,714
Loans for industry facilities fund	The Korea Development Bank and others	Apr. 1, 2019 and others	3.235	128,177	-
				140,701	14,183
Long-term borrowings					
Loans for facilities from energy usage rationalization fund	KEB Hana Bank	Mar. 15, 2020 and others	1.75	280	1,929
Loans for environment improvement supporting fund	KEB Hana Bank	-	-	-	161
Loans for industry facilities fund	The Korea Development Bank	Jul. 31, 2024	2.42 - 2.46	50,893	61,607
Loans for industry facilities fund	The Korea Development Bank and others	Dec. 30, 2025	3.235	813,638	740,705
				864,811	804,402
Total				₩ 3,364,720	₩ 2,173,935

Details of carrying amount of debentures as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	Issuance date	Maturity Date	Interest Rates (%) Dec. 31, 2018	2018	2017
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. 2, 2016	Sep. 2, 2021	1.646	210,000	210,000
Public bonds (50-2)	Sep. 2, 2016	Sep. 2, 2023	1.722	80,000	80,000
Public bonds (50-3)	Sep. 2, 2016	Sep. 2, 2026	1.932	60,000	60,000
Public bonds (51-1)	Feb. 22, 2017	Feb. 22, 2022	2.197	230,000	230,000
Public bonds (51-2)	Feb. 22, 2017	Feb. 22, 2024	2.438	110,000	110,000
Public bonds (51-3)	Feb. 22, 2017	Feb. 22, 2027	2.559	60,000	60,000
Public bonds (52-1)	Sep. 19, 2017	Sep. 19, 2020	2.046	130,000	130,000
Public bonds (52-2)	Sep. 19, 2017	Sep. 19, 2022	2.317	110,000	110,000
Public bonds (52-3)	Sep. 19, 2017	Sep. 19, 2024	2.531	60,000	60,000
Public bonds (53-1)	Jul. 3, 2018	Jul. 3, 2021	2.442	110,000	-
Public bonds (53-2)	Jul. 3, 2018	Jul. 3, 2023	2.617	110,000	-
Public bonds (53-3)	Jul. 3, 2018	Jul. 3, 2025	2.708	80,000	-
Less: Present value discount				(4,323)	(4,725)
Sub total				2,970,677	2,670,275
Less: Current maturities				(434,861)	-
Total				₩ 2,535,816	₩ 2,670,275

As at December 31, 2018 and 2017, a certain portion of property, plant and equipment and etc. is pledged as collateral for various borrowings (Note 16).

19. Provisions, Deferred Revenues and Contract Liabilities

Details and changes in provisions for other liabilities and charges for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**Environmental Restoration**		**Others**		**Total**	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**
Beginning balance	₩ 1,797	₩ 1,803	₩ -	₩ -	₩ 1,797	₩ 1,803
Additional provision	3,000	3,745	11,585	8,173	14,585	11,918
Used during year	(2,029)	(3,751)	(11,585)	(8,173)	(13,614)	(11,924)
Ending balance	₩ 2,768	₩ 1,797	₩ -	₩ -	₩ 2,768	₩ 1,797

Changes in contract liabilities and deferred revenues for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**	**2017**
	Contract Liabilities	**Deferred Revenues**
Beginning balance	₩ 24,937	₩ 27,433
Additions	9,359	7,154
Used during year	(11,216)	(9,650)
Ending balance	₩ 23,080	₩ 24,937

Contract liabilities and 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, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**	**2017**
Present value of funded defined benefit obligations	₩ 356,830	₩ 312,834
Fair value of plan assets[1]	(393,224)	(378,631)
Net defined benefit liabilities (assets)	₩ (36,394)	₩ (65,797)

[1] The contributions to the National Pension Fund of ₩ 436 million are included in the fair value of plan assets as at December 31, 2018 (2017: ₩ 502 million).

Movements in the defined benefit obligations for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)		**2018**		**2017**
Beginning balance	₩	312,834	₩	290,173
Acquisition of subsidiary		-		875
Current service cost		38,502		36,367
Interest expense		11,704		10,026
Remeasurements :				
Actuarial losses (gains) arising from change in financial assumptions		14,643		(9,092)
Actuarial losses (gains) arising from change in demographic assumptions		2,211		-
Actuarial losses (gains) from experience adjustments		(3,092)		(6,191)
Benefits payments		(19,972)		(9,324)
Ending Balance	₩	356,830	₩	312,834

Movements in the fair value of plan assets for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)		**2018**		**2017**
Beginning balance	₩	378,631	₩	318,307
Acquisition of subsidiary		-		835
Interest income		13,560		10,470
Remeasurements :				
Return on plan assets		(8,260)		(6,271)
Contributions		28,742		64,000
Benefits payments		(19,449)		(8,710)
Ending balance	₩	393,224	₩	378,631

Plan assets as at December 31, 2018 and 2017, consist of financial assets including deposits.

The significant actuarial assumptions as at December 31, 2018 and 2017, are as follows:

	2018	**2017**
Discount rate	2.55 - 3.20%	3.05 - 3.80%
Salary growth rate	5.00 - 5.32%	4.00 - 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, 2018	**December, 31 2017**
Salary growth rate	One percent increase	10.97% increase	9.98% increase
	One percent decrease	9.52% decrease	8.75% decrease
Discount rate	One percent increase	9.43% decrease	8.81% decrease
	One percent decrease	11.07% increase	10.26% 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 10.25 years and expected contributions to post-employment benefit plans for the year ending December 31, 2018 are ₩ 62,285 million.
The expense, etc. recognized in the current period in relation to defined contribution plan was ₩ 7,901 million (2017: ₩ 9,521 million).

21. Contingencies

As at December 31, 2018, 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 532 million with Shinhan Bank and three other banks.

As at December 31, 2018, the Group has banker's usance agreements and imported credit agreements of up to a maximum of USD 4,190 million with the Korea Development Bank and 17 other banks.

As at December 31, 2018, 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, 2018, KEB Hana Bank has provided guarantees up to ₩ 4,000 million for the restoration responsibilities of Onsan National Industrial Complex.

As at December 31, 2018, the Group offered one blank check to Korea National Oil Corporation ("KNOC") as payment guarantee.

As at December 31, 2018, the balance of trade receivables that are not past due amounts to USD 149 million (2017: USD 214 million). As at December 31, 2018, the Group transferred the trade receivables to Shinhan Bank and four other financial institutions and derecognized the transferred receivables as all the risks and rewards are substantially transferred (Note 8).

As at December 31, 2018, the Group has Stand-by credit line agreements, etc. with the Korea Development Bank and four other financial institutions for up to ₩ 300,000 million and USD 290 million.

As at December 31, 2018, the Group has agreements with the 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 ₩ 941,815 million.

As at December 31, 2018, 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 is pledged as collateral from the Korea Development Bank and eight financial institutions.

As at December 31, 2018, the Group has been provided performance guarantee and others amounting to ₩ 8,728 million by Seoul Guarantee Insurance.

As at December 31, 2018, there is no significant pending lawsuit.

As at December 31, 2018, the amount of commitment in relation to the Group's purchase of lands is ₩ 24,681 million.

22. Share Capital and Share Premium

Share capital and share premium as at December 31, 2018 and 2017, 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, 2017	112,582,792	4,021,927	₩281,457	₩ 10,055	₩ 379,190	₩ 670,702
December 31, 2018	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, 2018, 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, 2018, 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, 2018, 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, 2018, 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, 2018 and 2017, consist of:

(In millions of Korean won)		2018		2017
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		3,357,898		2,786,098
		3,516,743		2,944,943
Revaluation reserve		984,648		984,648
Retained earnings before appropriation		175,910		1,122,785
	₩	4,823,057	₩	5,198,132

[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 2017 amounting to ₩ 529,139 million for ordinary share and ₩ 18,134 million for preferred share were paid out in April 2018 (Dividends paid in 2017: ₩ 641,722 million for ordinary share and ₩ 21,972 for preferred share).

In accordance with the Articles of Incorporation on July 19, 2018, the Board of Directors declared interim cash dividends of ₩ 600 per share with dividend date on June 30, 2018.

(In millions of Korean won, except number of shares)	Number of shares		Amount	Dividend rate		Cash Dividends
Ordinary share	112,582,792	₩	281,457	24%	₩	67,549
Preferred share[1]	3,837,847		9,595	24%		2,303
	116,420,639	₩	291,052		₩	69,852

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

A dividend in respect of the year ended December 31, 2018, of ₩ 150 per ordinary share and ₩ 175 per preferred share, amounting to total dividend of ₩ 16,887 million for ordinary share and ₩ 672 million for preferred share, is to be proposed to shareholders at the annual general meeting on March 28, 2019. These consolidated financial statements do not reflect this dividend payable.

25. Reserves

Changes in reserves for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	Gains on disposal of treasury share	Gains(losses) on valuation of available-for- sale financial assets	Gains on valuation of financial assets at fair value through other comprehensive income	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, 2018	₩ 952,311	₩ -	₩ 16,485	₩ (34)	₩ 8,134	₩ (1,234)	₩ 975,662
Gains on valuation of financial assets at fair value through other comprehensive income	-	-	432	-	-	-	432
Currency translation difference	-	-		-	38	-	38
Share of other comprehensive income in joint venture and associate	-	-		(15)	-	-	(15)
Cash flow hedge	-	-		-	-	1,234	1,234
Balance at December 31, 2018	₩ 952,311	₩ -	₩ 16,917	₩ (49)	₩ 8,172	₩ -	₩ 977,351
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

26. Cost of Sales

Cost of sales for the years ended December 31, 2018 and 2017, consists of:

(In millions of Korean won)		2018		2017
Beginning balance of merchandise and finished goods	₩	558,279	₩	502,142
Purchases of merchandise		2,500,951		1,458,212
Manufacturing cost for the year		24,043,603		19,058,149
Transfer from other accounts		48,864		2,241
Transfer to other accounts		(1,401,371)		(972,165)
Ending balance of merchandise and finished goods		(769,842)		(558,279)
Adjustments		(780,238)		(707,159)
Total	₩	24,200,246	₩	18,783,141

27. Selling and Administrative Expenses

Selling and administrative expenses for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	Selling expenses				Administrative expenses			
		2018		2017		2018		2017
Salaries	₩	64,525	₩	64,690	₩	31,006	₩	30,197
Post-employment benefits		9,481		10,164		4,775		4,822
Employee benefits		37,483		49,856		20,502		22,637
Training expenses		58		82		2,842		2,311
Travel expenses		3,323		3,482		1,122		974
Miscellaneous administrative expenses		851		805		496		423
Communication expenses		1,771		1,742		1,516		1,553
Vehicles maintenance expenses		442		466		360		352
Utility expenses		1,809		1,240		1,301		1,186
Rental expenses		11,976		9,055		2,013		2,481
Service expenses for oil storages		27,161		29,843		-		-
Service fees		12,923		11,759		6,646		4,456
Entertainment expenses		1,389		1,255		969		900
Export expenses		114,541		187,380		-		-
Repairs and maintenance expenses		6,490		5,308		3,472		4,563
Supplies expenses		253		301		106		7
Chemicals expenses		438		377		-		-
Outsourcing fees		14,212		15,980		9,525		13,107
Promotional and advertising expenses		24,445		26,832		8,006		7,748
Freight expenses		145,010		170,605		-		25
Insurance premium		3,109		2,979		65		146
Taxes and dues		5,445		5,201		5,557		5,761
Depreciation expenses		22,851		20,690		6,580		3,218
Amortization expenses		538		538		5,462		6,455
Impairment losses (Reversal of provision for impairment)		(242)		(155)		1		(19)
Others		275		269		710		921
Total	₩	510,557	₩	620,744	₩	113,032	₩	114,224

28. Other Income and Expenses

Other income and expenses for the years ended December 31, 2018 and 2017, are as follows:

Other income

(In millions of Korean won)		**2018**		**2017**
Gains from disposal of property, plant and equipment	₩	69	₩	773
Dividend income		1,037		1,197
Others		24,259		21,268
Gains on foreign currency transactions		198,708		265,939
Gains on foreign currency translation		9,120		24,926
Gains on derivative transactions		23,994		38,670
Gains on valuation of derivatives		4,590		24,312
Total	₩	261,777	₩	377,085

Other expenses

(In millions of Korean won)		**2018**		**2017**
Losses on disposal of property, plant and equipment	₩	617	₩	1,324
Impairment losses on intangible assets		2,471		-
Donations		19,456		14,140
Others		75,647		11,938
Losses on foreign currency transactions		256,272		241,253
Losses on foreign currency translation		9,408		17,246
Losses on derivative transactions		79,260		22,466
Losses on valuation of derivatives		9,768		5,643
Total	₩	452,899	₩	314,010

29. Finance Income and Costs

Finance income and costs for the years ended December 31, 2018 and 2017, consist of:

Finance income

(In millions of Korean won)		**2018**		**2017**
Interest income	₩	24,295	₩	52,403
Gains on foreign currency transactions		73,998		205,210
Gains on foreign currency translation		18,374		72,670
Total	₩	116,667	₩	330,283

Finance costs

(In millions of Korean won)		**2018**		**2017**
Interest expenses[1]	₩	72,309	₩	58,254
Losses on foreign currency transactions		164,166		68,585
Losses on foreign currency translation		861		45
Total	₩	237,336	₩	126,884

[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, 2018 and 2017, consists of:

(in millions Korean won)	2018	2017
Current tax		
Current tax on profit for the year	₩ 60,165	₩ 363,353
Adjustments in respect of prior years	4,791	(10,560)
Total current tax	64,956	352,793
Deferred tax		
Origination and reversal of temporary differences	8,798	45,587
Income tax expense	₩ 73,754	₩ 398,380

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)	2018	2017
Profit before income tax	₩ 331,789	₩ 1,644,869
Tax at domestic tax rates applicable to profits in the respective countries	₩ 80,880	₩ 398,550
Income not subject to tax	(6,982)	(934)
Expenses not deductible for tax purposes	3,913	5,148
Adjustments in respect of prior years	4,791	(10,560)
Tax credit and others	(11,751)	(17,739)
Effects of changes on tax brackets	2,903	(778)
Associates' results reported net of tax	-	(1)
Re-measurement of deferred tax – change in the Korean tax rate	-	24,694
Income tax expense	₩ 73,754	₩ 398,380

The weighted average applicable tax rate of the Group was 24.38% (2017: 24.23%).

The tax effect relating to components of other comprehensive income (expenses) for the years ended December 31, 2018 and 2017, is as follows:

(in millions Korean won)	2018		
	Before Tax	Tax effect	After tax
Gains(losses) on valuation of financial assets at fair value through other comprehensive income	₩ 596	₩ (164)	₩ 432
Share of other comprehensive income of joint venture and associate	(21)	6	(15)
Currency translation differences	53	(15)	38
Cash flow hedge	1,702	(468)	1,234
Remeasurements of net defined benefit liabilities	(22,022)	6,045	(15,977)
Total	₩ (19,692)	₩ 5,404	₩ (14,288)

(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

The analysis of deferred tax assets and liabilities as at December 31, 2018 and 2017, is as follows:

(In millions of Korean won)	**2018**		**2017**	
Deferred tax assets				
Deferred tax asset to be recovered after more than 12 months	₩	47,222	₩	33,320
Deferred tax asset to be recovered within 12 months		47,981		45,315
		95,203		78,635
Deferred tax liabilities				
Deferred tax liability to be recovered after more than 12 months		(235,775)		(232,649)
Deferred tax liability to be recovered within 12 months		(56,356)		(39,520)
		(292,131)		(272,169)
Deferred tax liabilities, net	₩	(196,928)	₩	(193,534)

The movements on the deferred income tax for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**		**2017**	
Beginning balance	₩	(193,534)	₩	(144,040)
Acquisition of subsidiary		-		(4,161)
Deferred income tax charged to income		(8,798)		(45,587)
Deferred income tax charged to equity		5,404		254
Ending balance	₩	(196,928)	₩	(193,534)

The movements in deferred tax assets and liabilities for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	2018			
	Beginning Balance	**Statement of Profit or loss**	**Other comprehensive income**	**Ending Balance**
Depreciation	₩ 6,021	₩ (697)	₩ -	₩ 5,324
Losses on impairment of investments	507	679	-	1,186
Salaries and wages payable	24,544	(13,271)	-	11,273
Bonus card point and etc.	7,697	(227)	-	7,470
Subsidiary and joint ventures	(5,023)	3,797	-	(1,226)
Gains (losses) on valuation of derivative instruments	1,547	102	-	1,649
Losses on impairment of property, plant and equipment	1,518	-	-	1,518
Customs duties receivable	(12,319)	(6,589)	-	(18,908)
Accrued interest income	(1,911)	1,751	-	(160)
Net defined benefit liabilities	(14,735)	3,303	-	(11,432)
Employee benefits	7,997	(157)	-	7,840
Revaluation of lands	(215,184)	-	-	(215,184)
Others	(9,272)	2,511	-	(6,761)
Gains(losses) on valuation of financial assets at fair value through other comprehensive income	(6,254)	-	(164)	(6,418)
Currency translation differences and share of other comprehensive income of associate and joint venture	(2,509)	-	(9)	(2,518)
Cash flow hedge	468	-	(468)	-
Remeasurements of net defined benefit liabilities	23,374	-	6,045	29,419
Total	₩ (193,534)	₩ (8,798)	₩ 5,404	₩ (196,928)

(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)

31. Breakdown of Expenses by Nature

Expenses by nature for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**	**2017**
Raw materials and merchandises used	₩ 22,286,125	₩ 16,923,742
Changes in inventories of finished goods, work in-progress and merchandise	(311,804)	(59,514)
Employee benefit expense	353,785	335,913
Utility expenses	1,375,126	1,133,467
Depreciation and amortization	354,161	294,172
Freight expenses	145,010	170,630
Advertising costs	18,532	20,332
Other expenses	602,900	699,367
Total cost of sales, selling and administrative expenses	₩ 24,823,835	₩ 19,518,109

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, 2018 and 2017, is calculated as follows:

(In millions of Korean won, except per share data and number of shares)		2018		2017
Profit for the year	₩	258,035	₩	1,246,489
Adjustments:				
Dividends for preferred share		(96)		(96)
Additional dividends for preferred share		(8,503)		(41,088)
Profit attributable to ordinary share shareholders		249,436		1,205,305
Weighted average number of shares of ordinary share		112,582,792		112,582,792
Basic earnings per ordinary share	₩	2,216	₩	10,706

Basic earnings per preferred share for the years ended December 31, 2018 and 2017, is calculated as follows:

(In millions of Korean won, except per share data and number of shares)		2018		2017
Profit attributable to preferred share shareholders	₩	8,599	₩	41,184
Weighted average number of shares of preferred share[1]		3,837,847		3,837,847
Basic earnings per preferred share	₩	2,241	₩	10,731

[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, 2018 and 2017, are as follows:

	2018	2017
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]	Saudi Aramco Products Trading Company[2]
	Aramco Trading Singapore Pte. Ltd.[2]	-
	-	Aramco Asia Japan K.K.[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, 2018 and 2017, and the related receivables and payables as at December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**Sales**		**Purchases**	
	2018	**2017**	**2018**	**2017**
Ultimate parent company				
Saudi Arabian Oil Company[1]	₩ -	₩ -	₩ 17,428,059	₩ 13,714,906
Joint venture				
S-OIL TOTAL Lubricants Co., Ltd.	93,248	89,865	33,086	30,617
Other related parties				
Saudi Aramco Products Trading Company	2,302,769	1,884,412	956,019	807,185
Aramco Trading Singapore Pte. Ltd.	614,837	-	343,733	-
Aramco Asia Japan K.K.	-	4	-	-
Total	₩ 3,010,854	₩ 1,974,281	₩ 18,760,897	₩ 14,552,708

(In millions of Korean won)	**Receivables**		**Payables**	
	2018	**2017**	**2018**	**2017**
Ultimate parent company				
Saudi Arabian Oil Company[1]	₩ -	₩ -	₩ 1,027,835	₩ 1,384,762
Joint venture				
S-OIL TOTAL Lubricants Co., Ltd.	955	2,428	1,456	502
Other related parties				
Saudi Aramco Products Trading Company	41,727	114,495	140,036	95,881
Aramco Trading Singapore Pte. Ltd.	219,620	-	64,459	-
Aramco Asia Japan K.K.	-	-	-	-
Total	₩ 262,302	₩ 116,923	₩ 1,233,786	₩ 1,481,145

[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, 2018.

Financial transactions with related parties for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**Equity contribution in cash**		**Dividends received**		**Dividends paid**	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**
Parent company						
Aramco Overseas Co., B.V.	₩ -	₩ -	₩ -	₩ -	₩ 380,226	₩ 495,008
Joint venture						
S-OIL TOTAL Lubricants Co., Ltd.	-	-	4,900	6,125	-	-
Associate						
Korea Oil Terminal Co., Ltd.	-	103	-	-	-	-
Total	₩ -	₩ 103	₩ 4,900	₩ 6,125	₩ 380,226	₩ 495,008

The compensation to key management for employee services for the years ended December 31, 2018 and 2017, consists of:

(In millions of Korean won)	**2018**		**2017**	
Short-term employee benefits	₩	1,482	₩	1,848
Post-employment benefits		183		198
Total	₩	1,665	₩	2,046

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, 2018 and 2017, is as follows:

(In millions of Korean won)	**2018**		**2017**	
Profit for the year	₩	258,035	₩	1,246,489
Adjustments :				
Income tax expense		73,754		398,380
Depreciation expense of property, plant and equipment		345,939		285,365
Amortization expense		8,222		8,807
Depreciation expense of lease assets		1,143		-
Post-employment benefits		36,645		35,923
Reversal of provision for impairment losses on receivables		(241)		(174)
Interest expense		72,309		58,254
Losses on foreign currency translation		10,269		17,291
Losses on derivative transactions		79,260		22,466
Losses on valuation of derivatives		9,768		5,643
Losses on disposal of property, plant and equipment		617		1,324
Impairment losses on intangible assets		2,471		-
Reversal of losses on valuation of inventories		242,161		1,372
Share of profit of joint venture		(4,161)		(5,259)
Share of loss of associate		41		129
Interest income		(24,295)		(52,403)
Gains on foreign currency translation		(27,494)		(97,596)
Gains on disposal of property, plant and equipment		(69)		(773)
Gains on derivative transactions		(23,994)		(38,670)
Gains on valuation of derivatives		(4,590)		(24,312)
Dividend income		(1,037)		(1,197)
Others		1,856		4,888
Changes in net working capital :				
Trade receivables		(111,635)		(400,596)
Other receivables		(86,941)		(51,860)
Other current assets		(2,684)		162
Inventories		(590,501)		(368,673)
Trade payables		(289,591)		615,999
Other payables		228,742		15,509
Other liabilities		999		20,242
Net defined benefit liabilities		(29,405)		(64,614)
Provisions for other liabilities and charges		971		(6)
Contract liabilities		(1,857)		-
Deferred revenues		-		(2,496)
Cash generated from operations	₩	174,707	₩	1,629,614

Significant transactions not affecting cash flows for the years ended December 31, 2018 and 2017, are as follows:

(In millions of Korean won)	**2018**	**2017**
Reclassification of construction in-progress to property, plant and equipment and intangible assets	₩ 5,416,707	₩ 248,035
Current portion of long-term borrowings and debentures	561,379	6,777
Current portion of long-term loans receivable	19,832	11,241
Increase in other payables related to acquisition of property, plant and equipment	28,336	9,383
Reclassification of long-term advance payments to property, plant and equipment	19,731	820
Reclassification of long-term prepaid expenses to property, plant and equipment	1,593	2,743
Reclassification of long-term advance payments to purchase consideration in the business combination	-	11,432

Changes in liabilities arising from financing activities for the years ended December 31, 2018 and December 31, 2017, are as follows:

(In millions of Korean won)	**2018**						
			Changes in non-cash transaction				
	Beginning balance	**Cash flows from financing activities**	**Current portion**	**Transfer in**	**Changes in foreign exchange rates**	**Reclassification from retained earnings**	**Ending balance**
Short-term borrowings and banker's usance	₩ 1,355,350	₩ 1,021,371	₩ -	₩ -	₩ (17,513)	₩ -	₩ 2,359,208
Current maturities of debentures	-	-	434,861	-	-	-	434,861
Current maturities of long-term borrowings	14,183	-	126,518	-	-	-	140,701
Debentures	2,670,275	299,139	(434,861)	1,263	-	-	2,535,816
Long-term borrowings	804,402	185,817	(126,518)	1,110	-	-	864,811
Dividend payables	85	(617,109)	-	-	-	617,126	102
Current other payables	-	-	3,680	-	-	-	3,680
Other payables	-	(1,430)	(3,680)	69,102	-	-	63,992
	₩ 4,844,295	₩ 887,788	₩ -	₩ 71,475	₩ (17,513)	₩ 617,126	₩ 6,403,171

(In millions of Korean won)	**2017**						
			Changes in non-cash transaction				
	Beginning balance	**Cash flows from financing activities**	**Current portion**	**Transfer in**	**Changes in foreign exchange rates**	**Reclassification from retained earnings**	**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
Dividend payables	81	(803,394)	-	-	-	803,398	85
	₩ 4,709,542	₩ (598,263)	₩ -	₩ 2,288	₩ (72,670)	₩ 803,398	₩ 4,844,295

35. Changes in Accounting Policies

35.1 Adoption of Korean IFRS 1109 *Financial Instruments*

As explained in Note 2, the Group has applied Korean IFRS 1109 *Financial Instruments* on January 1, 2018, the date of initial application. The application does not have a significant impact on the consolidated financial statements.

(1) Classification and Measurement of Financial Instruments

On the date of initial application, January 1, 2018, the financial instruments of the Group with any reclassifications noted, were as follows:

(in millions of Korean won)	Measurement category		Carrying amount					
	Korean IFRS 1039	Korean IFRS 1109		Korean IFRS 1039		Korean IFRS 1109		Difference
Financial assets								
Cash and cash equivalents	Amortized costs	Amortized costs	₩	480,052	₩	480,052	₩	-
Trade receivables	Amortized costs	Amortized costs		1,538,758		1,538,758		-
Other receivables	Amortized costs	Amortized costs		196,170		196,170		-
Derivative instruments	Financial assets at fair value through profit or loss	Fair value through profit or loss[2]		24,312		24,312		-
Other financial assets								
Short-term financial instruments	Amortized costs	Amortized costs	₩	1,711,000	₩	1,711,000	₩	-
Long-term deposit	Amortized costs	Amortized costs		10		10		-
Government and public bonds	Available-for-sale financial assets	Fair value through other comprehensive income[1]		4,119		4,119		-
Equity instruments	Available-for-sale financial assets	Fair value through other comprehensive income[1]		45,812		45,812		-

[1] Fair value through other comprehensive income: investments in equity instruments and debt instruments
[2] Financial assets measured at fair value through profit or loss

(2) Impairment of Financial Assets

The Group has three types of financial assets subject to Korean IFRS 1109's new expected credit loss model:

- trade receivables for sales of inventory
- debt investments carried at fair value through other comprehensive income, and
- debt investments carried at amortized cost

Upon adoption of Korean IFRS 1109, accounting policies for recognition of impairment have changed. The change in impairment methodology does not have an impact on the Group's beginning balance of retained earnings.

a. Trade receivables

The Group applies the simplified approach to measure the loss allowance at an amount equal to lifetime expected credit losses for each trade receivables.

b. Debt instruments

Debt investments at amortized cost and those at fair value through other comprehensive income are considered to be low risk, and thus the provision for impairment is determined as 12 months expected credit losses.

(3) Hedge Accounting

The foreign exchange forward contract hedges in place as at December 31, 2017 qualified as cash flow hedges under Korean IFRS 1109. The Group's risk management strategies and hedge documentation are aligned with the requirements of Korean IFRS 1109 and are thus treated as continuing hedges.

35.2 Adoption of Korean IFRS 1115 *Revenue from Contracts with Customers*

As explained in Note 2, the Group has applied Korean IFRS 1115 *Revenue from contracts with customers* from January 1, 2018. The application does not have a significant impact on the financial statements. The Group has also voluntarily changed the presentation of line items in the statements of financial position to reflect the terminology of Korean IFRS 1115 and Korean IFRS 1109. Contract liabilities in relation to the customer loyalty programme were previously presented as deferred revenue (₩ 24,937 million as at December 31, 2018).

36. Greenhouse Gas Emission Permits and Obligations

Quantity of emission permits for the 2nd plan period (2018–2020) as at December 31, 2018, is as follows:

(In thousands of tCO2-eq)	Emission Permits[1]
2018[1]	7,681
2019	5,310
2020	5,310
	18,301

[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, 2018 and 2017, are as follows:

(In thousands of tCO2-eq)	**2018**	**2017**
Beginning balance	511	44
Allocation[1]	7,170	6,034
Emission[2]	(6,263)	(5,567)
Ending balance	1,417	511

[1] The Group had transactions of emission permit transfer during the years ended December 31, 2018 and 2017 taking the supply of emission permits in the future into consideration. The results of the transactions have been reflected to the quantity of the permits.

[2] This is the best estimate as at December 31, 2018 and subject to change with submission to government.

Greenhouse gas emissions obligations for the year ended December 31, 2018, is measured at zero and there are no emission permits pledged as collateral.

37. 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