

LG Chem, Ltd. and Subsidiaries
Consolidated Financial Statements
December 31, 2020 and 2019

LG Chem, Ltd. and Subsidiaries
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December 31, 2020 and 2019

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Independent Auditor's Report

(English Translation of a Report Originally Issued in Korean)

To the Board of Directors and Shareholders of
LG Chem, Ltd.

Opinion

We have audited the accompanying consolidated financial statements of LG Chem, Ltd. and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as at December 31, 2020 and 2019, and consolidated statements of profit or loss, consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at December 31, 2020 and 2019, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with International Financial Reporting Standards as adopted by the Republic of Korea (Korean IFRS).

Basis for Opinion

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

Emphasis of Matter

Without modifying our opinion, we draw attention to Note 4 to the consolidated financial statements. Note 4 to the consolidated financial statements describes management's plans and action taken to resolve uncertainty relating to the impact of Coronavirus disease 2019 (COVID-19) on the Group's productivity and ability to satisfy customer's orders, and to solve these events or circumstances.

Key Audit Matters

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

(1) Goodwill impairment assessment for Life Sciences Cash Generating Unit

Why this matter was determined to be a key audit matter

We focused on goodwill impairment assessment due to the significance of size of goodwill balance (₩887,037 million as at December 31, 2020) and because the measurement of the recoverable amount of the Group's Cash Generating Units (CGUs) involves management's judgements about the future results of the business, discount rate and adjustments arising from the perspective of market participants. Details are described in Note 12.

In particular, we focused our audit effort on the goodwill recognized in relation to the Life Sciences CGU (₩686,229 million as at December 31, 2020) which is the most significant element among all relevant CGUs with goodwill. The Life Sciences business was acquired by the Group in 2017 and has not recognized impairment on goodwill since then. We focused on this area due to the significance of size of goodwill balance.

How this matter was addressed in our audit

Audit procedures we performed to address this key audit matter include:

- Understanding, evaluation and testing of the design and operating effectiveness of relevant internal controls in place in connection with impairment assessment of goodwill including review and approval by management of future cash flow forecasts and assumptions applied in the assessment.
- Evaluation of valuation model used by management to estimate value-in-use.
- Comparison of future cash flow forecasts used to estimate value-in-use with the budgets approved by the management except for the cash flows relating to specific fixed assets adjusted from the perspective of market participants.
- Comparison of the current year actual results with the prior year forecasts to assess whether management's forecasts include optimistic assumptions.
- Evaluation of management's assumptions used to estimate value-in-use.
 - Comparison of estimated revenue growth rate, operating margin rate and capital expenditures applied to estimate value-in-use with historical performances of the CGU and the current market condition to evaluate whether applied assumptions are consistent.
 - Evaluation of long-term growth rate by considering economic and industry forecasts
 - Comparison of the discount rate used by the management with the discount rate independently calculated by us using observable information in the market.
- Evaluation of CGUs identification and testing of book values allocated to CGUs
- Evaluation of sensitivity analysis performed by management on the discount rate and terminal growth rate.

Other Matter

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

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

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

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

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

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

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

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

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we

conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.

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

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

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

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

Seoul, Korea

March 11, 2021

This report is effective as of March 11, 2021, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that there is a possibility that the above audit report may have to be revised to reflect the impact of such subsequent events or circumstances, if any.

LG Chem, Ltd. and Subsidiaries
Consolidated Statements of Financial Position
December 31, 2020 and 2019

<i>(in millions of Korean won)</i>	Notes	2020	2019
Assets			
Current assets			
Cash and cash equivalents	3, 5, 6	3,274,250	1,888,631
Trade receivables	3, 5, 7, 31	5,298,365	3,738,224
Other receivables	3, 5, 7, 31	924,303	266,551
Other current financial assets	3, 5, 8	23,821	10,879
Prepaid income taxes		17,049	118,349
Other current assets	13	643,152	793,796
Inventories	9	5,349,688	5,033,721
Assets held for sale	34	789,072	19,573
Total current assets		16,319,700	11,869,724
Non-current assets			
Trade receivables	3, 5, 7	29,376	-
Other receivables	3, 5, 7	255,030	172,933
Other non-current financial assets	3, 5, 8	81,532	159,955
Investments in associates and joint ventures	1, 10, 33	309,329	307,577
Deferred tax assets	28	1,409,757	516,606
Property, plant and equipment	11	20,567,475	18,593,642
Intangible assets	12	2,279,917	2,206,229
Investment properties	36	49,433	53,328
Other non-current assets	13	87,345	144,432
Total non-current assets		25,069,194	22,154,702
Total assets		41,388,894	34,024,426
Liabilities			
Current liabilities			
Trade payables	3, 5, 31	3,458,526	2,379,711
Other payables	3, 5, 31	5,266,974	4,142,953
Borrowings	3, 5, 14	1,548,815	1,356,097
Other current financial liabilities	3, 5, 8	16,797	-
Provisions	15	1,041,451	472,129
Income tax payables	28	373,244	84,713
Other current liabilities	17	788,029	505,926
Liabilities held for sale	34	130,383	0
Total current liabilities		12,624,219	8,941,529
Non-current liabilities			
Other payables	3, 5	11,927	10,951
Borrowings	3, 5, 14	8,637,302	7,058,171
Other non-current financial liabilities	3, 5, 8	41,768	930
Provisions	15	328,556	264,599
Net defined benefit liabilities	16	117,959	179,160
Deferred tax liabilities	28	689,817	51,812
Other non-current liabilities	17	146,906	133,485
Total non-current liabilities		9,974,235	7,699,108
Total liabilities		22,598,454	16,640,637

LG Chem, Ltd. and Subsidiaries
Consolidated Statements of Financial Position
December 31, 2020 and 2019

<i>(in millions of Korean won)</i>	Notes	2020	2019
Equity			
Share capital	1, 19	391,406	391,406
Capital surplus		2,692,485	2,274,620
Other components of equity	21	(54,998)	(374,243)
Accumulated other comprehensive income		(165,076)	(85,496)
Retained earnings	20	15,175,304	14,798,690
Equity attributable to owners of the Parent Company		<u>18,039,121</u>	<u>17,004,977</u>
Non-controlling interests		751,319	378,812
Total equity		<u>18,790,440</u>	<u>17,383,789</u>
Total liabilities and equity		<u>41,388,894</u>	<u>34,024,426</u>

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

LG Chem, Ltd. and Subsidiaries
Consolidated Statements of Profit or Loss
Years Ended December 31, 2020 and 2019

<i>(in millions of Korean won, except per share amounts)</i>	Notes	2020	2019
Revenue	31, 33	30,076,510	27,353,078
Cost of sales	23, 31	<u>(23,764,286)</u>	<u>(22,667,434)</u>
Gross profit		6,312,224	4,685,644
Selling and administrative expenses	22, 23, 31	<u>(4,514,065)</u>	<u>(3,860,229)</u>
Operating profit	33	1,798,159	825,415
Finance income	5, 25	417,468	286,178
Finance costs	5, 25	(1,109,585)	(421,274)
Share of net profit of associates and joint ventures accounted for using the equity method	10	9,343	22,211
Other non-operating income	5, 26	1,155,244	519,121
Other non-operating expenses	5, 27	<u>(1,326,937)</u>	<u>(657,208)</u>
Profit before income tax	32	943,692	574,443
Income tax expense	28	<u>(367,839)</u>	<u>(169,181)</u>
Profit from continuing operations		<u>575,853</u>	<u>405,262</u>
Profit (loss) from discontinued operations	34	<u>106,555</u>	<u>(29,158)</u>
Profit for the year		<u>682,408</u>	<u>376,104</u>
Profit is attributable to:			
Owners of the Parent Company			
Profit from continuing operations		406,079	342,523
Profit (loss) from discontinued operations		<u>106,555</u>	<u>(29,158)</u>
		512,634	313,365
Non-controlling interests			
Profit from continuing operations		<u>169,774</u>	<u>62,739</u>
		169,774	62,739
Earnings per share for profit			
attributable to the equity holders			
of the Parent Company (in won)	29		
Basic earnings per ordinary share		6,666	4,085
Basic earnings per preferred share		6,716	4,135
Diluted earnings per ordinary share		6,666	3,875
Diluted earnings per preferred share		6,716	3,925
Earnings per share for profit from continuing operations			
attributable to the equity holders			
of the Parent Company (in won)	29		
Basic earnings per ordinary share		5,279	4,466
Basic earnings per preferred share		5,329	4,516
Diluted earnings per ordinary share		5,279	4,249
Diluted earnings per preferred share		5,329	4,299

The above consolidated statements of profit or loss should be read in conjunction with the accompanying notes.

LG Chem, Ltd. and Subsidiaries
Consolidated Statements of Comprehensive Income
Years Ended December 31, 2020 and 2019

(in millions of Korean won)

	Notes	2020	2019
Profit for the year		<u>682,408</u>	<u>376,104</u>
Other comprehensive income			
<i>Items that will not be reclassified to profit or loss</i>			
Remeasurements of net defined benefit liability	16	25,345	(65,806)
Gain on valuation of financial assets at fair value through other comprehensive income		2,364	35,331
Shares of remeasurements of net defined benefit liabilities of associates		365	(132)
Income tax relating to these items		(7,580)	8,544
<i>Items that may be subsequently reclassified to profit or loss</i>			
Exchange differences on translation of foreign operations		(115,678)	67,216
Cash flow hedge		2,451	39,848
Shares of other comprehensive income (loss) of associates and joint ventures		29,554	(2,075)
Income tax relating to these items		(7,071)	(10,510)
Other comprehensive income (loss) for the year, net of tax		<u>(70,250)</u>	<u>72,416</u>
Total comprehensive income for the year		<u>612,158</u>	<u>448,520</u>
Total comprehensive income for the year is attributable to:			
Owners of the Parent Company		451,834	383,185
Non-controlling interest		160,324	65,335

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

LG Chem, Ltd. and Subsidiaries
Consolidated Statements of Changes in Equity
Years Ended December 31, 2020 and 2019

(in millions of Korean won)

Notes	Attributable to owners of the Parent Company						Non-controlling interests	Total equity
	Share capital	Capital surplus	Other components of equity	Accumulated other comprehensive income	Retained earnings	Total		
Balance at January 1, 2019	391,406	2,274,623	(374,243)	(202,994)	14,994,252	17,083,044	239,084	17,322,128
Comprehensive income								
Profit for the year	-	-	-	-	313,365	313,365	62,739	376,104
Remeasurements of net defined benefit liability	16	-	-	-	(47,546)	(47,546)	-	(47,546)
Exchange differences on translation of foreign operations	-	-	-	65,068	-	65,068	2,596	67,664
Gain on valuation of financial assets at fair value through other comprehensive income	-	-	-	25,615	-	25,615	-	25,615
Cash flow hedge	-	-	-	28,890	-	28,890	-	28,890
Others	-	-	-	(2,075)	(132)	(2,207)	-	(2,207)
Total comprehensive income for the year	-	-	-	117,498	265,687	383,185	65,335	448,520
Transactions with owners:								
Dividends	30	-	-	-	(460,058)	(460,058)	(23,852)	(483,910)
Increase in paid-in capital of a subsidiary	-	-	-	-	-	-	98,642	98,642
Others	-	(3)	-	-	(1,191)	(1,194)	(397)	(1,591)
Total transactions with owners	-	(3)	-	-	(461,249)	(461,252)	74,393	(386,859)
Balance at December 31, 2019	391,406	2,274,620	(374,243)	(85,496)	14,798,690	17,004,977	378,812	17,383,789
Balance at January 1, 2020	391,406	2,274,620	(374,243)	(85,496)	14,798,690	17,004,977	378,812	17,383,789
Comprehensive income								
Profit for the year	-	-	-	-	512,634	512,634	169,774	682,408
Remeasurements of net defined benefit liability	16	-	-	-	18,415	18,415	-	18,415
Exchange differences on translation of foreign operations	-	-	-	(112,625)	-	(112,625)	(9,450)	(122,075)
Gain on valuation of financial assets at fair value through other comprehensive income	-	-	-	1,714	-	1,714	-	1,714
Cash flow hedge	-	-	-	1,777	-	1,777	-	1,777
Others	-	-	-	29,554	365	29,919	-	29,919
Total comprehensive income for the year	-	-	-	(79,580)	531,414	451,834	160,324	612,158
Transactions with owners:								
Disposal of treasury shares	-	417,865	319,245	-	-	737,110	-	737,110
Dividends	30	-	-	-	(153,608)	(153,608)	(24,040)	(177,648)
Increase in paid-in capital of a subsidiary	-	-	-	-	-	-	236,620	236,620
Others	-	-	-	-	(1,192)	(1,192)	(397)	(1,589)
Total transactions with owners	-	417,865	319,245	-	(154,800)	582,310	212,183	794,493
Balance at December 31, 2020	391,406	2,692,485	(54,998)	(165,076)	15,175,304	18,039,121	751,319	18,790,440

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

LG Chem, Ltd. and Subsidiaries
Consolidated Statements of Cash Flows
Years Ended December 31, 2020 and 2019

<i>(in millions of Korean won)</i>	Notes	2020	2019
Cash flows from operating activities			
Cash generated from operations	32	6,526,644	3,836,461
Interest received		28,918	58,479
Interest paid		(215,865)	(209,256)
Dividends received		14,263	12,130
Income taxes paid		(513,128)	(576,713)
Net cash inflow from operating activities		<u>5,840,832</u>	<u>3,121,101</u>
Cash flows from investing activities			
Decrease in other receivables		79,603	207,398
Decrease in other non-current receivables		75,745	53,405
Proceeds from disposal of investments in associates		382,941	16,149
Proceeds from disposal of financial instruments		91,263	3,014
Proceeds from disposal of property, plant and equipment		37,482	79,602
Proceeds from disposal of intangible assets		17,182	20,074
Government grants received		273,577	348,053
Proceeds from disposal of assets held for sale		93,165	-
Proceeds from transfer of business		354,466	6,861
Increase in other receivables		(658,735)	(169,916)
Increase in other non-current receivables		(136,854)	(114,705)
Acquisition of investments in associates		(44,006)	(47,170)
Acquisition of financial assets		(18,519)	(23,186)
Acquisition of property, plant and equipment		(5,535,791)	(6,238,203)
Acquisition of intangible assets		(123,592)	(252,288)
Cash outflows from transfer of business		(184,302)	(529)
Net cash outflow from investing activities		<u>(5,296,375)</u>	<u>(6,111,441)</u>
Cash flows from financing activities			
Proceeds from borrowings		4,073,803	3,987,118
Capital contribution from non-controlling interests		236,621	98,642
Repayments of borrowings and others		(3,194,707)	(1,301,205)
Dividends paid		(177,648)	(483,910)
Net cash inflow from financing activities		<u>938,069</u>	<u>2,300,645</u>
Net increase (decrease) in cash and cash equivalents			
Cash and cash equivalents at the beginning of the year		1,482,526	(689,695)
Effects of exchange rate changes on cash and cash equivalents		1,888,631	2,513,702
Cash and cash equivalents included in disposal groups classified as held for sale		(84,407)	64,624
		<u>(12,500)</u>	<u>-</u>
Cash and cash equivalents at the end of the year in the consolidated statement of financial position		<u>3,274,250</u>	<u>1,888,631</u>

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

LG Chem, Ltd. and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2020 and 2019

1. General Information

General information about LG Chem, Ltd. (the Parent Company) and its 48 subsidiaries (collectively referred to as “the Group”) is as follows:

1.1 The Parent Company

The Parent Company was spun off on April 1, 2001, from LG Chem Investment Ltd. (now LG Corp., formerly LG Chemical Ltd.).

As at December 31, 2020, the Group has its manufacturing facilities in Yeosu, Daesan, Ochang, Cheongju, Ulsan, Naju, Iksan, Paju, Osong, Onsan, Gimcheon and overseas sites.

The Parent Company is authorized to issue 292 million shares of ordinary shares with par value of ₩5,000 per share. As at December 31, 2020, the Parent Company has issued and outstanding 70,592,343 ordinary shares (₩352,962 million) and 7,688,800 preferred shares (₩38,444 million). The largest shareholder of the Parent Company is LG Corp., which owns 33.34% of the Parent Company’s ordinary shares. Preferred shareholders have no voting rights but are entitled to receive dividends at a rate 1% more than those paid to ordinary shareholders.

1.2 Business Overview

The Group is engaged in Petrochemicals, Energy solutions, and Advanced materials business, and also engaged in Life Sciences business acquired through a merger with LG Life Sciences, Ltd. in January 2017. In addition, the Parent Company acquired 100% shares of FarmHannong Co., Ltd., in April 2016, which is engaged to manufacture crop protection products, seeds, fertilizers and others.

The Petrochemical business includes production of olefin petrochemicals, such as ethylene, propylene, butadiene from Naphtha, and aromatic petrochemicals such as benzene. It also includes production of synthetic resin and synthetic components from olefin, and aromatic petrochemicals. This business bears characteristics of a large-volume process industry. The Group’s major products are PE, PP, BPA, ABS, EP, PVC, plasticizers, acrylic, SAP, synthetic rubber, a special resin, and others.

LG Energy Solution Co., Ltd. which was established through the split-off of Energy solution business from the Parent Company on December 1, 2020, and its subsidiaries mainly manufacture and supply batteries ranging from IT & New application batteries for mobile phones and laptop computers, to automotive batteries for electric vehicles and ESS (Energy Storage System) batteries. Demand of small-sized batteries for new applications such as electric tools and electric driving devices as well as traditional IT devices is increasing recently and the automotive battery business is also expected to expand rapidly due to an increasing demand of the batteries in associated with enhanced environment regulation in developed countries. Demand for ESS is expanding with an increasing importance of efficient usage of electricity and generation of renewable energy.

The Advanced material business manufactures and supplies various kinds of IT materials such as polarizer, automotive material, OLED film, semiconductor materials, OLED materials, battery materials and others and RO membranes, which will be the next growth engine for future.

The Life Sciences business manufactures and supplies pharmaceutical products, such as human growth hormone ‘Eutropin’, diabetes drug ‘Zemiglo’, bovine somatotropin ‘Boostin’, hyaluronic acid filler ‘YVOIRE’ and others, as well as fine chemical products, such as herbicide ‘PYANCHOR’ for rice farming and others.

LG Chem, Ltd. and Subsidiaries

Notes to the Consolidated Financial Statements

December 31, 2020 and 2019

FarmHannong Co., Ltd. and its subsidiaries which were acquired by the Group in 2016 manufacture and sell crop protection products, seeds, fertilizers and others. The crop protection business provides high value products such as environmentally-friendly pesticide. The fertilizer business leads developing a next generation fertilizers such as eco-friendly organic and functional fertilizers, and potting soil. The seed business puts priority on retaining various genetic resources and developing rare breeds with high profit in order to remain competitive in a future food industry.

1.3 Consolidated Subsidiaries, Associates and Joint Ventures

	December 31, 2020			
	Percentage of ownership (%)	Business location	Closing month	Business activities
Consolidated subsidiaries				
LG Energy Solution Co., Ltd. ¹	100	Korea	December	Battery manufacturing and sales
Ningbo LG Yongxing Chemical Co., Ltd. ²	75	China	December	ABS/SBL manufacturing and sales
Ningbo Zhenhai LG Yongxing Trade Co., Ltd. ²	75	China	December	ABS sales
LG Chem America, Inc. ³	100	USA	December	Sales and trading
LG Chemical India Pvt. Ltd. ⁴	100	India	December	Synthetic resin manufacturing and sales
LG Polymers India Pvt. Ltd. ⁴	100	India	December	PS manufacturing and sales
LG Chemical (Guangzhou) Engineering Plastics Co., Ltd.	100	China	December	EP manufacturing and sales
LG Chem (Nanjing) Information & Electronics Materials Co., Ltd. ¹	100	China	December	Battery/ Polarizer manufacturing and sales
LG Chem (Taiwan), Ltd.	100	Taiwan	December	Polarizer manufacturing and sales
LG Chem Display Materials (Beijing) Co., Ltd.	100	China	December	Polarizer manufacturing and sales
Tianjin LG Bohai Chemical Co., Ltd.	75	China	December	PVC, VCM, EDC manufacturing and sales
Tianjin LG BOTIAN Chemical Co., Ltd.	58	China	December	SBS manufacturing and sales
LG Chem (China) Investment Co., Ltd.	100	China	December	China holding company
LG Chem (Tianjin) Engineering Plastics Co., Ltd.	100	China	December	EP manufacturing and sales
LG Chem Europe GmbH	100	Germany	December	Sales and trading
LG Chem Poland Sp. z o.o.	100	Poland	December	EP manufacturing and sales
LG Energy Solution Michigan Inc. ^{1,5}	100	USA	December	Automotive battery research and manufacturing
LGC Petrochemical India Private Ltd.	100	India	December	Synthetic resin manufacturing and sales
HAENGBOKNURI CO., LTD.	100	Korea	December	Facility management and general cleaning
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	100	Turkey	December	Sales and trading
LG Chem Japan Co., Ltd.	100	Japan	December	Sales and trading
LG NanoH2O, LLC ³	100	USA	December	Water processing membrane sales
Nanjing LG Chem New Energy Battery Co., Ltd. ¹	50	China	December	Automotive battery manufacturing and sales
LG Chem (Chongqing) Engineering Plastics Co., Ltd.	100	China	December	EP manufacturing and sales
LG Chem Wroclaw Energy sp. z o.o. ^{1,6}	100	Poland	December	Automotive battery manufacturing and sales
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	70	China	December	ABS manufacturing and sales
FarmHannong Co., Ltd. ⁷	100	Korea	December	Agricultural pesticide manufacturing and sales
LG Chem Life Sciences India Pvt. Ltd.	100	India	December	Pharmaceutical products sales
LG Chem Life Sciences (Beijing) Co., Ltd.	100	China	December	Pharmaceutical products sales
LG Chem Life Sciences (Thailand) Ltd.	100	Thailand	December	Pharmaceutical products sales
Farmhannong America, Inc. ⁷	100	USA	December	Agricultural pesticide sales
LG Chem Hai Phong Vietnam Co., Ltd.	100	Vietnam	December	Polarizer manufacturing and sales
LG Energy Solution Australia Pty Ltd ¹	100	Australia	December	ESS sales

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LG Chem Mexico S.A. de C.V.	100	Mexico	December	Sales and trading
FarmHannong(Thailand) Ltd. ⁷	100	Thailand	December	Research and development on seeds
LG Chem Hai Phong engineering Plastics LLC.	100	Vietnam	December	EP manufacturing and sales
LG Chem (Guangzhou) Information & Electronics Materials Co., Ltd.	100	China	December	Polarizer manufacturing and sales
LEYOU NEW ENERGY MATERIALS(WUXI) Co., LTD ⁸	51	China	December	Battery materials manufacturing and sales
LG Chem Fund I LLC ⁹	100	USA	December	Investments in venture companies
Ugimag Korea Co., Ltd ¹⁰	100	Korea	December	Electronic parts manufacturing and sales
Uniseal, Inc. ^{3,11}	100	USA	December	Adhesive manufacturing and sales
Uniseal Europe Ltd. ¹¹	100	England	December	Adhesive manufacturing and sales
LG Chem Nanjing Energy Solution Co., Ltd. ^{1,12}	100	China	December	Battery manufacturing and sales
LG Chem Life Science Innovation Center, Inc. ³	100	USA	December	Pharmaceutical products research
FARMHANNONG(MALAYSIA) SDN. BHD. ⁷	100	Malaysia	December	Agricultural pesticide licensing
PT FARM HANNONG INDONESIA ^{7,13}	100	Indonesia	December	Agricultural pesticide licensing
Ultium Cells LLC ^{1,14}	50	USA	December	Automotive battery manufacturing and sales
LG Energy Solution Europe GmbH ¹	100	Germany	December	Sales and trading

Associates

TECHWIN Co., Ltd.	20	Korea	December	Environment solution and construction of chemical plant
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA. ¹⁵	100	Brazil	December	Sales and trading
LG Chem Malaysia SDN.BHD. ¹⁵	100	Malaysia	December	Sales and trading
FJ Composite Material Co., Ltd.	30	Japan	May	Heat diffuser research and manufacturing
WUXI CL New Energy Technology Ltd. ¹	30	China	December	ESS manufacturing and sales
LG Chem Life Sciences Poland Ltd. ¹⁵	100	Poland	December	Pharmaceutical products sales
Combustion Synthesis Co., Ltd.	36	Japan	December	Nitride-based ceramic powder production
HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD. ¹⁶	49	China	December	Battery materials manufacturing and sales
VINFAST LITHIUM BATTERY PACK LLC. ¹	35	Vietnam	December	Battery manufacturing and sales
Jiangxi VL Battery., Ltd. ^{1,17}	34	China	December	Battery manufacturing and sales

Joint ventures

LG VINA Chemical Co., Ltd.	50	Vietnam	December	DOP production and sales
HL Greenpower Co., Ltd. ¹	49	Korea	December	Automotive battery manufacturing and sales
SEETEC Co., Ltd.	50	Korea	December	Plant utility and distribution, research assistance service

¹ LG Energy Solution Co., Ltd was established through the split-off of Energy solution business from the Parent Company during the year ended December 31, 2020. LG Energy Solution owns 100% of LG Energy Solution Michigan Inc., LG Chem Wroclaw Energy sp. z o.o., LG Energy Solution Australia Pty Ltd, LG Chem Nanjing Energy Solution Co., Ltd. and LG Energy Solution Europe GmbH's shares, 80.79% of LG Chem (Nanjing) Information & Electronics Materials Co., Ltd.'s shares and 50% of Nanjing LG Chem New Energy Battery Co.,Ltd. and Ultium Cells LLC's shares. The Group owns 100% of LG Energy Solution Co., Ltd's shares.

² As at December 31, 2020, Ningbo LG Yongxing Chemical Co., Ltd. owns 100% of Ningbo Zhenhai LG Yongxing Trading Co., Ltd.'s shares.

³ During the year ended December 31, 2020, the Parent Company acquired 100% of LG Chem America, Inc., LG NanoH2O, LLC, Uniseal, Inc. and LG Chem Life Science Innovation Center, Inc.'s shares formerly owned by LG Energy Solution Michigan Inc...

⁴ As at December 31, 2020, LG Chemical India Pvt. Ltd. owns 100% of LG Polymers India Pvt. Ltd.'s shares.

⁵ During the year ended December 31, 2020, the Parent Company acquired additional shares of LG Energy Solution Michigan Inc. for ₩206,238 million.

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- ⁶ During the year ended December 31, 2020, the Parent Company acquired additional shares of LG Chem Wroclaw Energy sp. z o.o. for ₩413,739 million.
- ⁷ As at December 31, 2020, FarmHannong Co., Ltd. owns 100% of Farmhannong America, Inc., FarmHannong(Thailand) Ltd. and FARMHANNONG(MALAYSIA) SDN.BHD.'s shares, and 100% of PT FARM HANNONG INDONESIA's shares.
- ⁸ During the year ended December 31, 2020, the Parent Company acquired additional shares of LEYOU NEW ENERGY MATERIALS(WUXI) Co., LTD. for ₩17,639 million.
- ⁹ During the year ended December 31, 2020, the Parent Company acquired additional shares of LG CHEM FUND I LLC for ₩16,111 million.
- ¹⁰ During the year ended December 31, 2020, the Parent Company acquired additional shares of Ugimag Korea Co., Ltd. for ₩24,500 million.
- ¹¹ Uniseal, Inc. owns 100% of Uniseal Europe Ltd's shares.
- ¹² During the year ended December 31, 2020, the Parent Company acquired additional shares of LG Chem Nanjing Energy Solution Co., Ltd. for ₩514,136 million.
- ¹³ PT FARM HANNONG INDONESIA was newly established during the year ended December 31, 2020, and the Group acquired 100% shares of PT FARM HANNONG INDONESIA for ₩208 million.
- ¹⁴ Ultium Cells LLC was newly established during the year ended December 31, 2020, and the Group acquired 50% shares of Ultium Cells LLC for ₩163,592 million. The Group possesses control over the investee as the Group can exercise the majority voting rights in its decision-making process and has the ability to use power to affect the variable returns of the investee through its involvement in the production and cost management and other activities in accordance with the shareholders' agreement.
- ¹⁵ Classified as an investment in associate due to its small size.
- ¹⁶ During the year ended December 31, 2020, the Parent Company acquired additional shares of HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD. for ₩22,191 million.
- ¹⁷ During the year ended December 31, 2020, the Parent Company newly acquired 34% shares of Jiangxi VL Battery., Ltd. for ₩21,815 million.

1.4 Summarized Financial Information of Subsidiaries, Associates and Joint Ventures

Summarized financial information (before elimination of intercompany transactions and adjustments for differences in accounting policies) of subsidiaries, associates and joint ventures is as follows:

<i>(in millions of Korean won)</i>	December 31, 2020			2020	
	Assets	Liabilities	Equity	Revenue	Profit (loss) for the year
Subsidiaries					
LG Energy Solution Co., Ltd.	12,342,717	5,090,619	7,252,098	632,954	(377,980)
Ningbo LG Yongxing Chemical Co.,Ltd.	1,092,905	219,173	873,732	1,718,744	363,954
Ningbo Zhenhai LG Yongxing Trade Co.,Ltd.	6,224	1,303	4,921	21,144	413
LG Chem America, Inc.	237,946	208,031	29,915	683,181	5,641
LG Chemical India Pvt. Ltd.	32,680	19	32,661	-	29
LG Polymers India Pvt. Ltd.	56,029	38,833	17,196	61,709	(62,422)
LG Chemical (Guangzhou) Engineering Plastics Co.,Ltd.	107,270	33,741	73,529	202,417	15,097
LG Chem (Nanjing) Information & Electronics Materials Co.,Ltd. ¹	3,793,936	1,536,320	2,257,616	3,187,317	351,732
LG Chem (Taiwan), Ltd.	113,717	46,372	67,345	127,861	2,693
LG Chem Display Materials (Beijing) Co.,Ltd. ¹	40,417	13,171	27,246	167	1,406
Tianjin LG Bohai Chemical Co.,Ltd.	282,683	53,113	229,570	484,912	67,720
Tianjin LG BOTIAN Chemical Co.,Ltd.	38,391	14,760	23,631	107,588	8,991
LG Chem (China) Investment Co.,Ltd.	703,145	392,501	310,644	61,415	77,465
LG Chem (Tianjin) Engineering Plastics Co.,Ltd.	52,446	10,440	42,006	60,210	3,923

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LG Chem Europe GmbH	229,078	166,779	62,299	656,984	16,461
LG Chem Poland Sp. z o.o.	74,063	27,931	46,132	110,923	10,237
LG Energy Solution Michigan Inc.	915,288	607,065	308,223	727,897	(121,895)
LGC Petrochemical India Private Ltd.	3,722	590	3,132	3,721	362
HAENGBOKNURI CO., LTD.	4,869	2,453	2,416	11,562	537
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	7,033	6,154	879	44,961	55
LG Chem Japan Co.,Ltd.	5,863	852	5,011	5,730	573
LG NanoH2O, LLC ²	33,155	11,117	22,038	40,871	5,033
Nanjing LG Chem New Energy Battery Co.,Ltd.	1,059,066	781,217	277,849	1,237,064	63,336
LG Chem (Chongqing) Engineering Plastics Co.,Ltd.	38,629	10,973	27,656	49,391	5,067
LG Chem Wroclaw Energy sp. z o.o.	6,526,231	5,350,936	1,175,295	5,119,379	(302,248)
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	392,176	199,465	192,711	700,735	118,374
FarmHannong Co., Ltd. ^{2,3}	1,023,232	646,884	376,348	601,679	7,940
LG Chem Life Sciences India Pvt. Ltd.	1,295	837	458	5,176	1,027
LG Chem Life Sciences (Beijing) Co.,Ltd.	2,099	716	1,383	1,856	82
LG Chem Life Sciences (Thailand) Ltd.	22,854	9,722	13,132	33,434	2,752
LG Chem Hai Phong Vietnam Company Ltd.	14,277	6,770	7,507	16,881	1,264
LG Energy Solution Australia Pty Ltd.	4,793	3,049	1,744	9,398	565
LG Chem Mexico S.A. de C.V.	1,081	152	929	1,362	214
LG Chem Hai Phong Engineering Plastics Ltd.	23,110	11,430	11,680	16,148	(1,395)
LG Chem (Guangzhou) Information & Electronics Materials Co.,Ltd. ¹	630,513	399,728	230,785	49,440	62,871
LEYOU NEW ENERGY MATERIALS(WUXI) Co.,LTD	429,359	97,122	332,237	50,174	1,874
LG Chem Fund I LLC	28,842	31	28,811	-	(4,109)
Ugimag Korea Co., Ltd. ²	39,015	15,903	23,112	17,638	(7,905)
Uniseal,Inc. ^{2,3}	34,452	6,050	28,402	57,725	757
LG Chem Nanjing Energy Solution Co., Ltd.	1,767,706	964,689	803,017	837,968	42,555
LG Chem Life Science Innovation Center, Inc.	3,314	1,868	1,446	4,500	263
Ultium Cells LLC	336,851	32,309	304,542	-	11
LG Energy Solution Europe GmbH	49,626	14,814	34,812	9,855	130
Associates					
TECHWIN Co., Ltd.	134,405	38,746	95,659	112,184	11,049
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	528	80	448	1,423	252
LG Chem Malaysia SDN.BHD.	418	2	416	677	28
FJ Composite Material Co., Ltd.	11,026	4,635	6,391	1,867	302
WUXI CL New Energy Technology Ltd.	1,910	2,972	(1,062)	1,065	(34)
LG Chem Life Sciences Poland Ltd.	191	78	113	256	11
Combustion Synthesis Co., Ltd.	717	66	651	105	(488)
HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD.	226,471	43,454	183,017	-	565
VINFAST LITHIUM BATTERY PACK LLC.	18,148	6,322	11,826	19,555	(1,342)
Jiangxi VL Battery.,Ltd	67,186	4,066	63,120	-	208
Joint ventures					
LG VINA Chemical Co., Ltd.	35,832	27,515	8,317	91,304	2,237
HL Greenpower Co., Ltd.	406,928	360,547	46,381	1,255,431	(591)
SEETEC Co., Ltd.	342,227	55,056	287,171	490,978	14,556

¹ LCD polarizer business of these entities was classified as discontinued operations and profit or loss from the business was included in profit from discontinued operations(Note 34).

² Fair value adjustments due to business combination recorded in the consolidated financial statements are not included in the above information.

³ Represent financial information of intermediate parent company consolidating its subsidiaries.

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	December 31, 2019			2019	
	Assets	Liabilities	Equity	Revenue	Profit (loss) for the year
<i>(in millions of Korean won)</i>					
Subsidiaries					
Ningbo LG Yongxing Chemical Co.,Ltd.	781,530	174,627	606,903	1,788,258	137,332
Ningbo Zhenhai LG Yongxing Trade Co.,Ltd.	5,956	1,472	4,484	19,640	462
LG Chem HK Ltd.	-	-	-	-	25
LG Chem America, Inc.	311,718	285,645	26,073	799,045	3,910
LG Chemical India Pvt. Ltd.	32,758	17	32,741	-	37
LG Polymers India Pvt. Ltd.	122,078	37,794	84,284	222,831	6,312
LG Chemical (Guangzhou) Engineering Plastics Co.,Ltd.	103,530	42,832	60,698	206,281	10,063
LG Chem (Nanjing) Information & Electronics Materials Co.,Ltd. ¹	3,685,798	1,785,288	1,900,510	2,497,968	78,425
LG Chem (Taiwan), Ltd.	101,804	34,195	67,609	137,779	3,331
LG Chem Display Materials (Beijing) Co.,Ltd. ¹	41,729	11,486	30,243	-	-
Tianjin LG Bohai Chemical Co.,Ltd.	244,047	81,853	162,194	512,294	52,738
Tianjin LG BOTIAN Chemical Co.,Ltd.	43,473	28,726	14,747	146,675	11,383
LG Chem (China) Investment Co.,Ltd.	934,186	630,040	304,146	64,873	40,099
LG Chem (Tianjin) Engineering Plastics Co.,Ltd.	45,380	7,448	37,932	65,895	(1,110)
LG Chem Europe GmbH	330,807	286,252	44,555	822,405	9,467
LG Chem Poland Sp. z o.o.	63,814	26,005	37,809	115,275	1,705
LG Energy Solution Michigan Inc.	709,715	448,675	261,040	398,498	(37,766)
LGC Petrochemical India Private Ltd.	3,762	708	3,054	4,359	540
HAENGBOKNURI CO., LTD.	3,716	1,837	1,879	10,547	325
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	9,807	8,601	1,206	38,705	326
LG Chem Japan Co.,Ltd.	5,638	1,138	4,500	6,528	574
LG NanoH2O, LLC	23,684	5,219	18,465	28,967	3,668
NanoH2O (Jiangsu) Water Processing Technology Co. Ltd.	-	-	-	-	1,350
Nanjing LG Chem New Energy Battery Co.,Ltd.	1,002,457	845,483	156,974	1,163,760	33,573
LG Chem (Chongqing) Engineering Plastics Co.,Ltd.	33,009	10,480	22,529	35,333	(2,328)
LG Chem Wroclaw Energy sp. z o.o.	4,330,353	3,211,121	1,119,232	2,285,190	(202,085)
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	364,406	288,234	76,172	595,646	(1,481)
FarmHannong Co., Ltd. ^{2,3}	1,022,865	652,462	370,403	590,412	(19,510)
LG Chem Life Sciences India Pvt. Ltd.	2,774	3,322	(548)	6,940	(652)
LG Chem Life Sciences (Beijing) Co.,Ltd.	1,878	585	1,293	1,398	79
LG Chem Life Sciences (Thailand) Ltd.	26,245	15,190	11,055	40,645	4,534
LG Chem Hai Phong Vietnam Company Ltd.	17,152	10,502	6,650	36,292	1,958
LG Energy Solution Australia Pty Ltd.	2,595	1,471	1,124	2,884	422
LG Chem Mexico S.A. de C.V.	930	152	778	1,434	213
LG Chem Hai Phong Engineering Plastics Ltd.	22,794	9,053	13,741	3,470	(2,325)
LG Chem (Guangzhou) Information & Electronics Materials Co.,Ltd. ¹	570,429	402,793	167,636	34	(1,437)
LEYOU NEW ENERGY MATERIALS(WUXI) Co.,LTD	348,722	54,207	294,515	-	900
LG Chem Fund I LLC	18,317	63	18,254	-	(3,491)
Ugimag Korea Co., Ltd. ²	39,082	32,563	6,519	21,110	(7,109)
Uniseal,Inc. ^{2,3}	36,013	6,218	29,795	62,650	1,862
LG Chem Nanjing Energy Solution Co., Ltd.	807,952	550,770	257,182	8,365	(13,643)
LG Chem Life Science Innovation Center, Inc.	3,558	2,281	1,277	2,467	123
Associates					
LG Holdings (HK) Ltd.	196,270	40,724	155,546	49,483	15,356
TECHWIN Co., Ltd.	173,997	81,803	92,194	284,209	35,430

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LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR Q UIMICO LTDA.	410	108	302	1,730	229
LG Chem Malaysia SDN.BHD.	409	2	407	858	104
LG Fuel Cell Systems Inc.	-	-	-	265	(3,714)
FJ Composite Material Co., Ltd.	8,393	4,692	3,701	1,228	169
WUXI CL New Energy Technology Ltd.	3,701	4,617	(916)	(2,306)	(5,385)
LG Chem Life Sciences Poland Ltd.	178	87	91	261	18
Combustion Synthesis Co., Ltd.	971	79	892	58	(696)
HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD.	203,635	66,725	136,910	-	508
VINFAST LITHIUM BATTERY PACK LLC.	28,283	14,413	13,870	5,652	(544)
Joint ventures					
LG VINA Chemical Co., Ltd.	34,259	27,559	6,700	54,935	(623)
HL Greenpower Co., Ltd.	401,313	353,936	47,377	1,086,634	5,427
SEETEC Co., Ltd..	351,935	59,732	292,203	596,824	13,959

¹ LCD polarizer business of these entities was classified as a discontinued operation and profit or loss from the business was included in profit or loss from discontinued operation(Note 34).

² Fair value adjustments due to business combination recorded in the consolidated financial statements are not included in the above information.

³ Represent financial information of intermediate parent company consolidating its subsidiaries.

1.5 Changes in Scope for Consolidation

Subsidiaries newly included in the consolidation for the year ended December 31, 2020, are as follows:

Subsidiary	Reason
PT FARM HANNONG INDONESIA	Newly established
Ultium Cells LLC	Newly established
LG Energy Solution Co., Ltd.	Newly established
LG Energy Solution Europe GmbH	Newly established

Subsidiary excluded from the consolidation for the year ended December 31, 2020, is as follows:

Subsidiary	Reason
Farm Hannong (Heilongjiang) Chemical Co., Ltd.	Disposed

2. Summary of Significant Accounting Policies

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

2.1 Basis of Preparation

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

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

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

The financial statements have been prepared on a historical cost basis, except for the following:

- Certain financial assets and liabilities (including derivative instruments),
- Assets held for sale – measured at fair value less costs to sell, and
- Defined benefit pension plans – plan assets measured at fair value

The preparation of financial statements requires the use of critical accounting estimates. Management also needs to exercise judgement in applying the Group's accounting policies. The areas involving a higher degree of judgment or complexity, or areas where assumptions and estimates are significant to the consolidated financial statements are disclosed in Note 4.

2.2 Changes in Accounting Policies and Disclosures

(a) New and amended standard adopted by the Group

The Group has applied the following standards and amendments for the first time for their annual reporting period commencing January 1, 2020.

- *Amendments to Korean IFRS 1001 Presentation of Financial Statements and Korean IFRS 1008 Accounting policies, changes in accounting estimates and errors – Definition of Material*

The amendments clarify the definition of material. Information is material if omitting, misstating or obscuring it could reasonably be expected to influence the decisions that the primary users of general-purpose financial statements make on the basis of those financial statements. The amendments do not have a significant impact on the financial statements.

- *Amendments to Korean IFRS 1103 Business Combination – Definition of a Business*

The amended definition of a business requires an acquisition to include an input and a substantive process that together significantly contribute to the ability to create outputs and the definition of output excludes the returns in the form of lower costs and other economic benefits. If substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or group of similar identifiable assets, an entity may elect to apply an optional concentration test that permits a simplified assessment of whether an acquired set of activities and assets is not a business. The amendments do not have a significant impact on the financial statements.

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- Amendments to Korean IFRS 1109 Financial Instruments, Korean IFRS 1039 Financial Instruments: Recognition and Measurement and Korean IFRS 1107 Financial Instruments: Disclosure – Interest Rate Benchmark Reform

The amendments allow to apply the exceptions in relation the application of hedge accounting while uncertainties arising from interest rate benchmark reform exist. The exceptions require the Group assumes that the interest rate benchmark on which the hedged items and the hedging instruments are based on is not altered as a result of interest rate benchmark reform, when determining whether the expected cash flows are highly probable, whether an economic relationship between the hedged item and the hedging instrument exists, and when assessing the hedging relationship is highly effective.

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

The following new accounting standards and interpretations have been published that are not mandatory for December 31, 2020 reporting periods and have not been early adopted by the Group.

- Amendments to Korean IFRS 1116 Lease – Practical expedient for COVID-19 - Related Rent Exemption, Concessions, Suspension

As a practical expedient, a lessee may elect not to assess whether a rent concession occurring as a direct consequence of the COVID-19 pandemic is a lease modification, and the amounts recognized in profit or loss as a result of applying this exemption should be disclosed. The amendments should be applied for annual periods beginning on or after June 1, 2020, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the financial statements.

- Amendments to Korean IFRS 1109 Financial Instruments, Korean IFRS 1039 Financial Instruments: Recognition and Measurement, Korean IFRS 1107 Financial Instruments: Disclosure, Korean IFRS 1104 Insurance Contracts and Korean IFRS 1116 Lease – Interest Rate Benchmark Reform

In relation to interest rate benchmark reform, the amendments provide exceptions including adjust effective interest rate instead of book amounts when interest rate benchmark of financial instruments at amortized costs is replaced, and apply hedge accounting without discontinuance although the interest rate benchmark is replaced in hedging relationship. The amendments should be applied for annual periods beginning on or after January 1, 2021, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the financial statements.

- Amendments to Korean IFRS 1103 Business Combination – Reference to the Conceptual Framework

The amendments update a reference of definition of assets and liabilities qualify for recognition in revised Conceptual Framework for Financial Reporting. However, the amendments add an exception for the recognition of liabilities and contingent liabilities within the scope of Korea IFRS 1037 Provisions, Contingent Liabilities and Contingent Assets, and Korean IFRS 2121 Levies. The amendments also confirm that contingent assets should not be recognized at the acquisition date. The amendments should be applied for annual periods beginning on or after January 1, 2022, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the financial statements.

- Amendments to Korean IFRS 1016 Property, Plant and Equipment - Proceeds before intended

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use

The amendments prohibit an entity from deducting from the cost of an item of property, plant and equipment any proceeds from selling items produced while the entity is preparing the asset for its intended use. Instead, the entity will recognize the proceeds from selling such items, and the costs of producing those items, in profit or loss. The amendments should be applied for annual periods beginning on or after January 1, 2022, and earlier application is permitted. The Group is in review for the impact of these amendments on the financial statements.

- Amendments to Korean IFRS 1037 Provisions, Contingent Liabilities and Contingent Assets - Onerous Contracts: Cost of Fulfilling a Contract

The amendments clarify that the direct costs of fulfilling a contract include both the incremental costs of fulfilling the contract and an allocation of other costs directly related to fulfilling contracts when assessing whether the contract is onerous. The amendments should be applied for annual periods beginning on or after January 1, 2022, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the financial statements.

- Annual improvements to Korean IFRS 2018-2020

Annual improvements of Korean IFRS 2018-2020 Cycle should be applied for annual periods beginning on or after January 1, 2022, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the financial statements.

- Korean IFRS 1101 *First time Adoption of Korean International Financial Reporting Standards* – Subsidiaries that are first-time adopters
- Korean IFRS 1109 *Financial Instruments* – Fees related to the 10% test for derecognition of financial liabilities
- Korean IFRS 1116 *Leases* – Lease incentives
- Korean IFRS 1041 *Agriculture* – Measuring fair value

- Amendments to Korean IFRS 1001 Presentation of Financial Statements - Classification of Liabilities as Current or Non-current

The amendments clarify that liabilities are classified as either current or non-current, depending on the substantive rights that exist at the end of the reporting period. Classification is unaffected by the likelihood that an entity will exercise right to defer settlement of the liability or the expectations of management. Also, the settlement of liability include the transfer of the entity's own equity instruments, however, it would be excluded if an option to settle them by the entity's own equity instruments if compound financial instruments is met the definition of equity instruments and recognized separately from the liability. The amendments should be applied for annual periods beginning on or after January 1, 2023, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the financial statements.

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2.3 Consolidation

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

(a) Subsidiaries

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

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

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

For transactions with non-controlling interests that do not result in a loss of control, any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized in equity attributable to the owners of the Parent.

When the Group loses a control in a subsidiary, any retained interest in the subsidiary is remeasured at its fair value and resulting gain or loss is recognized in profit or loss.

Intercompany transactions, balances and unrealized gains on transactions between group companies are eliminated. If a member of the Group uses accounting policies other than those adopted in the consolidated financial statements for like transactions and events in similar circumstances, appropriate adjustments are made to that group member's financial statements in preparing the consolidated financial statements to ensure conformity with the group's accounting policies.

(b) Associates

Associates are entities over which the Group has significant influence but not control or joint control. Investments in associates are accounted for using the equity method of accounting, after initially being recognized at cost. Unrealized gains on transactions between the Group and its associates are eliminated to the extent of the Group's interest in the associates. If the Group's share of losses of an associate equals or exceeds its interest in the associate (including long-term interests that, in substance, form part of the Group's net investment in the associate), the Group discontinues recognizing its share of further losses. After the Group's interest is reduced to zero, additional losses are provided for, and a liability is recognized, only to the extent that the Group

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has incurred legal or constructive obligations or made payments on behalf of the associate. If there is objective evidence of impairment for the investment in the associate, the Group recognizes the difference between the recoverable amount of the associate and its book amount as impairment loss.

(c) Joint Arrangements

A joint arrangement, wherein two or more parties have joint control, is classified as either a joint operation or a joint venture. A joint operator recognizes its direct right to the assets, liabilities, revenues and expenses of joint operations and its share of any jointly held or incurred assets, liabilities, revenues and expenses. Interests in joint ventures are accounted for using the equity method, after initially being recognized at cost in the consolidated statement of financial position.

2.4 Segment Reporting

Information of each operating segment is reported in a manner consistent with the business segment reporting provided to the chief operating decision-maker (Note 33). The chief operating decision-maker is responsible for allocating resources and assessing performance of the operating segments and the Group has identified the Board of Directors as the chief operating decision-maker.

2.5 Foreign Currency Translation

(a) Functional and presentation currency

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

(b) Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation of monetary assets and liabilities denominated in foreign currencies at year end exchange rates are generally recognized in profit or loss. They are recognized in other comprehensive income if they relate to qualifying cash flow hedges, qualifying effective portion of net investment hedges, or are attributable to monetary part of the net investment in a foreign operation.

Foreign exchange gains and losses that relate to borrowings are presented in the statement of profit or loss, within finance costs. All other foreign exchange gains and losses are presented in the statement of profit or loss within 'other income or other expenses'.

When a gain or loss on a non-monetary item is recognized in other comprehensive income, any exchange component of that gain or loss shall be recognized in other comprehensive income. As such, translation differences on equities held at fair value through other comprehensive income are recognized in other comprehensive income.

(c) Translation into the presentation currency

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

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- i) assets and liabilities for each statement of financial position presented are translated at the closing rate at the end of the reporting period;
- ii) income and expenses for each statement of income are translated at monthly average exchange rates; and
- iii) equity is translated at the historical exchange rate; and
- iv) all resulting exchange differences are recognized in other comprehensive income.

2.6 Cash and Cash Equivalents

Cash and cash equivalents include cash in hand, deposits held at call with banks, other short-term highly liquid investments with original maturities of three months or less.

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2.7 Financial Assets

(a) Classification

The Group classifies its financial assets in the following measurement categories:

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

Financial assets are classified on the basis of the Group's business model for managing the financial assets and the contractual cash flow characteristics of the financial assets.

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

Subsequent changes in the fair value of investments in equity instruments that are not held for trading are recognized in other comprehensive income.

(b) Measurement

At initial recognition, the Group measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial asset. Transaction costs of financial assets carried at fair value through profit or loss are expensed in profit or loss. Financial assets with embedded derivatives are considered in their entirety when determining whether their cash flows are solely payment of principal and interest.

A. Debt instruments

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

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

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- Fair value through other comprehensive income:
Assets that are held for collection of contractual cash flows and for selling the financial assets, where the assets' cash flows represent solely payments of principal and interest, are measured at fair value through other comprehensive income. Movements in the carrying amount are taken through other comprehensive income, except for the recognition of impairment loss (reversal of impairment loss), interest income and foreign exchange gains and losses which are recognized in profit or loss. When the financial asset is derecognized, the cumulative gain or loss previously recognized in other comprehensive income is reclassified from equity to profit or loss. Interest income from these financial assets is included in 'finance income' using the effective interest rate method. Foreign exchange gains and losses are presented in 'finance income / costs or other non-operating income / expenses' and impairment losses are presented in 'other non-operating expenses'.
- Fair value through profit or loss:
Assets that do not meet the criteria for amortized cost or fair value through other comprehensive income are measured at fair value through profit or loss. A gain or loss on a debt investment that is subsequently measured at fair value through profit or loss and is not part of a hedging relationship is recognized in profit or loss and presented net in the statement of profit or loss within 'finance income / costs or other non-operating income / expenses' in the year in which it arises.

B. Equity instruments

The Group subsequently measures all equity investments at fair value. Where the Group's management has elected to present fair value gains and losses on equity investments in other comprehensive income, there is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition of the investment. Dividend income from such investments continue to be recognized in profit or loss as 'finance income' when the right to receive payments is established. Changes in the fair value of financial assets at fair value through profit or loss are recognized in 'finance income or finance costs' in the statement of profit or loss as applicable. Impairment loss (reversal of impairment loss) on equity investments measured at fair value through other comprehensive income are not reported separately from other changes in fair value.

(c) Impairment

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

(d) Recognition and Derecognition

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

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

2.8 Derivative Financial Instruments

Derivatives are initially recognized at fair value on the date a derivative contract is entered into and are subsequently remeasured to their fair value at the end of each reporting period. The accounting for subsequent changes in fair value depends on whether the derivative is designated as a hedging instrument, and if so, the nature of the item being hedged. The Group has hedge relationships and designates certain derivatives as either:

- hedges of the fair value of recognized assets or liabilities or a firm commitment (fair value hedges)
- hedges of a particular risk associated with the cash flows of recognized assets and liabilities and highly probable forecast transactions (cash flow hedges), or
- hedges of a net investment in a foreign operation (net investment hedges)

At inception of the hedge relationship, the Group documents the economic relationship between hedging instruments and hedged items including whether changes in the cash flows of the hedging instruments are expected to offset changes in the cash flows of hedged items.

The full fair value of a hedging derivative is classified as a non-current asset or liability when the remaining maturity of the hedged item is more than 12 months; it is classified as a current asset or liability when the remaining maturity of the hedged item is less than 12 months. A non-derivative financial asset and a non-derivative financial liability is classified as a current or non-current based on its expected maturity and its settlement, respectively.

Cash flow hedge

The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in the cash flow hedge reserve within equity, limited to the cumulative change in fair value (present value) of the hedged item (the present value of the cumulative change in the future expected cash flows of the hedged item) from the inception of the hedge. The ineffective portion is recognized in 'other non-operating income (expenses)'.

When option contracts are used to hedge forecast transactions, the Group designates only the intrinsic value of the option contract as the hedging instrument. Gains or losses relating to the effective portion of the change in intrinsic value of the option contracts are recognized in the cash flow hedge reserve within equity. The changes in the time value of the option contracts that relate to the hedged item ('aligned time value') are recognized within the costs of hedging in other comprehensive income within equity.

When forward contracts are used to hedge forecast transactions, the Group generally designates only the change in fair value of the forward contract related to the spot element as the hedging instrument. Gains or losses relating to the effective portion of the change in the spot element of the forward contracts are recognized in the cash flow hedge reserve within equity. The change in the forward element of the contract that relates to the hedged item is recognized within other comprehensive income within equity. In some cases, the Group may designate the full change in fair value of the forward contract (including forward points) as the hedging instrument. In such cases, the gains or losses relating to the effective portion of the change in fair value of the entire forward contract are recognized in the cash flow hedge reserve within equity.

Amounts accumulated in equity are reclassified in the periods when the hedged item affects profit or loss, as follows:

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- Where the hedged item subsequently results in the recognition of a non-financial asset (such as inventory), both the deferred hedging gains and losses and the deferred time value of the option contracts or deferred forward points, if any, are included within the initial cost of the asset. The deferred amounts are ultimately recognized in profit or loss as the hedged item affects profit or loss (for example through cost of sales).

- The gain or loss relating to the effective portion of the interest rate swaps hedging variable rate borrowings is recognized in profit or loss within 'finance cost' at the same time as the interest expense on the hedged borrowings.

When a hedging instrument expires, or is sold, terminated, exercised, or when a hedge no longer meets the criteria for hedge accounting, any accumulated cash flow hedge reserve at that time remains in equity until the forecast transaction occurs, resulting in the recognition of a non-financial asset such as inventory. When the forecast transaction is no longer expected to occur, the cash flow hedge reserve and deferred costs of hedging that were reported in equity are immediately reclassified to profit or loss.

Changes in the fair value of any derivative instrument that does not qualify for hedge accounting are recognized immediately in profit or loss within 'other non-operating income (expenses)' or 'finance income (costs)' based on the nature of transactions.

2.9 Trade Receivables

At initial recognition, trade receivables are measured at the amount of unconditional consideration, unless the trade receivables contain a significant financing component. Trade receivables are subsequently measured at amortized cost using the effective interest method, less loss allowance.

2.10 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost is determined using weighted average cost method, except for goods in transit which is determined using the specific identification method.

2.11 Assets Held for sale

Assets are classified as held for sale when their carrying amount will be recovered principally through a sale transaction rather than through continuing use and a sale is considered highly probable. The assets are measured at the lower amount between their carrying amount and the fair value less costs to sell.

2.12 Property, Plant and Equipment

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

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

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	Useful lives
Buildings	25 - 50 years
Structures	15 - 50 years
Machinery	4 - 15 years
Others	1 - 15 years

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

2.13 Investment Property

Investment property is property held to earn rentals or for capital appreciation or both. An investment property is measured initially at its cost. An investment property is measured after initial measurement at depreciated cost (less any accumulated impairment losses). The Group depreciates investment properties, except for land, using the straight-line method over their useful lives of 25 ~ 50 years.

2.14 Borrowing Costs

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

2.15 Government Grants

Grants from the government are recognized at their fair value where there is a reasonable assurance that the grant will be received and the Group will comply with all attached conditions. Government grants related to assets are presented in the statement of financial position by deducting the grant in arriving at the carrying amount of the asset, and government grants related to income are deferred and later deducted from the related expense.

2.16 Intangible Assets

The excess of consideration transferred and amount of acquisition-date fair value of any previous equity interest in the acquired entity over the fair value of the net identifiable assets acquired is recorded as goodwill. Goodwill is carried at its cost less accumulated impairment losses. Impairment losses on goodwill are not reversed.

Intangible assets, except for goodwill, are initially recognized at its historical cost and carried at its cost less accumulated amortization and accumulated impairment losses.

Development costs that are directly attributable to internally generated by the Group are recognized when the criteria; such as, technically feasible, generate probable future economic benefits and other, are met. Membership rights that have an indefinite useful life are not subject to amortization because there is no foreseeable limit to the period over which the assets are expected to be utilized. The Group amortizes intangible assets with a limited useful life using the straight-line method over the following periods:

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	Useful lives
Development costs	3 - 15 years
Industrial property rights	5 - 15 years
Others	6 - 20 years

2.17 Research and Development

Costs associated with research are recognized as an expense as incurred. Costs that are identifiable, controllable and directly attributable to development projects are recognized as intangible asset when the following criteria are met:

- It is technically feasible to complete the development project so that it will be available for use;
- Management intends to complete the development project for its own use or selling;
- There is an ability to use or sell the development project;
- It can be demonstrated how the development project will generate probable future economic benefits;
- Adequate technical, financial resources and other resources to complete the development and to use or sell the development project are available; and
- The expenditure attributable to the development project during its development can be reliably measured.

Generally, internally generated development projects have the following stages; formulation and selection of a project, verification of idea and technology, development and testing, decision of commercialization, test of final application. Expenditures can be capitalized as intangible assets only after the decision of commercialization. Expenditures incurred in other stages are recognized as expenses on the research phase.

Internally generated development projects in the Life Sciences business have the following stages; formulation of potential candidates, preclinical research, clinical researches such as phase 1, 2 and 3 trials, approval of regulatory body and new product launch. Expenditures incurred from new drug development project are recognized as expensed on the research phase. However, expenditures incurred during clinical phase 1~3 trials from development projects for generic drugs or biosimilars are recognized as intangible assets depending on the nature of the products.

Expenditures incurred from technology license agreement with the third parties are recognized as intangible assets.

Development costs previously recognized as an expense are not recognized as an asset in a subsequent period. Capitalized development costs that are recognized as intangible assets are amortized using the straight-line method over their estimated useful lives when the assets are available for use and are tested for impairment.

2.18 Impairment of Non-financial Assets

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

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2.19 Trade and Other Payables

These amounts represent liabilities for goods and services provided to the Group prior to the end of reporting period which are unpaid. Trade and other payables are presented as current liabilities, unless payment is not due within 12 months after the reporting period. They are recognized initially at their fair value and subsequently measured at amortized cost using the effective interest method.

2.20 Financial Liabilities

(a) Classification and measurement

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

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

(b) Derecognition

Financial liabilities are removed from the statement of financial position when it is extinguished; for example, when the obligation specified in the contract is discharged or cancelled or expired or when the terms of an existing financial liability are substantially modified. The difference between the carrying amount of a financial liability extinguished or transferred to another party and the consideration paid (including any non-cash assets transferred or liabilities assumed) is recognized in profit or loss.

2.21 Financial Guarantee Contracts

Financial guarantee contract is recognized as a financial liability at the time the guarantee is issued. The liability is initially measured at fair value, subsequently at the higher of following and recognized in the statement of financial position within 'other financial liabilities'.

- the amount determined in accordance with the expected credit loss model under Korean IFRS 1109 *Financial Instruments* and
- the amount initially recognized less, where appropriate, the cumulative amount of income recognized in accordance with Korean IFRS 1115 *Revenue from Contracts with Customers*

2.22 Compound Financial Instruments

Compound financial instruments that the Group has issued are exchangeable bonds that can be exchanged into equity instruments at the option of the holder.

The liability component of this compound financial instrument is recognized initially at the fair value and subsequently recognized at amortized cost until conversion or maturity of the bonds. The equity component is remeasured at fair value until conversion or maturity of the bonds. Any directly attributable transaction costs are allocated to the liability and equity components in proportion to their initial carrying amounts.

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2.23 Current and Deferred Tax

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

The current income tax expense is measured at the amount expected to be paid to the taxation authorities, using the tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation, and considers whether it is probable that a taxation authority will accept an uncertain tax treatment. The Group measures its tax balances either based on the most likely amount or the expected value, depending on which method provides a better prediction of the resolution of the uncertainty.

Deferred income tax is provided in full, using the liability method, on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements. However, deferred income tax is not accounted for if it arises from initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss.

Deferred tax assets are recognized only if it is probable that future taxable amounts will be available to utilize those temporary differences and losses.

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

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

2.24 Provisions

Provisions for service warranties, make good obligation, and legal claims are recognized when the Group has a present legal or constructive obligation as a result of past events, it is probable that an outflow of resources will be required to settle the obligation and the amount can be reliably estimated. Provisions are measured at the present value of management's best estimate of the expenditure required to settle the present obligation at the end of the reporting period, and the increase in the provision due to the passage of time is recognized as interest expense.

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2.25 Greenhouse Gas Emissions Permits and Obligations

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

2.26 Employee Benefits

(a) Post-employment benefits

The Group operates both defined contribution and defined benefit pension plans. For defined contribution plans, the Group pays contribution to publicly or privately administered pension insurance plans on mandatory, contractual or voluntary basis. The Group has no further payment obligation once the contribution has been paid. The contribution is recognized as employee benefit expense when they are due. A defined benefit plan is a pension plan that is not a defined contribution plan.

Generally, post-employment benefits are payable after the completion of employment, and the benefit amount depended on the employee's age, periods of service or salary levels. The liability recognized in the statement of financial position in respect of defined benefit pension plans is the present value of the defined benefit obligation at the end of the reporting period less the fair value of plan assets. The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid, and that have terms approximating to the terms of the related obligation. Remeasurement gains and losses arising from experience adjustments and changes in actuarial assumptions are recognized in the period in which they occur, directly in other comprehensive income.

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

(b) Other long-term employee benefits

Certain entities within the Group provide long-term employee benefits that are entitled to employees with service period for ten years and above. The expected costs of these benefits are accrued over the period of employment using the same accounting methodology as used for defined benefit pension plans. The Group recognizes service cost, net interest on other long-term employee benefits and remeasurements as profit or loss for the year. These liabilities are valued annually by an independent qualified actuary.

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2.27 Revenue Recognition

(a) Identify performance obligation

With regard to the contract of selling products to the customer, the Group identifies the services provided separately to the customer as a different performance obligation. When the Group makes a sales contract with the customer, the standard warranty period for each product and customer is set up considering the legal warranty period. Even though the standard warranty period has been expired, the warranties are recognized as a revenue and is identified as a separate performance obligation when the Group provides additional warranties for the quality of product or when the customer has an option to purchase additional warranties separately.

(b) A performance obligation satisfied at a point in time

The revenue from the sale of goods is recognized at the time they are delivered to the customer. Delivery occurs when the products have been shipped to the specific location, the risks of obsolescence and loss have been transferred to the customer, and either the customer has accepted the products in accordance with the sales contract, the acceptance provisions have lapsed, or the group has objective evidence that all criteria for acceptance have been satisfied.

The goods are often sold with volume discounts, and it is the group's policy to sell its products to the customer with a right of return. Accumulated experience is used to estimate for the discounts and the refund, and the volume discounts is calculated based on the periodical forecast sales. The warranty provision for the sales and refund is reasonably estimated and recognized properly.

(c) Sales return

A gross contract liability for the expected refunds to customers is recognized as adjustment to revenue, and the Group has a right to recover the product from the customer where the customer exercises his right of return and recognizes an asset and a corresponding adjustment to cost of sales. A right to recover the products is measured at former carrying amount of the product less the costs to recover the products.

(d) Significant financing component

As a practical expedient, the Group need not adjust the promised amount of consideration for the effects of a significant financing component as the period between when the entity transfers a promised good or service to a customer and when the customer pays for that good or service is generally one year or less.

2.28 Lease

Lease income from operating leases where the Group is a lessor is recognized in income on a straight-line basis over the lease term. Initial direct costs incurred in obtaining an operating lease are added to the carrying amount of the underlying asset and recognized as expense over the lease term on the same basis as lease income. The respective leased assets are included in the statement of financial position based on their nature.

The Group leases various machinery, real estate and cars. Lease contracts are typically made for fixed periods, but may have extension options. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. The lease agreements do not impose any covenants, but leased assets may not be used as security for borrowing purposes.

Leases are recognized as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by the Group. Each lease payment is allocated between the

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liability and finance cost. The finance cost is charged to profit or loss over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. The right-of-use asset is depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis.

Assets and liabilities arising from a lease are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- Fixed payments (including in-substance fixed payments), less any lease incentives receivable
- Variable lease payment that are based on an index or a rate, initially measured using the index or rate as at the commencement date
- Amounts expected to be payable by the Group (the lessee) under residual value guarantees
- The exercise price of a purchase option if the Group (the lessee) is reasonably certain to exercise that option, and
- Payments of penalties for terminating the lease, if the lease term reflects the Group (the lessee) exercising that option

If the Group is reasonably certain to exercise a purchase option, the right-of-use asset is depreciated over the useful life of the underlying asset.

The lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be determined, the lessee's incremental borrowing rate is used, being the rate that the lessee would have to pay to borrow the funds necessary to obtain an asset of similar value in a similar economic environment with similar terms and conditions.

Right-of-use assets are measured at cost comprising the following:

- the amount of the initial measurement of lease liability
- any lease payments made at or before the commencement date less any lease incentives received
- any initial direct costs, and
- restoration costs

Payments associated with short-term leases or leases of low-value assets are recognized on a straight-line basis as an expense in profit or loss. Short-term leases are leases with a lease term of 12 months or less. Low-value assets comprise IT-equipment and small items of office furniture.

(a) Variable lease payments

Some property leases contain variable payment terms that are linked to sales generated from a warehouse. Variable lease payments that depend on usage are recognized in profit or loss in the period in which the condition that triggers those payments occurs.

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(b) Extension and termination options

Extension and termination options are included in a number of leases across the Group. These terms are used to maximize operational flexibility in terms of managing contracts. The majority of extension and termination options held are exercisable only by the Group and not by the respective lessor.

The Group determines the lease term as the non-cancellable period of a lease within the period for which the contract is enforceable, together with both (a) periods covered by an option to extend the lease if the lessee is reasonably certain to exercise that option; and (b) periods covered by an option to terminate the lease if the lessee is reasonably certain not to exercise that option. When both lessee and lessor have the right to terminate the lease without permission from the other party, the Group considers the contractual termination payments in determining the period for which the contract is enforceable.

3. Financial Risk Management

3.1 Financial Risk Factors

The Group's activities expose it to a variety of financial risks: market risk, credit risk and liquidity risk. The Group's overall risk management program focuses on the unpredictability of financial markets and seeks to minimize potential adverse effects on the financial performance of the Group. The Group uses derivative financial instruments to hedge certain risk exposures.

Risk management is carried out by the Group's finance team under policies approved by the Corporate Management Committee. The finance team identifies, evaluates and hedges financial risks in close co-operation with the Group's operating units. The Corporate Management Committee reviews and approves written principles for overall risk management, as well as written policies covering specific areas, such as foreign exchange risk, interest rate risk, and credit risk, use of derivative financial instruments and non-derivative financial instruments, investment of excess liquidity.

(1) Market risk

1) Foreign exchange risk

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

Management has set up a policy to require group companies to manage their foreign exchange risk against their functional currency. The Group manages maximum loss for currency risk exposures within acceptable range by using currency risk management model and hires employees who are exclusively responsible for currency risk management.

The Group has certain investments in foreign operations, whose net assets are exposed to foreign currency translation risk. Currency exposure arising from the net assets of the Group's foreign operations is managed primarily through borrowings denominated in the relevant foreign currencies.

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As at December 31, 2020 and 2019, the Group's monetary assets and liabilities denominated in currencies other than its functional currency, are as follows:

<i>(in millions of Korean won)</i>	2020		2019	
	Assets	Liabilities	Assets	Liabilities
USD	4,367,761	3,805,638	2,681,402	3,321,586
EUR	244,382	4,479,131	275,799	3,157,509
JPY	20,035	303,704	30,081	208,998
CNY and others	343,749	8,199	693,284	8,231

As at December 31, 2020 and 2019, if the Group's functional currency had weakened / strengthened by 10% against the US dollar with all other variables held constant, profit before income tax would have been affected as follows:

<i>(in millions of Korean won)</i>	2020		2019	
	10% Increase	10% Decrease	10% Increase	10% Decrease
USD	77,289	(77,289)	(64,018)	64,018

The above sensitivity analysis has been performed for monetary assets and liabilities denominated in foreign currencies other than the Group's functional currency at the reporting date.

As at December 31, 2020, the Group entered into foreign currency forward contracts to manage risk from changes in exchange rates and the details are as follows:

<i>(in millions of Korean won and in millions of US dollars)</i>						Book amount	
	Contractor	Contract amount	Contract exchange rate	Contract inception date	Contract maturity	Assets	Liabilities
Currency forward ¹	Shinhan Bank	USD 500	1,135.60	2020.10.14	2024.10.15	-	23,115
	KB Kookmin Bank	USD 500	1,102.83	2020.11.24	2029.04.16	-	18,653

¹ A derivative instrument which is not subject to hedging

2) Price risk

The Group is exposed to equity securities price risk arises from investments held by the Group and classified in the consolidated interim statement of financial position as non-current financial assets. The Group's equity investments are publicly traded and are related to the NASDAQ index.

The table below summarizes the impact of increases/decreases of the listed stock price index on the Group's equity before tax effects as at December 31, 2020 and 2019. The analysis is based on the assumption that the equity index has increased/decreased by 10% with all other variables held constant, and that all the Group's equity instruments moved in line with the index.

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<i>(in millions of Korean won)</i>	2020		2019	
	10% Increase	10% Decrease	10% Increase	10% Decrease
KOSDAQ	-	-	676	(676)
NASDAQ	997	(997)	819	(819)
HSI	-	-	7,944	(7,944)
Total	997	(997)	9,439	(9,439)

3) Interest rate risk

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

The Group adequately minimizes risks from interest rate fluctuations through various policies, such as sharing excess cash within the Group (internal cash sharing) to minimize external borrowings, avoiding high rate borrowings, reforming capital structure, managing an appropriate ratio of fixed rate borrowings and floating rate borrowings, monitoring a fluctuation of domestic and foreign interest rates daily, weekly and monthly, establishing alternatives, and balancing floating rate short-term borrowings with floating rate deposits.

The table below summarizes the impact of increases/decreases of interest rate on the Group's equity and post-tax profit for the year. The analysis is based on the assumption that the interest rate has increased/decreased by 1% (100 basis points) with all other variables held constant.

<i>(in millions of Korean won)</i>	Impact on post-tax profit		Impact on equity	
	2020	2019	2020	2019
Increase	(36,812)	(22,265)	(36,812)	(22,265)
Decrease	36,812	22,265	36,812	22,265

(2) Credit risk

Credit risk arises from trade receivables and that the Group holds, as well as debt instruments at amortized cost or fair value through other comprehensive income.

1) Trade receivables

The Group applies the simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for trade receivables. To measure the expected credit losses, trade receivables have been grouped based on shared credit risk characteristics and the days past due. The loss allowance provision as at December 31, 2020 is as follows. Expected credit losses include forward-looking information.

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	Receivables not past due ¹	Receivables past due but not impaired ¹	Impaired receivables ²	Total
December 31, 2020				
(trade receivables)				
Gross carrying amount	4,835,299	493,371	3,462	5,332,132
Expected loss rate	0.0%	0.1%	54.7%	0.1%
Loss allowance provision	2,032	467	1,892	4,391
December 31, 2019				
(trade receivables)				
Gross carrying amount	3,005,591	729,226	9,237	3,744,054
Expected loss rate	0.1%	0.1%	31.3%	0.2%
Loss allowance provision	2,111	829	2,890	5,830

¹ See Note 7.(3) for aging analysis.

² Impaired receivables are those for which impairment indicators have been confirmed, such as significant lack of collectability.

Movements in the loss allowance provision for trade receivables for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	Trade receivables	
	2020	2019
Beginning balance	5,830	7,910
Reversal of loss allowance recognized in profit or loss	(480)	(903)
Receivables written off as uncollectible	(833)	(1,164)
Exchange differences	(126)	(13)
Ending balance	4,391	5,830

As at December 31, 2020, the carrying amount of trade receivables representing the maximum exposure to credit risk amounts to ₩5,332,132 million (2019: ₩3,744,054 million).

2) Other financial assets at amortized cost

Movements in loss allowance provision for other financial assets at amortized cost for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	Other receivables	
	2020	2019
Beginning balance	2,109	2,726
Increase in loss allowance recognized as 'other non-operating expenses' in profit or loss	2	(630)
Exchange differences	54	13
Ending balance	2,165	2,109

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All of the financial assets at amortized costs are considered to have low credit risk, and the loss allowance recognized during the period was, therefore, limited to 12 months expected losses.

Debt investments measured at fair value through other comprehensive income include trade receivables to be discounted. For these investments, changes in fair value are accumulated within the financial assets at fair value through other comprehensive income reserve within equity. The accumulated changes in fair value are transferred to profit or loss when the investment is impaired.

The Group has established the following policies and procedures to manage credit risks.

To manage credit risks relating to trade receivables, the Group evaluates the credit rating of customers and determines credit limit for each customer based on the information provided by credit rating agencies and other available financial information before commencing business with new customers. The credit risks relating to trade receivables are also mitigated by insurance contracts, collateral as well as payment guarantees.

The Group has entered into export bond insurance contracts with Korea Trade Insurance Corporation to mitigate credit risks relating to export trade receivables to overseas customers. The Group is also provided with collateral by customers depending on their credit rating or payment guarantees from the customers' financial institutions if necessary.

The Group has deposited its cash and cash equivalents and other long-term deposits in several financial institutions, such as Woori Bank and others. The Group has also entered into derivative contract with several financial institutions. The Group maintains business relationship with those financial institutions with high credit ratings evaluated by independent credit rating agencies and accordingly, credit risks associated with these financial institutions are limited.

(3) Liquidity risk

Finance team of the Group monitors rolling forecasts of the Group's liquidity requirements to ensure it has sufficient cash to meet operational needs while maintaining sufficient headroom on its undrawn committed borrowing facilities at all times so that the Group does not breach borrowing limits or covenants (where applicable) on any of its borrowing facilities. The Group's liquidity management policy involves projecting cash flows in major currencies and considering the level of liquid assets necessary to meet these, monitoring balance sheet liquidity ratios against internal and external regulatory requirements and maintaining debt financing plans.

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The table below analyzes the Group's non-derivative financial liabilities into relevant maturity groupings based on the remaining period at the reporting period to the contractual maturity date. Cash flows presented below are gross cash flows before discount, and includes cash flows for interests.

(in millions of Korean won)

	2020			
	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years
Borrowings (excluding lease liabilities)	1,665,869	1,876,344	4,941,527	2,239,926
Lease liabilities	59,636	33,536	44,091	75,581
Trade and other payables ¹	8,725,500	11,756	-	171
Total	10,451,005	1,921,636	4,985,618	2,315,678
Derivative instruments				
Gross settlement currency forwards				
(Inflows)	-	-	(544,000)	(544,000)
Outflows	-	-	567,800	551,415
	-	-	23,800	7,415
Total	10,451,005	1,921,636	5,009,418	2,323,093

(in millions of Korean won)

	2019			
	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years
Borrowings (excluding finance lease liabilities)	1,463,659	1,445,986	4,060,071	1,976,074
Finance lease liabilities	64,481	41,132	79,703	114,050
Trade and other payables ¹	6,522,664	10,787	43	121
Total	8,050,804	1,497,905	4,139,817	2,090,245

¹ Included ₩2,099,936 million (2019: ₩862,452 million) of financial liabilities due to a financial institution relating to reverse factoring arrangement. The Group has entered into reverse factoring arrangement (interest rate CD 91 days + 0.92~1.04%) with a financial institution whereby suppliers receive payments from the financial institution on the due date of each invoice and the Group pays to the financial institution at the end of extended credit period as agreed in the reverse factoring arrangement.

As at December 31, 2020, the Group has entered into swap contracts for which cash flow hedge accounting is applied, to avoid market price fluctuation of raw materials.

(in millions of Korean won)

	2020				
	Purpose of the contracts	Hedged items	Financial institution	Maturity	Fair value
Merchandise (raw materials) swap ¹	Cash flow hedge	Non-ferrous metal	Citi bank	~2021. 12	23,821

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Details of derivative assets and liabilities as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020		2019	
	Assets	Liabilities	Assets	Liabilities
Merchandise (raw materials) swap ¹	23,821	-	21,371	-
Total	23,821	-	21,371	-

¹ Gain (loss) resulting from the contracts to avoid cash flow fluctuation risk of expected future transaction is accounted for as accumulated other comprehensive income (Note 5).

3.2 Capital Risk Management

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

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

The gearing ratio and debt-to-equity ratio as at December 31, 2020 and 2019, were as follows:

<i>(in millions of Korean won, except for ratios)</i>	2020	2019
Total borrowings (Note 14) (A)	10,186,117	8,414,268
Less: cash and cash equivalents (B)	<u>(3,274,250)</u>	<u>(1,888,631)</u>
Net debt (C=A+B)	6,911,867	6,525,637
Total liabilities (D)	22,598,454	16,640,637
Total equity (E)	<u>18,790,440</u>	<u>17,383,789</u>
Total capital (F=C+E)	25,702,307	23,909,426
Gearing ratio (C/F)	26.9%	27.3%
Debt-to-equity ratio (D/E)	120.3%	95.7%

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3.3 Fair Value

(1) Carrying amount and fair value of financial instruments by category as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020		2019	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets (current)				
Cash and cash equivalents	3,274,250	¹	1,888,631	¹
Deposits held by financial institutions	608,039	¹	32,515	¹
Trade receivables	5,298,365	¹	3,738,224	¹
Other receivables (excluding deposits held by financial institutions)	316,264	¹	234,036	¹
Current derivative financial assets	23,821	23,821	10,879	10,879
Financial assets (non-current)				
Deposits held by financial institutions	167,054	¹	107,434	¹
Trade receivables	29,376	¹	-	-
Other receivables (excluding deposits held by financial institutions)	87,976	¹	65,499	¹
Other non-current financial assets (carried at fair value)				
Marketable financial assets	7,679	7,679	83,174	83,174
Non-marketable financial assets ²	73,853	73,853	66,289	66,289
Non-current derivative financial assets	-	-	10,492	10,492
Financial liabilities (current)				
Trade and other payables	8,725,500	¹	6,522,664	¹
Current borrowings (excluding exchangeable bonds and lease liabilities)	1,460,926	¹	1,300,989	¹
Current borrowings (exchangeable bonds)	32,500	32,763	-	-
Current lease liabilities	55,389	³	55,108	³
Current derivative financial liabilities (exchange rights)	16,797	16,797	-	-
Financial liabilities (non-current)				
Non-current borrowings (excluding lease liabilities)	8,508,066	8,614,889	6,836,034	7,042,233
Non-current lease liabilities	129,236	³	222,137	³
Other non-current payables	11,927	¹	10,951	¹
Other non-current derivative financial liabilities (currency forward)	41,768	41,768	-	-
Other non-current derivative financial liabilities (exchange rights)	-	-	930	930

¹ These financial assets and liabilities are not included in the disclosure above as their carrying amount is a reasonable approximation of the fair value.

² Acquisition costs of these financial assets approximate their fair values.

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³ Fair values for these financial assets and liabilities are not disclosed above in accordance with related Korean IFRS.

(2) Fair value for measurement and disclosure are determined based on the following method:

Fair values of financial liabilities (non-current) are based on cash outflows discounted by using Korean won currency note yield in the same credit grade with the Parent Company (AA+), and the applied discount rates as at December 31, 2020 and 2019, are as follows:

<i>(in percentage)</i>	2020	2019
Discount rate	0.97% ~ 2.27%	1.63% ~ 2.24%

(3) Fair value hierarchy

Items that are measured at fair value are categorized by the fair value hierarchy levels, and the defined levels are as follows:

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

Fair value hierarchy classifications of the financial instruments that are measured at fair value or their fair value are disclosed as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020			
	Level 1	Level 2	Level 3	Total
Financial assets/liabilities measured at fair value				
Other non-current financial assets (marketable financial assets)	7,679	-	-	7,679
Other non-current financial assets (non-marketable financial assets)	-	-	73,853	73,853
Current derivative financial assets	-	23,821	-	23,821
Current derivative financial liabilities (exchange rights)	-	-	16,797	16,797
Current derivative financial liabilities (currency forward)	-	41,768	-	41,768
Financial assets/liabilities not measured at fair value				
Current borrowings (exchangeable bonds)	-	-	32,763	32,763
Non-current borrowings (excluding lease liabilities)	-	8,614,889	-	8,614,889

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	2019			
	Level 1	Level 2	Level 3	Total
Financial assets/liabilities measured at fair value				
Other non-current financial assets (marketable financial assets)	83,174	-	-	83,174
Other non-current financial assets (non-marketable financial assets)	-	-	66,289	66,289
Current derivative financial assets	-	10,879	-	10,879
Non-current derivative financial assets	-	10,492	-	10,492
Non-current financial liabilities (exchange rights) ¹	-	-	930	930
Financial assets/liabilities not measured at fair value				
Non-current borrowings (excluding lease liabilities)	-	6,390,480	651,753	7,042,233

¹ Movements in exchange rights are as follows.

(in millions of Korean won)

	USD		EUR		Total	
	2020	2019	2020	2019	2020	2019
Beginning Balance	42	14,350	888	16,034	930	30,384
Exchange	(89,961)	-	(188,303)	-	(278,264)	-
Redemption	(70)	-	-	-	(70)	-
Evaluation	89,989	(14,308)	204,212	(15,146)	294,201	(29,454)
Ending Balance	-	42	16,797	888	16,797	930

(4) Valuation technique and the inputs

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

(in millions of Korean won)

	2020				
	Fair value	Level	Valuation Technique	Inputs	Coverage of Level 3 inputs
Financial liabilities – Exchangeable Bond					
Exchangeable Bond	32,763	3	Binominal option pricing model	Annual rates of credit volatility	-0.5%p ~ +0.5%p
Exchange right	16,797	3	Binominal option pricing model	Annual rates of credit volatility Underlying asset (equity) volatility	-0.5%p ~ +0.5%p -5.0% ~ +5.0%

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	2019				
	Fair value	Level	Valuation Technique	Inputs	Coverage of Level 3 inputs
Financial liabilities					
– Exchangeable bond					
Exchangeable Bond	651,753	3	Binominal option pricing model	Annual rates of credit volatility	-0.5%p ~ +0.5%p
Exchange right	930	3	Binominal option pricing model	Annual rates of credit volatility Underlying asset (equity) volatility	-0.5%p ~ +0.5%p -5.0% ~ +5.0%

(5) Sensitivity analysis for recurring fair value measurements categorized within Level 3

Sensitivity analysis of financial instruments is performed to measure favorable and unfavorable changes in the fair value of financial instruments which are affected by the unobservable parameters, using a statistical technique. When the fair value is affected by more than two input parameters, the most favorable or most unfavorable amounts are presented.

The results of the sensitivity analysis for the effect on profit or loss from changes in inputs for exchangeable bonds categorized as level 3 and subject to sensitivity analysis, are as follows:

(in millions of Korean won)

	2020	
	The effect on profit	The effect on loss
Financial liabilities		
– Exchangeable Bond		
Annual rates of credit volatility	47	(48)
Financial liabilities		
– Exchange right		
Annual rates of credit volatility	40	(41)
Underlying asset (equity) volatility	44	(129)

(in millions of Korean won)

	2019	
	The effect on profit	The effect on loss
Financial liabilities		
– Exchangeable Bond		
Annual rates of credit volatility	4,130	(4,177)
Financial liabilities		
– Exchange right		
Annual rates of credit volatility	112	(107)
Underlying asset (equity) volatility	497	(580)

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4. Critical Accounting Estimates and Assumptions

The preparation of financial statements requires the Group to make estimates and assumptions concerning the future. Management also needs to exercise judgement in applying the Group's accounting policies. Estimates and assumptions are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. The resulting accounting estimates may differ from the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below.

The spread of COVID-19 during 2020 has impacted significantly on the domestic and international economies. This may affect the company's financial position and business performance.

Significant accounting estimates and assumptions used in the preparation of financial statements may be adjusted according to fluctuations in uncertainty arising from COVID-19, and the ultimate impact of COVID-19 on the company's business, financial position, and performance is currently unpredictable.

(a) Impairment test of goodwill

The Group tests whether goodwill has suffered any impairment on an annual basis. The recoverable amount of a cash generating unit (CGU) is determined based on value-in-use or fair value less cost of disposal calculations (Note 12).

(b) Income taxes

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

(c) Provisions

The Group recognizes provisions for product warranties as explained in Note 15. These provisions are estimated based on the past experience. Provisions related to voluntary recall by the Group's customer are estimated based on the number of vehicles subject to recall, estimated total repair costs, and cost sharing ratio.

(d) Fair value of financial instruments

The fair value of financial instruments that are not traded in an active market is determined by using valuation techniques. The Group uses its judgment to select a variety of methods and make assumptions that are mainly based on market conditions existing at the end of each reporting period (Note 3.3).

(e) Impairment of financial assets

The provision for impairment for financial assets are based on assumptions about risk of default and expected loss rates. The Group uses judgement in making these assumptions and selecting the inputs to the impairment calculation based on the Group's past experience, existing market

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conditions as well as forward looking estimates at the end of each reporting period (Note 3.1.(2)).

(f) Net defined benefit liability

The present value of net defined benefit liability depends on a number of factors that are determined on an actuarial basis using a number of assumptions including the discount rate (Note 16).

(g) Lease

In determining the lease term, management considers all facts and circumstances that create an economic incentive to exercise an extension option, or not exercise a termination option. Extension options (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated).

The lease term is reassessed if an option is actually exercised (or not exercised) or the Group becomes obliged to exercise (or not exercise) it. The assessment of reasonable certainty is only revised if a significant event or a significant change in circumstances occurs, which affects this assessment, and that is within the control of the lessee.

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5. Financial Instruments by Category

Categorizations of financial instruments as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

Financial assets	2020				Total
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Financial assets at fair value through other comprehensive income	Other financial assets ¹	
Cash and cash equivalents	3,274,250	-	-	-	3,274,250
Trade receivables	4,876,565	-	421,800	-	5,298,365
Non-current trade receivables	29,376	-	-	-	29,376
Other receivables	904,640	-	19,663	-	924,303
Other non-current receivables	255,030	-	-	-	255,030
Other current financial assets	-	-	-	23,821	23,821
Other non-current financial assets	-	29,316	52,216	-	81,532
Total	9,339,861	29,316	493,679	23,821	9,886,677

(in millions of Korean won)

Financial liabilities	2020			Total
	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Other financial liabilities ²	
Trade payables	-	3,458,526	-	3,458,526
Other payables	-	5,266,974	-	5,266,974
Borrowings (current)	-	1,493,426	55,389	1,548,815
Other current financial liabilities	16,797	-	-	16,797
Other non-current financial liabilities	-	-	41,768	41,768
Other non-current payables	-	11,927	-	11,927
Borrowings (non-current)	-	8,508,066	129,236	8,637,302
Total	16,797	18,738,919	226,393	18,982,109

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(in millions of Korean won)

Financial assets	2019				Total
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Financial assets at fair value through other comprehensive income	Other financial assets ¹	
Cash and cash equivalents	1,888,631	-	-	-	1,888,631
Trade receivables	3,114,376	-	623,848	-	3,738,224
Other receivables	259,204	-	7,347	-	266,551
Other non-current receivables	172,933	-	-	-	172,933
Other current financial assets	-	-	-	10,879	10,879
Other non-current financial assets	-	24,613	124,850	10,492	159,955
Total	5,435,144	24,613	756,045	21,371	6,237,173

(in millions of Korean won)

Financial liabilities	2019			Total
	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Other financial liabilities ²	
Trade payables	-	2,379,711	-	2,379,711
Other payables	-	4,142,953	-	4,142,953
Borrowings (current)	-	1,300,989	55,108	1,356,097
Other non-current financial liabilities	930	-	-	930
Other non-current payables	-	10,951	-	10,951
Borrowings (non-current)	-	6,836,034	222,137	7,058,171
Total	930	14,670,638	277,245	14,948,813

¹ Other financial assets include derivative assets.

² Other financial liabilities include lease liabilities and derivative liabilities.

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Net gains or losses on each category of financial instruments for the three-month and nine-month periods ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Dividend income		
Financial assets at fair value through other comprehensive income	2,562	1,724
Interest income		
Financial assets at amortized cost	35,927	48,789
Interest expense		
Financial liabilities at amortized cost	(232,514)	(214,388)
Other financial liabilities	(9,578)	(3,593)
Financial assets at amortized cost ¹	(912)	(4,247)
Financial assets at fair value through other comprehensive income ¹	(2,874)	(8,101)
Gain (loss) on valuation		
Financial assets at fair value through profit or loss	3,898	16
Financial assets at fair value through other comprehensive income	3,024	35,398
Derivative instruments	(322,967)	69,303
Exchange differences		
Financial assets at amortized cost	(360,502)	67,810
Financial liabilities at amortized cost	258	(66,523)
Other financial liabilities	(10,522)	190

¹ Fees paid to financial institutions for factoring.

6. Cash and Cash Equivalents

Details of cash and cash equivalents as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Bank deposits and cash on hand	1,704,420	902,764
Deposits held by financial institutions and others	1,569,830	985,867
Total	<u>3,274,250</u>	<u>1,888,631</u>

As at December 31, 2020, cash and cash equivalents include ₩39,317 million which is subject to a restriction on the use in association with the national R&D projects.

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7. Trade and Other Receivables

Trade and other receivables and its provisions for impairment, as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020		
	Gross amount	Provision for impairment	Carrying amount
Trade receivables	5,302,756	(4,391)	5,298,365
Non-current trade receivables	29,376	-	29,376
Other current receivables	926,468	(2,165)	924,303
Other non-current receivables	255,030	-	255,030
Total	6,513,630	(6,556)	6,507,074

(in millions of Korean won)

	2019		
	Gross amount	Provision for impairment	Carrying amount
Trade receivables	3,744,054	(5,830)	3,738,224
Non-current trade receivables	-	-	-
Other current receivables	268,660	(2,109)	266,551
Other non-current receivables	172,933	-	172,933
Total	4,185,647	(7,939)	4,177,708

Details of other receivables as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020	2019
Current		
Non-trade receivables	271,651	195,182
Deposits held by financial institutions	608,039	32,515
Accrued income	2,567	2,317
Guarantee deposits provided	42,046	36,537
	<u>924,303</u>	<u>266,551</u>
Non-current		
Non-trade receivables	24,910	-
Deposits held by financial institutions ¹	167,054	107,434
Loans	831	677
Guarantee deposits provided	62,235	64,822
	<u>255,030</u>	<u>172,933</u>
Total	<u>1,179,333</u>	<u>439,484</u>

¹ As at December 31, 2020, ₩166,100 million (2019: ₩106,600 million) is restricted from being withdrawn in relation to large, small and medium-sized companies cooperation agreement and others. In addition, ₩928 million is restricted from withdrawal in connection with maintaining checking accounts (2019: ₩808 million).

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The aging analysis of trade and other receivables as at December 31, 2020 and 2019, is as follows:

<i>(in millions of Korean won)</i>	2020		2019	
	Trade receivables	Other receivables	Trade receivables	Other receivables
Receivables not past due	4,835,299	1,134,863	3,005,591	378,107
Past due but not impaired				
Up to 3 months	333,522	41,780	554,620	43,891
Between 3-6 months	69,272	353	153,457	7,107
Over 6 months	90,577	2,337	21,149	5,578
	493,371	44,470	729,226	56,576
Impaired receivables	3,462	2,165	9,237	6,910
Total	5,332,132	1,181,498	3,744,054	441,593

Movements on the provision for impairment of trade and other receivables for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020			
	Trade receivables		Other receivables	
	Current	Non-current	Current	Non-current
Beginning balance	5,830	-	2,109	-
Additions (reversal)	(480)	-	2	-
Write-off	(833)	-	-	-
Exchange differences	(126)	-	54	-
Ending balance	4,391	-	2,165	-

<i>(in millions of Korean won)</i>	2019			
	Trade receivables		Other receivables	
	Current	Non-current	Current	Non-current
Beginning balance	7,910	-	2,726	-
Reversal	(903)	-	(630)	-
Write-off	(1,164)	-	-	-
Exchange differences	(13)	-	13	-
Ending balance	5,830	-	2,109	-

As at December 31, 2020 and 2019, the carrying amounts of trade and other receivables are approximation of their fair values.

The Group transferred trade and other receivables to financial institutions for ₩168,781 million at December 31, 2020 (2019: ₩820,426 million), and derecognized the trade and other receivables from the financial statements at the date of disposal, as substantial all the risks and rewards were transferred.

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8. Other Financial Assets and Liabilities

Details of other financial assets and liabilities as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Other financial assets		
Derivative financial assets (forward contract) (current)	23,821	10,879
Financial assets at fair value through other comprehensive income (excluding forward contract) (non-current)	52,216	124,850
Derivative financial assets (forward contract) (non-current)	-	10,492
Financial assets at fair value through profit or loss (excluding forward contract) (non-current)	29,316	24,613
	<u>105,353</u>	<u>170,834</u>
Other financial liabilities		
Financial liabilities at fair value through profit or loss (exchange rights) (current)	16,797	-
Financial liabilities at fair value through profit or loss (exchange rights) (non-current)	-	930
Financial liabilities at fair value through profit or loss (forward contract) (non-current)	41,768	-
	<u>58,565</u>	<u>930</u>

Changes in equity and debt instruments included in other financial assets for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Beginning balance	149,463	93,350
Acquisitions / transfer	18,120	23,572
Disposals	(91,251)	(2,873)
Gain on valuation (before income tax effects) through other comprehensive income	3,024	35,315
Gain on valuation (before income tax effects) through profit or loss	3,898	-
Others	(1,722)	99
Ending balance	<u>81,532</u>	<u>149,463</u>

During the years ended December 31, 2020 and 2019, the Group did not recognize impairment for other financial assets.

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9. Inventories

Details of inventories as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020		
	Gross amount	Valuation allowance	Carrying amount
Merchandise	130,457	(3,486)	126,971
Finished / Semi-finished products	3,087,998	(129,308)	2,958,690
Work-in-process	23,570	-	23,570
Raw materials	1,277,855	(17,100)	1,260,755
Supplies	188,503	-	188,503
Materials-in-transit	791,199	-	791,199
Total	5,499,582	(149,894)	5,349,688

(in millions of Korean won)

	2019		
	Gross amount	Valuation allowance	Carrying amount
Merchandise	179,572	(4,880)	174,692
Finished / Semi-finished products	2,821,981	(134,101)	2,687,880
Work-in-process	11,561	-	11,561
Raw materials	1,213,481	(18,669)	1,194,812
Supplies	177,535	-	177,535
Materials-in-transit	787,241	-	787,241
Total	5,191,371	(157,650)	5,033,721

During the year ended December 31, 2020, the cost of inventories recognized as expense and included in 'cost of sales' amounted to ₩17,678,492 million (2019: ₩16,541,239 million).

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10. Investments in Associates and Joint Ventures

Changes in investments in associates and joint ventures for the years ended December 31, 2020 and 2019, are as follows:

(in millions of
Korean won)

	2020							
	Beginning balance	Acquisitions / transfer	Dividends	Share of profit (loss) of associates and joint ventures	Share of other comprehensive income (loss) of associates and joint ventures	Impairment / disposals	Others	Ending balance
LG VINA Chemical Co., Ltd.	4,403	-	-	1,782	(310)	-	-	5,875
HL Greenpower Co., Ltd.	23,366	-	-	(664)	-	-	8	22,710
LG Holdings (HK) Ltd. ¹	40,973	-	-	436	(369)	(41,040)	-	-
TECHWIN Co., Ltd.	19,376	-	(314)	1,053	(2)	-	-	20,113
SEETEC Co., Ltd	142,554	-	(10,000)	7,205	-	-	357	140,116
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	579	-	-	-	-	-	-	579
LG Chem Malaysia SDN.BHD	150	-	-	-	-	-	-	150
FJ Composite Materials Co., LTD.	2,171	-	-	(142)	(162)	-	870	2,737
WUXI CL New Energy Technology Ltd ²	-	-	-	-	-	-	-	-
LG Life Sciences Poland Ltd.	17	-	-	-	-	-	-	17
Combustion Synthesis Co., Ltd.	2,042	-	-	(88)	(68)	-	(19)	1,867
HUAJIN NEW ENERGY MATERIALS(QUZHOU)C O., LTD. ³	67,058	22,191	-	151	125	-	-	89,525
VINFAST LITHIUM BATTERY PACK LIMITED LIABILITY COMPANY	4,888	-	-	(461)	(248)	-	-	4,179
Jiangxi VL Battery Co.,Ltd ⁴	-	21,815	-	71	(425)	-	-	21,461
	<u>307,577</u>	<u>44,006</u>	<u>(10,314)</u>	<u>9,343</u>	<u>(1,459)</u>	<u>(41,040)</u>	<u>1,216</u>	<u>309,329</u>

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Korean won)

	2019							Ending balance
	Beginning balance	Acquisitions / transfer	Dividends	Share of profit (loss) of associates and joint ventures	Share of other comprehensive income (loss) of associates and joint ventures	Impairment / disposals	Others	
LG VINA Chemical Co., Ltd.	4,479	-	-	(348)	272	-	-	4,403
HL Greenpower Co., Ltd.	19,565	-	-	3,919	-	-	(118)	23,366
LG Holdings (HK) Ltd.	54,735	-	-	3,993	(1,967)	-	(15,788)	40,973
TECHWIN Co., Ltd.	9,828	-	-	9,563	(15)	-	-	19,376
SEETEC Co., Ltd	145,649	-	(10,000)	6,919	-	-	(14)	142,554
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	579	-	-	-	-	-	-	579
LG Chem Malaysia SDN.BHD	150	-	-	-	-	-	-	150
FJ Composite Materials Co., LTD.	2,315	-	-	(240)	96	-	-	2,171
WUXI CL New Energy Technology Ltd.	1,288	-	-	(1,336)	48	-	-	-
LG Life Sciences Poland Ltd.	17	-	-	-	-	-	-	17
Combustion Synthesis Co., Ltd.	1,397	645	-	(289)	220	-	69	2,042
HUAJIN NEW ENERGY MATERIALS(QUZHOU)C O., LTD.	26,120	41,202	-	222	(486)	-	-	67,058
VINFAST LITHIUM BATTERY PACK LIMITED LIABILITY COMPANY	-	5,323	-	(192)	(243)	-	-	4,888
	<u>266,122</u>	<u>47,170</u>	<u>(10,000)</u>	<u>22,211</u>	<u>(2,075)</u>	<u>-</u>	<u>(15,851)</u>	<u>307,577</u>

¹ During the year ended December 31, 2020, LG Holdings (HK) Ltd. was disposed.

² As at December 31, 2020, the Group discontinued recognizing its share of further losses as its share of losses of an associate exceeds the carrying amount of its interest in the associate. Unrecognized accumulated losses amounted to ₩320 million.

³ During the year ended December 31, 2020, the Parent Company acquired additional shares of HUAJIN NEW ENERGY MATERIALS(QUZHOU)CO., LTD. for ₩ 22,191 million.

⁴ During the year ended December 31, 2020, the Parent Company newly acquired 34% shares of Jiangxi VL Battery Co., Ltd. for ₩ 21,815 million.

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11. Property, Plant and Equipment

Changes in property, plant and equipment for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020											
	Land	Buildings	Structures	Machinery	Vehicles	Tools	Equipment	Others	Right-of- use assets	Construction -in-progress	Machinery -in-transit	Total
Beginning balance	1,759,528	3,890,961	957,739	6,348,867	6,261	601,958	163,470	175,122	319,620	4,210,088	160,028	18,593,642
Cost	1,796,480	4,769,924	1,583,401	17,044,880	33,056	1,457,840	467,293	378,823	380,814	4,300,788	160,028	32,373,327
Accumulated depreciation	-	(839,904)	(609,282)	(10,486,289)	(26,648)	(843,955)	(301,041)	(197,978)	(61,119)	-	-	(13,366,216)
Accumulated impairment	(36,952)	(39,059)	(16,380)	(209,724)	(147)	(11,927)	(2,782)	(5,723)	(75)	(90,700)	-	(413,469)
Acquisitions/ transfer	14,436	1,137,678	106,976	3,243,373	6,365	282,554	87,682	39,256	109,307	5,168,221	258,957	10,454,805
Disposals/ transfer	(681)	(18,922)	(1,655)	(66,721)	(38)	(25,298)	(4,352)	(2,398)	(8,165)	(5,421,750)	(72,815)	(5,622,795)
Exchange differences	(1,244)	29,214	887	(63,136)	(192)	(873)	108	1	(1,353)	(55,703)	-	(92,291)
Depreciation	-	(145,120)	(60,365)	(1,510,695)	(2,390)	(190,550)	(51,930)	(99,491)	(70,534)	-	-	(2,131,075)
Impairment	-	(5,542)	(8,639)	(47,769)	(57)	(10,148)	(627)	(195)	(86)	(2,716)	(259)	(76,038)
Reversal of impairment	-	-	-	-	-	-	-	-	-	220	-	220
Transfer to assets held for sale	-	(67,255)	(9,753)	(330,903)	(29)	(12,302)	(9,138)	-	(117,935)	(11,678)	-	(558,993)
Ending balance	1,772,039	4,821,014	985,190	7,573,016	9,920	645,341	185,213	112,295	230,854	3,886,682	345,911	20,567,475
Cost	1,808,991	5,794,729	1,677,231	18,812,951	36,372	1,579,923	511,358	413,150	348,412	3,968,793	345,911	35,297,821
Accumulated depreciation	-	(931,321)	(667,122)	(11,062,720)	(26,346)	(922,831)	(322,812)	(294,937)	(117,522)	-	-	(14,345,611)
Accumulated impairment	(36,952)	(42,394)	(24,919)	(177,215)	(106)	(11,751)	(3,333)	(5,918)	(36)	(82,111)	-	(384,735)

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(in millions of Korean won)	2019											
	Land	Buildings	Structures	Machinery	Vehicles	Tools	Equipment	Others	Right-of- use assets	Construction -in-progress	Machinery -in-transit	Total
Beginning balance	1,620,153	3,187,757	827,775	4,691,884	12,865	471,130	149,599	115,901	-	2,588,018	174,116	13,839,198
Cost	1,657,105	3,959,198	1,407,903	14,412,619	41,803	1,233,217	420,342	315,049	-	2,641,276	174,116	26,262,628
Accumulated depreciation	-	(735,173)	(566,151)	(9,564,688)	(28,783)	(750,202)	(268,298)	(196,996)	-	-	-	(12,110,291)
Accumulated impairment	(36,952)	(36,268)	(13,977)	(156,047)	(155)	(11,885)	(2,445)	(2,152)	-	(53,258)	-	(313,139)
Changes in accounting policies	-	-	(17,697)	(9,668)	-	-	-	-	175,599	-	-	148,234
Restated beginning balance	1,620,153	3,187,757	810,078	4,682,216	12,865	471,130	149,599	115,901	175,599	2,588,018	174,116	13,987,432
Acquisitions/ Transfer	150,097	841,640	207,263	3,053,495	6,021	311,322	62,487	144,766	180,963	6,767,527	195,797	11,921,378
Disposals/ Transfer	(10,846)	(40,096)	(3,436)	(92,420)	(10,139)	(15,174)	(2,776)	(173)	(3,890)	(5,117,686)	(208,708)	(5,505,344)
Exchange differences	124	18,966	1,665	20,526	30	2,012	613	-	2,380	11,305	-	57,621
Depreciation	-	(114,179)	(55,546)	(1,221,114)	(2,518)	(166,457)	(46,032)	(81,801)	(35,357)	-	-	(1,723,004)
Impairment	-	(3,139)	(2,297)	(74,968)	-	(828)	(429)	(3,571)	(75)	(39,076)	(1,177)	(125,560)
Reversal of impairment	-	12	12	181	2	-	8	-	-	-	-	215
Transfer to assets held for sale	-	-	-	(19,049)	-	(47)	-	-	-	-	-	(19,096)
Ending balance	1,759,528	3,890,961	957,739	6,348,867	6,261	601,958	163,470	175,122	319,620	4,210,088	160,028	18,593,642
Cost	1,796,480	4,769,924	1,583,401	17,044,880	33,056	1,457,840	467,293	378,823	380,814	4,300,788	160,028	32,373,327
Accumulated depreciation	-	(839,904)	(609,282)	(10,486,289)	(26,648)	(843,955)	(301,041)	(197,978)	(61,119)	-	-	(13,366,216)
Accumulated impairment	(36,952)	(39,059)	(16,380)	(209,724)	(147)	(11,927)	(2,782)	(5,723)	(75)	(90,700)	-	(413,469)

During the year ended December 31, 2020, the Group capitalized ₩46,992 million of borrowing costs (2019: ₩27,159 million) in relation to acquisition of property, plant and equipment, on property, plant and equipment. The capitalization rate of borrowings used to determine the amount of borrowing costs eligible for capitalization is 1.39% (2019: 1.98%).

Line items including depreciation in the consolidated statements of profit or loss for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)	2020	2019
Cost of sales	1,900,043	1,505,317
Selling and administrative expenses	191,174	152,488
Others	2,250	4,634
Discontinued operations	37,608	60,565
Total	2,131,075	1,723,004

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Lease

(i) Amounts recognized in the consolidated statement of financial position

The consolidated statement of financial position shows the following amounts relating to leases:

<i>(in millions of Korean won)</i>	2020	2019
Right-of-use assets ¹		
Real-estate	183,136	272,958
Machinery	26,541	23,041
Vehicles	17,026	22,425
Tools	3,535	162
Equipment	616	1,034
	<u>230,854</u>	<u>319,620</u>

¹ Included in the line item 'Property, plant and equipment' in the consolidated statements of financial position.

Additions to the right-of-use assets during the year ended December 31, 2020, were ₩109,307 million.(2019: ₩175,599 million)

<i>(in millions of Korean won)</i>	2020	2019
Lease liabilities ¹		
Current	55,389	55,108
Non-current	129,236	222,137
	<u>184,625</u>	<u>277,245</u>

¹ Included in the line item 'borrowings' in the consolidated statements of financial position.

(ii) Amounts recognized in the consolidated statement of profit or loss

The consolidated statement of profit or loss shows the following amounts relating to leases:

<i>(in millions of Korean won)</i>	2020	2019
Depreciation of right-of-use assets		
Real-estate	50,449	19,390
Machinery	5,051	5,142
Vehicles	13,578	10,039
Tools	962	28
Equipment	494	758
	<u>70,534</u>	<u>35,357</u>
Interest expense relating to lease liabilities (included in finance cost)	9,578	3,593
Expense relating to short-term leases (included in cost of goods sold and administrative expenses)	30,164	60,001

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Expense relating to leases of low-value assets that are not short-term leases (included in cost of goods sold and administrative expenses)	14,304	10,614
Expense relating to variable lease payments not included in lease liabilities (included in cost of goods sold and administrative expenses)	-	22

The total cash outflow for leases during the year ended December 31, 2020, was ₩97,774 million (2019: ₩87,125 million).

The Group reviews annually whether there is any indication that an asset may be impaired. In 2020, the Group has performed impairment test for LG Polymers India Pvt. Ltd. CGU as the future economic performance was expected not to reach the planned target and recognized ₩16,177 million of impairment losses.

The amount of impairment loss recognized as other non-operating (income) expense for the year ended December 31, 2020, is as follows:

<i>(in millions of Korean won)</i>	2020
	LG Polymers India Pvt. Ltd.¹
Impaired amount	
Property, plant and equipment	16,177

¹ Total carrying amount of property, plant and equipment excluding land was recognized as impairment loss because assets at the site are prohibited from moving or disposal due to the decision made by India's court.

12. Intangible Assets

Changes in intangible assets for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020						
	Development costs	Software	Industrial property rights	Goodwill	Memberships	Others	Total
Beginning balance	56,832	267,377	569,129	1,010,534	47,329	255,028	2,206,229
Separate acquisitions/ transfer	-	302,054	123,062	-	867	9,336	435,319
Additions – internal development	4,282	-	-	-	-	-	4,282
Disposals/transfer	-	(1,976)	(4,098)	-	(16,611)	(7,900)	(30,585)
Exchange differences	-	4,885	(864)	(11,711)	4	(32)	(7,718)
Amortization	(5,257)	(102,989)	(50,710)	-	-	(22,017)	(180,973)
Impairment	-	(26)	(26,735)	(111,786)	-	-	(138,547)
Transfer to assets held for sale (Note 34)	-	(2,967)	(5,123)	-	-	-	(8,090)
Ending balance	55,857	466,358	604,661	887,037	31,589	234,415	2,279,917

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<i>(in millions of Korean won)</i>	2019						Total
	Development costs	Software	Industrial property rights	Goodwill	Memberships	Others	
Beginning balance	81,610	191,324	405,282	1,017,855	50,885	259,282	2,006,238
Separate acquisitions/transfer ¹	5,261	151,205	215,545	-	66	41,751	413,828
Additions – internal development	17,170	-	-	-	-	-	17,170
Disposals/transfer	(7,591)	(12,915)	(4,456)	-	(3,635)	(10,305)	(38,902)
Exchange differences	(570)	1,023	60	4,294	13	1,695	6,515
Amortization	(6,729)	(63,423)	(43,713)	-	-	(23,005)	(136,870)
Impairment	(32,318)	163	(3,589)	(11,615)	-	(14,391)	(61,750)
Ending balance	56,833	267,377	569,129	1,010,534	47,329	255,027	2,206,229

¹ Intangible assets acquired from Dupont related to S-OLED are included.

Line items including amortization of intangible assets for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Cost of sales	45,972	29,886
Selling and administrative expenses	134,377	106,001
Discontinued operations	624	983
Total	180,973	136,870

The Group recognized total research and development costs of ₩1,116,080 million (2019: ₩1,095,510 million) as expenses.

Changes in greenhouse gas emission permits for the years ended December 31, 2020 and 2019, are as follows:

<i>(in thousands of tons and millions of Korean won)</i>	2020			
	2019		2020	
	Quantity	Amount	Quantity	Amount
Beginning balance	7,656	4,375	7,546	-
Allocation with nil consideration	898	-	2	-
Purchase/Sale	138	3,525	-	-
Borrowings/Carry forwards between years	41	-	(41)	-
Surrendered to the government	(8,733)	(7,900)	-	-
Ending balance	-	-	7,507	-

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<i>(in thousands of tons and millions of Korean won)</i>	2019					
	2018		2019		2020	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Beginning balance	7,903	7,359	7,546	-	-	-
Allocation with nil consideration	245	-	-	-	7,546	-
Purchase/Sale	100	2,790	130	4,375	-	-
Borrowings/Carry forwards between years	20	-	(20)	-	-	-
Surrendered to the government	(8,268)	(10,149)	-	-	-	-
Ending balance	-	-	7,656	4,375	7,546	-

Goodwill is allocated to the Group's CGUs identified for each operating segment. The carrying amounts of goodwill allocation by CGUs as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020						
	Acquisition of NanoH2O Co., Ltd.	Acquisition of FarmHannong Co., Ltd.	Acquisition of LG Life Sciences, Ltd.	Acquisition of Uniseal, Inc.	Acquisition of Ugimag Korea Co., Ltd.	Others	Total
Petrochemicals							
NCC	-	-	-	-	-	2,639	2,639
ABS	-	-	-	-	-	15,209	15,209
PO	-	-	-	-	-	1,054	1,054
PVC	-	-	-	-	-	808	808
Acrylic	-	-	-	-	-	25,572	25,572
Plasticizer	-	-	-	-	-	53	53
BPA	-	-	-	-	-	467	467
Others ¹	-	-	-	-	-	1,350	1,350
Advanced Materials							
RO ¹	102,286	-	-	-	-	-	102,286
PSAA	-	-	-	-	-	4,112	4,112
Life Sciences							
Life sciences	-	-	686,229	-	-	-	686,229
Common and others							
FarmHannong Co.,Ltd. ²	-	3,091	-	-	-	-	3,091
Adhesive ^{1,3}	-	-	-	44,167	-	-	44,167
Total	102,286	3,091	686,229	44,167	-	51,264	887,037

¹ Included changes resulting from foreign currency translation.

² Goodwill resulting from the acquisition of FarmHannong Co., Ltd. has been impaired and recognized as impairment losses for ₩83,765 million in 2020.

³ Goodwill resulting from the acquisition of Uniseal, Inc. has been impaired and recognized as impairment losses for ₩28,020 million in 2020.

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(in millions of Korean won)	2019						
	Acquisition of NanoH2O Co., Ltd.	Acquisition of FarmHannong Co., Ltd.	Acquisition of LG Life Sciences, Ltd.	Acquisition of Uniseal, Inc.	Acquisition of Ugimag Korea Co., Ltd.	Others	Total
Petrochemicals							
NCC	-	-	-	-	-	2,639	2,639
ABS	-	-	-	-	-	15,726	15,726
PO	-	-	-	-	-	1,054	1,054
PVC	-	-	-	-	-	808	808
Acrylic	-	-	-	-	-	25,572	25,572
Plasticizer	-	-	-	-	-	53	53
BPA	-	-	-	-	-	467	467
Others ¹	-	-	-	-	-	1,350	1,350
Advanced Materials							
RO ²	108,848	-	-	-	-	-	108,848
PSAA	-	-	-	-	-	4,112	4,112
Life Sciences							
Life sciences	-	-	686,229	-	-	-	686,229
Common and others							
FarmHannong Co.,Ltd.	-	86,858	-	-	-	-	86,858
Adhesive ²	-	-	-	76,818	-	-	76,818
Total	108,848	86,858	686,229	76,818	-	51,780	1,010,534

¹ Goodwill resulting from the acquisition of Ugimag Korea Co., Ltd. has been fully impaired and recognized as impairment losses in 2019.

² Included changes resulting from foreign currency translation.

The recoverable amounts of CGUs have been determined based on value-in-use or fair value less cost of disposal calculations. Value-in-use calculations use pre-tax cash flow projections based on financial budgets approved by management covering a five-year period. Fair value less cost of disposal reflects expectation of future business and usage pattern of assets from the perspective of market participants. Management determined the estimated pre-tax cash flow based on past performance and its expectations of market development. Discount rates applied by the management are the pre-tax discount rates reflecting specific risks relating to the relevant operating segments. Taking into account the uncertainties relating to COVID-19, discount rates have been determined based on average values of input parameters (e.g. market risk premium) for longer observable period than before.

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During 2020, key assumptions used for calculation of value in use and fair value less cost of disposal are as follows:

<i>(in millions of Korean won)</i>	2020	
	Pre-tax discount rate	Growth rate for subsequent years after five years
Acquisition of LG Petrochemical Co., Ltd.	7.8%	0.0%
Acquisition of SAP business	7.7%	0.0%
Acquisition of NanoH2O, Inc	8.4%	1.0%
Acquisition of FarmHannong	11.6%	1.0%
Acquisition of PSAA business	7.8%	0.0%
Acquisition of LG Life Sciences	11.3%	3.0%
Acquisition of Uniseal, Inc.	12.8%	2.0%
Consolidation of LG Chem(HUIZHOU) Petrochemical Co., Ltd	8.6%	0.0%

The results of the sensitivity analysis for the fair value less cost of disposal calculation of Life Sciences CGU are as follows:

<i>(in millions of Korean won)</i>	0.5% Increase	0.5% Decrease
Discount rate		
Increase(decrease) in fair value	(138,675)	162,305
Growth rate		
Increase(decrease) in fair value	113,949	(97,435)

Had the discount rate been 0.5% higher than the management's estimate, the Group should have recognized impairment loss of ₩78,810 million for the carrying value of goodwill. Also, had the growth rate been 0.5% lower than the management's estimate, the Group should have recognized impairment loss of ₩37,750 million for the carrying value of goodwill.

Impairment test on intangible assets other than goodwill

The impairment losses for intangible assets other than goodwill that the Group recognized during the year are as follows:

<i>(in millions of Korean won)</i>	2020			
	Development costs	Industrial property rights	Other intangible assets	Total
FarmHannong ¹	-	-	25,283	25,283
	-	-	25,283	25,283

¹ During 2020, the Group has performed impairment test for FarmHannong and recognized ₩25,283 million of impairment losses.

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13. Other Current and Non-Current Assets

Details of other current and non-current assets as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Current		
Prepayments to suppliers and prepaid expenses	174,885	106,380
Prepaid value added tax	428,303	545,668
Others	39,964	141,748
Total	<u>643,152</u>	<u>793,796</u>
Non-current		
Long-term prepayments and long-term prepaid expenses	87,247	144,336
Others	98	96
Total	<u>87,345</u>	<u>144,432</u>

14. Borrowings

Borrowings as at December 31, 2020 and 2019, consist of:

<i>(in millions of Korean won)</i>	2020	2019
Current		
Short-term borrowings	879,757	771,102
Current portion of long-term borrowings of bank loans	341,203	309,944
Current-portion of debentures	272,466	219,943
Finance lease liabilities	55,389	55,108
	<u>1,548,815</u>	<u>1,356,097</u>
Non-current		
Long-term borrowings	3,131,254	1,536,821
Debentures	5,376,812	5,299,213
Lease liabilities	129,236	222,137
	<u>8,637,302</u>	<u>7,058,171</u>
Total	<u>10,186,117</u>	<u>8,414,268</u>

Details of short-term borrowings as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	Bank	Latest maturity date	Interest rate(%) as at December 31, 2020	2020	2019
Bank loans	CITI and others	December 9, 2021	2.60 and others	879,757	771,102
Total				<u>879,757</u>	<u>771,102</u>

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Details of long-term borrowings as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)	Bank	2020			
		Annual interest rate (%)	Amount in Korean won	Current	Non-current
Borrowings in Korean won	KDB ¹	(1Y) + 1.45 ~ 1.99	6,622	1,597	5,025
	Kookmin Bank	24M MOR + 1.89	2,000	980	1,020
Borrowings in foreign currencies	HSBC	USD: 3M LIBOR + 0.95~1.40 CNY: PBOC ×0.95, LPR(5Y)-0.3375	87,806	60,541	27,265
	SMBC	3M LIBOR + 0.32~0.48	202,142	-	202,142
	Construction Bank of China	LPR(1Y)+0.36~0.46	81,673	35,315	46,358
	Communications Bank of China	PBOC ×1.00	5,676	5,676	-
	CITI	USD: 3M LIBOR + 0.95 EUR: EURIBOR +0.62~0.70	241,354	39,212	202,142
	ING	6M EURIBOR + 0.70 ~0.83	161,714	-	161,714
	Standard Chartered Bank	USD: 3M LIBOR + 1.20 CNY: PBOC ×0.95	92,036	79,514	12,522
	CNOOC Finance	PBOC ×0.90	10,018	10,018	-
	EBRD	6M EURIBOR+0.62	336,903	-	336,903
	Bank of China	3M LIBOR +1.15	5,475	5,475	-
	MUFG	EUR:3M EURIBOR + 0.60~0.80	134,761	-	134,761
	Industrial and Commercial Bank of China	PBOC ×1.00	46,024	10,473	35,551
	CIMB	3M LIBOR + 1.50	49,021	49,021	-
	KEB Hana Bank	3M EURIBOR + 0.62	269,523	-	269,523
	KDB	USD: 3M LIBOR+ 0.93 EUR: 6M EURIBOR+1.50	513,380	43,381	469,999
	The Export-Import Bank of Korea	6M EURIBOR + 1.50	296,475	-	296,475
NongHyup Bank	6M EURIBOR + 1.50	148,238	-	148,238	
EIB	3M EURIBOR + 0.47	646,855	-	646,855	
DBS	6M EURIBOR + 0.60	134,761	-	134,761	
Total			3,472,457	341,203	3,131,254

¹ Manufacturing facilities are pledged as collateral for the above long-term borrowings (Note 18).

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<i>(in millions of Korean won)</i>		2019			
	Bank	Annual interest rate (%)	Amount in Korean won	Current	Non-current
Borrowings in Korean won	KDB ¹	(1Y)+1.45~1.99	7,607	986	6,621
	Kookmin Bank	24M MOR+1.89	1,188	-	1,188
Borrowings in foreign currencies	HSBC	USD: 3M LIBOR +0.95~1.40 CNY: PBOC ×0.95	87,958	14,974	72,984
	SMBC	3M LIBOR + 0.65~1.05	71,822	9,171	62,651
	Agricultural Bank of China	USD: 3M LIBOR + 0.80 CNY: PBOC ×0.90	33,594	10,059	23,535
	Construction Bank of China	PBOC ×0.90	37,146	7,146	30,000
	Communications Bank of China	PBOC ×1.00	38,576	5,800	32,776
	CITI	USD: 3M LIBOR + 0.95 EUR: EURIBOR + 0.65	279,935	43,574	236,361
	Bank of America	3M LIBOR + 0.90	17,367	-	17,367
	ING	6M EURIBOR + 0.70~0.83	155,795	-	155,795
	UOB	6M LIBOR + 1.20	111,664	111,664	-
	Standard Chartered Bank	USD: 3M LIBOR + 1.20 CNY: PBOC ×0.95	107,534	12,431	95,103
	Mizuho Banking Corporation	3M LIBOR + 0.98	31,180	6,929	24,251
	CNOOC Finance	PBOC ×0.90	33,148	23,204	9,944
	EBRD	6M EURIBOR + 0.62	129,829	-	129,829
	Hangseng	3M LIBOR + 1.00	29,483	29,483	-
	Bank of China	3M LIBOR + 0.95	18,298	12,487	5,811
	MUFG	USD: 3LIBOR + 1.00 EUR:3M EURIBOR + 0.60~0.80	173,165	5,778	167,387
	Industrial and Commercial Bank of China	PBOC ×1.00	43,579	5,801	37,778
	CIMB	3LIBOR + 1.50	57,809	5,781	52,028
	KEB Hana Bank	3M EURIBOR + 0.62	259,658	-	259,658
KDB	3M LIBOR + 0.93	30,182	3,018	27,164	
Deutsche Bank	PBOC×0.84	90,248	1,658	88,590	
Total			1,846,765	309,944	1,536,821

¹ Manufacturing facilities are pledged as collateral for the above long-term borrowings (Note 18).

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Details of debentures as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)		2020		Amount in Korean won	Current	Non-current
		Annual interest rate (%)	Latest maturity date			
50-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.28	2022.5.19	400,000	-	400,000
50-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.53	2024.5.19	280,000	-	280,000
51-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.56	2021.2.20	190,000	190,000	-
51-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.88	2023.2.20	240,000	-	240,000
51-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.07	2025.2.20	270,000	-	270,000
51-4th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.29	2028.2.20	300,000	-	300,000
52-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.02	2022.3.13	160,000	-	160,000
52-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.11	2024.3.13	240,000	-	240,000
52-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.21	2026.3.13	200,000	-	200,000
52-4th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.40	2029.3.13	400,000	-	400,000
53-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.57	2023.2.19	350,000	-	350,000
53-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.65	2025.2.19	250,000	-	250,000
53-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.72	2027.2.19	50,000	-	50,000
53-4th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.91	2030.2.19	250,000	-	250,000
USD foreign currency debenture with maturity in 2024	CITI and others	3.25	2024.10.15	544,000	-	544,000
USD foreign currency debenture with maturity in 2029	CITI and others	3.63	2029.4.15	544,000	-	544,000
EUR foreign currency debenture with maturity in 2023	CITI and others	0.50	2023.4.15	669,120	-	669,120
1-1st USD Overseas Exchangeable bonds^{1,3}	Credit Suisse	-	2020.10.7	-	-	-
1-2nd EUR Overseas Exchangeable bonds^{2,3}	Credit Suisse	-	2020.1.14	32,787	32,787	-
Debentures in Korean won (non-guaranteed)	NH Investment & Securities Co., Ltd.	2.26	2022.02.16	100,000	-	100,000
	NH Investment & Securities Co., Ltd.	2.71	2021.03.02	50,000	50,000	-
	NH Investment & Securities Co., Ltd.	3.00	2023.03.02	40,000	-	40,000
	NH Investment & Securities Co., Ltd.	1.95	2023.02.14	80,000	-	80,000
	NH Investment & Securities Co., Ltd.	2.22	2025.02.14	30,000	-	30,000
Less: discount on debentures				(20,629)	(321)	(20,308)
Total				5,649,278	272,466	5,376,812

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		2019				
	Financial institution	Annual interest rate (%)	Latest maturity date	Amount in Korean won	Current	Non-current
50-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.95	2020.5.19	120,000	120,000	-
50-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.28	2022.5.19	400,000	-	400,000
50-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.53	2024.5.19	280,000	-	280,000
51-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.56	2021.2.20	190,000	-	190,000
51-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.88	2023.2.20	240,000	-	240,000
51-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.07	2025.2.20	270,000	-	270,000
51-4th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.29	2028.2.20	300,000	-	300,000
52-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.02	2022.3.13	160,000	-	160,000
52-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.11	2024.3.13	240,000	-	240,000
52-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.21	2026.3.13	200,000	-	200,000
52-4th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.40	2029.3.13	400,000	-	400,000
1-1st USD Overseas Exchangeable bonds¹	Credit Suisse	-	2021.4.16	254,716	-	254,716
1-2nd EUR Overseas Exchangeable bonds²	Credit Suisse	-	2021.4.16	408,950	-	408,950
USD foreign currency debenture with maturity in 2024	CITI and others	3.25	2024.10.15	578,900	-	578,900
USD foreign currency debenture with maturity in 2029	CITI and others	3.63	2029.4.15	578,900	-	578,900
EUR foreign currency debenture with maturity in 2023	CITI and others	0.50	2023.4.15	648,715	-	648,715
Debentures in Korean won (non-guaranteed)	NH Investment & Securities Co., Ltd.	1.93	2020.2.16	100,000	100,000	-
	NH Investment & Securities Co., Ltd.	2.26	2022.2.16	100,000	-	100,000
	NH Investment & Securities Co., Ltd.	2.71	2021.3.02	50,000	-	50,000
	NH Investment & Securities Co., Ltd.	3.00	2023.3.02	40,000	-	40,000
Less: discount on debentures				(41,025)	(57)	(40,968)
Total				<u>5,519,156</u>	<u>219,943</u>	<u>5,299,213</u>

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¹ Details of 1-1st USD overseas exchangeable bonds are as follows:

	Details
Aggregate principal amount	USD 220,000,000
Issue price	USD 220,000,000
Coupon rate (%)	0.00
Issue date	April 16, 2018
Maturity date	April 16, 2021
Redemption	- Redemption at maturity: Outstanding bond principal, which is not repaid early or which call option is not exercised on, is repaid at maturity as a lump sum. - Prepayment: The issuer has a call option.
Underlying shares	509,606 registered ordinary shares (treasury shares)
Exchange price (Korean won/shares)	460,000
Exchange period	From May 27, 2018 to April 6, 2021
Call option by the issuer	- Share price (based on closing price) is higher than 130% of exchange price for more than 20 trading days during 30 consecutive trading days in a row, after 1 year from the closing date. - The amount of outstanding bonds is less than 10% in aggregate principal amount of the bonds originally issued (clean up call). - As a result of changes relating to tax laws in Korea, the issuer becomes obliged to pay any additional amounts.
Call option by bondholders	- The shares cease to be listed or admitted to trading or are suspended for a period equal to or exceeding 30 consecutive trading days. - The occurrence of a change of control

² Details of 1-2nd EUR overseas exchangeable bonds are as follows:

	Details
Aggregate principal amount	EUR 315,200,000
Issue price	EUR 315,200,000
Coupon rate (%)	0.00
Issue date	April 16, 2018
Maturity date	April 16, 2021
Redemption	- Redemption at maturity: Outstanding bond principal, which is not repaid early or which call option is not exercised on, is repaid at maturity as a lump sum. - Prepayment: The issuer has a call option.
Underlying shares	775,128 registered ordinary shares (treasury shares)
Exchange price (Korean won/shares)	533,600
Exchange period	From May 27, 2018 to April 6, 2021
Call option by the issuer	- Share price (based on closing price) is higher than 130% of exchange price for more than 20 trading days during 30 consecutive trading days in a row, after 1 year from the closing date. - The amount of outstanding bonds is less than 10% in aggregate principal amount of the bonds originally issued (clean up call). - As a result of changes relating to tax laws in Korea, the issuer becomes obliged to pay any additional amounts.
Call option by bondholders	- The shares cease to be listed or admitted to trading or are suspended for a period equal to or exceeding 30 consecutive trading days. - The occurrence of a change of control

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³ As the conditions for the execution of call options have been satisfied for the year ended December 31, 2020, exchangeable bonds of USD 219,800,000 were exchanged with 509,113 treasury shares and the remaining exchangeable bonds of USD 200,000 have been early repaid on October 7, 2020. Also, exchangeable bonds of EUR 290,700,000 were exchanged with 714,856 treasury shares. In January 2021, exchangeable bonds of EUR 22,300,000 were additionally exchanged with 54,834 treasury shares and the remaining exchangeable bonds of EUR 2,200,000 have been early repaid on January 14, 2021.

Details of lease liabilities as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>		2020			
Leaser	Annual interest rate (%)	Latest maturity date	Total amount	Current	Non-current
Hyundai Oil Bank and others	1.98 ~ 3.01	2068.12.31	184,625	55,389	129,236

<i>(in millions of Korean won)</i>		2019			
Leaser	Annual interest rate (%)	Latest maturity date	Total amount	Current	Non-current
Hyundai Oil Bank and others	1.98 ~ 4.13	2068.12.31	277,245	55,108	222,137

15. Provisions

Changes in provisions for other liabilities and charges for the years ended December 31, 2020 and 2019, as follows:

<i>(in millions of Korean won)</i>		2020			
	Warranty¹	Greenhouse gas emission²	Legal claims³	Restoration⁴	Total
Beginning balance	596,251	25,157	370	114,950	736,728
Additions (reversal)	942,425	(12,382)	8,885	22,112	961,040
Used	(294,659)	(7,900)	(969)	(24,233)	(327,761)
Ending balance	1,244,017	4,875	8,286	112,829	1,370,007
Less: current portion	(1,000,312)	(4,875)	-	(36,264)	(1,041,451)
Total	243,705	-	8,286	76,565	328,556

<i>(in millions of Korean won)</i>		2019			
	Warranty¹	Greenhouse gas emission²	Legal claims³	Restoration⁴	Total
Beginning balance	198,575	11,700	402	126,976	337,653
Additions	652,528	23,606	13	8,884	685,031
Used	(254,852)	(10,149)	(45)	(20,910)	(285,956)
Ending balance	596,251	25,157	370	114,950	736,728
Less: current portion	(417,561)	(25,157)	-	(29,411)	(472,129)
Total	178,690	-	370	85,539	264,599

¹ Warranty provisions have been accrued based on historical experience for the estimated warranty costs to be incurred due to quality control, exchange, refunds with regard to products. In addition, provisions related to replacement costs for ESS and voluntary automotive battery recalls are

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included.

² Greenhouse gas emission provisions have been accrued for estimated expenditures to be obligated for any excess emission. The estimated emission as at December 31, 2020 amounts to 8,437 thousand tons (2019: 8,255 thousand tons).

³ Lawsuit provisions have been accrued for certain pending cases.

⁴ As at December 31, 2020, restoration provisions have been accrued for the estimated expenses to restore land pollutions and others.

16. Net Defined Benefit Liabilities

Details of net defined benefit liabilities recognized in the consolidated statements of financial position as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Present value of defined benefit obligations ¹	1,454,596	1,343,553
Fair value of plan assets	<u>(1,336,637)</u>	<u>(1,164,393)</u>
Liabilities in the consolidated statement of financial position	<u>117,959</u>	<u>179,160</u>

¹ The present value of retirement benefit obligations is net of existing contributions to the National Pension Plan of ₩734 million as at December 31, 2020 (2019: ₩768 million).

The amounts recognized in the consolidated statements of profit or loss for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Current service cost ¹	196,654	161,211
Past service cost	-	-
Interest cost	<u>4,006</u>	<u>6,063</u>
Total, included in employee benefit expenses	<u>200,660</u>	<u>167,274</u>

¹ The above amounts excluded ₩5,622 million (2019: ₩1,720 million) of expenses capitalized to construction in progress and development costs.

Post-employment benefits recognized for defined contribution plan for the year ended December 31, 2020, amounted to ₩8,109 million (2019: ₩6,969 million).

Post-employment benefits recognized in the consolidated statements of profit or loss for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Cost of sales	131,628	109,856
Selling and administrative expenses	74,919	57,667
Discontinued operations	<u>2,222</u>	<u>6,720</u>
Total	<u>208,769</u>	<u>174,243</u>

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Movements in the present value of defined benefit obligations for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Beginning balance	1,343,553	1,167,524
Transfer in	7,190	20,820
Transfer out	(1,690)	(5,909)
Current service cost	202,276	162,931
Interest expense	31,314	30,649
Remeasurements:		
Actuarial loss from change in demographic assumptions	7,943	5,316
Actuarial loss (gain) from change in financial assumptions	(28,735)	74,372
Actuarial gain from experience adjustments	(10,239)	(21,594)
Others	1,433	916
Exchange differences	(14,637)	(949)
Payments from plans	(83,812)	(90,523)
Ending balance	<u>1,454,596</u>	<u>1,343,553</u>

Movements in the fair value of plan assets for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Beginning balance	1,164,393	939,980
Transfer out	(725)	(184)
Interest income	27,307	24,586
Remeasurements:		
Return on plan assets (excluding amounts included in interest income)	(5,069)	(6,796)
Contributions:		
Employers	227,555	283,196
Payments from plans	(76,458)	(75,299)
Administrative costs	(366)	(1,090)
Ending balance	<u>1,336,637</u>	<u>1,164,393</u>

The actual return on plan assets for the year ended December 31, 2020, was ₩22,238 million (2019: ₩17,790million).

The significant actuarial assumptions as at December 31, 2020 and 2019, are as follows:

	2020	2019
Discount rate	2.4% ~ 2.5%	2.4% ~ 2.5%
Salary growth rate	4.0% ~ 5.0%	4.0% ~ 5.0%

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The sensitivity analysis for changes in key actuarial assumptions as at December 31, 2020, is as follows:

<i>(in millions of Korean won)</i>	Increase by 0.5%	Decrease by 0.5%
Discount rate:		
Increase (decrease) in defined benefit obligations	(84,399)	92,803
Salary growth rate:		
Increase (decrease) in defined benefit obligations	90,078	(82,894)

A decrease in corporate bond yields may lead most significantly to an increase in defined benefit liabilities.

The above sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. The sensitivity of the defined benefit obligation to changes in principal actuarial assumptions is calculated using the projected unit credit method, the same method applied when calculating the defined benefit obligations recognized on the statement of financial position.

The methods and types of assumptions used in preparing the sensitivity analysis did not change compared to the prior period.

Plan assets as at December 31, 2020 and 2019, consist of:

<i>(in millions of Korean won)</i>	2020		2019	
	Amount	Composition (%)	Amount	Composition (%)
Insurance contracts with guaranteed yield	1,314,072	98.3	1,138,725	97.8
Equity linked bonds	20,855	1.6	24,891	2.1
Time deposits	1,710	0.1	777	0.1
	<u>1,336,637</u>	<u>100.0</u>	<u>1,164,393</u>	<u>100.0</u>

Plan assets consist of various debt instruments with principal and interest protection and others which have no quoted market prices in an active market.

The weighted average duration of the defined benefit obligation is 12.87 years.

The Group reviews the funding level on an annual basis and has a policy of eliminating deficit from the fund. Expected contributions to post-employment benefit plans for the year ending December 31, 2021, are ₩340,682 million.

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17. Other Current and Non-Current Liabilities

Details of other current and non-current liabilities as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Current		
Advances from customers	203,507	150,673
Withholdings	128,754	108,140
Unearned revenues	62,286	48,907
Accrued expenses	393,482	198,206
Total	788,029	505,926
Non-current		
Long-term accrued expenses	63,019	59,514
Long-term unearned revenues	14,952	15,272
Long-term advanced received	68,935	58,699
Total	146,906	133,485

18. Commitments and Contingencies

- (1) The Parent Company is jointly liable for liabilities of LG Energy Solutions Co., Ltd. as at December 1, 2020, a newly established company through the split-off from the Parent Company.
- (2) As at December 31, 2020, the Parent Company and certain subsidiaries have been guaranteed from Seoul Guarantee Insurance Company for the execution of contracts and others.
- (3) As at December 31, 2020, the Parent Company and certain subsidiaries have various specific line of credit agreements with several financial institutions, as follows:

(unit: Korean won in millions, foreign currencies in millions)

Classification	The Parent Group		Certain Overseas Subsidiaries					
	KRW	USD	KRW	USD	CNY	EUR	INR	THB
Limit of bank overdraft	20,400	-	8,700	300	1,800	29	-	10
Limit of the letter of credit	22,000	356	-	305	4,934	-	777	-
Limit of discount of notes from export	-	397	-	135	-	-	-	-
Limit of guaranteed payments in other foreign currency	-	41	-	56	-	-	-	-
Limit of loan arrangements	-	-	83,122	2,690	3,784	2,475	3,017	-

The Group also entered into comprehensive credit line agreements with other financial institutions relating to trade finance and import/export amounting to ₩20,000 million (including bank overdraft of ₩5,000 million) and USD 55 million.

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- (4) As at December 31, 2020, the Parent Company and certain subsidiaries have B2B purchase arrangements with several financial institutions with limit of ₩330,000 million and ₩167,818 million, respectively, as well as enterprise general fund arrangement with limit of ₩350,000 million and other loans with limit of USD 55 million.
- (5) As at December 31, 2020, the Parent Company has reverse factoring agreements, and utilized the facility for ₩739,616 million provided by Shinhan Card and utilized the facility for ₩1,360,320 million provided by Woori Card.
- (6) As at December 31, 2020, in connection with styrene monomer gas leakage accident, several law suits against LG Polymer India Pvt. Ltd., a subsidiary, have been filed with National Green Tribunal of India (NGT) and Andhra Pradesh High Court (APHC). The ultimate outcome of these cases cannot be determined at the reporting date. NGT has ordered LG Polymer India Pvt. Ltd. to deposit INR 500 million in connection with this accident and the manufacturing facility is currently closed with limited access in accordance with APHC's order.
- (7) As at December 31, 2020, in relation to price fixing of mobile batteries, the consumers in Israel have filed two class actions against the Parent Company and certain overseas subsidiaries. However, the ultimate outcome of these cases cannot be determined at the reporting date.
- (8) In addition, as at December 31, 2020, the Parent Company and certain subsidiaries have been named as a plaintiff in 9 and 22 legal actions, respectively, involving ₩20,711 million and ₩8,790 million in claims, respectively. They have been named as a defendant in 7 and 183 legal actions, respectively, with ₩4,612 million and ₩7,806 million in claims, respectively. The ultimate outcome of these cases cannot be determined at the reporting date.
- (9) As at December 31, 2020, the Parent Company is under investigation by the related authorities in relation to the manipulation of the emission of fine dust-causing substance in the Yeosu Industrial Complex, and the final outcome of these investigations cannot be determined at the reporting date. As at December 31, 2020, the Parent Company shut down the relevant production facilities.
- (10) The Parent Company has entered into manufacture and production technical contracts with ExxonMobil and others.
- (11) The Parent Company has entered into a license agreement with LG Corp. to use trademarks on the products that the Group manufactures and sells, and on the services the Group provides in relation to its business.
- (12) As at December 31, 2020, the Parent Company has entered into payment guarantee contract of USD 8 million, and certain subsidiaries have entered into payment guarantee contracts of USD 2 million, EUR 3 million and ₩5,373 million with financial institutions to guarantee the warrant of certain installed products. Also, certain subsidiaries have entered into payment guarantee contract of CNY 67 million with financial institutions in relation to custom of imported raw materials.

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(13) As at December 31, 2020 and 2019, assets pledged as collateral for the borrowings are as follows:

<i>(in millions of Korean won)</i>	2020			Secured party
	Secured amount	Borrowings / Loan	Limit	
Factory	20,880	Current and non-current borrowings	6,622	KDB
	<u>20,880</u>		<u>6,622</u>	
<i>(in millions of Korean won)</i>	2019			
	Secured amount	Borrowings / Loan	Limit	Secured party
Factory	20,880	Non-current borrowings	16,208	KDB
	<u>20,880</u>		<u>16,208</u>	

(14) Capital expenditure arrangement that has not incur at the end of the reporting period is as follows:

<i>(in millions of Korean won)</i>	2020	2019
Property, plant and equipment	2,428,411	2,069,630

(15) After the reporting period, General Motors Company has issued a recall for the Chevrolet Bolt EV to investigate fire risk. Investigation on the cause of the fire is being conducted by related authorities and the exact cause of fire has not been determined yet at the reporting date. As such, the Group cannot make reasonable expectation of the timing and amount of an outflow from the Group of resources due to the uncertainty of the cause of the accident.

(16) As of December 31, 2020, the Group has entered into an agreement with General Motors (GM) regarding joint investment in Ultium Cells LLC, whereby each party can sell its shares to third parties in 8 years after the inception of the contract. In addition, if one party defaults, the other party has the right to purchase shares from the other party. The Group is in the process of approval by the government for the use of core technologies according to the Industrial Technology Protection Act.

19. Share Capital

Changes in share capital and share premium for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won and in shares)</i>	Ordinary shares		Preferred shares		Share premium
	Number of shares	Share capital	Number of shares	Share capital	
January 1, 2019	70,592,343	352,962	7,688,800	38,444	2,014,038
December 31, 2019	70,592,343	352,962	7,688,800	38,444	2,014,036
December 31, 2020	<u>70,592,343</u>	<u>352,962</u>	<u>7,688,800</u>	<u>38,444</u>	<u>2,014,036</u>

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Changes in treasury shares for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won and in shares)</i>	Number of shares		Carrying amount	Gain on disposal of treasury shares
	Ordinary shares	Preferred shares		
January 1, 2019	1,652,417	16,367	354,945	13,855
December 31, 2019	1,652,417	16,367	354,945	13,855
Treasury shares reduction due to the exercise of exchange rights	(1,187,575)	-	(319,246)	417,865
Others	-	1	-	-
December 31, 2020	464,842	16,368	35,699	431,720

20. Retained Earnings

Retained earnings as at December 31, 2020 and 2019, consist of:

<i>(in millions of Korean won)</i>	2020	2019
Legal reserve ¹	401,574	352,286
Discretionary reserve ²	13,780,609	13,608,917
Retained earnings before appropriation	993,121	837,487
Total	15,175,304	14,798,690

¹ The Commercial Code of the Republic of Korea requires the Parent Company to appropriate for each financial period, as a legal reserve, an amount equal to a minimum of 10% of cash dividends paid until such reserve equals 50% of its issued share capital. The reserve is not available for cash dividends payment, but may be transferred to share capital or used to reduce accumulated deficit. When the accumulated legal reserves (the sum of capital reserves and earned profit reserves) are greater than 1.5 times the paid-in capital amount, the excess legal reserves may be distributed in accordance with a resolution of the shareholders' meeting.

² The Group separately accumulates a discretionary reserve for research and human resource development through appropriation of retained earnings, which has been included as deductible expense for the corporate income tax return according to the Special Tax Treatment Law. The reserve could be reversed in accordance with the terms of related tax laws.

21. Other Components of Equity

Details of other components of equity as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Treasury shares (Note 19)	(35,699)	(354,945)
Capital transactions within the Group ¹	(19,299)	(19,298)
Total	(54,998)	(374,243)

¹ Includes gain or loss on disposal of investments and investment differences due to changes in equity, net of deferred tax.

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22. Selling and Administrative Expenses

Selling and administrative expenses for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Wages and salaries	943,299	857,421
Post-employment benefits (Note 16)	74,919	57,667
Employee benefits	196,317	188,157
Travel expense	34,516	79,182
Water & utilities	56,135	54,883
Packaging expense	7,134	10,582
Rental expenses	87,943	94,576
Commission expenses	690,734	555,141
Depreciation	192,322	153,714
Advertising expense	27,413	38,194
Freight expenses	598,380	568,341
Training expense	16,012	24,969
Amortization (Note 12)	134,377	106,001
Sample expense	21,473	22,762
Development costs	217,778	236,308
Others	1,215,313	812,331
Total	4,514,065	3,860,229

23. Breakdown of Expenses by Nature

Cost of sales, and selling and administrative expenses by nature for the years ended December 31, 2020 and 2019, consist of:

<i>(in millions of Korean won)</i>	2020	2019
Changes in inventories of merchandise, finished goods, semi-finished goods and work in process	(360,005)	(349,012)
Raw materials and consumables used	16,780,471	15,614,550
Purchase of merchandise	1,258,026	1,275,701
Employee benefit expenses (Note 24)	2,900,719	2,528,142
Advertising expenses	28,463	39,422
Freight expenses	637,018	602,367
Commission expenses	1,121,736	889,023
Depreciation and amortization	2,272,727	1,794,918
Rent expenses and usage fee	59,613	77,844
Other expenses	3,579,583	4,054,708
Total	28,278,351	26,527,663

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24. Employee Benefit Expenses

Details of employee benefit expenses for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Salaries	2,420,523	2,103,682
Post-employment benefits – Defined benefit plan (Note 16)	198,561	160,656
Post-employment benefits – Defined contribution plan (Note 16)	7,986	6,867
Others	273,649	256,937
Total	<u>2,900,719</u>	<u>2,528,142</u>

25. Finance Income and Costs

Details of finance income and costs for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Finance income		
Interest income ¹	35,927	48,789
Dividend income	289	1,724
Exchange differences	377,354	205,998
Gain on valuation of derivative instruments	-	29,600
Others	3,898	67
Total	<u>417,468</u>	<u>286,178</u>
Finance costs		
Interest expense ²	198,814	203,169
Exchange differences	585,354	217,825
Loss related to derivative instruments	325,417	273
Others	-	7
Total	<u>1,109,585</u>	<u>421,274</u>

¹ Details of interest income for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Deposits held by financial institutions	24,976	37,782
Other loans and receivables	10,951	11,007
Total	<u>35,927</u>	<u>48,789</u>

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² Details of interest expense for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Interest on financial institutions	49,505	87,671
Interest on lease liabilities	9,578	3,590
Interest on debentures	149,987	121,760
Other interest expenses	36,808	17,307
Capitalized interest for qualifying assets	<u>(47,064)</u>	<u>(27,159)</u>
Total	<u>198,814</u>	<u>203,169</u>

26. Other Non-Operating Income

Details of other non-operating income for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Exchange differences	762,423	468,651
Gain on disposal of property, plant and equipment	3,452	10,124
Gain on disposal of intangible assets	104	405
Reversal of impairment loss on property, plant and equipment	-	215
Gain on disposal of investments in associates	312,080	599
Others	<u>77,185</u>	<u>39,127</u>
Total	<u>1,155,244</u>	<u>519,121</u>

27. Other Non-Operating Expenses

Details of other non-operating expenses for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Exchange differences	925,189	455,348
Loss on disposal of property, plant and equipment	80,763	43,471
Loss on disposal of intangible assets	1,776	681
Impairment loss on property, plant and equipment	73,964	58,166
Impairment loss on intangible assets	138,484	61,032
Donations	13,627	14,588
Others	<u>93,134</u>	<u>23,922</u>
Total	<u>1,326,937</u>	<u>657,208</u>

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28. Tax Expense and Deferred Tax

Details of income tax expense for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Current tax on profit for the years	119,273	243,906
Adjustments in respect of prior years	6,287	52,976
Deferred tax - movement in temporary differences	433,353	(107,550)
Deferred tax – tax credit carryforwards	(12,578)	(1,893)
	<u>546,335</u>	<u>187,439</u>
Deferred tax charged directly to equity	(186,855)	(21,243)
Current tax charged directly to equity	(6,771)	18,260
Others	15,130	(15,275)
Income tax expense	<u>367,839</u>	<u>169,181</u>

The aggregate current and deferred tax charged directly to equity (other comprehensive income) for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Current tax		
Remeasurements of net defined benefit liabilities	(6,771)	18,260
Deferred tax		
Loss on valuation of derivative instruments	(674)	(10,958)
Exchange differences on translation of foreign operations	(4,998)	(569)
Gain on disposal of financial assets at fair value through other comprehensive income	(5,262)	-
Gain on valuation of financial assets at fair value through other comprehensive income	4,430	(9,716)
Remeasurements of net defined benefit liabilities	131	-
Gain on disposal of treasury shares	(180,482)	-
Total	<u>(186,855)</u>	<u>(21,243)</u>

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Movements in deferred tax assets (liabilities) for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020						Ending balance
	Beginning balance	Business combination	Profit (loss) for the year	Other comprehensive income	Others	Exchange differences	
Net defined benefit liabilities	358,940	-	29,572	115	-	(18)	388,609
Plan assets	(317,845)	-	(48,231)	16	-	-	(366,060)
Provision for impairment on receivables	1,106	-	(693)	-	-	16	429
Property, plant and equipment	116,316	-	19,514	-	36,498	2,686	175,014
Intangible assets	(42,115)	-	574	-	-	-	(41,541)
Investments in subsidiaries, associates and joint ventures	(30,109)	-	(56,435)	-	-	-	(86,544)
Accrued income	(218)	-	(36)	-	-	(1)	(255)
Others	271,183	-	(177,198)	(181,988)	694,776	(4,281)	602,492
	<u>357,258</u>	<u>-</u>	<u>(232,933)</u>	<u>(181,857)</u>	<u>731,274</u>	<u>(1,598)</u>	<u>672,144</u>
Exchange differences on translation of foreign operations	2,161	-	-	(4,998)	-	-	(2,837)
Tax credit carryforwards	20,687	-	12,578	-	(16,775)	(1,240)	15,250
Tax loss carryforwards	84,688	-	(13,565)	-	(34,234)	(1,506)	35,383
Deferred tax assets (liabilities)	<u>464,794</u>	<u>-</u>	<u>(233,920)</u>	<u>(186,855)</u>	<u>680,265</u>	<u>(4,344)</u>	<u>719,940</u>

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(in millions of Korean won)

	2019					
	Beginning balance	Increase (decrease)				Ending balance
		Business combination	Profit (loss) for the year	Other comprehensive income	Exchange differences	
Net defined benefit liabilities	311,710	-	47,211	-	19	358,940
Plan assets	(256,797)	-	(61,048)	-	-	(317,845)
Provision for impairment on receivables	813	-	273	-	20	1,106
Property, plant and equipment	98,726	-	17,368	-	222	116,316
Intangible assets	(47,092)	2,851	2,126	-	-	(42,115)
Investments in subsidiaries, associates and joint ventures	(18,904)	-	(11,205)	-	-	(30,109)
Accrued income	(534)	-	320	-	(4)	(218)
Others	158,198	-	132,930	(20,674)	729	271,183
	<u>246,120</u>	<u>2,851</u>	<u>127,975</u>	<u>(20,674)</u>	<u>986</u>	<u>357,258</u>
Exchange differences on translation of foreign operations	3,500	-	(798)	(569)	28	2,161
Tax credit carryforwards	18,602	-	1,893	-	192	20,687
Tax loss carryforwards	82,034	-	1,616	-	1,038	84,688
Deferred tax assets (liabilities)	<u>350,256</u>	<u>2,851</u>	<u>130,686</u>	<u>(21,243)</u>	<u>2,244</u>	<u>464,794</u>

The reconciliations between income tax expense and accounting profit for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020	2019
Profit before income tax expense	<u>1,106,549</u>	<u>560,560</u>
Tax at domestic tax rates applicable to profits in the respective countries¹	495,467	213,020
Tax effects of:	(127,628)	(43,839)
Income not subject to tax	(36,733)	(18,865)
Expenses not deductible for tax purposes	29,198	35,405
Unrecognized deferred income tax for temporary differences in the current year	749,185	19,594
Tax credit	(173,716)	(92,052)
Others	(695,562)	12,079
Income tax expense	<u>367,839</u>	<u>169,181</u>
Effective tax rate (income tax expense/profit before income tax)	33.24%	30.18%

¹ The weighted average applicable tax rate on profit before income tax for the year ended December 31, 2020, is 44.78% (2019: 38.00%).

Realization of deferred tax assets is dependent on the Group's ability to generate future taxable profits in excess of the profits arising from the reversal of taxable temporary differences, and economic and industry outlooks. Management periodically reviews on these factors.

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Details of deductible (taxable) temporary differences unrecognized as deferred tax assets (liabilities) as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019	
Investments in subsidiaries, associates and joint ventures	(161,065)	(125,485)	Permanently re-invested income not distributed as dividend
Goodwill	5,737,439	893,853	No possibility of disposal
Land	(694,422)	(694,422)	
Unused tax loss carryforwards	488	488	
	<u>345,652</u>	<u>305,471</u>	Uncertainty of future tax income

The maturity of unused loss is as follows:

<i>(in millions of Korean won)</i>	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years
2020 Tax loss carryforwards	165	2,497	14,501	480,651
2019 Tax loss carryforwards	93,677	46,962	30,760	341,155

29. Earnings per Share

Basic earnings per share is calculated by dividing the profit attributable to equity holders of the Parent Company by the weighted average number of shares in issue excluding shares purchased by the Parent Company and held as treasury shares. As at the reporting date, the Parent Company has no potential ordinary shares. Preferred shares have a right to participate in the profits of the Group. These participation rights have been considered in presenting the earnings per share information for the both of ordinary shares and preferred shares.

Basic earnings per share for profit from continuing operations and earnings per share attributable to the equity holders of the Parent Company for the years ended December 31, 2020 and 2019, are computed as follows:

Basic earnings per ordinary share from continuing operations

<i>(in millions of Korean won and in number of shares)</i>	2020	2019
Profit from continuing operations attributable to ordinary shares ¹	365,192	307,875
Weighted average number of ordinary shares outstanding ²	<u>69,177,128</u>	<u>68,939,926</u>
Basic earnings per ordinary share from continuing operations <i>(in won)</i>	<u>5,279</u>	<u>4,466</u>

Basic earnings per ordinary share

<i>(in millions of Korean won and in number of shares)</i>	2020	2019
Profit attributable to ordinary shares ¹	461,109	281,637
Weighted average number of ordinary shares outstanding ²	<u>69,177,128</u>	<u>68,939,926</u>
Basic earnings per ordinary shares <i>(in won)</i>	<u>6,666</u>	<u>4,085</u>

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Basic earnings per preferred share from continuing operations

<i>(in millions of Korean won and in number of shares)</i>	2020	2019
Profit from continuing operations attributable to preferred share ¹	40,887	34,648
Weighted average number of preferred shares outstanding ²	7,672,433	7,672,433
Basic earnings per preferred share from continuing operations <i>(in won)</i>	<u>5,329</u>	<u>4,516</u>

Basic earnings per preferred share

<i>(in millions of Korean won and in number of shares)</i>	2020	2019
Profit attributable to preferred shares ¹	51,525	31,728
Weighted average number of preferred shares outstanding ²	7,672,433	7,672,433
Basic earnings per preferred shares <i>(in won)</i>	<u>6,716</u>	<u>4,135</u>

¹ Profit attributable to ordinary and preferred shares are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Profit from continuing operations attributable to the equity holders of the Parent Company	406,079	342,523
Ordinary shares dividends (A)	691,771	137,880
Preferred shares dividends (B)	77,108	15,728
Undistributed earnings from continuing operation for the period	(362,800)	188,915
Undistributed earnings available for ordinary shares (C)	(326,578)	169,995
Undistributed earnings available for preferred shares (D)	(36,222)	18,920
Profit from continuing operations for the period attributable to ordinary shares (A+C)	365,192	307,875
Profit from continuing operations for the period attributable to preferred shares (B+D)	40,887	34,648
<i>(in millions of Korean won)</i>	2020	2019
Profit attributable to the equity holders of the Parent Company	512,634	313,365
Ordinary shares dividends (A)	691,771	137,880
Preferred shares dividends (B)	77,108	15,728
Undistributed earnings for the period	(256,245)	159,757
Undistributed earnings available for ordinary shares (C)	(230,662)	143,757
Undistributed earnings available for preferred shares (D)	(25,583)	16,000
Profit for the period attributable to ordinary shares (A+C)	461,109	281,637
Profit for the period attributable to preferred shares (B+D)	51,525	31,728

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² Weighted average numbers of shares are calculated as follows:

Ordinary shares outstanding	2020			
	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2020. 1. 1 – 2020 12. 31	68,939,926	366	25,232,012,916
Conversion of treasury shares	2020. 8. 1 - 2020. 12. 31	47,277	153	7,233,381
	2020. 9. 1 - 2020. 12. 31	446,115	122	54,426,030
	2020. 10. 1 - 2020. 12. 31	16,212	92	1,491,504
	2020. 11. 1 - 2020. 12. 31	50,658	61	3,090,138
	2020. 12. 1 - 2020. 12. 31	663,707	31	20,574,917
Total				25,318,828,886

Weighted average number of ordinary shares outstanding: $25,318,828,886 / 366 = 69,177,128$ shares

Preferred shares outstanding	2020			
	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2020. 1. 1 - 2020. 12. 31	7,672,433	366	2,808,110,478
Total				2,808,110,478

Weighted average number of preferred shares outstanding: $2,808,110,478 / 366 = 7,672,433$ shares

Ordinary shares outstanding	2019			
	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2019. 1. 1 - 2019. 12. 31	68,939,926	365	25,163,072,990
Total				25,163,072,990

Weighted average number of ordinary shares outstanding: $25,163,072,990 / 365 = 68,939,926$ shares

Preferred shares outstanding	2019			
	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2019. 1. 1 - 2019. 12. 31	7,672,433	365	2,800,438,045
Total				2,800,438,045

Weighted average number of preferred shares outstanding: $2,800,438,045 / 365 = 7,672,433$ shares

For the year ended December 31, 2020, the Parent Company did not calculate diluted earnings per share due to antidilution.

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<i>(in millions of Korean won and in number of shares)</i>	2019
Diluted earnings per ordinary shares from continuing operations	
Profit from continuing operation for the period attributable to ordinary shares	307,875
Loss on exchangeable bonds (after tax effects)	(9,458)
Profit from continuing operation used in calculating diluted earnings per share from continuing operation	298,417
Weighted average number of ordinary shares outstanding	68,939,926
Adjustments for calculation of diluted earnings per share:	
Assumed conversion of exchangeable bonds	<u>1,284,734</u>
Weighted average number of ordinary shares and potential ordinary shares used as the denominator in calculating diluted earnings per share from continuing operation	<u>70,224,660</u>
Diluted earnings per share from continuing operation attributable to the ordinary shares <i>(in won)</i>	<u>4,249</u>

<i>(in millions of Korean won and in number of shares)</i>	2019
Diluted earnings per ordinary shares	
Profit for the period attributable to the ordinary shares	281,637
Loss on exchangeable bonds (after tax effects)	(9,507)
Profit used in calculating diluted earnings per share	272,130
Weighted average number of ordinary shares outstanding	68,939,926
Adjustments for calculation of diluted earnings per share:	
Assumed conversion of exchangeable bonds	<u>1,284,734</u>
Weighted average number of ordinary shares and potential ordinary shares used as the denominator in calculating diluted earnings per share	<u>70,224,660</u>
Diluted earnings per share attributable to the ordinary shares <i>(in won)</i>	<u>3,875</u>

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<i>(in millions of Korean won and in number of shares)</i>	2019
Diluted earnings per preferred shares from continuing operations	
Profit from continuing operation for the period attributable to preferred shares	34,648
Loss on exchangeable bonds (after tax effects)	(1,661)
Profit from continuing operation used in calculating diluted earnings per share from continuing operation	32,987
Weighted average number of ordinary shares outstanding	
Adjustments for calculation of diluted earnings per share:	7,672,433
Assumed conversion of exchangeable bonds	-
Weighted average number of ordinary shares and potential ordinary shares used as the denominator in calculating diluted earnings per share from continuing operation	<u>7,672,433</u>
Diluted earnings per share from continuing operation attributable to the preferred shares <i>(in won)</i>	<u>4,299</u>

<i>(in millions of Korean won and in number of shares)</i>	2019
Diluted earnings per preferred shares	
Profit for the period attributable to the preferred shares	31,727
Loss on exchangeable bonds (after tax effects)	(1,612)
Profit used in calculating diluted earnings per share	30,115
Weighted average number of ordinary shares outstanding	
Adjustments for calculation of diluted earnings per share:	7,672,433
Assumed conversion of exchangeable bonds	-
Weighted average number of ordinary shares and potential ordinary shares used as the denominator in calculating diluted earnings per share	<u>7,672,433</u>
Diluted earnings per share attributable to the preferred shares <i>(in won)</i>	<u>3,925</u>

Basic and diluted earnings (losses) per share attributable to ordinary and preferred shares from discounted operations for the years ended December 31, 2020 and 2019, are as follows:

<i>(in Korean won)</i>	2020	2019
Basic earnings (losses) per ordinary share from discounted operations	1,387	(381)
Basic earnings (losses) per preferred share from discounted operations	1,387	(381)
Diluted earnings (losses) per ordinary share from discounted operations	1,387	(374)
Diluted earnings (losses) per preferred share from discounted operations	1,387	(374)

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30. Dividends

Details of dividends of the Parent Company as at December 31, 2020 and 2019, are as follows:

	2020	2019
Number of shares entitled to dividends: shares issued and outstanding (par value per share: ₩5,000)		
Ordinary shares	70,127,501	68,939,926
Preferred shares	7,672,432	7,672,433
Dividend per share (<i>in Korean won, %</i>)		
Ordinary shares: cash	10,000 (200%)	2,000 (40%)
Preferred shares: cash	10,050 (201%)	2,050 (41%)
Cash dividends to distribute (<i>in millions of Korean won</i>)		
Ordinary shares	701,275	137,880
Preferred shares	77,108	15,728
	<u>778,383</u>	<u>153,608</u>

Dividend payout ratios of the Parent Company for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Dividends (A)	778,383	153,608
Profit attributable to equity holders of the Parent Company (B)	512,634	313,365
Dividend payout ratio (A/B)	<u>151.84%</u>	<u>49.02%</u>

Dividend yield ratios of the Parent Company for the years ended December 31, 2020 and 2019, are as follows:

<i>(in Korean won)</i>	2020		2019	
	Ordinary shares	Preferred Shares	Ordinary shares	Preferred Shares
Dividend per share (A)	10,000	10,050	2,000	2,050
Market value at the end of year (B) ¹	808,750	377,375	312,000	171,500
Dividend yield ratio (A/B)	<u>1.24%</u>	<u>2.66%</u>	<u>0.64%</u>	<u>1.20%</u>

¹ Average price in the stock market during one week preceding two business days before shareholder list closing date for the general shareholders' meeting.

31. Related Party Transactions

As at December 31, 2020 and 2019, LG Corp. is an entity exercising a significant influence over the Group, which owns 33.34% of the Parent Company's ordinary shares.

Details of associates and other related parties that have sales and other transactions with the Group or have receivables and payables balances as at December 31, 2020 and 2019, are as follows, and the details of investments in subsidiaries, associates and joint ventures are described in Note 1.3:

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Related party	Related party's subsidiary (Domestic)	Related party's subsidiary (Overseas)	Details
S&I Corp.	S&I CM	S&I CM NANJING Co., Ltd. and others	Subsidiary of LG Corp.
LG CNS Co., Ltd.	Biz Tech Partners Co., Ltd. and others	LG CNS America Inc. and others	Subsidiary of LG Corp.
LG Management Development Institute	-	-	Subsidiary of LG Corp.
LG Sports Ltd.	-	-	Subsidiary of LG Corp.
LG Holdings Japan	-	-	Subsidiary of LG Corp.
LG MMA Corporation	-	-	Joint venture of LG Corp.
LG Display Co., Ltd.	-	LG Display (China) Co., Ltd. and others	LG Enterprise group ¹
LG Electronics, Inc.	LG Innotek Co., Ltd. and others	Inspur LG Digital Mobile Communications Co., Ltd. and others	LG Enterprise group ¹
LG International Corp.	Pantos Logistics Co., Ltd. and others	LG International (Japan) Ltd. and others	LG Enterprise group ¹
LG Hausys, Ltd.	-	LG Hausys Tianjin Co., Ltd. and others	LG Enterprise group ¹
LG Household & Health Care Ltd.	Coca-Cola Beverage Co. and others	-	LG Enterprise group ¹
LG Uplus Corp.	LG HelloVision Corp.	-	LG Enterprise group ¹
G II R Inc.	HS AD Inc.	Beijing Yuanzhimeng Advertising Co., Ltd.	LG Enterprise group ¹
Silicon Works Co., Ltd.	-	-	LG Enterprise group ¹
SERVEONE ²	-	Serveone(Nanjing).Co., Ltd. and others	LG Enterprise group ¹

¹ Although these entities are not the related parties of the Group in accordance with K-IFRS 1024, these entities belong to a large enterprise group in accordance with the Monopoly Regulation and Fair Trade Act.

² During 2019, SERVEONE has been excluded from other related parties as S&I Corp. has sold its shares of SERVEONE.

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Sales and purchases with related parties for the years ended December 31, 2020 and 2019, are as follows:

	2020					
	Sales and others	Purchase and others				
		Purchase of raw materials /merchandises	Acquisition of property, plant and equipment and intangible assets	Acquisition of right-of-use assets	Interest expense	Others
Entity with a significant influence over the Group						
LG Corp.	14	-	-	-	167	60,718
Associates and joint ventures						
SEETEC Co., Ltd.	56,396	135,799	10	618	86	78,908
TECWIN Co., Ltd.	25	318	4,662	-	-	211
HL Greenpower Co., Ltd.	853,423	-	-	-	-	3,530
Others	54	4,678	-	-	-	2,482
Other related parties						
LG MMA Corporation ¹	84,486	136,506	-	-	-	3,320
S&I Corp. and its subsidiaries	337	30,472	618,098	-	-	87,470
LG CNS Co., Ltd. and its subsidiaries	13,156	4,524	397,358	-	16	107,325
Others	14	-	-	583	2	16,470
Others						
LG Display Co., Ltd. and its subsidiaries	861,285	98	879	891	6	314
LG Electronics Inc. and its subsidiaries ²	1,187,949	822,786	326,358	1,910	10	110,628
LG International Corp. and its subsidiaries	57,992	324,691	148,452	1,181	4	465,694
LG Hausys, Ltd. and its subsidiaries	171,063	1,861	5,665	-	1	6,227
Others	7,847	22,830	2,236	1,605	29	6,960
Total	3,294,041	1,484,563	1,503,692	6,788	321	950,257

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	2019					
	Sales and others	Purchase and others				
		Purchase of raw materials /merchandises	Acquisition of property, plant and equipment and intangible assets	Acquisition of right-of-use assets	Interest expense	Others
Entity with a significant influence over the Group						
LG Corp.	2,666	-	-	-	-	73,171
Associates and joint ventures						
SEETEC Co., Ltd.	49,774	197,502	342	2,775	14	90,611
TECWIN Co., Ltd.	3	55	4,728	-	-	220
HL Greenpower Co., Ltd.	834,289	-	-	-	-	1,148
Others	196	27	1	-	-	2,937
Other related parties						
LG MMA Corporation ¹	108,957	190,917	-	-	-	6,087
S&I Corp. and its subsidiaries ²	11,234	755,355	620,251	-	-	139,372
LG CNS Co., Ltd. and its subsidiaries	18,258	3,862	344,607	-	-	87,073
Others	5	-	-	530	7	18,154
Others						
LG Display Co., Ltd. and its subsidiaries	1,123,640	148	80,116	37	-	2,151
LG Electronics Inc. and its subsidiaries	960,332	575,282	728,049	-	-	106,866
LG International Corp. and its subsidiaries	185,471	454,183	43,235	28	-	537,084
LG Hausys, Ltd. and its subsidiaries	191,851	7,633	4,483	113	-	7,079
Others	14,499	23,901	1,041	280	2	12,652
Total	3,501,175	2,208,865	1,826,853	3,763	23	1,084,605

¹ Net sales and purchase amounts after offsetting for Raffinate transactions with LG MMA.

² In October 2020, LG Energy Solution Michigan Inc, a subsidiary, entered into an agreement to acquire automotive battery pack manufacturing facilities from LG Electronics Inc. for approximately USD 37 million.

³ SERVEONE has been excluded from the related parties as at December 31, 2019 since S&I Corp. sold its shares of SERVEONE in 2019. Transactions with SERVEONE until the sale of shares have been included in the above information.

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Balances of receivables and payables arising from sales and purchases of goods and services as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020			Total
	Receivables			
	Trade receivables and others	Loan receivables	Other receivables	
Entity with a significant influence over the Group				
LG Corp.	-	-	12,420	12,420
Associates and joint ventures				
SEETEC Co., Ltd.	3,820	-	201	4,021
TECWIN Co., Ltd.	-	-	-	-
HL Greenpower Co., Ltd.	-	-	-	-
Others	-	-	22	22
Other related parties				
LG MMA Corporation	3,186	-	534	3,720
S&I Corp. and its subsidiaries ¹	6	-	8,783	8,789
LG CNS Co., Ltd. and its subsidiaries	7,048	-	85	7,133
Others	606	-	4,360	4,966
Others				
LG Display Co., Ltd. and its subsidiaries	152,152	-	27,792	179,944
LG Electronics Inc. and its subsidiaries	245,176	-	111,549	356,725
LG International Corp. and its subsidiaries	4,710	-	-	4,710
LG Hausys, Ltd. and its subsidiaries	34,977	-	31	35,008
Others	128	-	1,163	1,291
Total	451,809	-	166,940	618,749

(in millions of Korean won)

	2020				Total
	Payables				
	Trade payables	Borrowings	Lease liabilities	Other payables	
Entity with a significant influence over the Group					
LG Corp.	-	-	11,934	4,013	15,947
Associates and joint ventures					
SEETEC Co., Ltd.	14,977	-	26,014	9,884	50,875
TECWIN Co., Ltd.	-	-	-	574	574
HL Greenpower Co., Ltd.	-	-	-	-	-
Others	194	-	-	272	466
Other related parties					
LG MMA Corporation	13,272	-	-	-	13,272
S&I Corp. and its subsidiaries ¹	30	-	-	265,647	265,677
LG CNS Co., Ltd. and its subsidiaries	4	-	1,206	164,632	165,842
Others	-	-	92	289	381
Others					
LG Display Co., Ltd. and its subsidiaries	-	-	703	115	818
LG Electronics Inc. and its subsidiaries	133,330	-	1,792	254,868	389,990
LG International Corp. and its subsidiaries	23,654	-	575	74,267	98,496
LG Hausys, Ltd. and its subsidiaries	-	-	-	3,965	3,965
Others	1,869	-	1,101	6,224	9,194
Total	187,330	-	43,417	784,750	1,015,497

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(in millions of Korean won)

	2019			
	Receivables			Total
	Trade receivables and others	Loan receivables	Other receivables	
Entity with a significant influence over the Group				
LG Corp.	-	-	12,391	12,391
Associates and joint ventures				
SEETEC Co., Ltd.	4,140	-	636	4,776
TECWIN Co., Ltd.	-	-	-	-
HL Greenpower Co., Ltd.	54,907	-	-	54,907
Others	-	-	10	10
Other related parties				
LG MMA Corporation	8,425	-	844	9,269
S&I Corp. and its subsidiaries ¹	8	-	24,574	24,582
LG CNS Co., Ltd. and its subsidiaries	7,650	-	-	7,650
Others	607	-	4,356	4,963
Others				
LG Display Co., Ltd. and its subsidiaries	128,562	-	74	128,636
LG Electronics Inc. and its subsidiaries	231,821	-	21,095	252,916
LG International Corp. and its subsidiaries	13,861	-	-	13,861
LG Hausys, Ltd. and its subsidiaries	19,995	-	262	20,257
Others	39	-	1,096	1,135
Total	470,015	-	65,338	535,353

(in millions of Korean won)

	2019				
	Payables				Total
	Trade payables	Borrowings	Lease liabilities	Other payables	
Entity with a significant influence over the Group					
LG Corp.	-	-	14,863	1,360	16,223
Associates and joint ventures					
SEETEC Co., Ltd.	15,781	-	1,402	11,375	28,558
TECWIN Co., Ltd.	-	-	-	1,633	1,633
HL Greenpower Co., Ltd.	-	-	-	65	65
Others	-	-	-	258	258
Other related parties					
LG MMA Corporation	13,413	-	-	-	13,413
S&I Corp. and its subsidiaries ¹	19	-	-	300,928	300,947
LG CNS Co., Ltd. And its subsidiaries	860	-	1,206	163,654	165,720
Others	-	-	93	462	555
Others					
LG Display Co., Ltd. and its subsidiaries	7	-	9	87	103
LG Electronics Inc. and its subsidiaries	115,622	-	448	436,962	553,032
LG International Corp. and its subsidiaries	10,398	-	20	97,017	107,435
LG Hausys, Ltd. and its subsidiaries	512	-	50	5,925	6,487
Others	1,706	-	168	4,328	6,202
Total	158,318	-	18,259	1,024,054	1,200,631

¹ Other receivables to S&I Corp. include the amount of deposits which are classified as memberships in the financial statements of the Group.

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Fund transactions with related parties for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020						
	Dividends received	Dividends paid	Equity contributions in cash (capital reduction)	Loans		Borrowings ¹	
Loans				Repayment	Borrowings	Repayment	
Entity with a significant influence over the Group							
LG Corp.	-	47,068	-	-	-	167	14,699
Associates and joint ventures							
SEETEC Co., Ltd.	10,000	-	-	-	-	86	3,506
TECWIN Co., Ltd.	314	-	-	-	-	-	-
HUAJIN NEW ENERGY MATERIALS(QUZHOU) CO.,Ltd	-	-	22,191	-	-	-	-
WUXI CL New Energy Technology	-	-	(1,178)	-	-	-	-
Other related parties							
LG CNS Co., Ltd.	-	-	-	-	-	16	1,190
LG Holdings Japan Co.,Ltd.	-	-	-	-	-	583	482
Others							
LG Display America,Inc.	-	-	-	-	-	891	85
Pantos Logistics (China) Co., Ltd.	-	-	-	-	-	-	21
Pantos Logistics France	-	-	-	-	-	854	415
Pantos Logistics Spain S.L.	-	-	-	-	-	328	159
LG Electronics Deutschland GmbH	-	-	-	-	-	1,910	4,390
LG Hausys, Ltd.	-	-	-	-	-	56	8
LG HOUSEHOLD & HEALTH CARE LTD	-	-	-	-	-	29	697
Total	10,314	47,068	21,013	-	-	4,920	25,652

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(in millions of Korean won)

	2019						
	Dividends received	Dividends paid	Equity contributions in cash (capital reduction)	Loans		Borrowings ¹	
Loans				Repayment	Borrowings	Repayment	
Entity with a significant influence over the Group							
LG Corp.	-	141,205	-	-	-	-	-
Associates and joint ventures							
SEETEC Co., Ltd.	10,000	-	-	-	-	2,775	1,027
LG Holdings (HK) Ltd.	-	-	(15,788)	-	-	-	-
HUAJIN NEW ENERGY MATERIALS(QUZHOU) CO.,LTD	-	-	41,202	-	-	-	-
VINFAST LITHIUM BATTERY PACK LLC.	-	-	5,323	-	-	-	-
Combustion Synthesis Co., Ltd	-	-	645	-	-	-	-
Other related parties							
LG Holdings Japan Co.,Ltd.	-	-	-	-	-	530	463
Others							
LG Display America, Inc.	-	-	-	-	-	37	28
Pantos Logistics (China) Co., Ltd.	-	-	-	-	-	35	14
LG Hausys, Ltd.	-	-	-	-	-	113	39
LG HOUSEHOLD & HEALTH CARE LTD	-	-	-	-	-	280	105
Total	<u>10,000</u>	<u>141,205</u>	<u>31,382</u>	<u>-</u>	<u>-</u>	<u>3,770</u>	<u>1,676</u>

¹ The amounts represent lease liabilities that were recognized or repaid for the years ended December 31, 2020.

Compensation for key management of the Group for the years ended December 31, 2020 and 2019, consists of:

(in millions of Korean won)	2020	2019
Short-term employee benefits	92,430	83,330
Post-employment benefits	7,005	4,999
Total	<u>99,435</u>	<u>88,329</u>

Key management includes directors and audit committee members having duties and responsibilities over planning, operations and controlling of the Group's business activities.

There are no provisions recognized against receivables from related parties as at December 31, 2020 and 2019; therefore, there are no impairment losses recognized against the receivables from related parties for the years ended December 31, 2020 and 2019.

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As at December 31, 2020, there are no payment guarantees provided by the Group for related parties.

32. Cash Generated from Operations

Reconciliation between profit before income tax and cash generated from operations for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Profit before income tax		
Profit before income tax from continuing operations	943,692	574,443
Profit before income tax from discontinued operations	162,856	(13,883)
	<u>1,106,548</u>	<u>560,560</u>
Adjustments for:		
Depreciation	2,129,986	1,719,597
Amortization	180,973	136,870
Post-employment benefits	200,660	167,274
Finance income	(55,302)	(184,059)
Finance costs	790,030	387,285
Foreign exchange differences	10,363	5,751
Loss (gain) on valuation of inventories	(7,756)	12,640
Gain on disposal of property, plant and equipment	(17,506)	(11,602)
Gain on disposal of intangible assets	(104)	(405)
Gain on disposal of other assets	(2,771)	-
Loss on disposal of property, plant and equipment	81,402	45,913
Loss on disposal of intangible assets	1,776	1,726
Reversal of impairment loss on property, plant and equipment	(220)	(215)
Impairment loss on property, plant and equipment	76,037	125,560
Impairment loss on intangible assets	138,547	61,750
Impairment loss on other assets	23	-
Gain on disposal of investments in associates	(312,080)	(599)
Gain on disposal of business	(32,085)	-
Additions to provisions	961,040	685,031
Other income	10,668	8,778
Increase in inventories	(565,687)	(718,805)
Decrease (increase) in trade receivables	(3,181,776)	595,234
Decrease (increase) in other receivables	(142,121)	81,139
Decrease (increase) in other current assets	53,343	(147,130)
Settlement of derivative instrument transactions	(733)	-
Increase in trade payables	3,651,513	217,041
Increase in other payables	1,583,217	934,698
Increase (decrease) in other current liabilities	340,058	(214,744)
Decrease in provisions	(319,861)	(285,956)
Decrease in net defined benefit liabilities	(228,316)	(282,235)
Other cash flows from operations	76,778	(64,636)
Cash generated from operations	<u>6,526,644</u>	<u>3,836,461</u>

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Changes in liabilities arising from financial activities for the year ended December 31, 2020, are as follows:

<i>(in millions of Korean won)</i>	2020						
	At January 1, 2020	Cash flows from financing activities	Reclassification of current portion	Amortization	Lease liabilities	Others	At December 31, 2020
Short-term borrowings	1,136,154	(602,203)	748,905	-	-	(6,507)	1,276,349
Long-term borrowings	1,758,958	2,272,499	(748,905)	-	99,160	(121,222)	3,260,490
Debentures	5,519,156	786,604	-	17,097	-	(673,579)	5,649,278
Exchange rights	930	-	-	-	-	15,867	16,797
Other payables for the reverse factoring arrangement	856,287	(1,577,805)	-	-	-	2,802,825	2,081,307
Total	9,271,485	879,095	-	17,097	99,160	2,017,384	12,284,221

The significant non-cash transactions for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Reclassification of construction-in-progress	5,421,750	5,117,685
Reclassification of machinery-in-transit	72,815	208,708
Reclassification of long-term borrowings into current portion	1,662,047	1,010,178
Reclassification of other payables under the reverse factoring arrangement	2,802,825	862,452
Other payables related to acquisitions of property, plant and equipment and intangible assets	1,786,346	2,344,088
Transfer of non-current assets held for sale	777,695	-
Transfer of non-current liabilities held for sale	130,383	--
Exchange of treasury stocks such as exchangeable bonds	917,592	-

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33. Segment Information

General information about the Group's reportable segments is as follows:

Segment	Products or services	Major customers
Petrochemicals	ABS, PC, PE, PP, Acrylic, Alcohol, SAP, PVC, Synthetic rubber, Special resin, BPA, Ethylene, Propylene and others	LG Electronics Inc., OCI Group Co. Ltd., Mitsubishi Corp. and others
Energy solutions	Mobile batteries, Automotive batteries, Electricity storage batteries and others	Hewlett-Packard Co., General Motors Corp., and others
Advanced materials ¹	OLED Polarizers, Automotive components, LCD Photoresist, OLED materials, Battery materials and others	LG Display Co., Ltd., Samsung Display Co., Ltd., BOE, AUO and others
Life sciences	Growth hormone, Vaccine, Antidiabetic, agricultural chemicals and others	HUADONG NINGBO, UNICEF, Intervet and others
Common and others ¹	Crop protection products, Seeds, Fertilizers, General management, sales and R&D and others	National Agriculture Cooperative Federation and others

¹ Part of the Advanced materials business was reclassified into the Common and others business sector. The information for the comparative period has been restated to reflect these changes.

The segment information on revenue, profit and loss for the years ended December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020					
	Petro-chemicals	Energy solutions	Advanced materials	Life sciences	Common and others ³	Total
Total segment revenue	14,268,536	12,363,633	3,610,823	661,363	868,666	31,773,021
Inter-segment revenue	540,198	109	1,047,274	3,086	105,844	1,696,511
Revenue from external customers ¹	13,728,338	12,363,524	2,563,549	658,277	762,822	30,076,510
Operating profit (loss) ²	1,967,925	(165,634)	162,864	53,836	(220,832)	1,798,159
<i>(in millions of Korean won)</i>	2019					
	Petro-chemicals	Energy solutions	Advanced materials	Life sciences	Common and others ³	Total
Total segment revenue	15,547,871	8,350,251	3,736,122	627,802	819,734	29,081,780
Inter-segment revenue	554,857	-	1,111,246	5,618	56,981	1,728,702
Revenue from external customers ¹	14,993,014	8,350,251	2,624,876	622,184	762,753	27,353,078
Operating profit (loss) ²	1,417,851	(454,312)	14,445	37,199	(189,768)	825,415

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¹ Revenue from external customers consists of sales of goods. Interest income and dividend income are included in finance income.

² Management assesses the performance of the operating segments based on a measurement of operating profit of segment.

³ Common and other segments include operating segments not qualifying as a reportable segment, supporting divisions as well as R&D divisions.

The segment information on assets and liabilities as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won</i>	2020					
	Petro-chemicals	Energy solutions	Advanced materials	Life sciences	Common and others	Total
Reportable segment asset ¹	11,539,470	19,577,416	3,095,366	1,928,129	5,248,513	41,388,894
Investments in associates and joint ventures	6,604	48,350	89,525	17	164,833	309,329
Reportable segment liability ¹	3,540,685	12,024,260	1,142,234	211,806	5,679,469	22,598,454

<i>(in millions of Korean won</i>	2019					
	Petro-chemicals	Energy solutions	Advanced materials	Life sciences	Common and others	Total
Reportable segment asset ¹	10,564,216	12,091,983	3,618,226	1,906,005	5,843,996	34,024,426
Investments in associates and joint ventures	5,132	28,254	67,059	17	207,115	307,577
Reportable segment liability ¹	3,358,939	6,587,857	687,400	232,049	5,774,392	16,640,637

¹ Assets and liabilities are measured in a manner consistent with those in the financial statements, and allocated on the basis of segment operation.

The external sales and non-current assets by geographical segments from continuing operations for the years ended December 31, 2020 and 2019, and as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	Sales		Non-current assets¹	
	2020	2019	2020	2019
Korea ²	8,287,876	8,430,399	14,656,257	13,208,426
China	8,913,290	8,319,911	3,690,486	3,975,505
Asia	3,283,064	3,739,497	34,876	58,990
America	2,601,486	1,871,443	656,190	559,051
Europe	6,662,579	4,583,211	3,859,016	3,051,227
Others	328,215	408,617	-	-
Total	30,076,510	27,353,078	22,896,825	20,853,199

¹ Represents aggregate amount of property, plant and equipment, intangible assets and investment properties.

² Domestic sales include the exports made through local letters of credit.

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There is no single external customer who contributes over 10% of the Group's revenue for the years ended December 31, 2020 and 2019.

34. Assets and Liabilities Held for Sale and Discontinued Operations

34.1 Assets and Liabilities Held for Sale

Upon the approval of management, the Group decided to dispose of six lines of small pouch assembly facilities and others (June 2019), acrylic film business (December 2020), and LCD polarizer business (June 2020). The related assets and liabilities were reclassified as assets and liabilities held for sale. The disposal of small pouch assembly facility business is pending due to the delay in factory establishment by the buyer, but the transaction is expected to be completed in the first half of 2021. The disposal of acrylic film business is expected to be completed in the second half of 2021. In addition, the disposal of land acquired as part of acquisition of Farm Hannong Co., Ltd. is expected to be completed in the first half of 2021 and the disposal of LCD polarizer business has been completed in February 2021.

Details of assets and liabilities of disposal group classified as held for sale as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Assets of disposal group		
Inventories	185,693	-
Property, plant and equipment	570,374	19,573
Intangible assets	8,086	-
Others	24,919	-
Total	<u>789,072</u>	<u>19,573</u>
Liabilities of disposal group		
Borrowings and others	130,383	-
Total	<u>130,383</u>	<u>-</u>

Assets of the disposal group were measured at net fair value immediately before the initial classification as assets as held for sale and there are no other non-operating expenses (income) recognized from the measurement for the years ended December 31, 2020 and 2019.

The Group recognized cumulative losses of ₩2,095 million directly to other comprehensive income in relation to the disposal groups classified as held for sale.

34.2 Discontinued Operations

The Group decided to discontinue Glass substrate business with the resolution of the Board of Directors in January 2020 and substantially discontinued the related business as of March 2020. In addition, the Group decided to dispose of LCD polarizer business with the resolution of the Board of Directors in June 2020, and the disposal has been completed in February 2021. Accordingly, the profit and loss from the related operations are presented as discontinued operations and the comparative consolidated statements of profit or loss have been restated.

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Comprehensive income information from discontinued operation for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020		
	LCD polarizer	Glass substrate	Total
Revenue	1,312,590	43,901	1,356,491
Expense	(1,109,989)	(83,646)	(1,193,635)
Gain (loss) before income tax of discontinued operation	202,601	(39,745)	162,856
Income tax benefits (expense)	(64,213)	7,912	(56,301)
Gain (loss) after income tax of discontinued operations	138,388	(31,833)	106,555

(in millions of Korean won)

	2019		
	LCD polarizer	Glass substrate	Total
Revenue	1,252,876	57,440	1,310,316
Expense	(1,153,514)	(170,685)	(1,324,199)
Gain (loss) before income tax of discontinued operation	99,362	(113,245)	(13,883)
Income tax benefits (expense)	(35,570)	20,295	(15,275)
Gain (loss) after income tax of discontinued operations	63,792	(92,950)	(29,158)

Net cash flows from discontinued operations for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)

	2020		
	LCD polarizer	Glass substrate	Total
Net cash inflow (outflow) from operating activities	216,331	(3,963)	212,368
Net cash inflow (outflow) from investing activities	119,019	33,111	152,130
Net cash inflow (outflow) from financing activities	(323,171)	(29,148)	(352,319)

(in millions of Korean won)

	2019		
	LCD polarizer	Glass substrate	Total
Net cash inflow (outflow) from operating activities	205,943	(16,238)	189,705
Net cash outflow from investing activities	(90,404)	(38,820)	(129,224)
Net cash inflow (outflow) from financing activities	(115,793)	55,058	(60,735)

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35. Assets and Liabilities related to Contracts with Customers

Assets and liabilities related to contracts with customers as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Contract assets		
A right to recover the product	4,729	5,191
Total contract assets	<u>4,729</u>	<u>5,191</u>
Contract liabilities		
Advances in relation to revenue from the Group's main business activities	265,688	204,337
Expected services to be transferred	-	3,500
Expected customer incentives	5,394	6,400
Unearned revenue	26,036	34,247
Expected refunds	8,631	10,893
Total contract liabilities	<u>305,749</u>	<u>259,377</u>

Revenue recognized in relation to contract liabilities

The following table shows how much of the revenue recognized in the current reporting period relates to carried-forward contract liabilities and how much relates to performance obligations that were satisfied in the prior periods.

<i>(in millions of Korean won)</i>	2020	2019
Revenue recognized in the current period from the contract liability balance at the beginning of the period	179,431	81,688
Advances in relation to revenue from the Group's main business activities	162,509	75,085
Unearned revenue	13,422	2,068
Expected services to be transferred	3,500	4,535
Revenue recognized from performance obligations satisfied in previous periods	-	-

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36. Investment Properties

Details of investment properties as at December 31, 2020 and 2019, are as follows:

(in millions of Korean won)	2020			2019				
	Cost	Accumulated depreciation	Accumulated impairment	Book amount	Cost	Accumulated depreciation	Accumulated impairment	Book amount
Land	4,211	-	-	4,211	4,368	-	-	4,368
Buildings	54,457	(9,225)	(10)	45,222	61,242	(12,202)	(80)	48,960
Total	58,668	(9,225)	(10)	49,433	65,610	(12,202)	(80)	53,328

Changes in investment properties for the years ended December 31, 2020 and 2019, are as follows:

(in millions of Korean won)	2020			2019		
	Land	Building	Total	Land	Building	Total
Beginning balance	4,368	48,960	53,328	486	464	950
Acquisitions/transfers	-	2,644	2,644	3,882	49,722	53,604
Disposals/transfers	(157)	(5,221)	(5,378)	-	-	-
Depreciation	-	(1,161)	(1,161)	-	(1,226)	(1,226)
Ending balance	4,211	45,222	49,433	4,368	48,960	53,328

The fair value of investment properties is measured either by independent professional appraisers with certified qualification or measured based on official appraised value of land and available information from recent transactions of similar properties, and it is classified as 'level 3' of the fair value hierarchy. The fair value of investment properties as at December 31, 2020, is ₩51,625 million.

Rental income from investment properties under operating lease is ₩6,819 million, and operating expenses incurred for investment properties that generated rental income (including maintenance and repair expenses) are ₩1,149 million. Operating expenses incurred for investment properties that do not generate rental income (including maintenance and repair expenses) are ₩12 million.

Operating lease

Investment properties are leased to tenants under operating leases with monthly rent payments. Where considered necessary to reduce credit risk, the Group may obtain bank guarantees for the term of the lease.

Although the Group is exposed to changes in the residual value at the end of the current leases, the Group typically enters into new operating leases and therefore will not immediately realize any reduction in residual value at the end of these leases. Expectations about the future residual values are reflected in the fair value of investment properties.

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The future minimum lease payments expected to be received in relation to the above operating lease agreement for investment properties as at December 31, 2020 and 2019, are as follows:

<i>(in millions of Korean won)</i>	2020	2019
Within one year	503	6,848
Within two years	172	-
Within five years	500	-
Total	<u>1,175</u>	<u>6,848</u>

37. Events after the Reporting Period

(a) The Group decided to issue publicly offered corporate bonds at the Management Committee held on January 25, 2021. In accordance with the decision, publicly offered corporate bonds of ₩120,000 million were issued on February 19th.

<i>(in millions of Korean won)</i>	Expiry date	Amount
54-1st Debenture (non-guaranteed/public)	2024.02.19	350,000
54-2nd Debenture (non-guaranteed/public)	2026.02.19	270,000
54-3rd Debenture (non-guaranteed/public)	2028.02.19	200,000
54-4th Debenture (non-guaranteed/public)	2031.02.19	260,000
54-5th Debenture (non-guaranteed/public)	2036.02.19	120,000

(b) The sale of LCD polarizer business, which was classified as assets held for sale upon the resolution of the Board of Directors in June 2020, was completed in February 2021.

38. Approval of Issuance of the Financial Statements

The consolidated financial statements 2020 were approved for issue by the board of directors on March 4, 2021 and are subject to change with the approval of shareholders at their annual general meeting.