

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2020 and 2019
with the independent auditor's report



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Independent auditor's report

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Independent auditor's report

The Shareholders and Board of Directors Hanwha Total Petrochemical Co., Ltd.

Opinion

We have audited the consolidated financial statements of Hanwha Total Petrochemical Co., Ltd. (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as of December 31, 2020 and 2019, 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 of December 31, 2020 and 2019, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards ("KIFRS").

Basis for opinion

We conducted our audit in accordance with Korean Auditing Standards ("KGAAS"). 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 that are relevant to our audit of the consolidated financial statements in the Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

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 KIFRS, 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, or has no realistic alternative but to do so.

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 KGAAS 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 KGAAS, 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 Group'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.



March 16, 2021

This audit report is effective as of March 16, 2021, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the independent auditor's report date to the time this report is used. Such events and circumstances could significantly affect the accompanying consolidated financial statements and may result in modifications to this report.

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries

Consolidated financial statements
for the years ended December 31, 2020 and 2019

“The accompanying consolidated financial statements, including all footnotes and disclosures, have been prepared by, and are the responsibility of, the Group.”

Jong Seo Kim & Thierry Boulfroy
Chief Executive Officers
Hanwha Total Petrochemical Co., Ltd.

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as of December 31, 2020 and 2019

(Korean won)

	Notes	2020	2019
Assets			
Current assets:			
Cash and cash equivalents	3	₩ 231,451,124,896	₩ 368,644,459,888
Short-term investment securities	3	90,834,800,000	-
Trade and other accounts receivable, net	3,4,13, 22,24	606,333,255,566	828,016,299,699
Prepaid expenses		16,640,694,136	13,165,106,658
Other current assets		2,508,006,515	3,522,632,866
Inventories, net	5	1,061,699,446,067	1,232,322,655,434
Total current assets		<u>2,009,467,327,180</u>	<u>2,445,671,154,545</u>
Non-current assets:			
Long-term investment securities	3,6	16,870,305,966	12,167,615,478
Long-term loans, net	3,4	949,384,680	262,975,703
Long-term accounts receivable, net	3,4,24	3,538,133,847	3,788,023,385
Long-term prepaid expenses		54,402,395,386	54,588,551,372
Property, plant and equipment, net	7,8,23	4,538,254,282,160	4,517,823,813,389
Intangible assets, net	9,23	31,510,628,005	32,963,059,867
Defined benefit assets, net	12	4,725,934,016	-
Other non-current assets	3	15,500,000	15,500,000
Deferred tax assets	18	7,269,016,257	9,929,433,794
Total non-current assets		<u>4,657,535,580,317</u>	<u>4,631,538,972,988</u>
Total assets		<u>₩ 6,667,002,907,497</u>	<u>₩ 7,077,210,127,533</u>

(Continued)

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as of December 31, 2020 and 2019 (cont'd)

(Korean won)

	Notes	2020	2019
Liabilities			
Current liabilities:			
Trade and other			
accounts payable	3,13,14,22 ₩	592,264,516,317 ₩	830,246,977,710 ₩
Short-term borrowings	3,4,10,21,24	94,768,700,797	134,025,576,583
Current portion of bonds payable	3,8,10,		
and long-term borrowings	21,24	603,994,382,294	424,291,143,279
Income tax payable		20,013,674,145	41,998,213,264
Other current liabilities	11	33,883,695,449	11,113,333,623
Total current liabilities		<u>1,344,924,969,002</u>	<u>1,441,675,244,459</u>
Non-current liabilities:			
Bonds payable, net	3,10,21,24	1,340,919,474,134	1,736,815,858,250
Long-term borrowings	3,8,10,21,24	508,678,257,589	290,137,225,646
Long-term accounts payable	3	78,199,855	-
Defined benefit liabilities, net	12	-	2,069,809,182
Other non-current liabilities		10,099,605,540	8,298,176,411
Total non-current liabilities		<u>1,859,775,537,118</u>	<u>2,037,321,069,489</u>
Total liabilities		<u>3,204,700,506,120</u>	<u>3,478,996,313,948</u>
Equity			
Equity attributable to			
owners of the parent:			
Issued capital	16	95,826,580,000	95,826,580,000
Share premium	16	864,898,306,667	864,898,306,667
Accumulated other			
comprehensive income (loss)	16	5,078,280,408	(1,074,259,885)
Retained earnings	16	2,496,499,234,302	2,638,563,186,803
		<u>3,462,302,401,377</u>	<u>3,598,213,813,585</u>
Non-controlling interests		-	-
Total equity		<u>3,462,302,401,377</u>	<u>3,598,213,813,585</u>
Total liabilities and equity		<u>₩ 6,667,002,907,497</u>	<u>₩ 7,077,210,127,533</u>

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

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
Consolidated statements of comprehensive income
for the years ended December 31, 2020 and 2019
(Korean won)

	Notes	2020	2019
Sales	22,23	₩ 6,762,650,159,635	₩ 9,844,955,613,194
Cost of goods sold	5,17,22	6,422,139,229,943	9,135,696,523,929
Gross profit		340,510,929,692	709,259,089,265
Selling and administrative expenses	15,17,22	234,073,691,177	242,263,111,100
Operating profit	23	106,437,238,515	466,995,978,165
Finance income	3,13,17	303,921,415,204	274,301,944,080
Finance costs	3,13,17	252,559,755,748	311,138,402,406
Other income	17	15,531,029,671	29,614,730,028
Other expenses	17	26,741,442,271	33,280,087,736
Profit before tax		146,588,485,371	426,494,162,131
Income tax expenses	18	31,612,678,746	106,160,802,121
Profit for the year	23	₩ 114,975,806,625	₩ 320,333,360,010
Other comprehensive income			
<i>Other comprehensive income (loss) that may be reclassified to profit or loss in subsequent periods:</i>			
Net gain (loss) on valuation of interest rate swaps	13	1,338,385,072	(1,048,651,741)
Exchange differences on translation of foreign operations		277,380,786	367,835,438
Net other comprehensive income (loss) that may be reclassified to profit or loss in subsequent periods		1,615,765,858	(680,816,303)
<i>Other comprehensive income that will not be reclassified to profit or loss in subsequent periods:</i>			
Remeasurement gain (loss) on net defined benefit liabilities (assets)	12	(4,873,901,110)	2,669,023,365
Net gain on valuation of financial instruments measured at FVOCI	6	5,362,916,419	-
Net other comprehensive income that will not be reclassified to profit or loss in subsequent periods		489,015,309	2,669,023,365
Other comprehensive income for the year, net of tax		2,104,781,167	1,988,207,062
Total comprehensive income for the year, net of tax		₩ 117,080,587,792	₩ 322,321,567,072
Profit for the year attributable to:			
Owners of the parent		₩ 114,975,806,625	₩ 320,333,360,010
Non-controlling interests		-	-
		₩ 114,975,806,625	₩ 320,333,360,010
Total comprehensive income for the year attributable to:			
Owners of the parent		117,080,587,792	322,321,567,072
Non-controlling interests		-	-
		₩ 117,080,587,792	₩ 322,321,567,072
Earnings per share:			
Basic and diluted, earnings per share	19	₩ 5,999	₩ 16,714

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

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2020 and 2019
(Korean won)

	Issued capital	Share premium	Accumulated other comprehensive income(loss)	Retained earnings	Equity attributable to owners of the parent	Non-controlling interests	Total equity
As of January 1, 2019	₩ 95,826,580,000	₩ 864,898,306,667	₩ (393,443,582)	₩ 2,807,466,803,428	₩ 3,767,798,246,513	₩ -	₩ 3,767,798,246,513
Profit for the year	-	-	-	320,333,360,010	320,333,360,010	-	320,333,360,010
Net loss on valuation of interest rate swaps (Note 13)	-	-	(1,048,651,741)	-	(1,048,651,741)	-	(1,048,651,741)
Exchange differences on translation of foreign operations	-	-	367,835,438	-	367,835,438	-	367,835,438
Re-measurement gain	-	-	-	-	-	-	-
on net defined benefit liabilities (Note 12)	-	-	-	-	-	-	-
Total comprehensive income for the year	-	-	-	2,669,023,365	2,669,023,365	-	2,669,023,365
Annual dividends (Note 20)	-	-	(680,816,303)	323,002,383,375	322,321,567,072	-	322,321,567,072
Interim dividends (Note 20)	-	-	-	(396,906,000,000)	(396,906,000,000)	-	(396,906,000,000)
Interim dividends (Note 20)	-	-	-	(95,000,000,000)	(95,000,000,000)	-	(95,000,000,000)
As of December 31, 2019	₩ 95,826,580,000	₩ 864,898,306,667	₩ (1,074,259,885)	₩ 2,638,563,186,803	₩ 3,598,213,813,585	₩ -	₩ 3,598,213,813,585
As of January 1, 2020	₩ 95,826,580,000	₩ 864,898,306,667	₩ (1,074,259,885)	₩ 2,638,563,186,803	₩ 3,598,213,813,585	₩ -	₩ 3,598,213,813,585
Profit for the year	-	-	-	114,975,806,625	114,975,806,625	-	114,975,806,625
Net gain on valuation of interest rate swaps (Note 13)	-	-	1,338,385,072	-	1,338,385,072	-	1,338,385,072
Exchange differences on translation of foreign operations	-	-	277,380,786	-	277,380,786	-	277,380,786
Re-measurement loss on net defined benefit liabilities (assets) (Note 12)	-	-	-	(4,873,901,110)	(4,873,901,110)	-	(4,873,901,110)
Net gain on valuation of financial instruments measured at FVOCI	-	-	5,362,916,419	-	5,362,916,419	-	5,362,916,419
Reclassification of gain on valuation of financial instruments measured at FVOCI	-	-	(826,141,984)	-	-	-	-
Total comprehensive income for the year	-	-	6,152,540,293	110,928,047,499	117,080,587,792	-	117,080,587,792
Annual dividends (Note 20)	-	-	-	(222,992,000,000)	(222,992,000,000)	-	(222,992,000,000)
Interim dividends (Note 20)	-	-	-	(30,000,000,000)	(30,000,000,000)	-	(30,000,000,000)
As of December 31, 2020	₩ 95,826,580,000	₩ 864,898,306,667	₩ 5,078,280,408	₩ 2,496,499,234,302	₩ 3,462,302,401,377	₩ -	₩ 3,462,302,401,377

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

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2020 and 2019
(Korean won)

	2020	2019
Cash flows from operating activities:		
Profit for the year	₩ 114,975,806,629	₩ 320,333,360,010
Non-cash adjustments to reconcile profit for the year to net cash flows provided by operating activities (Note 21)	436,783,571,658	564,234,531,439
Working capital adjustments (Note 21)	210,822,386,009	390,216,405,172
Interest received	1,922,565,069	4,510,995,544
Income tax paid	(53,099,889,290)	(197,186,996,724)
Net cash flows provided by operating activities	711,404,440,075	1,082,108,295,441
Cash flows from investing activities:		
Increase in short-term investment securities	(90,854,400,000)	-
Decrease in long-term loans	73,591,023	191,064,776
Increase in long-term loans	(760,000,000)	-
Proceeds from disposal of long-term investment securities	2,311,852,469	42,555,000
Acquisition of long-term investment securities	(1,087,200)	(282,598)
Decrease in long-term accounts receivable	524,927,119	151,621,858
Increase in long-term accounts receivable	(259,876,000)	(821,129,000)
Proceeds from disposal of property, plant and equipment	2,627,523,903	3,695,417,020
Acquisition of property, plant and equipment	(515,267,057,025)	(726,495,883,412)
Proceeds from disposal of intangible assets	1,664,090,905	1,200,000,000
Acquisition of intangible assets	(460,998,006)	(458,552,321)
Settlement of derivatives	78,392,543,484	(9,944,471,061)
Dividends received	175,767,495	241,998,725
Net cash flows used in investing activities	(521,833,121,833)	(732,197,661,013)
Cash flows from financing activities:		
Net increase (decrease) in short-term borrowings (Note 21)	(38,220,860,861)	12,246,632,371
Repayment of current portion of bonds payable and long-term borrowings (Note 21)	(425,114,985,055)	(548,494,354,642)
Increase in long-term borrowings (Note 21)	500,000,000,000	-
Repayment of long-term borrowings (Note 21)	(50,265,000,000)	-
Increase in bonds payable (Note 21)	-	852,080,000,000
Interest paid	(60,320,652,153)	(64,497,603,492)
Dividends paid	(252,992,000,000)	(491,906,000,000)
Net cash flows used in financing activities	(326,913,498,069)	(240,571,325,763)
Net increase (decrease) in cash and cash equivalents	(137,342,179,827)	109,339,308,665
Cash and cash equivalents as of January 1	368,644,459,888	259,217,545,462
Net foreign exchange difference	148,844,835	87,605,761
Cash and cash equivalents as of December 31	₩ 231,451,124,896	₩ 368,644,459,888

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

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2020 and 2019

1. General information

Corporate information

Hanwha Total Petrochemical Co., Ltd. (the "Company") was incorporated on August 1, 2003 under the laws of the Republic of Korea in accordance with a joint venture agreement entered into on June 10, 2003, between Total Holdings UK Limited ("Total Holdings") of the United Kingdom and Samsung General Chemical Co., Ltd. ("SGC") of the Republic of Korea, and an in-kind contribution agreement entered into between the Company and SGC.

Upon the Company's incorporation on August 1, 2003, SGC sold 50% of its equity interest in the Company to Total Holdings in accordance with a share purchase agreement entered into with Total Holdings, SGC and SGC's two shareholders on June 10, 2003. At the time of establishment, the Company was named Samsung Atofina Co., Ltd. and changed to Samsung Total Petrochemical Co., Ltd. in October 2004.

On November 26, 2014, Hanwha Group and Samsung Group entered into a share transfer agreement of SGC. In accordance with a resolution at the shareholders' meeting on April 30, 2015, the name of the Company was changed from Samsung Total Petrochemical Co., Ltd. to Hanwha Total Petrochemical Co., Ltd.

As of December 31, 2020, the issued and outstanding shares of the Company are equally owned by Total Holdings and Hanwha General Chemical Co., Ltd. ("HGC")

The Company acquired all of the equity interest of West Sea Utilities Investment Private Company in West Sea Power Co., Ltd. and West Sea Water Co., Ltd. (acquired companies) in January 2012 to enhance the stabilization and efficiency of operations and competitiveness through the integration of utility facilities. The acquired companies were merged into the Company as of March 28, 2012.

The primary business activity of the Company is the production and sale of various petrochemical and fuel products, including polyethylenes, polypropylenes, butadienes, styrene monomers, paraxylenes, jetoil and gasoline. The Company's manufacturing plant is located in Seosan-si (the Seosan City), Choongchungnam-do.

Information about consolidated subsidiaries

The consolidated subsidiaries as of December 31, 2020 and 2019 are as follows:

Subsidiary	Principal activities	Equity interest (%)	Country of domicile
Dongguan Hanwha Total Engineering Plastic Co., Ltd.	Production and sale of synthetic resins and various plastics	100	China
Hanwha Total Petrochemical Trading (Shanghai) Co., Ltd.	Trading	100	China

Summarized financial information of the consolidated subsidiaries as of and for the years ended December 31, 2020 and 2019, which has been included in the accompanying consolidated financial statements, is as follows (Korean won in thousands):

Subsidiary	2020						Total comprehensive income
	Assets	Liabilities	Equity	Sales	Profit for the year		
Dongguan Hanwha Total Engineering Plastic Co., Ltd.	₩ 24,821,820	₩ 4,115,955	₩ 20,705,865	₩ 36,762,976	₩ 2,297,111	₩ 2,512,305	
Hanwha Total Petrochemical Trading (Shanghai) Co., Ltd.	2,839,626	622,531	2,217,095	4,952,319	239,708	301,895	

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2020 and 2019

1. General information (cont'd)

Subsidiary	2019						Total comprehensive income
	Assets	Liabilities	Equity	Revenue	Profit for the year		
Dongguan Hanwha Total Engineering Plastic Co., Ltd.	₩ 24,096,996	₩ 3,035,737	₩ 21,061,259	₩ 39,270,898	₩ 1,513,999	₩ 1,840,411	
Hanwha Total Petrochemical Trading (Shanghai) Co., Ltd.	3,800,212	737,932	3,062,280	5,890,988	394,983	436,406	

There were no changes in the scope of consolidation for the years ended December 31, 2020 and 2019.

2. Basis of preparation and summary of significant accounting policies

Basis of preparation

The Group prepares its statutory consolidated financial statements in the Korean language in conformity with Korean International Financial Reporting Standards ("KIFRS") enacted by the *Act on External Audit of Stock Companies*. The consolidated financial statements have been prepared on a historical cost basis, except for certain assets that have been measured at fair value in accordance with KIFRS. The accompanying consolidated financial statements have been translated into the English language from the Korean language financial statements. In the event of any differences in interpreting the financial statements or the independent auditor's report thereon, the Korean version, which is used for regulatory reporting purpose, shall prevail. The consolidated financial statements are presented in Korean won, and all values are rounded to the nearest thousands, except when otherwise indicated.

Basis of consolidation

The consolidated financial statements comprise the financial statements of the Company and its subsidiaries (collectively referred to as the "Group") as of December 31, 2020 and 2019. Control is achieved when the Group is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Specifically, the Group controls an investee if and only if the Group has:

- Power over the investee (i.e. existing rights that give it the current ability to direct the relevant activities of the investee)
- Exposure, or rights, to variable returns from its involvement with the investee, and
- The ability to use its power over the investee to affect its returns

When the Group has less than a majority of the voting or similar rights of an investee, the Group considers all relevant facts and circumstances in assessing whether it has power over an investee, including:

- The contractual arrangements with the other vote holders of the investee
- Rights arising from other contractual arrangements
- The Group's voting rights and potential voting rights

The Group re-assesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control. Consolidation of a subsidiary begins when the Group obtains control over the subsidiary and ceases when the Group loses control of the subsidiary. Assets, liabilities, income and expenses of a subsidiary acquired or disposed of during the year are included in the consolidated financial statements from the date the Group gains control until the date the Group ceases to control the subsidiary.

Profit or loss and each component of other comprehensive income (OCI) are attributed to the owners of the parent of the Group and to the non-controlling interests, even if this results in the non-controlling interests having a deficit balance. When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with the Group's accounting policies. All intra-group assets and liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated in full on consolidation.

2. Basis of preparation and summary of significant accounting policies (cont'd)

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction. If the Group loses control over a subsidiary, it:

- Derecognizes the assets (including goodwill) and liabilities of the subsidiary
- Derecognizes the carrying amount of any non-controlling interests
- Derecognizes the cumulative translation differences recorded in equity
- Recognizes the fair value of the consideration received
- Recognizes the fair value of any investment retained
- Recognizes any surplus or deficit in profit or loss
- Reclassifies the parent's share of components previously recognized in OCI to profit or loss or retained earnings, as appropriate.

Current versus non-current classification

The Group presents assets and liabilities in the consolidated statement of financial position based on current/non-current classification.

An asset is current when it is either:

- Expected to be realized or intended to be sold or consumed in the normal operating cycle
- Held primarily for the purpose of trading
- Expected to be realized within twelve months after the reporting period, or
- Cash or cash equivalent unless restricted from being exchanged or used to settle a liability for at least twelve months after the reporting period

All other assets are classified as non-current.

A liability is current when either:

- It is expected to be settled in the normal operating cycle
- It is held primarily for the purpose of trading
- It is due to be settled within twelve months after the reporting period, or
- There is no unconditional right to defer the settlement of the liability for at least twelve months after the reporting period

The Group classifies all other liabilities as non-current.

Deferred tax assets and liabilities are classified as non-current assets and liabilities.

Fair value measurement

The Group measures financial instruments, such as, derivatives, at fair value at each balance sheet date. Fair value related disclosures for financial instruments that are measured at fair value, or where fair values are disclosed, are summarized in Note 3.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place either:

- In the principal market for the asset or liability, or
- In the absence of a principal market, in the most advantageous market for the asset or liability

The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest. The Group uses valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs.

2. Basis of preparation and summary of significant accounting policies (cont'd)

All assets and liabilities for which fair value is measured or disclosed in the consolidated financial statements are categorized within the fair value hierarchy, described as follows, based on the lowest level input that is significant to the fair value measurement as a whole:

Level 1: Quoted (unadjusted) market prices in active markets for identical assets or liabilities

Level 2: Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observable

Level 3: Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable

For assets and liabilities that are recognized in the consolidated financial statements at fair value on a recurring basis, the Group determines whether transfers have occurred between levels in the hierarchy by re-assessing categorization (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period.

For the purpose of fair value disclosures, the Group has determined classes of assets and liabilities on the basis of the nature, characteristics and risks of the asset or liability and the level of the fair value hierarchy, as explained above.

Financial assets

Initial recognition and measurement

Financial assets are classified, at initial recognition, as subsequently measured at amortized cost, fair value through other comprehensive income (OCI), and fair value through profit or loss (FVTPL).

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Group's business model for managing them. With the exception of trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient, the Group initially 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. Trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient are measured at the transaction price determined under KIFRS 1115.

In order for a financial asset to be classified and measured at amortized cost or fair value through OCI, it needs to give rise to cash flows that are 'solely payments of principal and interest (SPPI)' on the principal amount outstanding. This assessment is referred to as the SPPI test and is performed at an instrument level.

The Group's business model for managing financial assets refers to how it manages its financial assets in order to generate cash flows. The business model determines whether cash flows will result from collecting contractual cash flows, selling the financial assets, or both.

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the market place (regular way trades) are recognized on the trade date, i.e., the date that the Group commits to purchase or sell the asset.

Subsequent measurement

For purposes of subsequent measurement, financial assets are classified in four categories:

- Financial assets at amortized cost (debt instruments)
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)
- Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments)
- Financial assets at FVTPL

2. Basis of preparation and summary of significant accounting policies (cont'd)

Financial assets at amortized cost (debt instruments)

The Group measures financial assets at amortized cost if both of the following conditions are met:

- The financial asset is held within a business model with the objective to hold financial assets in order to collect contractual cash flows, and
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding

Financial assets at amortized cost are subsequently measured using the effective interest rate (EIR) method and are subject to impairment. Gains and losses are recognized in profit or loss when the asset is derecognized, modified or impaired.

Financial assets at fair value through OCI (debt instruments)

The Group measures debt instruments at fair value through OCI if both of the following conditions are met:

- The financial asset is held within a business model with the objective of both holding to collect contractual cash flows and selling, and
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding

For debt instruments at fair value through OCI, interest income, foreign exchange revaluation and impairment losses or reversals are recognized in the consolidated statement of comprehensive income and computed in the same manner as for financial assets measured at amortized cost. The remaining fair value changes are recognized in OCI. Upon derecognition, the cumulative fair value change recognized in OCI is recycled to profit or loss.

Financial assets designated at fair value through OCI (equity instruments)

Upon initial recognition, the Group can elect to classify irrevocably its equity investments as equity instruments designated at fair value through OCI when they meet the definition of equity under KIFRS 1032 *Financial Instruments: Presentation* and are not held for trading. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognized as other income in the consolidated statement of comprehensive income when the right of payment has been established, except when the Group benefits from such proceeds as a recovery of part of the cost of the financial asset, in which case, such gains are recorded in OCI. Equity instruments designated at fair value through OCI are not subject to impairment assessment.

The Group may elect to classify irrevocably its non-listed equity investments under this category.

Financial assets at fair value through profit or loss

Financial assets at fair value through profit or loss include financial assets held for trading and financial assets designated upon initial recognition at fair value through profit or loss. Financial assets are classified as held for trading if they are acquired for the purpose of selling or repurchasing in the near term. Derivatives, including separated embedded derivatives, are also classified as held for trading unless they are designated as effective hedging instruments. Financial assets with cash flows that are not solely payments of principal and interest are classified and measured at fair value through profit or loss, irrespective of the business model. Notwithstanding the criteria for debt instruments to be classified at amortized cost or at fair value through OCI, as described above, debt instruments may be designated at fair value through profit or loss on initial recognition if doing so eliminates, or significantly reduces, an accounting mismatch.

Financial assets at fair value through profit or loss are carried in the consolidated statement of financial position at fair value with net changes in fair value recognized in the consolidated statement of comprehensive income.

2. Basis of preparation and summary of significant accounting policies (cont'd)

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if: the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss. Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the fair value through profit or loss category.

A derivative embedded within a hybrid contract containing a financial asset host is not accounted for separately. The financial asset host together with the embedded derivative is required to be classified in its entirety as a financial asset at fair value through profit or loss.

Derecognition

A financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) is primarily derecognized (i.e., removed from the Group's consolidated statement of financial position) when:

- The rights to receive cash flows from the asset have expired, or
- The Group has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either (a) the Group has transferred substantially all the risks and rewards of the asset, or (b) the Group has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset

When the Group has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if, and to what extent, it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the Group continues to recognize the transferred asset to the extent of its continuing involvement. In that case, the Group also recognizes an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Group has retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Group could be required to repay.

Impairment of financial assets

Further disclosures relating to impairment of financial assets are also provided in the following notes:

	<u>Notes</u>
➤ Disclosures for significant assumptions	3
➤ Trade receivables	4

The Group recognizes an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECLs are recognized in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

For trade receivables, the Group applies a simplified approach in calculating ECLs. Therefore, the Group does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date. The Group has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

2. Basis of preparation and summary of significant accounting policies (cont'd)

Financial liabilities

Initial recognition and measurement

Financial liabilities are classified, at initial recognition, as financial liabilities at fair value through profit or loss, loans and borrowings, payables, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Group's financial liabilities include trade and other accounts payable, loans and borrowings including bank overdrafts and derivative financial instruments.

Subsequent measurement

The measurement of financial liabilities depends on their classification, as described below:

Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as of fair value through profit or loss.

Financial liabilities are classified as held for trading if they are incurred for the purpose of repurchasing in the near term. This category also includes derivative financial instruments entered into by the Group that are not designated as hedging instruments in hedge relationships as defined by KIFRS 1109. Separated embedded derivatives are also classified as held for trading unless they are designated as effective hedging instruments.

Gains or losses on liabilities held for trading are recognized in profit or loss.

Financial liabilities designated upon initial recognition at fair value through profit or loss are designated at the initial date of recognition, and only if the criteria in KIFRS 1109 are satisfied. The Group has not designated any financial liability as at fair value through profit or loss.

Loans and borrowings

After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortized cost using the EIR method. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the EIR amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR.

Derecognition

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the derecognition of the original liability and the recognition of a new liability. The difference in the respective carrying amounts is recognized in profit or loss.

Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated statement of financial position if, and only if, (a) there is a currently enforceable legal right to offset the recognized amounts and (b) there is an intention to settle on a net basis, or to realize the assets and settle the liabilities simultaneously.

2. Basis of preparation and summary of significant accounting policies (cont'd)

Derivative financial instruments and hedge accounting

Initial recognition and subsequent measurement

The Group uses derivative financial instruments, such as forward currency contracts, interest rate swaps and forward commodity contracts, to hedge its foreign currency risks, interest rate risks and commodity price risks, respectively. Such derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative.

For the purpose of hedge accounting, hedges are classified as:

- Fair value hedges when hedging the exposure to changes in the fair value of a recognized asset or liability or an unrecognized firm commitment
- Cash flow hedges when hedging the exposure to variability in cash flows that is either attributable to a particular risk associated with a recognized asset or liability or a highly probable forecast transaction or the foreign currency risk in an unrecognized firm commitment

At the inception of a hedge relationship, the Group formally designates and documents the hedge relationship to which the Group wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge.

Before January 1, 2018, the documentation includes identification of the hedging instrument, the hedged item or transaction, the nature of the risk being hedged and how the Group will assess the effectiveness of changes in the hedging instrument's fair value in offsetting the exposure to changes in the hedged item's fair value or cash flows attributable to the hedged risk. Such hedges are expected to be highly effective in achieving offsetting changes in fair value or cash flows and are assessed on an ongoing basis to determine that they actually have been highly effective throughout the financial reporting periods for which they were designated.

Beginning January 1, 2018, the documentation includes identification of the hedging instrument, the hedged item, the nature of the risk being hedged and how the Group will assess whether the hedging relationship meets the hedge effectiveness requirements (including the analysis of sources of hedge ineffectiveness and how the hedge ratio is determined). A hedging relationship qualifies for hedge accounting if it meets all of the following effectiveness requirements:

- There is 'an economic relationship' between the hedged item and the hedging instrument.
- The effect of credit risk does not 'dominate the value changes' that result from that economic relationship.
- The hedge ratio of the hedging relationship is the same as that resulting from the quantity of the hedged item that the Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

Hedges that meet the strict criteria for hedge accounting are accounted for, as described below:

Fair value hedges

The change in the fair value of a hedging derivative is recognized in profit or loss. The change in the fair value of the hedged item attributable to the risk hedged is recorded as part of the carrying value of the hedged item and is also recognized in profit or loss.

For fair value hedges relating to items carried at amortized cost, any adjustment to carrying value is amortized through profit or loss over the remaining term of the hedge using the EIR method. EIR amortization may begin as soon as an adjustment exists and no later than when the hedged item ceases to be adjusted for changes in its fair value attributable to the risk being hedged.

If the hedged item is derecognized, the unamortized fair value is recognized immediately in profit or loss.

When an unrecognized firm commitment is designated as a hedged item, the subsequent cumulative change in the fair value of the firm commitment attributable to the hedged risk is recognized as an asset or liability with a corresponding gain or loss recognized in profit or loss.

2. Basis of preparation and summary of significant accounting policies (cont'd)

Cash flow hedges

The effective portion of the gain or loss on the hedging instrument is recognized in OCI in the cash flow hedge reserve, while any ineffective portion is recognized immediately in profit or loss. The cash flow hedge reserve is adjusted to the lower of the cumulative gain or loss on the hedging instrument and the cumulative change in fair value of the hedged item.

The Group uses forward currency contracts as hedges of its exposure to foreign currency risk in forecast transactions and firm commitments, as well as forward commodity contracts for its exposure to volatility in the commodity prices. The ineffective portion relating to forward currency contract is recognized as other expense and the ineffective portion relating to commodity contracts is recognized in other income or expenses.

The amounts accumulated in OCI are accounted for, depending on the nature of the underlying hedged transaction. If the hedged transaction subsequently results in the recognition of a non-financial item, the amount accumulated in equity is removed from the separate component of equity and included in the initial cost or other carrying amount of the hedged asset or liability. This is not a reclassification adjustment and will not be recognized in OCI for the period. This also applies where the hedged forecast transaction of a non-financial asset or non-financial liability subsequently becomes a firm commitment for which fair value hedge accounting is applied.

For any other cash flow hedges, the amount accumulated in OCI is reclassified to profit or loss as a reclassification adjustment in the same period or periods during which the hedged cash flows affect profit or loss.

If cash flow hedge accounting is discontinued, the amount that has been accumulated in OCI must remain in accumulated OCI if the hedged future cash flows are still expected to occur. Otherwise, the amount will be immediately reclassified to profit or loss as a reclassification adjustment. After discontinuation, once the hedged cash flow occurs, any amount remaining in accumulated OCI must be accounted for depending on the nature of the underlying transaction as described above.

Revenue from contracts with customers

(a) Sale of goods

For sale of goods contracts with customers, the Group generally expects that revenue is recognized when the control of the goods has passed to the buyer, usually on delivery of the goods. However, if the terms of the contract include inherent shipping and handling activities that occur after the transfer of the control to the customer, they are accounted for as separate promised services.

(b) Rendering of services

The shipping and handling services rendered prior to the control of the goods is transferred to a customer are order-related activities. However, if the control of goods has been transferred to the customer, shipping and handling services are provided in connection with the customer's goods, which indicates that the Group is rendering services to the customer. Accordingly, a portion of the proceeds from the sale of goods will be reclassified as revenue from rendering of services, and the timing of revenue recognition will depend on the transfer of control and the completion of the performance obligations.

Cash and cash equivalents

Cash and cash equivalents comprise cash at banks and on hand, short-term deposits and investments, with a maturity of three months or less from the date of acquisition, that can be readily convertible to a known amount of cash and be subject to an insignificant risk of changes in value.

Inventories

Inventories are valued at the lower of cost and net realizable value, with cost being determined using the moving-average method except for materials-in-transit which are determined using the specific identification cost method. Acquisition costs relating to inventory include purchase costs, conversion costs and other costs incurred to bring the inventory to its current location and present condition. The cost of finished goods and semi-finished goods include cost of raw materials, direct labor costs and other direct costs and manufacturing overheads. Net realizable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale.

2. Basis of preparation and summary of significant accounting policies (cont'd)

Property, plant and equipment

Property, plant and equipment are stated at cost, net of accumulated depreciation and accumulated impairment losses, if any. Such cost includes the cost of replacing part of the property, plant and equipment and borrowing costs for long-term construction projects if the recognition criteria are met. When significant parts of property, plant and equipment are required to be replaced at intervals, the Group recognizes such parts as individual assets with specific useful lives and depreciates them accordingly. Likewise, when a major inspection is performed, its cost is recognized in the carrying amount of the plant and equipment as a replacement if the recognition criteria are satisfied. All other repair and maintenance costs are recognized in profit or loss as incurred.

Depreciation of property, plant and equipment is provided using the straight-line method over the estimated useful lives of the assets as follows:

	Years
Buildings	10~55
Structures	4~40
Machinery and equipment	5~20
Vehicles and others	4~6

An item of property, plant and equipment and any significant part initially recognized is derecognized upon disposal or when no future economic benefits are expected from its use or disposal. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the consolidated statement of comprehensive income when the asset is derecognized. The residual values, useful lives and methods of depreciation of property, plant and equipment are reviewed at each financial year end, and adjusted prospectively, if appropriate.

Leases

The Group assesses at contract inception whether a contract is, or contains, a lease. That is, if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

Group as a lessee

The Group applies a single recognition and measurement approach for all leases, except for short-term leases and leases of low-value assets. The Group recognizes lease liabilities to make lease payments and right-of-use assets representing the right to use the underlying assets.

(a) Right-of-use assets

The Group recognizes right-of-use assets at the commencement date of the lease (i.e., the date the underlying asset is available for use). Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received. Right-of-use assets are depreciated on a straight-line basis over the shorter of the lease term and the estimated useful lives of the assets, as follows:

	Years
Buildings	2~8
Structures	2~30
Machinery and equipment	2~10
Vehicles	2~8
Others	2~4

If ownership of the leased asset transfers to the Group at the end of the lease term or the cost reflects the exercise of a purchase option, depreciation is calculated using the estimated useful life of the asset.

As described in "Impairment of non-financial assets" of the accounting policies section, right-of-use assets are also subject to impairment.

2. Basis of preparation and summary of significant accounting policies (cont'd)

(b) Lease liabilities

At the commencement date of the lease, the Group recognizes lease liabilities measured at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Group and payments of penalties for terminating the lease, if the lease term reflects the Group exercising the option to terminate. Variable lease payments that do not depend on an index or a rate are recognized as expenses (unless they are incurred to produce inventories) in the period in which the event or condition that triggers the payment occurs.

In calculating the present value of lease payments, the Group uses its incremental borrowing rate at the lease commencement date because the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in the lease payments (e.g., changes to future payments resulting from a change in an index or rate used to determine such lease payments) or a change in the assessment of an option to purchase the underlying asset.

The Group's lease liabilities are included in interest-bearing loans and borrowings (see Note 8).

(c) Short-term leases and leases of low-value assets

The Group applies the short-term lease recognition exemption to its short-term leases of some assets (i.e., those leases that have a lease term of 12 months or less from the commencement date and do not contain a purchase option). It also applies the lease of low-value assets recognition exemption to leases of office equipment that are considered to be low value. Lease payments on short-term leases and leases of low-value assets are recognized as expense on a straight-line basis over the lease term.

Intangible assets

Intangible assets acquired separately are measured at cost on initial recognition. The cost of intangible assets acquired in a business combination is their fair value at the date of acquisition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and accumulated impairment losses. Internally generated intangible assets, excluding capitalized development costs, are not capitalized and the related expenditure is reflected in the consolidated statement of comprehensive income in the year in which the expenditure is incurred.

The useful lives of intangible assets are assessed as either finite or indefinite. Intangible assets with finite lives are amortized over the useful economic life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at least at the end of each reporting period. Changes in the expected useful life or the expected pattern of consumption of future economic benefits embodied in the asset are considered to modify the amortization period or method, as appropriate, and are treated as changes in accounting estimates. The amortization expense on intangible assets with finite lives is recognized in the consolidated statement of comprehensive income as the expense category that is consistent with the function of the intangible assets.

Intangible assets with indefinite useful lives are not amortized, but are tested for impairment annually, either individually or at the cash-generating unit level. The assessment of indefinite life is reviewed annually to determine whether the indefinite life continues to be supportable. If not, the change in useful life from indefinite to finite is made on a prospective basis. Intangible assets with definite useful lives are amortized based on the straight-line method over the estimated useful lives between 4 and 30 years.

Gains or losses arising from derecognition of an intangible asset are measured as the difference between the net disposal proceeds and the carrying amount of the asset and are recognized in profit or loss when the asset is derecognized.

2. Basis of preparation and summary of significant accounting policies (cont'd)

Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period of time to get ready for its intended use or sale are capitalized as part of the cost of the respective asset. All other borrowing costs are expensed in the period in which they are incurred. Borrowing costs consist of interest and other costs that the Group incurs in connection with the borrowing of funds.

Impairment of non-financial assets

The Group assesses, at each reporting date, whether there is an indication that an asset may be impaired. If any indication exists, or when annual impairment testing for an asset is required, the Group estimates the asset's recoverable amount. An asset's recoverable amount is the higher of an asset's or cash-generating unit's (CGU) fair value less costs of disposal and its value in use. Recoverable amount is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets. When the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount.

In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. In determining fair value less costs of disposal, recent market transactions are taken into account. If no such transactions can be identified, an appropriate valuation model is used. These calculations are corroborated by valuation multiples, quoted share prices for publicly traded companies or other available fair value indicators.

Impairment losses of continuing operations, including impairment on inventories, are recognized in the consolidated statement of comprehensive income in expense categories consistent with the function of the impaired asset, except for properties previously revalued with the revaluation taken to OCI. For such properties, the impairment is recognized in OCI up to the amount of any previous revaluation.

For assets excluding goodwill, an assessment is made at each reporting date to determine whether there is an indication that previously recognized impairment losses no longer exist or have decreased. If such indication exists, the Group estimates the asset's or CGU's recoverable amount. A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognized for the asset in prior years. Such reversal is recognized in the consolidated statement of comprehensive income unless the asset is carried at a revalued amount, in which case, the reversal is treated as a revaluation increase.

Net defined benefit liabilities (assets)

The Group operates a defined benefit plan, under which amounts to be paid as retirement benefits are determined by reference to a formula based on the employees' earnings and years of service. The defined benefit asset or liability comprises the present value of the defined benefit obligations, less the fair value of plan assets out of which the obligations are to be settled.

The cost of providing benefits under the defined benefit plan is determined using the projected unit credit method. Re-measurements, comprising of actuarial gains and losses and the return on plan assets (excluding net interest), are recognized immediately in the consolidated statement of financial position with a corresponding debit or credit to retained earnings through OCI in the period in which they occur. Re-measurements are not reclassified to profit or loss in subsequent periods.

Past service costs are recognized in profit or loss on the earlier of:

- The date of the plan amendment or curtailment, and
- The date that the Group recognizes restructuring-related costs or termination benefits

2. Basis of preparation and summary of significant accounting policies (cont'd)

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. The Group recognizes service costs and net interest expense or income in the net defined benefit obligation under 'cost of goods sold' and 'selling and administrative expenses' in the consolidated statement of comprehensive income.

The Group operates a defined contribution plan for vested employees, and the obligation of contribution to the defined contribution plan is recognized as retirement benefits and reflected in current profit or loss unless the contribution is included in the cost of plan assets on the date of contribution. The Group recognizes a shortfall of the contribution as a liability and an excess contribution as an asset to an extent that the excess contribution reduces future payments or cash is refunded.

Provisions and contingent liabilities

Provisions are recognized when (a) the Group has a present obligation (legal or constructive) as a result of a past event, (b) it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and (c) a reliable estimate can be made of the amount of the obligation. The amount that the Group recognizes as a provision is the best estimate for the expenditures which are required to perform a current obligation at the end of reporting period, in consideration of unavoidable risks and uncertainties for related events and circumstances. If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects, where appropriate, the risks specific to the liability.

In addition, if an event occurred in the past but the Group has a potential obligation of which the existence is identified when an uncertain future event occurs, or if the past event or transaction causes a current obligation but resources are not likely to flow out of the Group, or if an amount required to perform the current obligation cannot be reliably estimated, the Group recognizes a contingent liability and discloses it in Note 15.

Functional currency and foreign currency translation

The Group's consolidated financial statements are presented in Korean won, which is the Group's functional currency. Transactions in foreign currencies are initially recorded by the Group at the functional currency spot rates at the date the transaction first qualifies for recognition. Monetary assets and liabilities denominated in foreign currencies are translated at the functional currency spot rate of exchange at the reporting date. Differences arising on settlement or translation of monetary assets and liabilities are recognized in profit or loss. Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates as at the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the dates when the fair value is determined. The gain or loss arising on translation of non-monetary items is treated in line with the recognition of gain or loss on change in fair value of the item (i.e. translation differences on items whose fair value gain or loss is recognized in OCI or profit or loss are also recognized in OCI or profit or loss, respectively).

Income taxes

Current income tax

Current income tax assets and liabilities for the current period are measured at the amount expected to be recovered from, or paid to, the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted, at the reporting date in the countries where the Group operates and generates taxable income.

Current income tax relating to items recognized directly in equity is recognized in equity and not in the consolidated statement of comprehensive income. Management periodically evaluates positions taken in the tax returns with respect to situations in which applicable tax regulations are subject to interpretation and establishes provisions where appropriate.

2. Basis of preparation and summary of significant accounting policies (cont'd)

Deferred tax

Deferred tax is provided using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes at the reporting date.

Deferred tax liabilities are recognized for all taxable temporary differences, except:

- When the deferred tax liability arises from the initial recognition of goodwill or an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss
- In respect of taxable temporary differences associated with investments in subsidiaries, associates and interests in joint ventures, when the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future

Deferred tax assets are recognized for all deductible temporary differences, the carry forward of unused tax credits and any unused tax losses. Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, the carry forward of unused tax credits and unused tax losses can be utilized, except:

- When the deferred tax asset relating to the deductible temporary difference arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss
- In respect of deductible temporary differences associated with investments in subsidiaries, associates and interests in joint ventures, deferred tax assets are recognized only to the extent that it is probable that the temporary differences will reverse in the foreseeable future and taxable profit will be available against which the temporary differences can be utilized

The carrying amount of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are re-assessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax assets to be recovered.

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

Deferred tax relating to items recognized outside profit or loss is recognized outside profit or loss. Deferred tax items are recognized in correlation to the underlying transaction either in OCI or directly in equity.

Deferred tax assets and deferred tax liabilities are offset if a legally enforceable right exists to set off current tax assets against current tax liabilities and the deferred taxes relate to the same taxable entity and the same taxation authority.

Earnings per share

Basic earnings per share are calculated by dividing profit for the year attributable to owners of the parent by the weighted-average number of ordinary shares outstanding during the year.

Emission rights and emission liabilities

The Group is allocated emission allowances free of charge by the government in accordance with the Act on Allocation and Trading of Emission Allowances in the Republic of Korea. The emission allowances are allocated to the Group annually for the planned periods, and the Group is to deliver the equivalent quantity of emission allowances for actual emissions to the government.

The Group measures the emission allowances that it receives from the government free of charge at nil and measures any purchased emission allowances at cost.

In addition, emission allowances are derecognized in the consolidated statement of financial position when they are delivered to the government or sold.

2. Basis of preparation and summary of significant accounting policies (cont'd)

An emission liability is recognized only where actual emissions exceed the allocated emission allowances, and the cost of emissions is recognized as cost of goods sold. The emission liability is measured by adding the following (1) and (2).

- (1) The carrying value of emission allowances for the year to be delivered to the government
- (2) The best estimate of expenditures, as at the end of a reporting period, in performing emission obligations exceeding the above emission allowances

Where the Group borrows a part of the allocated emission allowances for any of future periods to deliver to the government, it recognizes the borrowed portion as deferred revenue when derecognizing the liability and offsets the deferred revenue against the actual cost of emission, as it purchases the emission allowances to fill any shortfall in the period which the borrowed emission allowances belong to.

Significant accounting judgments, estimates and assumptions

The preparation of the Group's consolidated financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosure of contingent liabilities, at the end of the reporting period. However, uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of the asset or liability in future periods.

The key assumptions concerning the future and other key sources of estimation uncertainty at the reporting date, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are described below.

Retirement benefit plans

The cost of the defined benefit plan and the present value of the defined benefit obligation are determined using actuarial valuations. An actuarial valuation involves making various assumptions that may differ from actual developments in the future. These include the determination of the discount rate, future salary increases and mortality rates. Due to the complexity of the valuation, the underlying assumptions and its long-term nature, a defined benefit obligation is highly sensitive to changes in these assumptions. All assumptions are reviewed at each reporting date.

Fair value of financial instruments

When the fair value of financial assets and financial liabilities recorded in the consolidated statement of financial position cannot be derived from active markets, their fair value is determined using valuation techniques including the discounted cash flow model. The inputs to these models are taken from observable markets where possible, but where this is not feasible, a degree of judgment is required in establishing fair values. The judgments include considerations of inputs such as liquidity risk, credit risk and volatility. Changes in assumptions about these factors could affect the reported fair value of financial instruments.

Determining the lease term of contracts with renewal and termination options – Group as lessee

The Group determines the lease term as the non-cancellable term of the lease, together with any periods covered by an option to extend the lease if it is reasonably certain to be exercised, or any periods covered by an option to terminate the lease, if it is reasonably certain not to be exercised.

The Group has several lease contracts that include extension and termination options. The Group applies judgment in evaluating whether it is reasonably certain whether or not to exercise the option to renew or terminate the lease. That is, it considers all relevant factors that create an economic incentive for it to exercise either the renewal or termination. After the commencement date, the Group reassesses the lease term if there is a significant event or change in circumstances that is within its control and affects its ability to exercise or not to exercise the option to renew or to terminate (e.g., construction of significant leasehold improvements or significant customization to the leased asset).

2. Basis of preparation and summary of significant accounting policies (cont'd)

Leases - Estimating the incremental borrowing rate

The Group cannot readily determine the interest rate implicit in the lease, therefore, it uses its incremental borrowing rate (IBR) to measure lease liabilities. The IBR is the rate of interest that the Group would have to pay to borrow over a similar term, and with a similar security, the funds necessary to obtain an asset of a similar value to the right-of-use asset in a similar economic environment.

New and amended standards and interpretations

The Group applied for the first-time certain standards and amendments, which are effective for annual periods beginning on or after January 1, 2020. The Group has not early adopted any other standard, interpretation or amendment that has been issued but is not yet effective.

Amendments to KIFRS 1103: Definition of a Business

The amendment to KIFRS 1103 *Business Combinations* clarifies that to be considered a business, an integrated set of activities and assets must include, at a minimum, an input and a substantive process that, together, significantly contribute to the ability to create output. Furthermore, it clarifies that a business can exist without including all of the inputs and processes needed to create outputs. These amendments had no impact on the consolidated financial statements of the Group, but may impact future periods should the Group enter into any business combinations.

Amendments to KIFRS 1107, KIFRS 1109 and KIFRS 1039: Interest Rate Benchmark Reform

The amendments to KIFRS 1109 and KIFRS 1039 *Financial Instruments: Recognition and Measurement* provide a number of reliefs, which apply to all hedging relationships that are directly affected by interest rate benchmark reform. A hedging relationship is affected if the reform gives rise to uncertainty about the timing and/or amount of benchmark-based cash flows of the hedged item or the hedging instrument. These amendments have no impact on the consolidated financial statements of the Group.

Amendments to KIFRS 1001 and KIFRS 1008: Definition of Material

The amendments provide a new definition of material that states, "information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity." The amendments clarify that materiality will depend on the nature or magnitude of information, either individually or in combination with other information, in the context of the financial statements. A misstatement of information is material if it could reasonably be expected to influence decisions made by the primary users. These amendments had no impact on the consolidated financial statements of, nor is there expected to be any future impact to the Group.

Conceptual Framework for Financial Reporting issued on March 29, 2018

The Conceptual Framework is not a standard, and none of the concepts contained therein override the concepts or requirements in any standard. The purpose of the Conceptual Framework is to assist the KASB in developing standards, to help preparers develop consistent accounting policies where there is no applicable standard in place and to assist all parties to understand and interpret the standards. This will affect those entities which developed their accounting policies based on the Conceptual Framework. The revised Conceptual Framework includes some new concepts, updated definitions and recognition criteria for assets and liabilities and clarifies some important concepts. These amendments had no impact on the consolidated financial statements of the Group.

Standards issued but not yet effective

The new and amended standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's consolidated financial statements are disclosed below. The Group intends to adopt these new and amended standards and interpretations, if applicable, when they become effective.

2. Basis of preparation and summary of significant accounting policies (cont'd)

Amendments to KIFRS 1001: Classification of Liabilities as Current or Non-current

The amendments to paragraphs 69 to 76 of KIFRS 1001 specifies the requirements for classifying liabilities as current or non-current. The amendments clarify:

- What is meant by a right to defer settlement
- That a right to defer must exist at the end of the reporting period
- That classification is unaffected by the likelihood that an entity will exercise its deferral right
- That only if an embedded derivative in a convertible liability is itself an equity instrument would the terms of a liability not impact its classification

The amendments are effective for annual reporting periods beginning on or after January 1, 2023 and must be applied retrospectively. The Group is currently assessing the impact the amendments will have on current practice and whether existing loan agreements may require renegotiation.

Reference to the Conceptual Framework – Amendments to KIFRS 1103

The amendments are intended to replace a reference to the Framework for the Preparation and Presentation of Financial Statements, issued in 1989, with a reference to the Conceptual Framework for Financial Reporting issued in March 2018 without significantly changing its requirements. The Board also added an exception to the recognition principle of KIFRS 1103 to avoid the issue of potential 'day 2' gains or losses arising for liabilities and contingent liabilities that would be within the scope of KIFRS 1037 or KIFRS 2121 *Levies*, if incurred separately. At the same time, the Board decided to clarify existing guidance in KIFRS 1103 for contingent assets that would not be affected by replacing the reference to the Framework for the Preparation and Presentation of Financial Statements. The amendments are effective for annual reporting periods beginning on or after January 1, 2022 and apply prospectively.

Property, Plant and Equipment: Proceeds before Intended Use – Amendments to KIFRS 1016

The amendment prohibit entities deducting from the cost of an item of property, plant and equipment, any proceeds from selling items produced while bringing that asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Instead, an entity recognizes the proceeds from selling such items, and the costs of producing those items, in profit or loss.

The amendment is effective for annual reporting periods beginning on or after January 1, 2022 and must be applied retrospectively to items of property, plant and equipment made available for use on or after the beginning of the earliest period presented when the entity first applies the amendment. The Group is in process to review the potential impact of the amendments on its consolidated financial statements.

Onerous Contracts – Costs of Fulfilling a Contract – Amendments to KIFRS 1037

to the amendments specify which costs an entity needs to include when assessing whether a contract is onerous or loss-making. The amendments apply a "directly related cost approach". The costs that relate directly to a contract to provide goods or services include both incremental costs and an allocation of costs directly related to contract activities. General and administrative costs do not relate directly to a contract and are excluded unless they are explicitly chargeable to the counterparty under the contract. The amendments are effective for annual reporting periods beginning on or after January 1, 2022. The Group will apply these amendments to contracts for which it has not yet fulfilled all its obligations at the beginning of the annual reporting period in which it first applies the amendments.

Annual improvements 2018-2020 Cycle

KIFRS 1101 *First-time Adoption of International Financial Reporting Standards* – Subsidiary as a first-time adopter

The amendment permits a subsidiary that elects to apply paragraph D16(1) of KIFRS 1101 to measure cumulative translation differences using the amounts reported by the parent, based on the parent's date of transition to KIFRS. This amendment is also applied to an associate or joint venture that elects to apply paragraph D16(1) of KIFRS 1101. The amendment is effective for annual reporting periods beginning on or after January 1, 2022 with earlier adoption permitted.

2. Basis of preparation and summary of significant accounting policies (cont'd)

KIFRS 1109 *Financial Instruments* – Fees in the '10 per cent' test for derecognition of financial liabilities

The amendment clarifies the fees that an entity includes when assessing whether the terms of a new or modified financial liability are substantially different from the terms of the original financial liability. These fees include only those paid or received between the borrower and the lender, including fees paid or received by either the borrower or lender on the other's behalf. An entity applies the amendment to financial liabilities that are modified or exchanged on or after the beginning of the annual reporting period in which the entity first applies the amendment.

The amendment is effective for annual reporting periods beginning on or after January 1, 2022 with earlier adoption permitted. The Group will apply the amendments to financial liabilities that are modified or exchanged on or after the beginning of the annual reporting period in which the entity first applies the amendment.

The amendments are not expected to have a material impact on the Group.

KIFRS 1041 *Agriculture* – Taxation in fair value measurements

The amendment removes the requirement in paragraph 22 of KIFRS 1041 that entities exclude cash flows for taxation when measuring the fair value of assets within the scope of KIFRS 1041.

An entity applies the amendment prospectively to fair value measurements on or after the beginning of the first annual reporting period beginning on or after January 1, 2022 with earlier adoption permitted.

The amendments are not expected to have a material impact on the Group.

Amendments to KIFRS 1116 *Covid-19 Related Rent Concessions*

The amendments provide relief to lessees from applying KIFRS 1116 guidance on lease modification accounting for rent concessions arising as a direct consequence of the Covid-19 pandemic. As a practical expedient, a lessee may elect not to assess whether a Covid-19 related rent concession from a lessor is a lease modification. A lessee that makes this election accounts for any change in lease payments resulting from the Covid-19 related rent concession the same way it would account for the change under KIFRS 1116 if the change were not a lease modification.

The amendment applies to annual reporting periods beginning on or after 1 June 2020. Earlier application is permitted. This amendment had no impact on the consolidated financial statements of the Group.

3. Financial instruments

Financial assets as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020				
	Financial assets at FVTPL	Financial assets at amortized cost	Financial assets at FVOCI	Financial assets designated as hedges	Total
Current assets:					
Cash and cash equivalents	₩ -	₩ 231,451,125	₩ -	₩ -	₩ 231,451,125
Short-term investment securities	90,834,800	-	-	-	90,834,800
Trade and other accounts receivable:					
Trade accounts receivable	-	525,535,894	-	-	525,535,894
Other accounts receivable	9,597,212	62,018,799	-	9,038,019	80,654,030
Accrued income	25,642	7,555	-	-	33,197
Guarantee deposits	-	110,135	-	-	110,135
	100,457,654	819,123,508	-	9,038,019	928,619,181
Non-current assets:					
Long-term investment securities	-	148,505	16,721,801	-	16,870,306
Long-term loans	-	949,385	-	-	949,385
Long-term accounts receivable:					
Refundable deposits	-	3,538,134	-	-	3,538,134
Other non-current assets:					
Long-term financial instruments	-	15,500	-	-	15,500
	-	4,651,524	16,721,801	-	21,373,325
	₩ 100,457,654	₩ 823,775,032	₩ 16,721,801	₩ 9,038,019	₩ 949,992,506

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Notes to the consolidated financial statements
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3. Financial instruments (cont'd)

	2019				Total
	Financial assets at FVTPL	Financial assets at amortized cost	Financial assets at FVOCI	Financial assets designated as hedges	
Current assets:					
Cash and cash equivalents	₩ -	₩ 368,644,460	₩ -	₩ -	₩ 368,644,460
Trade and other accounts receivable:					
Trade accounts receivable	-	692,692,503	-	-	692,692,503
Other accounts receivable	197,173	107,903,920	-	27,088,393	135,189,486
Accrued income	-	21,390	-	-	21,390
Guarantee deposits	-	112,921	-	-	112,921
	197,173	1,169,375,194	-	27,088,393	1,196,660,760
Non-current assets:					
Long-term investment securities	-	194,515	11,973,100	-	12,167,615
Long-term loans	-	262,976	-	-	262,976
Long-term accounts receivable:					
Refundable deposits	-	3,788,023	-	-	3,788,023
Other non-current assets:					
Long-term financial instruments	-	15,500	-	-	15,500
	-	4,261,014	11,973,100	-	16,234,114
	₩ 197,173	₩ 1,173,636,208	₩ 11,973,100	₩ 27,088,393	₩ 1,212,894,874

Financial liabilities as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020			Total
	Financial liabilities at FVTPL	Financial liabilities designated as hedges	Financial liabilities at amortized cost	
Current liabilities:				
Trade and other accounts payable:				
Trade accounts payable	₩ -	₩ -	₩ 417,305,209	₩ 417,305,209
Other accounts payable	3,324,345	903,301	102,975,142	107,202,788
Accrued expenses	-	-	67,536,082	67,536,082
Deposits withheld	-	-	220,436	220,436
Short-term borrowings	-	-	94,768,701	94,768,701
Current portion of bonds payable and long-term borrowings	-	-	603,994,382	603,994,382
	3,324,345	903,301	1,286,799,953	1,291,027,599
Non-current liabilities:				
Bonds payable	-	-	1,340,919,474	1,340,919,474
Long-term borrowings	-	-	508,678,258	508,678,258
Long-term accounts payable	-	-	78,200	78,200
	-	-	1,849,675,932	1,849,675,932
	₩ 3,324,345	₩ 903,301	₩ 3,136,475,885	₩ 3,140,703,531

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
Notes to the consolidated financial statements
December 31, 2020 and 2019

3. Financial instruments (cont'd)

	2019			
	Financial liabilities at FVTPL	Financial liabilities designated as hedges	Financial liabilities at amortized costs	Total
Current liabilities:				
Trade and other accounts payable:				
Trade accounts payable	₩ -	₩ -	₩ 593,413,528	₩ 593,413,528
Other accounts payable	11,743,456	2,420,571	165,152,513	179,316,540
Accrued expenses	-	-	57,417,609	57,417,609
Deposits withheld	-	-	99,300	99,300
Short-term borrowings	-	-	134,025,577	134,025,577
Current portion of bonds payable and long-term borrowings	-	-	424,291,143	424,291,143
	11,743,456	2,420,571	1,374,399,670	1,388,563,697
Non-current liabilities:				
Bonds payable	-	-	1,736,815,858	1,736,815,858
Long-term borrowings	-	-	290,137,226	290,137,226
	-	-	2,026,953,084	2,026,953,084
	₩ 11,743,456	₩ 2,420,571	₩ 3,401,352,754	₩ 3,415,516,781

Gains or losses by financial instrument for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020				
	Financial assets		Financial liabilities		Total
	Financial assets at FVTPL	Financial assets at amortized cost	Financial liabilities at FVTPL	Financial liabilities at amortized cost	
Interest income	₩ -	₩ 1,934,372	₩ -	₩ -	₩ 1,934,372
Interest expenses	-	-	-	(52,480,476)	(52,480,476)
Gain on foreign exchange translation	-	132,375	-	33,831,136	33,963,511
Loss on foreign exchange translation	-	(4,663,790)	(18,369,038)	(286,746)	(23,319,574)
Gain (loss) on valuation of derivative instruments	9,597,212	-	(3,324,345)	-	6,272,867
Gain (loss) on settlement of derivative instruments	131,917,780	-	(52,958,550)	-	78,959,230

	2019				
	Financial assets		Financial liabilities		Total
	Financial assets at FVTPL	Financial assets at amortized cost	Financial liabilities at FVTPL	Financial liabilities at amortized cost	
Interest income	₩ -	₩ 4,306,862	₩ -	₩ -	₩ 4,306,862
Interest expenses	-	-	-	(46,162,993)	(46,162,993)
Gain on foreign exchange translation	27,088,393	46,242	-	29,828,902	56,963,536
Loss on foreign exchange translation	-	(5,728,476)	-	(35,627,294)	(41,355,770)
Gain (loss) on valuation of derivative instruments	197,173	-	(11,743,456)	-	(11,546,283)
Gain (loss) on settlement of derivative instruments	78,312,485	-	(88,256,956)	-	(9,944,471)

Above gains or losses include selling and administrative expenses and finance income (costs) arising from the financial assets and liabilities.

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Notes to the consolidated financial statements
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3. Financial instruments (cont'd)

Set out below, is a comparison by class of the carrying amounts and fair value of the Group's financial instruments (Korean won in thousands):

	2020		2019	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets:				
Cash and cash equivalents	₩ 231,451,125	₩ 231,451,125	₩ 368,644,460	₩ 368,644,460
Short-term investment securities	90,834,800	90,834,800	-	-
Trade and other accounts receivable:				
Trade accounts receivable	525,535,894	525,535,894	692,692,503	692,692,503
Other accounts receivable (derivative assets)	18,635,231	18,635,231	27,285,566	27,285,566
Other accounts receivable	62,018,799	62,018,799	107,903,920	107,903,920
Accrued income	33,197	33,197	21,390	21,390
Guarantee deposits	110,135	110,135	112,921	112,921
Long-term investment securities	16,870,306	16,870,306	12,167,615	12,167,615
Long-term loans	949,385	949,385	262,976	262,976
Long-term accounts receivable:				
Refundable deposits	3,538,134	3,538,134	3,788,023	3,788,023
Other non-current assets:				
Long-term financial instruments	15,500	15,500	15,500	15,500
	<u>₩ 949,992,506</u>	<u>₩ 949,992,506</u>	<u>₩ 1,212,894,874</u>	<u>₩ 1,212,894,874</u>

	2020		2019	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial liabilities:				
Trade and other accounts payable:				
Trade accounts payable	₩ 417,305,210	₩ 417,305,210	₩ 593,413,528	₩ 593,413,528
Other accounts payable (derivative liabilities)	4,227,646	4,227,646	14,164,027	14,164,027
Other accounts payable	102,975,142	102,975,142	165,152,513	165,152,513
Accrued expenses	67,536,082	67,536,082	57,417,609	57,417,609
Deposits withheld	220,436	220,436	99,300	99,300
Short-term borrowings	94,768,701	94,768,701	134,025,577	134,025,577
Current portion of bonds payable and long-term borrowings	603,994,382	603,994,382	424,291,143	424,291,143
Bonds payable	1,340,919,474	1,340,919,474	1,736,815,858	1,736,815,858
Long-term borrowings	508,678,258	508,678,258	290,137,226	290,137,226
Long-term accounts payable	78,200	78,200	-	-
	<u>₩ 3,140,703,531</u>	<u>₩ 3,140,703,531</u>	<u>₩ 3,415,516,781</u>	<u>₩ 3,415,516,781</u>

Hanwha Total Petrochemical Co., Ltd. and its subsidiaries
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3. Financial instruments (cont'd)

The fair value of the financial assets and liabilities is included at the amount at which the instrument could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale. The following methods and assumptions were used to estimate the fair values:

- The Group enters into derivative financial instruments with various counterparties, principally financial institutions with investment grade credit ratings. Derivatives valued using valuation techniques with market observable inputs are mainly interest rate swaps and foreign exchange forward contracts. The most frequently applied valuation techniques include forward pricing and swap models, using present value calculations. The models incorporate various inputs including the credit quality of counterparties, foreign exchange spot and forward rates, interest rate curves and forward rate curves of the underlying asset.
- The Group applied discount cash flow method, discounting future cash flows by appropriate discount rate to evaluate long-term investment securities

Management assessed that the book value of financial instruments approximates their respective fair value except for derivative financial instruments.

The levels of fair value measurements of financial instruments as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020			
	Level 1	Level 2	Level 3	Total
Assets and liabilities measured at fair value:				
Derivative assets				
(other accounts receivable) ₩	-	₩ 18,635,231	₩ -	₩ 18,635,231
Derivative liabilities				
(other accounts payable)	-	4,227,646	-	4,227,646
Short-term investment securities	-	90,834,800	-	90,834,800
Long-term investment securities	-	-	16,721,801	16,721,801
Assets and liabilities for which fair values are disclosed:				
Cash and cash equivalents	14,155	231,436,970	-	231,451,125
Trade accounts receivable	-	-	525,535,894	525,535,894
Other accounts receivable	-	-	62,018,799	62,018,799
Accrued income	-	-	33,197	33,197
Guarantee deposits	-	-	110,135	110,135
Long-term investment securities	-	-	148,505	148,505
Long-term loans	-	-	949,385	949,385
Refundable deposits	-	-	3,538,134	3,538,134
Long-term financial instruments	-	15,500	-	15,500
Trade accounts payable	-	-	417,305,210	417,305,210
Other accounts payable	-	-	102,975,142	102,975,142
Accrued expenses	-	-	67,536,082	67,536,082
Deposits withheld	-	-	220,436	220,436
Short-term borrowings	-	94,768,701	-	94,768,701
Current portion of bonds payable and long-term borrowings	-	603,994,382	-	603,994,382
Bonds payable	-	1,340,919,474	-	1,340,919,474
Long-term borrowings	-	508,678,258	-	508,678,258
Long-term accounts payable	-	-	78,200	78,200

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3. Financial instruments (cont'd)

	2019			
	Level 1	Level 2	Level 3	Total
Assets and liabilities measured at fair value:				
Derivative assets (other accounts receivable)	₩ -	₩ 27,285,566	₩ -	₩ 27,285,566
Derivative liabilities (other accounts payable)	-	14,164,027	-	14,164,027
Long-term investment securities	-	-	11,973,100	11,973,100
Assets and liabilities for which fair values are disclosed:				
Cash and cash equivalents	13,144	368,631,316	-	368,644,460
Trade accounts receivable	-	-	692,692,503	692,692,503
Other accounts receivable	-	-	107,903,920	107,903,920
Accrued income	-	-	21,390	21,390
Guarantee deposits	-	-	112,921	112,921
Long-term investment securities	-	-	194,515	194,515
Long-term loans	-	-	262,976	262,976
Refundable deposits	-	-	3,788,023	3,788,023
Long-term financial instruments	-	15,500	-	15,500
Trade accounts payable	-	-	593,413,528	593,413,528
Other accounts payable	-	-	165,152,513	165,152,513
Accrued expenses	-	-	57,417,609	57,417,609
Deposits withheld	-	-	99,300	99,300
Short-term borrowings	-	134,025,577	-	134,025,577
Current portion of bonds payable and long-term borrowings	-	424,291,143	-	424,291,143
Bonds payable	-	1,736,815,858	-	1,736,815,858
Long-term borrowings	-	290,137,226	-	290,137,226

For the years ended December 31, 2020 and 2019, there have been no transfers between level 1 and level 2 fair value measurements. Derivatives assets and liabilities that the Group holds are over-the-counter derivatives and are included in level 2 as all of the significant inputs used in the fair value measurement are directly or indirectly observable.

Restricted deposits as of December 31, 2020 and 2019 consist of the following (Korean won in thousands):

	2020		2019		Description
Long-term financial instruments	₩	15,500	₩	15,500	Deposits for maintenance of checking accounts

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4. Trade and other accounts receivable

Trade and other accounts receivable as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020		
	Costs	Allowance for doubtful accounts	Net book value
Trade accounts receivable	₩ 526,126,052	₩ (590,158)	₩ 525,535,894
Other receivables (*)	85,284,881	-	85,284,881
	<u>₩ 611,410,933</u>	<u>₩ (590,158)</u>	<u>₩ 610,820,775</u>

	2019		
	Costs	Allowance for doubtful accounts	Net book value
Trade accounts receivable	₩ 693,347,043	₩ (654,540)	₩ 692,692,503
Other receivables (*)	139,374,796	-	139,374,796
	<u>₩ 832,721,839</u>	<u>₩ (654,540)</u>	<u>₩ 832,067,299</u>

(*) Other receivables consist of other accounts receivable, accrued income, long-term loans, guarantee deposits and refundable deposits.

The Group has established a credit rating and credit limit system to estimate allowance for doubtful accounts by credit rating of customers. The allowance for doubtful account is established at the range from 1% to 5% of the balances of trade accounts receivable by credit ratings, excluding transaction with subsidiaries of Hanwha Group and Total Group, government-owned companies, and major conglomerates (Samsung, Hyundai Motors, SK, LG, Lotte, etc.). For bad debts, 20% ~ 100% of the balances of trade accounts receivable are established as an allowance for doubtful accounts by considering factors such as collaterals and the status of customers (court receivership, composition and default). Receivables for which credit enhancement has been made by commercial insurance, payment guarantees, and letters of credit are excluded from the allowance for doubtful accounts.

A reversal of allowance for doubtful accounts included in selling and administrative expenses amounted to ₩64,382 thousand and ₩43,765 thousand for the years ended December 31, 2020 and 2019, respectively.

The aging analysis of trade and other accounts receivable as of December 31, 2020 and 2019 is as follows (Korean won in thousands):

	2020					
	Neither past due nor impaired	Past due but not impaired			Impaired	Total
		Within 90 days	91 – 180 days	Over 180 days		
Trade accounts receivable	₩ 523,704,998	₩ 1,793,216	₩ -	₩ 37,680	₩ 590,158	₩ 526,126,052
Other receivables(*)	66,649,650	-	-	-	-	66,649,650
	<u>₩ 590,354,648</u>	<u>₩ 1,793,216</u>	<u>₩ -</u>	<u>₩ 37,680</u>	<u>₩ 590,158</u>	<u>₩ 592,775,702</u>

(*) Financial assets at FVTPL relating to derivative instruments, such as forward currency contracts, are excluded from other receivables.

	2019					
	Neither past due nor impaired	Past due but not impaired			Impaired	Total
		Within 90 days	91 – 180 days	Over 180 days		
Trade accounts receivable	₩ 689,687,572	₩ 2,785,956	₩ 75,412	₩ 143,563	₩ 654,540	₩ 693,347,043
Other receivables(*)	112,089,230	-	-	-	-	112,089,230
	<u>₩ 801,776,802</u>	<u>₩ 2,785,956</u>	<u>₩ 75,412</u>	<u>₩ 143,563</u>	<u>₩ 654,540</u>	<u>₩ 805,436,273</u>

(*) Financial assets at FVTPL relating to derivative instruments, such as forward currency contracts, are excluded from other receivables.

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4. Trade and other accounts receivable (cont'd)

The Group discounted trade accounts receivable pursuant to export bill discount agreements entered into with various financial institutions during the years ended December 31, 2020 and 2019. As the Group retains the risks and rewards relating to the provision of trade accounts receivable, the Group continues to recognize the discounted trade accounts receivable in its consolidated statements of financial position and recognizes short-term borrowings for the consideration received (See Note 10).

Discounted trade accounts receivable as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Book value:		
Discounted trade accounts receivable	₩ 49,994,357	₩ 56,063,210
Related short-term borrowings	49,994,357	56,063,210

There is no significant difference between the book value and fair value of discounted trade accounts receivable and related short-term borrowings, respectively.

5. Inventories

Inventories as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020		
	Costs	Valuation allowance	Net book value
Finished goods	₩ 207,075,196	₩ (4,491,245)	₩ 202,583,951
Semi-finished goods	100,826,796	(702,340)	100,124,456
Raw materials	232,784,587	-	232,784,587
Sub-materials	15,266,428	-	15,266,428
Supplies	124,635,106	-	124,635,106
By-products	41,149,531	-	41,149,531
Materials-in-transit	345,155,387	-	345,155,387
	<u>₩ 1,066,893,031</u>	<u>₩ (5,193,585)</u>	<u>₩ 1,061,699,446</u>
	2019		
	Costs	Valuation allowance	Net book value
Finished goods	₩ 241,592,835	₩ (3,908,446)	₩ 237,684,389
Semi-finished goods	127,752,066	(1,086,090)	126,665,976
Raw materials	219,847,138	-	219,847,138
Sub-materials	10,122,461	-	10,122,461
Supplies	112,632,819	-	112,632,819
By-products	54,713,782	-	54,713,782
Materials-in-transit	470,656,091	-	470,656,091
	<u>₩ 1,237,317,192</u>	<u>₩ (4,994,536)</u>	<u>₩ 1,232,322,656</u>

Loss on valuation of inventories included in cost of goods sold amounted to ₩199,050 thousand for the year ended December 31, 2020, and reversal of loss on valuation of inventories included in cost of goods sold amounted to ₩46,036,939 thousand for the year ended December 31, 2019.

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6. Long-term investments securities

Long-term investments securities of the Group as of December 31, 2020 and 2019 are as following (Korean won in thousands):

	2020		2019	
	Acquisition cost	Book value	Book value	
Financial assets at FVOCI:				
Non-listed equity investments, etc.	₩ 8,674,609	₩ 16,721,801	₩	11,973,100
Financial assets at amortized cost:				
National bonds	148,505	148,505		194,515
	<u>₩ 8,823,114</u>	<u>₩ 16,870,306</u>	<u>₩</u>	<u>12,167,615</u>

Financial assets at FVOCI of the Group as of December 31, 2020 and 2019 are as following (Korean won in thousands):

	Number of shares owned	Percentage of ownership (%)	2020		
			Acquisition cost	Book value	Fair value
Daehan Oil Pipeline Corp.	448,699	2.26	₩ 8,674,609	₩ 16,721,693	₩ 16,721,693
Others			108	108	108
			<u>₩ 8,674,717</u>	<u>₩ 16,721,801</u>	<u>₩ 16,721,801</u>
			2019		
	Number of shares owned	Percentage of ownership (%)	Acquisition cost	Book value	Fair value
Daehan Oil Pipeline Corp.	509,471	2.26	₩ 9,849,502	₩ 11,973,000	₩ 11,973,000
Others			100	100	100
			<u>₩ 9,849,602</u>	<u>₩ 11,973,100</u>	<u>₩ 11,973,100</u>

Valuation method and inputs used for valuation are as following (Korean won in thousands):

	Valuation method	Key operating activities	Book value	Inputs	Range
Financial assets at FVOCI	Discounted cash flow methods	Construction and operation of the pipeline	16,721,693	Cost of equity capital	15.88%

A sensitivity analysis on the changes in cost of equity capital, assuming a 1% increase and decrease in the discount rates as of December 31, 2020 are as follows (Korean won in thousands):

	Changes in book value	(+) 1% discount rate	(-) 1% discount rate
Changes in cost of equity capital	Increase (decrease) in financial assets at FVOCI	₩ 2,720,911	₩ (1,978,312)

7. Property, plant and equipment

The acquisition costs and net book value of property, plant and equipment as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020		
	Cost	Accumulated depreciation	Book value
Land	₩ 280,045,470	₩ -	₩ 280,045,470
Buildings	335,528,838	(73,254,860)	262,273,978
Structures	1,015,405,797	(405,687,092)	609,718,705
Machinery and equipment	5,525,300,050	(2,810,989,145)	2,714,310,905
Vehicles	13,581,930	(9,479,311)	4,102,619
Others	458,350,091	(295,137,511)	163,212,580
Construction-in-progress	504,590,025	-	504,590,025
	<u>₩ 8,132,802,201</u>	<u>₩ (3,594,547,919)</u>	<u>₩ 4,538,254,282</u>

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7. Property, plant and equipment, net (cont'd)

	2019		
	Cost	Accumulated depreciation	Book value
Land	₩ 278,782,675	₩ -	₩ 278,782,675
Buildings	256,339,972	(63,576,648)	192,763,324
Structures	1,004,377,047	(371,362,909)	633,014,138
Machinery and equipment	5,095,973,361	(2,519,445,873)	2,576,527,488
Vehicles	12,082,193	(8,848,840)	3,233,353
Others	407,684,447	(239,468,095)	168,216,352
Construction-in-progress	665,286,483	-	665,286,483
	<u>₩ 7,720,526,178</u>	<u>₩ (3,202,702,365)</u>	<u>₩ 4,517,823,813</u>

Changes in the net book value of property, plant and equipment for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020					
	Jan. 1	Acquisitions	Disposals	Transfers (*)	Depreciation	Dec. 31
Land	₩ 278,782,675	₩ 1,120,643	₩ -	₩ 142,152	₩ -	₩ 280,045,470
Buildings	192,763,324	133,477	(196,065)	79,495,171	(9,921,929)	262,273,978
Structures	633,014,138	144,285	(11,088)	10,908,804	(34,337,434)	609,718,705
Machinery and equipment	2,576,527,488	1,553,426	(3,435,933)	446,475,953	(306,810,029)	2,714,310,905
Vehicles	3,233,353	13,545	(278)	2,259,478	(1,403,479)	4,102,619
Others	168,216,353	7,049,956	(10,762,821)	56,967,069	(58,257,976)	163,212,580
Construction-in-progress	665,286,483	443,673,588	-	(604,370,046)	-	504,590,025
	<u>₩ 4,517,823,814</u>	<u>₩ 453,688,920</u>	<u>₩ (14,406,186)</u>	<u>₩ (8,121,419)</u>	<u>₩ (410,730,847)</u>	<u>₩ 4,538,254,282</u>

(*) These transfers relate to construction-in-progress that was reclassified to property, plant and equipment and intangible assets and exchange rate effects (See Note 9).

	2019					
	Jan. 1	Acquisitions	Disposals	Transfers (*)	Depreciation	Dec. 31
Land	₩ 278,143,664	₩ -	₩ -	₩ 639,011	₩ -	₩ 278,782,675
Buildings	186,760,308	28,917	(87,240)	13,050,760	(6,989,421)	192,763,324
Structures	643,564,981	32,752	-	23,326,611	(33,910,206)	633,014,138
Machinery and equipment	2,248,206,462	160,020	(6,243,039)	605,588,553	(271,184,508)	2,576,527,488
Vehicles	4,259,995	161,663	(550,395)	867,525	(1,505,435)	3,233,353
Others	97,406,015	4,497,548	(1,836,588)	122,976,904	(54,827,527)	168,216,352
Construction-in-progress	621,570,544	781,548,239	-	(737,832,300)	-	665,286,483
	<u>₩ 4,079,911,969</u>	<u>₩ 786,429,139</u>	<u>₩ (8,717,262)</u>	<u>₩ 28,617,064</u>	<u>₩ (368,417,097)</u>	<u>₩ 4,517,823,813</u>

(*) These transfers relate to construction-in-progress that was reclassified to property, plant and equipment and intangible assets, exchange rate effects and the recognition of right-of-use assets in accordance with KIFRS 1116 (See Note 8 and 9).

Capitalization of borrowing costs

Borrowing costs capitalized as part of property, plant and equipment amounted to ₩9,823,404 thousand and ₩17,627,370 thousand for the years ended December 31, 2020 and 2019, respectively. Capitalization interest rate is 2.34% and 2.58% for the years ended December 31, 2020 and 2019, respectively.

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8. Leases

Changes in the net book value of lease liabilities for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
As of January 1	₩ 14,458,186	₩ 3,348,849
Additions	3,962,041	14,603,691
Interest expenses	278,237	170,239
Lease payments	(5,393,222)	(3,736,736)
Effects of foreign currency translation	(218,159)	72,143
As of December 31	13,087,083	14,458,186

The maturity analysis of lease liabilities as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Current liabilities:		
Lease liabilities (See note 10)	₩ 4,200,093	₩ 4,320,960
Non-current liabilities:		
Lease liabilities (See note 10)	8,886,991	10,137,226
Total lease liabilities:		
Within 1 year	4,200,093	4,320,960
1 year ~ 5 years	6,796,874	8,623,986
Over 5 years	2,090,117	1,513,240

The followings are the amounts recognized in profit or loss for the year ended December 31, 2020 (Korean won in thousands):

	2020	2019
Short-term lease payments	₩ 11,906,122	₩ 9,444,619
Low-value lease payments	999,174	1,784,953
Depreciation of right-of-use assets	5,724,144	3,927,762
Interest expense of lease liabilities	278,237	170,239
Gain (loss) on foreign currency translation	(218,159)	72,143

The Group had total cash outflows for leases of ₩5,393 million for the year ended December 31, 2020. The Group also had increases in right-of-use assets and lease liabilities by ₩4,457 million and ₩3,962 million for the year ended December 31, 2020, respectively.

Changes in the net book value of right-of-use assets for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020					
	Right-of-use assets (*1)					
	Buildings	Structures	Machinery and equipment	Vehicles	Others	Total
As of January 1	₩ 1,571,779	₩ 19,735,824	₩ 531,580	₩ 7,132,141	₩ 5,980,059	₩ 34,951,383
Additions	1,379,653	-	-	3,077,080	-	4,456,733
Depreciation expenses	(1,096,772)	(747,015)	(76,855)	(1,963,484)	(1,840,018)	(5,724,144)
Termination of contracts	-	-	-	(308,813)	-	(308,813)
As of December 31	₩ 1,854,660	₩ 18,988,809	₩ 454,725	₩ 7,936,924	₩ 4,140,041	₩ 33,375,159

(*1) Right-of-use assets are recognized in other property, plant and equipment (See Note 7).

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8. Leases (cont.)

	2019					
	Right-of-use assets (*1)					
	Buildings	Structures	Machinery and equipment	Vehicles	Others	Total
As of January 1	₩ 2,454,796	₩ -	₩ 608,435	₩ 841,419	₩ -	₩ 3,904,650
Additions	30,229	3,220,170	-	7,196,757	7,360,073	17,807,229
Transfers (*2)	-	17,217,944	-	-	-	17,217,944
Depreciation expense	(913,246)	(702,290)	(76,855)	(900,357)	(1,380,014)	(3,972,762)
Termination of contracts	-	-	-	(5,678)	-	(5,678)
As of December 31	₩ 1,571,779	₩ 19,735,824	₩ 531,580	₩ 7,132,141	₩ 5,980,059	₩ 34,951,383

(*1) Right-of-use assets are recognized in other property, plant and equipment (See Note 7).

(*2) Includes contribution property of use earnings that is reclassified from intangible assets in accordance with the adoption of KIFRS 1116 (See Note 9).

9. Intangible assets

Changes in the net book value of intangible assets for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020					
	Jan. 1	Acquisitions	Disposals	Transfers (*)	Amortization	Dec. 31
Patents	₩ 1,313,856	₩ -	₩ (36,302)	₩ 286,610	₩ (237,926)	₩ 1,326,238
Software	15,711,887	197,055	-	7,872,699	(8,177,042)	15,604,599
Facility use right	81,214	137,543	-	-	-	218,757
Land use right	1,091,700	-	-	8,699	(28,922)	1,071,477
Memberships	14,764,402	126,400	(1,602,394)	1,149	-	13,289,557
	₩ 32,963,059	₩ 460,998	₩ (1,638,696)	₩ 8,169,157	₩ (8,443,890)	₩ 31,510,628

(*) These transfers relate to construction-in-progress that was reclassified to intangible assets and exchange rate effects.

	2019					
	Jan. 1	Acquisitions	Disposals	Transfers (*)	Amortization	Dec. 31
Patents	₩ 1,365,601	₩ -	₩ (20,243)	₩ 194,278	₩ (225,780)	₩ 1,313,856
Software	27,645,091	458,552	-	3,412,320	(15,804,076)	15,711,887
Facility use right	17,299,158	-	-	(17,217,944)	-	81,214
Land use right	1,099,619	-	-	20,614	(28,533)	1,091,700
Memberships	12,335,197	-	(1,226,400)	3,655,606	-	14,764,402
	₩ 59,744,666	₩ 458,552	₩ (1,246,643)	₩ (9,935,126)	₩ (16,058,389)	₩ 32,963,059

(*) These transfers relate to construction-in-progress that was reclassified to intangible assets, exchange rate effects and the contribution property of use earnings reclassified to right-of-use assets in accordance with the adoption of KIFRS 1116 (See Notes 7 and 8).

Impairment testing of intangible assets with indefinite lives

The Group performed an impairment testing of memberships with indefinite lives and recognized no impairment loss for the years ended December 31, 2020 and 2019. Net realizable value of a membership is measured at the higher of net fair value or value in use, and if the net fair value cannot be reliably measured, net realizable value is measured at value in use.

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10. Borrowings and bonds payable

Short-term borrowings as of December 31, 2020 and 2019 consist of the following (Korean won in thousands):

	Financial institution	2020 annual interest rate (%)		2020		2019
Bank overdrafts	Shinhan Bank	2.64	₩	44,774,344	₩	77,962,367
Discounted trade accounts receivable (*)	Woori Bank and others	0.60~2.00		49,994,357		56,063,210
			₩	<u>94,768,701</u>	₩	<u>134,025,577</u>

(*) The Group entered into factoring contracts with financial institutions such as Woori Bank, Shinhan Bank, KEB Hana Bank, and others, and the amount of trade accounts receivable that has not yet matured but are factored to the financial institutions has been recognized as short-term borrowings in the consolidated statements of financial position (See Note 4).

Details of long-term bonds denominated in Korean won as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

Series	Issuance date	Maturity date	2020 annual interest rate (%)		2020		2019
18-3rd public placement bonds	2014.08.08	2021.08.08	3.33	₩	100,000,000	₩	100,000,000
19-1st public placement bonds	2017.04.27	2020.04.27	2.07		-		60,000,000
19-2nd public placement bonds	2017.04.27	2022.04.27	2.53		80,000,000		80,000,000
20-1st public placement bonds	2018.03.02	2021.03.02	2.62		110,000,000		110,000,000
20-2nd public placement bonds	2018.03.02	2023.03.02	3.01		190,000,000		190,000,000
21-1st public placement bonds	2018.10.22	2021.10.22	2.32		160,000,000		160,000,000
21-2nd public placement bonds	2018.10.22	2023.10.20	2.52		140,000,000		140,000,000
21-3rd public placement bonds	2018.10.22	2025.10.22	2.65		100,000,000		100,000,000
23rd private placement bonds	2019.09.06	2022.09.06	1.26		100,000,000		100,000,000
24-1st public placement bonds	2019.10.16	2022.10.14	1.64		140,000,000		140,000,000
24-2nd public placement bonds	2019.10.16	2024.10.16	1.87		80,000,000		80,000,000
24-3rd public placement bonds	2019.10.16	2026.10.16	1.87		80,000,000		80,000,000
					<u>1,280,000,000</u>		<u>1,340,000,000</u>
Less: discount on bonds					(2,125,950)		(3,253,499)
Less: current portion					<u>(369,794,290)</u>		<u>(59,970,183)</u>
				₩	<u>908,079,760</u>	₩	<u>1,276,776,318</u>

Details of long-term bonds denominated in foreign currency as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

Series	Issuance date	Maturity date	Annual interest rate (%)		2020		2019
Foreign currency bonds	2019.01.23	2024.01.23	3.88		435,200,000		463,120,000
					435,200,000		463,120,000
Less: discount on bonds					(2,360,286)		(3,080,460)
Less: current portion					-		-
				₩	<u>432,839,714</u>	₩	<u>460,039,540</u>

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10. Borrowings and bonds payable (cont'd)

Long-term borrowings as of December 31, 2020 and 2019 consist of the following (Korean won in thousands):

	Financial institution	2020 annual interest rate (%)	2020	2019
Facility loan	Mizuho Bank	2.56	₩ 100,000,000	₩ 100,000,000
Facility loan	MUFG Bank	2.27	-	60,000,000
Facility loan	Credit Agricole CIB	3-month CD + additional rate	-	100,000,000
Facility loan	Credit Agricole CIB	3-month CD + additional rate	-	50,000,000
Facility loan	Credit Agricole CIB	1.799	150,000,000	-
Facility loan	Korea EXIM Bank	1.785	150,000,000	-
Commercial paper	Shinhan Bank	3-month CD + additional rate	-	100,000,000
Commercial paper	Shinhan Bank	3-month CD + additional rate	-	100,000,000
Commercial paper	Shinhan Bank	3-month CD + additional rate	50,000,000	50,000,000
Commercial paper	Shinhan Bank	3-month CD + additional rate	80,000,000	80,000,000
Commercial paper	Shinhan Bank	3-month CD + additional rate	200,000,000	-
			730,000,000	640,000,000
Less: present value discounts			(208,732)	-
Less: current portion			(230,000,000)	(360,000,000)
			₩ 499,791,268	₩ 280,000,000

Details of lease liabilities as of December 31, 2020 are as follows (Korean won in thousands):

	2020	2019
Lease liabilities	₩ 13,087,083	₩ 14,458,186
Less: current portion	(4,200,092)	(4,320,960)
Non-current lease liabilities	₩ 8,886,990	₩ 10,137,226

11. Other current liabilities

Other current liabilities as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Advance receipts	₩ 29,553,321	₩ 6,537,817
Withholdings	4,330,374	4,575,517
	₩ 33,883,695	₩ 11,113,334

12. Net defined benefit liabilities (assets)

The components of defined benefit liabilities (assets) as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Present value of defined benefit obligations	₩ 171,490,859	₩ 165,197,587
Fair value of plan assets	(176,216,793)	(163,127,778)
	₩ (4,725,934)	₩ 2,069,809

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12. Net defined benefit liabilities (assets) (cont'd)

Gains and losses related to retirement benefit plans for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Defined benefit plans:		
Current service cost	₩ 15,199,105	₩ 16,006,159
Interest cost	5,261,080	5,975,847
Expected return on plan assets	<u>(5,026,955)</u>	<u>(5,520,975)</u>
	<u>15,433,230</u>	<u>16,461,031</u>
Defined contribution plans:		
Retirement pension benefit	2,631,789	887,208
	<u>₩ 18,065,019</u>	<u>₩ 17,348,239</u>

Expenses recognized related to the retirement benefit plans for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Cost of goods sold	₩ 12,448,673	₩ 12,226,762
selling and administrative expenses (including research and development)	<u>5,616,346</u>	<u>5,121,477</u>
	<u>₩ 18,065,019</u>	<u>₩ 17,348,239</u>

Changes in the present value of defined benefit obligations for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
As of January 1	₩ 165,197,587	₩ 168,477,465
Current service cost	15,199,105	16,006,159
Interest cost	5,261,080	5,975,847
Benefits paid	(16,522,635)	(20,515,035)
Re-measurement loss (gain) in OCI:		
Actuarial loss arising from changes in demographic assumptions	-	4,739
Actuarial gain arising from changes in financial assumptions	(1,366,121)	(2,259,033)
Experience adjustments	4,209,820	(3,695,930)
Others (transfer from/to affiliates)	<u>(487,977)</u>	<u>1,203,375</u>
As of December 31	<u>₩ 171,490,859</u>	<u>₩ 165,197,587</u>

Changes in the fair value of plan assets for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
As of January 1	₩ 163,127,778	₩ 160,377,919
Contribution by employer	25,000,000	13,000,000
Expected returns	5,026,955	5,520,975
Benefits paid	(13,442,451)	(14,585,631)
Re-measurement loss in OCI	(2,017,333)	(2,323,834)
Others (transfer from/to affiliates)	<u>(1,478,156)</u>	<u>1,138,349</u>
As of December 31	<u>₩ 176,216,793</u>	<u>₩ 163,127,778</u>

Composition of plan assets

Plan assets as of December 31, 2020 and 2019 are composed of interest-bearing and principal-guaranteed financial assets such as time deposits.

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12. Net defined benefit liabilities (assets) (cont'd)

The principal assumptions used in actuarial calculation as of December 31, 2020 and 2019 are as follows:

	2020	2019
Discount rate (%)	3.35	3.26
Future salary increase rate (%)	4.39	4.37

Sensitivity analyses of defined benefit obligations

The result of sensitivity analyses, which are determined based on a method that extrapolates the impact on the defined benefit obligations as a result of reasonable changes in key assumptions occurring as of December 31, 2020 and 2019, is as follows (Korean won in thousand):

	2020	
	Increase by 1% point	Decrease by 1% point
Discount rate	₩ (14,442,100)	₩ 17,020,185
Future salary increase rate	17,091,244	(14,757,092)

	2019	
	Increase by 1% point	Decrease by 1% point
Discount rate	₩ (13,602,257)	₩ 15,996,551
Future salary increase rate	16,048,636	(13,888,508)

13. Derivative financial instruments

The Group entered into forward currency contracts to hedge the risk of volatility in US dollar exchange rates. Details of outstanding forward currency contracts which are not designated as hedging instruments as of December 31, 2020 and 2019 are presented as follows (Korean won in thousands and US dollar, except for contract exchange rate):

Financial institution	Maturity date	Contract exchange rate	Contract amount	2020	
				Fair value	
				Assets	Liabilities
KEB Hana	2020.01.06~2021.01.19	1100.90~1107.50	USD 17,000,000	₩ 197,627	₩ 90,501
SC Bank	2021.01.06	1086.40~1101.77	USD 18,000,000	-	126,120
KB Bank	2021.01.12	1,086.02	USD 7,000,000	-	12,462
Mizuho Bank	2021.01.06~2021.01.28	1085.17~1107.32	USD 48,000,000	247,716	164,780
KDB	2021.01.06	1,100.90	USD 7,000,000	-	90,400
Woori Bank	2021.01.06~2021.01.28	1087.82~1087.84	USD 20,000,000	1,734	1,515
Credit Agricole CIB	2021.01.06~2021.01.29	1090.08~1104.25	USD 74,000,000	190,373	757,794
				₩ 637,450	₩ 1,243,572

Financial institution	Maturity date	Contract exchange rate	Contract amount	2019	
				Fair value	
				Assets	Liabilities
Mizuho Bank	2020.01.03	1,179.93	USD 30,000,000	₩ -	₩ 663,828
Credit Agricole CIB	2020.01.13	1,191.38	USD 15,000,000	-	508,980
				₩ -	₩ 1,172,808

A valuation gain (loss) on derivate instruments is recognized as finance income (costs), and derivative assets (liabilities) are included in other accounts receivable (payable).

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13. Derivative financial instruments (cont'd)

Although the Group does not apply hedge accounting, the Group entered into commodity swaps for crude oil and petroleum products to hedge the exposure to variability in the future cash flows associated with price changes in petroleum products. As of December 31, 2020, the Group entered into 4 commodity swaps for 340,000 barrels and 86,000 tons. In relation to the contracts, ₩8,959,762 thousand and ₩197,173 thousand are recognized as gain on valuation of derivative financial instruments for the years ended December 31, 2020 and 2019, respectively, and ₩2,080,773 thousand and ₩10,570,648 thousand are recognized as loss on valuation of derivative financial instruments for the years ended December 31, 2020 and 2019, respectively. The corresponding amounts are recorded as other accounts receivable and other accounts payable as of December 31, 2020 and 2019, respectively.

Details of the interest rate swap contracts entered into to hedge the risk of volatility in interest rates on borrowings to which the Group applies cash flow hedge as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

Financial institution	Contract date	Maturity	Contract amount	Received – variable interest rate	Paid – swap interest rate	2020	
						Valuation gain (loss)	Receivables (payables)
Shinhan Bank	2018.9.13	2021.9.13	50,000,000	3-month CD	1.93%	₩ 108,649	₩ (347,423)
	2018.9.13	2021.9.13	80,000,000	3-month CD	1.93%	173,837	(555,878)
	2020.9.28	2023.9.27	200,000,000	3-month CD	0.885%	318,664	318,664
Credit Agricole CIB	2017.12.14	2020.12.14	100,000,000	3-month CD	2.08%	658,829	-
	2018.4.20	2021.4.19	50,000,000	3-month CD	2.15%	575,955	-
			<u>₩ 480,000,000</u>			<u>₩ 1,835,934</u>	<u>₩ (584,637)</u>

Financial institution	Contract date	Maturity	Contract amount	Received – variable interest rate	Paid – swap interest rate	2019	
						Valuation loss	Payables
Shinhan Bank	2016.6.27	2019.6.27	100,000,000	3-month CD	1.35%	₩ (234,688)	₩ -
	2016.9.27	2019.6.27	100,000,000	3-month CD	1.30%	(152,008)	-
	2018.9.13	2021.9.13	50,000,000	3-month CD	1.93%	(281,729)	(456,072)
	2018.9.13	2021.9.13	80,000,000	3-month CD	1.93%	(450,767)	(729,715)
MUFG	2016.3.31	2019.3.29	45,000,000	3-month CD	1.74%	(21,059)	-
Credit Agricole CIB	2017.12.14	2020.12.14	100,000,000	3-month CD	2.08%	(148,586)	(658,829)
	2018.4.20	2021.4.19	50,000,000	3-month CD	2.15%	(135,962)	(575,955)
			<u>₩ 525,000,000</u>			<u>₩ (1,424,799)</u>	<u>₩ (2,420,571)</u>

Details of the currency swap contracts entered into to hedge the risk of volatility in foreign currency exchange rates on borrowings denominated in foreign currencies to which the Group applies fair value hedge as of December 31, 2020 are as follows (Korean won in thousands and USD)

Financial institution	Contract date	Maturity date	Contract amount		Interest rate		2020	
			Notional amount (USD)	Swapped amount (KRW)	Received – fixed USD rate	Paid – fixed KRW rate	Valuation gain	Receivable
KDB Industrial Bank	2020.01.23	2024.01.23	100,000,000	112,300,000	3.88%	2.38%	(4,536,877)	2,001,839
KEB Hana Bank	2020.01.23	2024.01.23	200,000,000	224,420,000	3.88%	2.28%	(9,290,856)	5,036,119
			<u>400,000,000</u>	<u>449,120,000</u>			<u>₩ (18,369,038)</u>	<u>8,719,355</u>

Financial institution	Contract date	Maturity date	Contract amount		Interest rate		2019	
			Notional amount (USD)	Swapped amount (KRW)	Received – fixed USD rate	Paid – fixed KRW rate	Valuation gain	Receivable
KDB Industrial Bank	2020.01.23	2024.01.23	100,000,000	112,300,000	3.88%	2.38%	6,538,716	6,538,716
KEB Hana Bank	2020.01.23	2024.01.23	200,000,000	224,420,000	3.88%	2.28%	14,326,975	14,326,975
			<u>400,000,000</u>	<u>449,120,000</u>			<u>₩ 27,088,393</u>	<u>27,088,393</u>

In relation to the currency swaps above, the Group recognized ₩27,920,000 thousand of gain on foreign currency translation in respect to bonds denominated in foreign currencies and ₩18,369,038 thousand of loss on foreign currency translation from valuation of currency swaps for the year ended December 31, 2020.

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14. Emission liabilities

In relation to greenhouse gas emissions, the Group recognizes estimated expenses for emissions exceeding the emission rights granted for the current year, which the Group can be held liable, for as trade and other accounts payable.

Detail of annual emission allowances allocated and estimated greenhouse gas emissions as of December 31, 2020 is as follows (Unit: ton):

	2018	2019	2020
Allocated emission allowance	4,407,260	4,391,327	4,391,927
Estimated greenhouse gas emissions	4,407,622	4,217,702	4,813,510

Detail of annual emission allowances allocated and settled greenhouse gas emissions as of December 31, 2017 are as follows (Unit: ton):

	2015 (*)	2016 (*)	2017 (*)
Allocated emission allowance	4,267,529	4,336,065	4,368,688
Settled greenhouse gas emissions	4,267,529	4,438,807	4,322,261

(*) The estimated greenhouse gas emissions for the years 2015, 2016 and 2017 were permitted in the respective years.

Changes in emission liabilities for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
January 1	₩ -	₩ 553,397
Changes in estimation	-	(544,347)
Decrease (emission allowances submitted)	-	(9,050)
Increase (cost of emissions recognized)	7,682,964	-
December 31	₩ 7,682,964	₩ -

Changes in emission allowances for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands, except for quantity information):

	2019		2020	
	Quantity	Book value	Quantity	Book value
January 1	-	₩ -	73,263	₩ -
Allocated emission allowance	4,391,327	-	4,391,327	-
Borrowed	(362)	-	-	-
Submitted to the government	(4,217,702)	-	(4,813,510)	-
Sold	(100,000)	-	-	-
December 31	73,263	₩ -	(348,920)	₩ -

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15. Commitments and contingencies

The following table presents the available lines of credit from financial institutions as of December 31, 2020 and 2019 (Korean won in thousands and US dollar):

	Financial institution	2020	
		Korean won	US dollar
Bank overdrafts	Woori Bank and others	₩ 14,800,000	US\$ -
Line of credit for general borrowings	Woori Bank and others	724,000,000	20,000,000
Line of credit and Nego for export and import financing	Woori Bank and others	290,000,000	889,060,000
Line of credit for export bill discounts	Woori Bank and others	-	140,000,000
		<u>₩ 1,028,800,000</u>	<u>US\$ 1,049,060,000</u>
	Financial institution	2019	
		Korean won	US dollar
Bank overdrafts	Woori Bank and others	₩ 14,800,000	US\$ -
Line of credit for general borrowings	Woori Bank and others	840,000,000	130,000,000
Line of credit and Nego for export and import financing	Woori Bank and others	320,000,000	1,052,000,000
Line of credit for export bill discounts	Woori Bank and others	-	150,000,000
		<u>₩ 1,174,800,000</u>	<u>US\$ 1,332,000,000</u>

The Group has provided a blank check to Korea National Oil Corporation as collateral in connection with petroleum import duty as of December 31, 2020.

The Group entered into a contract for trademark rights with Hanwha Corporation and Total SE, effective from July 1, 2015. In accordance with the agreement, the Group paid fees amounting to ₩20.3 billion and ₩29.5 billion to Hanwha Corporation and Total SE for the years ended December 31, 2020 and 2019, respectively.

As of December 31, 2020, the Group has one pending lawsuit with total claim against the Group amounting to ₩0.3 billion, and its outcome is uncertain.

Summary of major contracts as of December 31, 2020 are as follows:

Contract name	Contractor	Description	Contract date	Expiration date	Country
Plant gas trading and utilities supply contract	Linde Korea (BOC Gases Korea)	Sale of air separation equipment and gas supply	April 3, 1999	January 29, 2033	United Kingdom
Utilities supply contract	Hanwha General Chemical Co., Ltd.	Utility supply	December 18, 2000	December 31, 2024	Republic of Korea
Contracted service contract	General Electric International, Inc	Supply of water treatment equipment parts and maintenance parts	March 28, 2012	December 31, 2031	United States of America
Second hydrogen gas sales contract	Hyundai Oilbank Co., Ltd.	Hydrogen gas supply contract	January 16, 2013	November 30, 2021	Republic of Korea
Business contract	Industrial Technology Services Co., Ltd.	Maintenance section	October 1, 2019	September 30, 2021	Republic of Korea
Hydrogen supply contract	HANWHA ENERGY CORPORATION	Hydrogen gas supply contract	May 17, 2018	May 16, 2028	Republic of Korea
EPC Contract for PP4 Project construction	HANWHA E&C	PP4 construction contract	December 26, 2018	February 28, 2021	Republic of Korea
EPC Contract for NCC side cracker expansion	HANWHA E&C	NCC side cracker expansion contract	January 10, 2019	January 31, 2021	Republic of Korea

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16. Equity

In accordance with the Articles of Incorporation, the Company is authorized to issue 70 million ordinary shares, with a par value of ₩5,000 per share. As of December 31, 2020 and 2019, the number of ordinary shares issued and outstanding is 19,165,316 amounting to ₩95,826,580 thousand.

Share premium of the Group represents issued capital in excess of par value and is restricted in use except for being used to offset a deficit or transferred to issued capital in accordance with the Korean Commercial Code.

Accumulated other comprehensive income (loss) of the Group as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Net loss on valuation of interest rate swaps	₩ (443,155)	₩ (1,781,541)
Net gain on valuation of financial instruments measured at FVOCI	6,099,669	1,562,895
Exchange differences on translation of foreign operations	(578,234)	(855,614)
	<u>₩ 5,078,280</u>	<u>₩ (1,074,260)</u>

Retained earnings as of December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Appropriated retained earnings:		
Legal reserve (*1)	₩ 47,913,290	₩ 47,913,290
Unappropriated retained earnings	<u>2,448,585,944</u>	<u>2,590,649,897</u>
	<u>₩ 2,496,499,234</u>	<u>₩ 2,638,563,187</u>

(*1) In accordance with the Korean Commercial Code, an amount equal to at least 10% of cash dividends declared at the annual ordinary shareholders' meeting is required to be appropriated as a legal reserve until such reserve equals 50% of issued capital. The legal reserve may not be utilized for cash dividends but may only be used to offset a deficit, if any, or be transferred to issued capital. The legal reserve has reached 50% of issued capital as of December 31, 2020 and 2019.

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17. Income and expenses

Revenue from contracts with customers

Revenue for the years ended December 31, 2020 and 2019 is as follows (Korean won in thousands):

	2020	2019
Revenue from contracts with customers:		
Sale of goods, etc.	₩ 6,666,561,536	₩ 9,777,714,134
Sale of service	96,088,624	67,241,479
	<u>₩ 6,762,650,160</u>	<u>₩ 9,844,955,613</u>

The following table provides the information of sales for the years ended December 31, 2020 and 2019 disaggregated by primary geographical market and timing of revenue recognition (Korean won in thousands).

	2020	2019
Primary geographical market:		
Export	₩ 3,738,754,629	₩ 6,205,214,403
Domestic	3,023,895,531	3,639,741,210
	<u>₩ 6,762,650,160</u>	<u>₩ 9,844,955,613</u>
Timing of revenue recognition:		
At a point in time	₩ 6,666,561,536	₩ 9,777,714,134
Over time	96,088,624	67,241,479
	<u>₩ 6,762,650,160</u>	<u>₩ 9,844,955,613</u>

Details of selling and administrative expenses for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Salaries	₩ 39,447,724	₩ 39,332,475
Retirement benefits	4,234,438	3,643,236
Employee welfare	24,164,846	24,709,321
Printing	1,049,550	1,185,293
Travel	764,150	3,234,651
Communications	521,828	550,201
Training	2,060,360	3,340,348
Supplies	1,016,639	1,487,720
Repairs	1,029,872	1,502,414
Entertainment	2,528,297	3,450,941
Meeting	552,366	762,820
Vehicle maintenance	540,094	607,460
Transportation	9,522,572	5,113,600
Taxes and dues	3,622,390	2,026,358
Insurance	1,823,849	1,847,202
Commissions and fees	35,133,703	45,325,528
Rents	12,894,377	11,219,358
Market research	2,903,034	2,615,945
Research and development	31,456,809	30,739,691
Depreciation	10,021,028	8,300,161
Amortization of intangible assets	5,712,369	12,050,788
Advertising	1,291,182	3,999,704
Samples	378,921	641,451
Events	979,086	1,693,178
Packaging	23,033,621	16,386,554
Electronic data processing	16,446,380	15,452,486
Others	1,008,588	1,087,992
Reversal of allowance for doubtful accounts	(64,382)	(43,765)
	<u>₩ 234,073,691</u>	<u>₩ 242,263,111</u>

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17. Income and expenses (cont'd)

Details of finance income for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Interest income	₩ 1,934,372	₩ 4,306,862
Gain on foreign currency transactions	126,508,540	134,521,888
Gain on foreign currency translation	33,963,512	56,963,536
Gain on settlement of derivative instruments	131,917,780	78,312,485
Gain on valuation of derivative instruments	9,597,212	197,173
	<u>₩ 303,921,416</u>	<u>₩ 274,301,944</u>

Details of finance costs for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Interest expenses	₩ 52,480,476	₩ 46,162,993
Loss on foreign currency transactions	120,476,810	123,619,227
Loss on foreign currency translation	23,319,575	41,355,770
Loss on settlement of derivative instruments	52,958,550	88,256,956
Loss on valuation of derivative instruments	3,324,345	11,743,456
	<u>₩ 252,559,756</u>	<u>₩ 311,138,402</u>

Details of other income for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Gain on disposal of property, plant and equipment	₩ 497,264	₩ 1,480,127
Gain on disposal of intangible assets	217,449	-
Dividend income	175,767	241,999
Rental income	691,252	443,553
Miscellaneous gain	13,949,298	27,449,051
	<u>₩ 15,531,030</u>	<u>₩ 29,614,730</u>

Details of other expenses for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Loss on disposal of property, plant and equipment	₩ 13,796,432	₩ 6,506,041
Loss on disposal of intangible assets	192,054	46,643
Loss on disposal of trade accounts receivable	2,859,237	4,611,301
Donations	6,493,984	8,966,370
Miscellaneous loss	3,399,735	13,149,733
	<u>₩ 26,741,442</u>	<u>₩ 33,280,088</u>

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17. Income and expenses (cont'd)

Expenses by nature

Details of expenses classified based on nature of expenses in cost of goods sold and selling and administrative expenses for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Changes in finished goods and semi-finished goods	₩ 75,206,209	₩ 41,564,344
Use of raw materials and others	3,787,439,359	4,970,836,483
Salaries and other benefits	234,557,567	231,594,084
Depreciation	410,730,847	368,417,097
Amortization of intangible assets	8,443,890	16,058,389
Transportation	107,724,713	74,752,940
Advertising	1,291,182	4,006,077
Rents	12,959,136	11,288,100
Others	2,017,860,018	3,659,442,121
	<u>₩ 6,656,212,921</u>	<u>₩ 9,377,959,635</u>

Details of salaries and other benefits for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Salaries	₩ 163,341,998	₩ 160,370,188
Retirement benefits	18,130,335	17,348,239
Employee welfare	53,085,234	53,875,657
	<u>₩ 234,557,567</u>	<u>₩ 231,594,084</u>

18. Income taxes

The major components of income tax expenses for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Current income taxes	₩ 30,847,576	₩ 110,892,172
Additional income taxes of prior periods	1,886	2,842,664
Changes in deferred taxes	2,660,418	(6,992,812)
Income tax expenses charged directly to equity	(1,897,201)	(581,222)
Income tax expenses	<u>₩ 31,612,679</u>	<u>₩ 106,160,802</u>

Details of income tax expenses charged directly to equity for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Net gain (loss) on valuation of interest rate swaps	₩ (497,548)	₩ 376,145
Re-measurement gain (loss) on net defined benefit liabilities	(12,869)	(957,367)
Net gain on valuation of financial instruments measured at FVOCI	(1,386,784)	-
	<u>₩ (1,897,201)</u>	<u>₩ (581,222)</u>

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18. Income taxes (cont'd)

A reconciliation of profit before tax at the statutory tax rate to income tax expenses at the effective tax rate for the years ended December 31, 2020 and 2019 is as follows (Korean won in thousands):

	2020	2019
Profit before tax	₩ 146,588,485	₩ 426,494,162
Tax at the statutory tax rate (*)	35,012,413	106,923,895
Reconciling items:		
Non-deductible expenses and non-taxable income for tax purposes	824,256	1,229,267
Tax credits	(4,932,631)	(4,762,021)
Additional income taxes for prior periods	1,886	2,842,664
Others	706,755	(73,003)
Income tax expenses at the effective tax rate (2020: 21.57%, 2019: 24.89%)	<u>₩ 31,612,679</u>	<u>₩ 106,160,802</u>

(*) The Group is subject to corporate income taxes (including resident sur-taxes), at the aggregate rate of 11% on taxable income up to ₩200,000 thousand, 22% on taxable income from ₩200,000 thousand to ₩20,000,000 thousand, 24.2% on taxable income from ₩20,000,000 thousand to ₩300,000,000 thousand and 27.5% in excess of ₩300,000,000 thousand.

Significant changes in deferred tax assets (liabilities) for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020			
	Jan. 1	Recognized directly in profit or loss	Recognized directly in equity	Dec. 31
Defined benefit liabilities	₩ (614,019)	₩ (717,038)	₩ (12,869)	₩ (1,343,926)
Depreciation	1,230,859	1,056,915	-	2,287,774
Accrued income	(5,647)	(2,387)	-	(8,034)
Capitalized interest costs	(1,950,106)	533,636	-	(1,416,470)
Loss (gain) on valuation of derivative instruments	639,029	-	(497,548)	141,481
Gain (loss) on foreign currency translation	(388)	33	-	(355)
Accrued expenses	10,290,141	(1,552,307)	-	8,737,834
Gain on valuation of financial instruments measured at FVOCI	(560,603)	-	(1,386,784)	(1,947,387)
Others	900,168	(82,069)	-	818,099
	<u>₩ 9,929,434</u>	<u>₩ (763,217)</u>	<u>₩ (1,897,201)</u>	<u>₩ 7,269,016</u>

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18. Income taxes (cont'd)

	2019			
	Jan. 1	Recognized directly in profit or loss	Recognized directly in equity	Dec. 31
Defined benefit liabilities	₩ (269,840)	₩ 613,188	₩ (957,367)	₩ (614,019)
Depreciation	2,605,976	(1,375,117)	-	1,230,859
Accrued income	(59,538)	53,891	-	(5,647)
Capitalized interest costs	(2,452,072)	501,966	-	(1,950,106)
Loss on valuation of derivative instruments	262,884	-	376,145	639,029
Unrealized financing income	(8,815)	8,815	-	-
Gain (loss) on foreign currency translation	(388)	-	-	(388)
Accrued expenses	2,882,654	7,407,487	-	10,290,141
Accrued contribution	528,000	(528,000)	-	-
Loss on disposal of PP&E	8,363	(8,363)	-	-
Gain on valuation of financial instruments measured at FVOCI	(560,603)	-	-	(560,603)
Others	-	900,168	-	900,168
	<u>₩ 2,936,621</u>	<u>7,574,035</u>	<u>(581,222)</u>	<u>9,929,434</u>

The Group applies the tax rates that are expected to apply in the year when the asset is realized or the liability is settled for temporary differences.

19. Earnings per share

The Group's basic and diluted earnings per share for the years ended December 31, 2020 and 2019 are computed as follows (Korean won, except for number of shares):

	2020	2019
Profit for the year attributable to owners of the parent	₩ 114,975,806,625	₩ 320,333,360,010
Weighted-average number of ordinary shares outstanding (*)	19,165,316 shares	19,165,316 shares
Basic earnings per share attributable to owners of the parent	<u>₩ 5,999</u>	<u>₩ 16,714</u>

(*) As of December 31, 2020 and 2019, the number of ordinary shares issued and outstanding are the same.

As the Group has no potential dilutive ordinary shares, the basic and diluted earnings per share are the same.

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20. Dividends

Details of dividends declared and paid for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands, except for dividends per share):

	2020	2019
Dividends attributable to owners of the parent:		
Interim dividends (2020: ₩1,565, 2019: ₩4,957 per share)	₩ 30,000,000	₩ 95,000,000
Annual dividends (2020: ₩2,998, 2019: ₩11,635 per share)	57,459,000	222,992,000
	<u>₩ 87,459,000</u>	<u>₩ 317,992,000</u>

The Company's dividend payout ratios for the years ended December 31, 2020 and 2019 are computed as follows (Korean won in thousands):

	2020	2019
Dividends (A)	₩ 87,459,000	₩ 317,992,000
Profit for the year (B)	116,612,686	317,992,949
Dividend payout ratio (A/B)	75.00%	99.99%

21. Supplementary cash flow information

Details of non-cash transaction and working capital adjustments to reconcile profit for the year to net cash flows provided by operating activities for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

Non-cash transaction adjustments

	2020	2019
Retirement benefits	₩ 15,433,230	₩ 16,461,031
Depreciation	410,730,847	368,417,097
Amortization of intangible assets	8,443,890	16,058,388
Reversal of allowance for doubtful accounts	(64,382)	(43,765)
Gain on foreign currency translation	(33,963,512)	(56,963,536)
Loss on foreign currency translation	23,319,575	41,355,770
Gain on disposal of property, plant and equipment	(497,264)	(1,480,127)
Loss on disposal of property, plant and equipment	13,796,427	6,506,041
Gain on disposal of intangible assets	(217,449)	-
Loss on disposal of intangible assets	192,054	46,643
Finance income (interest income)	(1,934,372)	(4,306,862)
Finance costs (interest expenses)	52,480,476	46,162,993
Loss on disposal of trade accounts receivable	2,859,237	4,611,301
Gain on valuation of derivative instruments	(9,597,212)	(197,173)
Loss on valuation of derivative instruments	3,324,345	11,743,456
Gain on settlement of derivative instruments	(131,917,780)	(78,312,485)
Loss on settlement of derivative instruments	52,958,550	88,256,956
Dividend income	(175,767)	(241,999)
Income tax expenses	31,612,679	106,160,802
	<u>₩ 436,783,572</u>	<u>₩ 564,234,531</u>

21. Supplementary cash flow information (cont'd)

Working capital adjustments

	2020	2019
Trade accounts receivable	₩ 163,340,462	₩ 118,277,690
Other accounts receivable	52,390,089	30,968,198
Other current assets	1,488,413	(80,227)
Prepaid expenses	(3,555,959)	1,622,808
Guarantee deposits	(11,516)	(22,961)
Inventories	170,663,669	178,219,086
Long-term prepaid expenses	121,160	(12,492,131)
Trade accounts payable	(174,691,360)	162,191,134
Other accounts payable	(16,618,271)	(12,079,813)
Advance receipts	23,017,737	2,148,881
Withholdings	(244,917)	(5,682,208)
Accrued expenses	20,011,855	(54,980,246)
Other non-current liabilities	2,001,029	990,572
Retirement benefits transferred from affiliates	998,777	64,925
Payment of retirement benefits	(3,088,782)	(5,929,303)
Contributions to plan assets	(25,000,000)	(13,000,000)
	<u>₩ 210,822,386</u>	<u>₩ 390,216,405</u>

Significant non-cash transactions for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020	2019
Transfer of construction-in-progress to property, plant and equipment and intangible assets	₩ 604,370,046	₩ 737,296,833
Reclassification of current portion of bonds payable and long-term borrowings	604,676,118	427,723,407
Changes in other accounts payable due to acquisition of property, plant and equipment	64,820,475	42,400,777

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21. Supplementary cash flow information (cont'd)

Changes in liabilities arising from financing activities for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020					
	January 1	Cash flows from financing activities	Foreign exchange rate movement	Amortization	Transfer	December 31
Current liabilities						
Short-term borrowings	₩ 134,025,577	₩ (38,220,861)	₩ (1,036,015)	₩ -	₩ -	₩ 94,768,701
Current portion of bonds payable and long-term borrowings	424,291,143	(425,114,985)	-	142,106	604,676,118	603,994,382
	558,316,720	(463,335,846)	(1,036,015)	142,106	604,676,118	698,763,083
Non-current liabilities						
Long-term borrowings	290,137,226	449,735,000	(279,023)	56,268	(230,971,213)	508,678,258
Bonds payable	1,736,815,858	-	(27,920,000)	1,847,722	(369,824,106)	1,340,919,474
	2,026,953,084	449,735,000	(28,199,023)	1,903,990	(600,795,319)	1,849,597,732
	₩ 2,585,269,804	₩ (13,600,846)	₩ (29,235,038)	₩ 2,046,096	₩ 3,880,799	₩ 2,548,360,815
	2019					
	January 1	Cash flows from financing activities	Foreign exchange rate movement	Amortization	transfer	December 31
Current liabilities						
Short-term borrowings	₩ 122,334,402	₩ 12,246,633	₩ (555,458)	₩ -	₩ -	₩ 134,025,577
Current portion of bonds payable and long-term borrowings	544,849,221	(548,494,355)	-	212,870	427,723,407	424,291,143
	667,183,623	(536,247,722)	(555,458)	212,870	427,723,407	558,316,720
Non-current liabilities						
Long-term borrowings	640,000,000	-	72,143	-	(349,934,917)	290,137,226
Bonds payable	937,293,715	852,080,000	11,040,000	(3,689,765)	(59,908,092)	1,736,815,858
	1,577,293,715	852,080,000	11,112,143	(3,689,765)	(409,843,009)	2,026,953,084
	₩ 2,244,477,338	₩ 315,832,278	₩ 10,556,685	₩ (3,476,895)	₩ 17,880,398	₩ 2,585,269,804

22. Related party disclosures

Key management personnel are standing directors who have the authority and responsibility for planning, directing and controlling the business of the Group. Compensation for key management personnel consisted of salaries of ₩1,262,253 thousand (₩1,314,967 thousand in 2019) and ₩487,056 thousand of retirement benefits in 2020 (₩249,117 thousand in 2019).

The related parties of the Company and their relationship with the Company as of December 31, 2020 are as follows:

Relationship	Related party
Jointly controlling entities	Hanwha General Chemical Co., Ltd. Total Holdings UK Limited
Subsidiaries	Dongguan Hanwha Total Engineering Plastic Co., Ltd. Hanwha Total Petrochemical Trading (Shanghai) Co., Ltd.

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22. Related party disclosures (cont'd)

All transactions and outstanding balances between the Company and its subsidiaries are eliminated in the preparation of the consolidated financial statements of the Group.

Significant transactions for 2020 and 2019 and the related outstanding balances as of December 31, 2020 and 2019 arising from such transactions between the Group and its related parties are as follows (Korean won in thousands):

Related party	2020				
	Sales and others	Purchase of inventories and others	Purchase of non-current assets	Receivables	Payables
Joint controlling:					
Hanwha General Chemical Co., Ltd.	₩ 420,859,209	₩ 17,472,675	₩ -	₩ 36,100,605	₩ 1,907,533
Total Holdings UK Limited	-	1,348,584	-	-	84,770
Other related parties:					
Hanwha Corporation	73,596,138	10,898,228	3,396,000	13,626,869	31,528
Hanwha Construction Co., Ltd.	-	123,000	239,339,776	-	13,292,110
Hanwha Life Insurance Co., Ltd.	2,988,793	5,830,929	-	149,330,361	25,230
Hanwha General Insurance Co., Ltd.	68,184	18,063,204	323,901	-	6,594,716
Hanwha Systems Co., Ltd.	41,875	15,269,843	2,176,290	3,560	4,350,204
Hanwha Solution Corporation	53,548,020	4,255,906	675,000	7,702,893	973,672
Hanwha Hotels & Resorts Co., Ltd.	-	1,521,036	492,904	-	-
Hanwha Galleria Co., Ltd.	-	2,623,507	-	-	8,868
Hanwha Energy Corporation	31,437,157	-	-	3,349,512	-
Hanwha Estate Co., Ltd.	11,956	572,437	1,313,995	984	35,487
Hanwha Techwin Co., Ltd.	-	-	1,980,371	-	331,194
Hanwha Compound Co., Ltd.	1,581,573	3,007,662	-	335,328	794,029
Hanwha Q CELLS Japan Co., Ltd.	4,270,623	13,516,901	-	36,161	301,361
TRI Energy Global Pte. Ltd.	366,506,663	13,773,533	-	46,678,687	-
Hanwha Chemical(Thailand) Co., Ltd.	12,592,788	-	-	1,291,707	-
Hanwha International LLC	1,141,698	586,842	1,024,672	-	275,802
Total Petrochemicals and Refining SA/NV	22,205,591	698,887	-	6,592,883	147,215
TOTAL SE	-	10,108,985	-	4,621,900	-
Total Trading Asia Pte. Ltd.	470,577,653	576,302,827	-	10,299,554	3,424,941
TOTSA Total Oil Trading SA	47,642,581	17,729,098	-	3,742,829	-
Total Petrochemicals (Hong Kong) Limited	1,245,741	5,065,943	-	338,455	-
Total Petrochemicals and Refining USA	2,249,898	-	-	715,158	-
TOTAL PETROCHEMICALS (NINGBO) Ltd.	6,818,066	-	-	-	451,228
TOTAL OIL ASIA-PACIFIC PTE LTD	4,857,219	-	-	292,390	-
TOTAL Gas & Power North America, Inc	16,015,681	-	-	-	-
TOTAL FLUIDES	1,908,978	6,684	-	-	186
Others	1,638,203	728,002	679,893	436,032	377,993
	₩ 1,543,804,288	₩ 719,504,713	₩ 251,402,802	₩ 285,495,868	₩ 33,408,067

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22. Related party disclosures (cont'd)

Related party	2019				
	Sales and others	Purchase of inventories and others	Purchase of non-current assets	Receivables	Payables
Joint controlling:					
Hanwha General Chemical Co., Ltd.	₩ 476,925,138	₩ 15,757,449	₩ -	₩ 44,537,029	₩ 2,363,218
Total Holdings UK Limited	-	1,315,200	-	-	242,848
Other related parties:					
Hanwha Corporation	83,302,600	43,027,029	21,851,300	8,221,144	7,318,611
Hanwha Construction Co., Ltd.	-	-	446,439,518	-	40,257,154
Hanwha Life Insurance Co., Ltd.	3,279,806	4,919,731	-	141,801,469	28,398
Hanwha General Insurance Co., Ltd.	88,043	17,761,248	709,863	-	6,333,591
Hanwha Systems Co., Ltd.	47,438	14,438,430	4,251,138	3,837	4,507,793
Hanwha Global Asset Corporation (formerly, Hanwha Q CELLS & Advanced Materials Corporation)	40,899,568	1,200,000	-	-	-
Hanwha Q CELLS & Advanced Materials Corporation	20,175,824	-	-	4,878,683	-
Hanwha Chemical Co, Ltd.	72,271	3,727,327	-	-	1,284,178
Hanwha Hotels & Resorts Co., Ltd.	-	3,129,726	4,368,062	-	186,489
Hanwha Energy Corporation	7,642,525	-	-	2,308,900	-
Hanwha Estate Co., Ltd.	10,929	637,233	2,946,399	520	1,504,826
Hanwha Power System Co. Ltd.	-	-	1,178,313	-	-
Hanwha Q CELLS Japan Co., Ltd.	3,618,953	8,285,844	-	36,477	-
TRI Energy Global Pte. Ltd.	558,400,357	508,298,739	-	18,465,011	-
Hanwha (H.K.) Co., Ltd.	-	5,439,682	-	-	-
Hanwha Chemical(Thailand) Co., Ltd.	11,233,640	-	-	1,076,896	-
Total Petrochemicals and Refining SA/NV	8,453,186	1,089,690	-	715,783	131,468
Total SA.	-	19,100,642	-	-	-
Total Trading Asia Pte. Ltd.	746,336,838	1,170,796,533	-	16,942,376	61,401,803
TOTSA Total Oil Trading SA	23,504,119	20,785,918	-	244,033	5,600,012
Total Petrochemicals (Hong Kong) LI	-	4,976,345	-	-	1,476,519
Total Petrochemicals and Refining USA	2,922,485	-	-	245,991	-
TOTAL PETROCHEMICALS (NINGBO) Ltd.	7,511,560	-	-	-	-
TOTAL OIL ASIA-PACIFIC PTE LTD	7,076,677	-	-	625,003	-
TOTAL Gas & Power North America, Inc	187,534,900	-	-	-	-
CSSA CHARTERING & SHIPPING SERVICES	-	1,481,249	-	-	-
Others	2,399,180	2,655,658	886,750	152,531	767,689
	₩ 2,191,436,037	₩ 1,848,823,673	₩ 482,631,343	₩ 240,255,683	₩ 133,404,597

Terms and conditions of transactions with related parties

Outstanding balances at the year-end are unsecured, interest free and settled in cash. There have been no guarantees provided or received for any related party receivables or payables. For the years ended December 31, 2020 and 2019, the Group has not recognized any impairment of receivables relating to amounts owed by the related parties. This assessment is undertaken each financial year through examining the financial position of the related parties and the market in which the related parties operate.

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23. Segment information

The financial information about geographic areas where the related parties are located for the years ended December 31, 2020 and 2019 are as follows (Korean won in thousands):

	2020			
	Korea	China	Consolidation elimination	Total
Sales	₩ 6,755,402,944	₩ 41,715,294	₩ -	₩ 6,797,118,238
Inter-company sales	18,576,130	15,891,948	(34,468,078)	-
Net sales	6,736,826,814	25,823,346	-	6,762,650,160
Operating profit	103,423,773	3,145,143	(131,677)	106,437,239
Profit for the year	116,612,686	2,536,819	(4,173,698)	114,975,807
Non-current assets (*)	4,617,042,736	6,197,717	926,853	4,624,167,306

	2019			
	Korea	China	Consolidation elimination	Total
Sales	₩ 9,837,450,679	₩ 45,161,885	₩ -	₩ 9,882,612,564
Inter-company sales	18,951,153	18,705,798	(37,656,951)	-
Net sales	9,818,499,526	26,456,087	-	9,844,955,613
Operating profit	464,131,106	2,410,694	454,178	466,995,978
Profit for the year	317,992,949	1,908,982	431,429	320,333,360
Non-current assets (*)	4,598,259,965	7,115,459	-	4,605,375,424

(*) Financial instruments, deferred tax assets and others are excluded from the non-current assets.

24. Financial risk management objectives and policies

The Group's principal financial liabilities comprise borrowings, bonds payable, trade and other accounts payable. The main purpose of these financial liabilities is to finance the Group's operations. The Group also has various financial assets including trade and notes receivable and cash and cash equivalents that arise directly from its operations.

The Group is exposed to market risk, credit risk and liquidity risk and the Group's key management oversees the management of these risks. It is the Group's policy that no trading in derivatives for speculative purposes shall be undertaken.

(1) Market risk

Market risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risks comprise three types of risk: interest rate risk, foreign currency risk and feedstock price risk.

1) Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Group's exposure to the risk of changes in market interest rates relates primarily to the Group's long-term debt obligations with floating interest rates. The Group manages its interest rate risk by having a balanced portfolio of fixed and variable rate loans and borrowings with the interest rate swap contracts. Borrowings with floating interest rates nominal amounts to ₩330,000,000 thousand and ₩480,000,000 thousand as of December 31, 2020 and 2019, respectively. The impact of changes in market interest rates on the fair value of future cash flows of the Group's financial instruments, after taking into account the currency swap contracts, is not material.

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24. Financial risk management objectives and policies (cont'd)

Foreign currency risk

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Group's exposure to the risk of changes in foreign exchange rates relates primarily to the Group's operating activities (when revenue or expense is denominated in a different currency from the Group's functional currency) and the Group's net investment in foreign subsidiaries. The Group manages its foreign currency risk periodically, especially by entering into currency forward and currency interest rate swap contracts.

Significant monetary assets and liabilities denominated in foreign currencies as of December 31, 2020 and 2019 are as follows (US dollar and Korean won in thousands):

	2020			2019		
	Currency	Foreign currencies	In equivalent of Korean won	Currency	Foreign currencies	In equivalent of Korean won
Financial assets	USD	327,757	₩ 356,599,373	USD	416,377	₩ 482,080,807
	Others		28,193,085	Others		20,003,928
			<u>₩ 384,792,458</u>			<u>₩ 502,084,735</u>
Financial liabilities	USD	753,688	₩ 820,012,969	USD	950,297	₩ 1,100,253,991
	Others		7,189,641	Others		8,057,102
			<u>₩ 827,202,610</u>			<u>₩ 1,108,311,093</u>

The following table demonstrates the sensitivity to a reasonably possible change in the US dollar exchange rate, with all other variables held constant. The Group's exposure to foreign currency changes for all other currencies is not material (Korean won in thousands):

	2020		2019	
	(+) 10%	(-) 10%	(+) 10%	(-) 10%
Increase (decrease) in profit for the year	₩ 2,347,988	₩ (2,347,988)	₩ (4,122,457)	₩ 4,122,457

Feedstock price risk

Feedstock price risk is the risk that the Group's income and cash flow will change due to the fluctuations in international market prices of the Group's feedstock including condensate. The Group entered into a commodity swap to hedge the risk of changes in feedstock. The commodity swap is exposed to the risk of changes in fair value. However, the price changes in fair value of the commodity swap can be offset with changes in operating margin. Therefore, the risk of changes in feedstock price is appropriately managed.

Credit risk

Credit risk is the risk that counterparty will not meet its obligations under a financial instrument or customer contract, leading to a financial loss of the Group.

Trade and other accounts receivable

Customer credit risk is managed by each business unit subject to the Group's established policy, procedures and control relating to customer credit risk management. Credit quality of the customer is assessed based on an extensive credit rating scorecard and individual credit limits are defined in accordance with this assessment. As of December 31, 2020, trade accounts receivable from the top five customers accounted for 28% or ₩147,221,885 thousand of total trade accounts receivable.

24. Financial risk management objectives and policies (cont'd)

Other financial assets

Credit risks associated with the Group's other financial assets which consist of bank deposits and long-term loans arise from the default by the counterparties. Maximum exposure to credit risks will be the carrying value of such financial assets. The Group deposits its surplus funds in the financial institutions whose credit ratings are high and, therefore, credit risks related to such financial institutions are considered limited.

Liquidity risk

Liquidity risk refers to the risk that the Group may default on the contractual obligations that become due. The Group monitors its risk to a shortage of funds using a recurring liquidity planning tool.

The Group's objective is to maintain a balance between continuity of funding and flexibility through the use of bank overdrafts, bank borrowings and bonds. The table below summarizes the maturity profile of the Group's financial liabilities based on contractual undiscounted payments (Korean won in thousands):

	2020				
	Within 3 months	3 months ~ 1 year	1 year ~ 5 years	Over 5 years	Total
Bonds payable and borrowings (*)	₩ 204,768,701	₩ 490,000,000	₩ 1,765,200,000	₩ 80,000,000	₩ 2,539,968,701
	2019				
	Within 3 months	3 months ~ 1 year	1 year ~ 5 years	Over 5 years	Total
Bonds payable and borrowings (*)	₩ 194,025,577	₩ 360,000,000	₩ 1,843,120,000	₩ 180,000,000	₩ 2,577,145,577

(*) lease liabilities are excluded from the bonds payable and borrowings.

27.4% of the Group's financial liabilities will mature in less than one year as of December 31, 2020 based on the carrying value of bonds payable and borrowings reflected in the consolidated financial statements. The Group assessed the concentration of risk with respect to refinancing its debt and concluded it to be manageable.

(4) Capital management

The primary objective of the Group's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business and maximize shareholder value. The Group manages its capital structure and makes adjustments to it in light of changes in economic conditions. No changes were made in the objectives, policies or processes during the years ended December 31, 2020 and 2019. The Group's debt-to-equity ratios as of December 31, 2020 and 2019 are 92.6% and 96.7%, respectively.

25. Uncertainty of the impact of Covid-19

In order to prevent the spread of Covid-19, a various prevention and control measures, including restrictions on traveling are being implemented worldwide, and as a result, the global economy has been extensively affected. In addition, governments are implementing various support measures to address Covid-19. The items that mainly impacted by the Covid-19 are collectability of trade accounts receivable (see Note 4) and impairment of property, plant and equipment and intangible assets (see Notes 7 and 9). The Group prepared its consolidated financial statements with reasonable estimates of the impact of Covid-19. However, significant accounting estimates and assumptions used in preparing the Group's consolidated financial statements may be adjusted depending on the changes arising from the uncertainties of Covid-19, and the ultimate impact on the Group's business, financial position and management performance is not estimable at the moment.

26. Approval of consolidated financial statements

The consolidated financial statements of the Group for the year ended December 31, 2020 were approved by the Company's Board of Directors on January 29, 2021.