

LG Electronics
Consolidated Financial Statements
December 31, 2019 and 2018

LG Electronics

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December 31, 2019 and 2018

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Independent Auditor's Report

(English Translation of a Report Originally Issued in Korean)

To the Shareholders and Board of Directors of
LG Electronics Inc.

Opinion

We have audited the accompanying consolidated financial statements of LG Electronics Inc. and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as at December 31, 2019 and 2018, and the 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, 2019 and 2018, 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.

Other Matter

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

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.

(a) Impairment of goodwill and others

Reasons why the matter was determined to be a key audit matter

As disclosed in Note 13, the book amounts of goodwill and other intangible assets (brand, technology, customer relationship) recognized by business combination of ZKW Holdings GmbH, its subsidiaries and related entities (hereinafter referred to as "ZKW") were ₩542,346 million and ₩290,737 million, respectively, as at December 31, 2019, which was material in consolidated financial statements of the Group.

The Group performed an impairment test on a Cash Generating Unit (CGU) of ZKW during the current period in accordance with Korean IFRS 1036 *Impairment of Assets*.

We considered that the impairment of goodwill and others was a key audit matter given the level of management's judgments involved in the value-in-use estimation used in impairment testing are significant.

How our audit addressed the Key Audit Matter

We performed the following audit procedures on a valuation model, key assumptions and judgements related to value-in-use estimation performed by the Group. We also involved our valuation specialists when performing such audit procedures. Our audit procedures included:

- Obtaining an understanding of the accounting policies and internal controls of the Group related to impairment testing
- Testing internal controls such as the management's review and approval of business plan estimation and key assumptions of the valuation model for impairment testing
- Making inquiries on and obtaining an understanding of valuation model used by the Group, and assessing the consistency with the prior year
- Evaluating appropriateness of the business plan estimation by management by comparing business plans of ZKW used in the accounting treatment of the business combination in the prior year with actual business performance
- Obtaining an understanding of future cash flows of ZKW, and confirming that such future cash flows forecasts are consistent with the corresponding information included in business plans approved by the management
- Evaluating the appropriateness of key assumptions used in the valuation model such as discount rates, growth rates and others by comparing them with external benchmarks within the same industry and historical financial information of ZKW
- Performing a sensitivity analysis of key assumptions in order to quantify the downside changes in assumptions that could result in an impairment

(b) Impairment of investments in associates

Reasons why the matter was determined to be a key audit matter

As disclosed in Note 14, the Group held 37.9% of the shares of LG Display Co., Ltd. (hereinafter referred to as "LGD"), which was classified as an associate and accounted for using equity method. As at December 31, 2019, the book amount of the LGD shares was ₩4,182,293 million.

The Group focused on the decline of the market value of the LGD shares during the current period and performed impairment testing in accordance with Korean IFRS 1036 *Impairment of Assets*.

We considered that the impairment of investments in associates was a key audit matter given the decline of the market value of the LGD shares and the level of management's judgments involved in the value-in-use estimation of impairment testing are significant.

How our audit addressed the Key Audit Matter

We performed the following audit procedures on a valuation model, key assumptions and judgements related to value-in-use estimation performed by the Group. We also involved our valuation specialists when performing such audit procedures. Our audit procedures included:

- Obtaining an understanding of the accounting policies and internal controls of the Group related to impairment testing
- Testing internal controls such as the management's review and approval of business plan estimation and key assumptions of the valuation model for impairment testing
- Making inquiries on and obtaining an understanding of valuation model used by the Group, and assessing the consistency with the prior year
- Evaluating the appropriateness of the business plan estimation by management by comparing business plans of LGD used in the prior year impairment testing with actual business performance
- Obtaining an understanding of future cash flows of LGD, and confirming that such future cash flows forecasts are consistent with the corresponding information included in business plans approved by the management
- Evaluating appropriateness of key assumptions used in the valuation model such as discount rates, growth rates and others by comparing them with external benchmarks within the same industry and historical financial information of LGD
- Performing sensitivity analysis of key assumptions in order to quantify the downside changes in assumptions that could result in an impairment

In addition, we reviewed the workpapers on the audit procedures related to the goodwill impairment testing performed by the independent auditor of LGD (hereinafter referred to as the "component auditor") and the evaluation result of competence and objectivity of involved independent external experts in the goodwill impairment testing prepared by management of LGD.

(c) Capitalization of internally generated development costs and their impairment

Reasons why the matter was determined to be a key audit matter

As disclosed in Note 13, the book amount of internally generated development costs of the Group was ₩850,838 million (including ₩488,942 million of construction-in-progress) as at December 31, 2019, which was material in consolidated financial statements of the Group.

The Group recognized internally generated development costs which meet certain conditions defined in Korean IFRS 1038 *Intangible Assets* and applied Korean IFRS 1036 *Impairment of Assets* to determine whether they are impaired.

We considered that the capitalization of internally generated development costs and their impairment was a key audit matter given that it is related to a significant level of judgments and estimations based on management's assumptions.

How our audit addressed the Key Audit Matter

We performed the following audit procedures relating to testing for the effectiveness of internal controls related to capitalization of internally generated development costs and their impairment:

- Evaluating whether the accounting policies of the Group were in compliance with the requirements for the recognition of Korean IFRS 1038 *Intangible Assets*
- Obtaining an understanding of the internal control related to capitalization of internally generated development costs and their impairment
- Testing internal controls such as the management's review and approval of business plan estimation of individual project and key assumptions of the valuation model

We also obtained a detailed schedule of capitalized development projects with the amounts of individual project, and reconciled them to the amounts recorded in the general ledger. For certain projects selected as samples, our audit procedures included:

- Obtaining management's analysis documentations, which included conclusions made by management, interviewing with the project managers to understand and evaluate whether each project met the criteria for capitalization, and confirming that the analyses are consistent with the explanations of the project managers
- Inspecting contracts with customers, purchase orders or quotations which represented future economic benefits
- Evaluating the appropriateness of key assumptions and raw data applied to impairment analysis and testing them by examining that they are consistent with the assumptions used in the business plans of each individual project, historical business performances, strategies of management, discount rate and others
- Testing the occurrence and the accuracy of aggregation and allocation of capitalized expenditures by vouching proper evidences

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 Ki-Soo Hong, Certified Public Accountant.

Seoul, Korea
March 16, 2020

<p>This report is effective as at March 16, 2020, 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.</p>

LG Electronics
Consolidated Statements of Financial Position
December 31, 2019 and 2018

<i>(in millions of Korean won)</i>	Notes	2019	2018
Assets			
Current assets			
Cash and cash equivalents	5,6,39	4,777,368	4,270,388
Deposits held by financial institutions	5,6,39	65,971	80,516
Trade receivables	5,7,39	6,360,288	6,371,594
Other receivables	5,7,39	639,150	506,437
Other financial assets	5,8,39	5,138	8,401
Inventories	9	5,863,418	6,021,356
Current tax assets		148,340	151,778
Contract assets	10	671,519	763,776
Other current assets	11	1,207,547	1,073,396
Assets held for sale	41	14,746	115,212
		<u>19,753,485</u>	<u>19,362,854</u>
Non-current assets			
Deposits held by financial institutions	5,6,39	39,368	45,853
Other receivables	5,7,39	437,957	452,366
Other financial assets	5,8,39	96,503	78,072
Property, plant and equipment	12	14,505,419	13,333,951
Intangible assets	13	2,691,972	3,001,155
Deferred tax assets	19	1,668,430	1,410,793
Investments in associates and joint ventures	14	4,544,521	5,537,556
Investment properties	15	291	94,396
Net defined benefit assets	20	8	942
Contract assets	10	205,976	221,008
Other non-current assets	11	915,945	789,497
		<u>25,106,390</u>	<u>24,965,589</u>
Total assets		<u>44,859,875</u>	<u>44,328,443</u>
Liabilities			
Current liabilities			
Trade payables	5,39	6,820,644	7,216,739
Borrowings	5,16,39	1,643,656	1,405,116
Lease liabilities	17	274,245	-
Other payables	5,18,39	3,318,784	3,670,453
Other financial liabilities	5,8,39	7,175	3,343
Current tax liabilities		172,756	185,687
Provisions	21	824,479	672,544
Contract liabilities	10	1,219,507	1,119,806
Other current liabilities	22	3,376,670	2,861,341
		<u>17,657,916</u>	<u>17,135,029</u>
Non-current liabilities			
Borrowings	5,16,39	8,843,682	9,496,070
Lease liabilities	17	497,179	-
Other payables	5,18,39	1,202	17,995
Other financial liabilities	5,8,39	107,973	89,267
Deferred tax liabilities	19	128,407	127,014
Net defined benefit liabilities	20	592,937	398,611
Provisions	21	258,521	343,811
Contract liabilities	10	27,908	23,787
Other non-current liabilities	22	319,012	389,952
		<u>10,776,821</u>	<u>10,886,507</u>
Total liabilities		<u>28,434,737</u>	<u>28,021,536</u>
Equity			
Paid-in capital:	23		
Share capital		904,169	904,169
Share premium		3,088,179	3,088,179
Retained earnings	24	11,857,302	12,075,414
Accumulated other comprehensive loss	25	(1,309,801)	(1,604,730)
Other components of equity	26	(209,764)	(209,764)
Equity attributable to owners of the Parent Company		<u>14,330,085</u>	<u>14,253,268</u>
Non-controlling interests		<u>2,095,053</u>	<u>2,053,639</u>
Total equity		<u>16,425,138</u>	<u>16,306,907</u>
Total liabilities and equity		<u>44,859,875</u>	<u>44,328,443</u>

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Consolidated Statements of Profit or Loss
Years Ended December 31, 2019 and 2018

(in millions of Korean won, except per share amounts)

	Notes	2019	2018
Net sales	27	62,306,175	61,341,664
Cost of sales	28	46,970,606	46,260,620
Gross profit		15,335,569	15,081,044
Selling and marketing expenses	28,29	7,621,228	7,431,183
Administrative expenses	28,29	1,361,419	1,341,955
Research and development expenses	28,29	2,483,406	2,324,022
Service costs	28,29	1,433,377	1,280,593
Operating profit		2,436,139	2,703,291
Financial income	30	426,248	487,370
Financial expenses	31	714,001	796,569
Loss from equity method valuation	14	(1,052,096)	(77,161)
Other non-operating income	32	1,375,967	1,251,599
Other non-operating expenses	33	1,943,619	1,559,955
Profit before income tax		528,638	2,008,575
Income tax expense	19	348,690	535,761
Profit for the year		179,948	1,472,814
Profit for the year attributable to:			
Owners of the Parent Company		31,285	1,240,139
Non-controlling interests		148,663	232,675
		179,948	1,472,814
Earnings per share attributable to owners of the Parent Company during the year (in Korean won):	34		
Earnings per ordinary share		169	6,882
Earnings per preferred share		219	6,932

LG Electronics
Consolidated Statements of Comprehensive Income
Years Ended December 31, 2019 and 2018

<i>(in millions of Korean won)</i>	Notes	2019	2018
Profit for the year		<u>179,948</u>	<u>1,472,814</u>
Other comprehensive income (loss), net of tax			
<i>Items that will not be reclassified subsequently to profit or loss:</i>			
Remeasurements of the net defined benefit liability	20	(145,578)	(73,882)
Share of remeasurements of associates	14	32,457	1,945
Financial assets at fair value through other comprehensive income	8	8,633	(618)
<i>Items that will be reclassified subsequently to profit or loss:</i>			
Share of other comprehensive income (excluding remeasurements) of associates and joint ventures	14	39,014	(8,574)
Cash flow hedges	39	(33,418)	(35,551)
Exchange differences on translation of foreign operations		<u>296,344</u>	<u>(23,887)</u>
Other comprehensive income (loss) for the year, net of tax		<u>197,452</u>	<u>(140,567)</u>
Total comprehensive income for the year, net of tax		<u>377,400</u>	<u>1,332,247</u>
Comprehensive income for the year, net of tax, attributable to:			
Owners of the Parent Company		221,062	1,098,351
Non-controlling interests		<u>156,338</u>	<u>233,896</u>
Total comprehensive income for the year, net of tax		<u>377,400</u>	<u>1,332,247</u>

LG Electronics
Consolidated Statements of Changes in Equity
Years Ended December 31, 2019 and 2018

		Attributable to owners of the Parent Company					Non-controlling Interests	Total Equity
		Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Other Components of Equity	Total		
<i>(in millions of Korean won)</i>								
	Notes							
Balance at January 1, 2018		3,992,348	10,964,155	(1,522,478)	(209,764)	13,224,261	1,449,423	14,673,684
Changes in accounting policy		-	20,639	(17,098)	-	3,541	-	3,541
Restated total equity		<u>3,992,348</u>	<u>10,984,794</u>	<u>(1,539,576)</u>	<u>(209,764)</u>	<u>13,227,802</u>	<u>1,449,423</u>	<u>14,677,225</u>
Total comprehensive income (loss):								
Profit for the year		-	1,240,139	-	-	1,240,139	232,675	1,472,814
Remeasurements of the net defined benefit liability	20	-	(78,579)	-	-	(78,579)	4,697	(73,882)
Share of remeasurements of associates	14	-	1,945	-	-	1,945	-	1,945
Financial assets at fair value through other comprehensive income	8	-	-	(686)	-	(686)	68	(618)
Share of other comprehensive loss (excluding remeasurements) of associates and joint ventures	14	-	-	(8,574)	-	(8,574)	-	(8,574)
Cash flow hedges	39	-	-	(35,478)	-	(35,478)	(73)	(35,551)
Exchange differences on translation of foreign operations		-	-	(20,416)	-	(20,416)	(3,471)	(23,887)
Total comprehensive income (loss)		<u>-</u>	<u>1,163,505</u>	<u>(65,154)</u>	<u>-</u>	<u>1,098,351</u>	<u>233,896</u>	<u>1,332,247</u>
Transactions with owners:								
Dividends	24	-	(72,885)	-	-	(72,885)	(49,661)	(122,546)
Changes in controlling interests in subsidiaries		-	-	-	-	-	(20)	(20)
Business combination	40	-	-	-	-	-	420,001	420,001
Total transactions with owners		<u>-</u>	<u>(72,885)</u>	<u>-</u>	<u>-</u>	<u>(72,885)</u>	<u>370,320</u>	<u>297,435</u>
Balance at December 31, 2018		<u>3,992,348</u>	<u>12,075,414</u>	<u>(1,604,730)</u>	<u>(209,764)</u>	<u>14,253,268</u>	<u>2,053,639</u>	<u>16,306,907</u>
Balance at January 1, 2019		3,992,348	12,075,414	(1,604,730)	(209,764)	14,253,268	2,053,639	16,306,907
Changes in accounting policy	2	-	(8,336)	-	-	(8,336)	428	(7,908)
Restated total equity		<u>3,992,348</u>	<u>12,067,078</u>	<u>(1,604,730)</u>	<u>(209,764)</u>	<u>14,244,932</u>	<u>2,054,067</u>	<u>16,298,999</u>
Total comprehensive income (loss):								
Profit for the year		-	31,285	-	-	31,285	148,663	179,948
Remeasurements of the net defined benefit liability	20	-	(137,609)	-	-	(137,609)	(7,969)	(145,578)
Share of remeasurements of associates	14	-	32,457	-	-	32,457	-	32,457
Financial assets at fair value through other comprehensive income	8	-	-	8,366	-	8,366	267	8,633
Share of other comprehensive income (excluding remeasurements) of associates and joint ventures	14	-	-	39,014	-	39,014	-	39,014
Cash flow hedges	39	-	-	(29,408)	-	(29,408)	(4,010)	(33,418)
Exchange differences on translation of foreign operations		-	-	276,957	-	276,957	19,387	296,344
Total comprehensive income (loss)		<u>-</u>	<u>(73,867)</u>	<u>294,929</u>	<u>-</u>	<u>221,062</u>	<u>156,338</u>	<u>377,400</u>
Transactions with owners:								
Dividends	24	-	(135,909)	-	-	(135,909)	(94,726)	(230,635)
Changes in controlling interests in subsidiaries		-	-	-	-	-	(280)	(280)
Transfer of business	35	-	-	-	-	-	(20,346)	(20,346)
Total transactions with owners		<u>-</u>	<u>(135,909)</u>	<u>-</u>	<u>-</u>	<u>(135,909)</u>	<u>(115,352)</u>	<u>(251,261)</u>
Balance at December 31, 2019		<u>3,992,348</u>	<u>11,857,302</u>	<u>(1,309,801)</u>	<u>(209,764)</u>	<u>14,330,085</u>	<u>2,095,053</u>	<u>16,425,138</u>

LG Electronics
Consolidated Statements of Cash Flows
Years Ended December 31, 2019 and 2018

<i>(in millions of Korean won)</i>	Notes	2019	2018
Cash flows from operating activities			
Cash generated from operations	35	4,538,942	5,292,811
Interest received		129,364	100,503
Interest paid		(411,189)	(425,816)
Dividend received		1,337	68,717
Income tax paid		(569,290)	(494,649)
Net cash inflow from operating activities		<u>3,689,164</u>	<u>4,541,566</u>
Cash flows from investing activities			
Decrease in deposits held by financial institutions		28,345	33,742
Decrease in other receivables		121,074	140,267
Proceeds from redemption and disposal of other financial assets		69,738	65,516
Proceeds from disposal of property, plant and equipment		223,379	147,541
Proceeds from disposal of intangible assets		4,214	2,751
Proceeds from disposal of and recovery of investments in associates and joint ventures		30,922	8
Proceeds from disposal of investment properties		99,663	-
Proceeds from disposal of assets held for sale		110,814	39,092
Transfer of business	35	173,028	49,618
Increase in deposits held by financial institutions		(7,062)	(27,161)
Increase in other receivables		(109,232)	(138,587)
Acquisition of other financial assets		(72,087)	(63,166)
Acquisition of property, plant and equipment		(2,072,127)	(3,166,489)
Acquisition of intangible assets		(472,472)	(677,882)
Acquisition of investments in associates and joint ventures		(18,813)	(87,510)
Business combination	40	(192,641)	(738,029)
Net cash outflow from investing activities		<u>(2,083,257)</u>	<u>(4,420,289)</u>
Cash flows from financing activities			
Proceeds from borrowings		735,288	2,279,823
Repayments of borrowings		(1,344,522)	(1,338,002)
Repayments of lease liabilities		(276,814)	-
Dividends paid		(230,915)	(122,567)
Net cash inflow (outflow) from financing activities		<u>(1,116,963)</u>	<u>819,254</u>
Effects of exchange rate changes on cash and cash equivalents		18,036	(20,740)
Net increase in cash and cash equivalents		<u>506,980</u>	<u>919,791</u>
Cash and cash equivalents at the beginning of the year	6	4,270,388	3,350,597
Cash and cash equivalents at the end of the year	6	<u>4,777,368</u>	<u>4,270,388</u>

LG Electronics

Notes to the Consolidated Financial Statements

December 31, 2019 and 2018

1. General Information

LG Electronics Inc. (the “Company” or “Parent Company”) was spun off from LG Electronics Investment Ltd. on April 1, 2002. The Parent Company’s shares were listed on the Korea Exchange on April 22, 2002, and some of its preferred shares, in the form of global depositary receipts (“GDRs”), are listed on the London Stock Exchange at the end of the reporting period. The Parent Company is domiciled in Korea at Yeoui-daero, Yeongdeungpo-gu, Seoul.

As at December 31, 2019, LG Corp. owns 33.7% of the Parent Company’s total shares, excluding preferred shares, while financial institutions, foreign investors and others own the rest.

The Parent Company and its subsidiaries (collectively referred to as the “Group”) operate following six major business segments: Home Appliance & Air Solution segment manufactures and sells refrigerators, washing machines, vacuum cleaners, and residential and commercial air conditioners; Home Entertainment segment manufactures and sells TVs, monitors and digital media products; Mobile Communications segment manufactures and sells mobile communications equipment; Vehicle component Solutions segment designs and manufactures automobile parts; Business Solutions segment manufactures and sells information displays, solar panels and others; and LG Innotek Co., Ltd. operates LED, optics solutions, substrate materials and automotive components businesses. As at December 31, 2019, the Parent Company has 135 subsidiaries (Note 1 (a)), 18 associates and joint ventures (Note 14).

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Notes to the Consolidated Financial Statements
December 31, 2019 and 2018

(a) Consolidated subsidiaries as at December 31, 2019 and 2018, are as follows:

Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
The Republic of Korea	Korea	Hiplaza Co., Ltd.	100.0%	-	100.0%	-	December	Wholesales and retails of electronic products	More than half of voting rights
	Korea	ACE R&A Co., Ltd.	100.0%	-	100.0%	-	December	Production and sales of air conditioner	More than half of voting rights
	Korea	Hi M Solutek Co., Ltd.	100.0%	-	100.0%	-	December	Maintenance	More than half of voting rights
	Korea	Hi Teleservice Co., Ltd.	100.0%	-	100.0%	-	December	Marketing services	More than half of voting rights
	Korea	LG Innotek Co., Ltd. ¹	40.8%	59.2%	40.8%	59.2%	December	Production and sales of electrical/electronic materials	De-facto control
	Korea	LG Innotek Alliance Fund ¹	40.4%	59.6%	40.4%	59.6%	December	Investment	De-facto control
	Korea	Innowith Co., Ltd. ¹	40.8%	59.2%	40.8%	59.2%	December	Services	De-facto control
	Korea	Hanuri Co., Ltd.	100.0%	-	100.0%	-	December	Business facility maintenance	More than half of voting rights
	Korea	ZKW Lighting Systems Korea Co., Ltd.	70.0%	30.0%	-	-	December	R&D	More than half of voting rights
China	China	Inspur LG Digital Mobile Communications Co., Ltd.(LGEYT)	70.0%	30.0%	70.0%	30.0%	December	Production of electronic products	More than half of voting rights
	China	LG Electronics (China) Co., Ltd.(LGECH)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	China	LG Electronics (China) Research and Development Center Co., Ltd.(LGERD)	100.0%	-	100.0%	-	December	R&D	More than half of voting rights
	China	LG Electronics (Hangzhou) Co., Ltd.(LGEHN)	70.0%	30.0%	70.0%	30.0%	December	Production of electronic products	More than half of voting rights

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	China	LG Electronics (Kunshan) Co.,Ltd.(LGEKS)	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
	China	LG Electronics (Shanghai) Research and Development Center Co., Ltd.(LGCRC)	100.0%	-	100.0%	-	December	R&D	More than half of voting rights
	China	LG Electronics Air-Conditioning(Shandong) Co., Ltd.(LGEQA)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	China	LG Electronics HK Ltd.(LGEHK)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	China	LG Electronics Huizhou Ltd.(LGEHZ)	80.0%	20.0%	80.0%	20.0%	December	Production of electronic products	More than half of voting rights
	China	LG Electronics Nanjing Battery Pack Co.,Ltd.(LGENB) ²	50.0%	50.0%	50.0%	50.0%	December	Production of electronic products	De-facto control
	China	LG Electronics Nanjing New Technology Co.,LTD(LGENT)	70.0%	30.0%	70.0%	30.0%	December	Production of electronic products	More than half of voting rights
	China	LG Electronics Nanjing Vehicle Components Co.,Ltd.(LGENV)	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
	China	LG Electronics Qinhuangdao Co.LTD(LGEQH)	100.0%	-	100.0%	-	December	Production of casting	More than half of voting rights
	China	LG Electronics Shenyang Inc.(LGESEY)	78.9%	21.1%	78.9%	21.1%	December	Production of electronic products	More than half of voting rights
	China	LG Electronics Tianjin Appliances Co., Ltd.(LGETA)	80.0%	20.0%	80.0%	20.0%	December	Production of electronic products	More than half of voting rights
	China	NanJing LG-Panda Appliances Co., Ltd.(LGEPN)	70.0%	30.0%	70.0%	30.0%	December	Production of electronic products	More than half of voting rights
	China	Qingdao LG Inspur Digital Communication Co., Ltd.(LGEQD)	70.0%	30.0%	70.0%	30.0%	December	Production of electronic products	More than half of voting rights

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	China	Taizhou LG Electronics Refrigeration Co., Ltd.(LGETR)	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
	China	Tianjin Lijie cartridge heater Co., Ltd.(LGETL)	100.0%	-	100.0%	-	December	Production of heater	More than half of voting rights
	China	QINGGONGLIAN ELECTRICAL INSTALLATION ENGINEERING CO.,LTD.	80.0%	20.0%	-	-	December	Installation and sales of air conditioners	More than half of voting rights
	China	LG Innotek Yantai Co.,Ltd.(LGITYT) ¹	40.8%	59.2%	40.8%	59.2%	December	Production and sales of electrical/electronic materials	De-facto control
	China	LG Innotek Huizhou Co.,Ltd.(LGITHZ) ¹	40.8%	59.2%	40.8%	59.2%	December	Production and sales of electrical/electronic materials	De-facto control
	China	LG Innotek Trading (Shanghai) Co.,Ltd.(LGITSH) ¹	40.8%	59.2%	40.8%	59.2%	December	Sales of electrical/electronic materials	De-facto control
	China	ZKW Lighting Systems (Dalian) Co. Ltd.	70.0%	30.0%	70.0%	30.0%	December	Production and sales of vehicle components	More than half of voting rights
	China	HIPLAZA (Shenyang) Trading Co., Ltd.	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
Asia	Australia	LG Electronics Australia Pty, Ltd.(LGEAP)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	India	LG Electronics India Pvt. Ltd.(LGEIL) ⁴	100.0%	-	100.0%	-	March	Production and sales of electronic products	More than half of voting rights
	Japan	LG Electronics Japan Lab. Inc.(LGJL)	100.0%	-	100.0%	-	December	R&D	More than half of voting rights
	Japan	LG Electronics Japan, Inc.(LGEJP)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Malaysia	LG Electronics (M) Sdn. Bhd(LGEML)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	Philippines	LG Electronics Philippines Inc.(LGEPH)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Singapore	LG Electronics Singapore PTE LTD.(LGESL)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Taiwan	LG Electronics Taiwan Taipei Co., Ltd.(LGETT)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Thailand	LG Electronics Thailand Co., Ltd.(LGETH)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	India	LG Soft India Private Limited.(LGS1) ⁴	100.0%	-	100.0%	-	March	R&D	More than half of voting rights
	Indonesia	P.T. LG Electronics Indonesia(LGEIN)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	Philippines	LG Electronics Pasig Inc. ³	38.0%	62.0%	38.0%	62.0%	December	Real estates	De-facto control
	Indonesia	PT. LG Innotek Indonesia(LGITIN) ¹	40.8%	59.2%	40.8%	59.2%	December	Production and sales of electrical/electronic materials	De-facto control
	Taiwan	LG Innotek (Taiwan) Co., Ltd.(LGITTW) ¹	40.8%	59.2%	40.8%	59.2%	December	Sales of electrical/electronic materials	De-facto control
	Vietnam	LG Innotek Vietnam Hai Phong Co.,Ltd.(LGITVH) ¹	40.8%	59.2%	40.8%	59.2%	December	Production and sales of electrical/electronic materials	De-facto control
	Malaysia	V-ENS (M) Sdn. Bhd.	100.0%	-	100.0%	-	December	Automotive engineering	More than half of voting rights
	Vietnam	LG Electronics Vietnam Haiphong Co., Ltd.(LGEVH)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	Indonesia	PT.LG Electronics Service Indonesia(LGEID)	99.8%	0.2%	99.8%	0.2%	December	Services	More than half of voting rights
	Philippines	HI-M SOLUTEK PHILIPPINES INC.	100.0%	-	100.0%	-	December	Services	More than half of voting rights

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	Vietnam	HI-M SOLUTEK VIETNAM CO., LTD.	100.0%	-	100.0%	-	December	Services	More than half of voting rights
Europe	Netherlands	LG Electronics Benelux Sales B.V.(LGEBN)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Germany	LG Electronics Deutschland GmbH(LGEDG)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Spain	LG Electronics Espana S.A.(LGEES)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Netherlands	LG Electronics European Holding B.V.(LGEEH)	100.0%	-	100.0%	-	December	European holding	More than half of voting rights
	Netherlands	LG Electronics European Shared Service Center B.V.(LGESC)	100.0%	-	100.0%	-	December	Services	More than half of voting rights
	France	LG Electronics France S.A.S(LGEFS)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Greece	LG Electronics Hellas S.A(LGEHS)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Italy	LG Electronics Italia S.P.A.(LGEIS)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Latvia	LG Electronics Latvia LTD(LGELA)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Hungary	LG Electronics Magyar K.F.T.(LGEMK)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Poland	LG Electronics Mlawa Sp. z.O.O.(LGEMA)	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
	Sweden	LG Electronics Nordic AB(LGESW)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Poland	LG Electronics Polska Sp. Z.O.O(LGEPL)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Portugal	LG Electronics Portugal S.A.(LGEPT)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	UK	LG Electronics U.K. LTD(LGEUK)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Poland	LG Electronics Wroclaw Sp. z.O.O.(LGEWR)	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
	Finland	LG Electronics Finland Lab Oy(LGEFL)	100.0%	-	100.0%	-	December	R&D	More than half of voting rights
	Poland	LG Innotek Poland Sp. z.o.o.(LGITPO) ¹	40.8%	59.2%	40.8%	59.2%	December	Production and sales of electrical/electronic materials	De-facto control
	Austria	ZKW Holding GmbH	70.0%	30.0%	70.0%	30.0%	December	Holding company	More than half of voting rights
	Austria	ZKW Group GmbH	70.0%	30.0%	70.0%	30.0%	December	Services	More than half of voting rights
	Austria	ZKW Elektronik GmbH	70.0%	30.0%	70.0%	30.0%	December	Production and sales of vehicle components	More than half of voting rights
	Austria	ZKW Lichtsysteme GmbH	70.0%	30.0%	70.0%	30.0%	December	Production and sales of vehicle components	More than half of voting rights
	Austria	ZKW Austria Immobilien Holding GmbH ⁵	70.0%	30.0%	70.0%	30.0%	December	Holding company	More than half of voting rights
	Austria	ZKW Austria Immobilien GmbH ⁵	70.0%	30.0%	70.0%	30.0%	December	Real estates	More than half of voting rights
	Slovakia	ZKW Slovakia s.r.o.	70.0%	30.0%	70.0%	30.0%	December	Production and sales of vehicle components	More than half of voting rights
	Czech	KES - kabelove a elektricke systemy spol. s.r.o.	70.0%	30.0%	70.0%	30.0%	December	Production and sales of vehicle components	More than half of voting rights

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	Poland	KES Poland Sp.z o.o.	70.0%	30.0%	70.0%	30.0%	December	Production and sales of vehicle components	More than half of voting rights
North America	USA	LG Electronics Miami Inc.(LGEMI)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	USA	LG Electronics Alabama Inc.(LGEAI)	100.0%	-	100.0%	-	December	Services	More than half of voting rights
	Canada	LG Electronics Canada, Inc.(LGECI)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Mexico	LG Electronics Mexicali, S.A. DE C.V.(LGEMX)	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
	Mexico	LG Electronics Mexico S.A. DE C.V.(LGEMS)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	USA	LG Electronics Mobile Research U.S.A., L.L.C.(LGEMR)	100.0%	-	100.0%	-	December	R&D	More than half of voting rights
	Mexico	LG Electronics Monterrey Mexico S.A.de C.V.(LGEMM)	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
	Mexico	LG Electronics Reynosa S.A. DE C.V.(LGERS)	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
	USA	LG Electronics U.S.A., Inc.(LGEUS)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Mexico	Servicios Integrales LG S.A DE C.V	100.0%	-	100.0%	-	December	Services	More than half of voting rights
	Mexico	Servicios LG Monterrey Mexico S.A. de C.V.	100.0%	-	100.0%	-	December	Services	More than half of voting rights
	USA	Zenith Electronics Corporation of Pennsylvania	100.0%	-	100.0%	-	December	Production of electronic products	More than half of voting rights
USA	Zenith Electronics LLC(Zenith)	100.0%	-	100.0%	-	December	R&D	More than half of voting rights	

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	USA	LG Innotek USA, Inc.(LGITUS) ¹	40.8%	59.2%	40.8%	59.2%	December	Sales of electrical/electronic materials	De-facto control
	Mexico	LG Innotek Mexico SA DE CV(LGITMX) ¹	40.8%	59.2%	40.8%	59.2%	December	Production and sales of electrical/electronic materials	De-facto control
	USA	LG Electronics Vehicle Components U.S.A, LLC(LGEVU)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	USA	LGEUS Power, LLC	100.0%	-	100.0%	-	December	Investment of solar power plant	More than half of voting rights
	USA	LG Electronics Fund I LLC	100.0%	-	100.0%	-	December	Investment in technology start-ups	More than half of voting rights
	USA	LG Technology Ventures LLC	100.0%	-	100.0%	-	December	Services	More than half of voting rights
	USA	LG CORP. U.S.A.	100.0%	-	-	-	December	Real estates	More than half of voting rights
	USA	ZKW Lighting Systems USA, Inc.	70.0%	30.0%	70.0%	30.0%	December	Sales of vehicle components	More than half of voting rights
	Mexico	ZKW Mexico Inmobiliaria, S.A. de C.V.	70.0%	30.0%	70.0%	30.0%	December	Real estates	More than half of voting rights
	Mexico	ZKW Mexico, S.A. de C.V.	70.0%	30.0%	70.0%	30.0%	December	Production and sales of vehicle components	More than half of voting rights
	Mexico	ZKW Mexico Servicios, S.A. de C.V.	70.0%	30.0%	70.0%	30.0%	December	Services	More than half of voting rights
South America	Argentina	LG Electronics Argentina S.A.(LGEAR)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Colombia	LG Electronics Colombia Limitada(LGECB)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Brazil	LG Electronics do Brasil Ltda.(LGEBR)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	Honduras	LG Electronics Honduras S.de R.L. ²	20.0%	80.0%	20.0%	80.0%	December	Sales of electronic products	De-facto control
	Chile	LG Electronics Inc Chile Limitada(LGECL)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Panama	LG Electronics Panama, S.A.(LGEPS)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Peru	LG Electronics Peru S.A.(LGEPR)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Venezuela	LG Electronics Venezuela S.A.(LGEVZ)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Panama	LG Consulting corp.	100.0%	-	100.0%	-	December	Services	More than half of voting rights
	Guatemala	LG Electronics Guatemala S.A.	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
Middle East and Africa	Angola	LG Electronics Angola Limitada(LGEAO)	100.0%	-	100.0%	-	December	Sales and services of electronic products	More than half of voting rights
	Jordan	LG Electronics (Levant) Jordan(LGELF)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	UAE	LG Electronics Africa Logistics FZE(LGEAF)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Algeria	LG Electronics Algeria SARL(LGEAS)	70.0%	30.0%	70.0%	30.0%	December	Sales of electronic products	More than half of voting rights
	UAE	LG Electronics Dubai FZE(LGEDF)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Egypt	LG Electronics Egypt S.A.E(LGEEG)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	UAE	LG Electronics Gulf FZE(LGEGF)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	UAE	LG Electronics Middle East Co., Ltd.(LGEME)	100.0%	-	100.0%	-	December	Services	More than half of voting rights

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Territory	Location	Subsidiary	December 31, 2019		December 31, 2018		Closing month	Major business	Basis of control
			Percentage of ownership		Percentage of ownership				
			Controlling interest	Non-controlling interest	Controlling interest	Non-controlling interest			
	Morocco	LG Electronics Morocco S.A.R.L.(LGEMC)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Nigeria	LG Electronics Nigeria Limited(LGENI)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Tunisia	LG Electronics North Africa Service Company S.A.R.L	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	UAE	LG Electronics Overseas Trading FZE(LGEOT)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	South Africa	LG Electronics S.A. (Pty) Ltd.(LGESA)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	Turkey	LG Electronics Ticaret A.S.(LGETK)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights
	Saudi Arabia	LG-Shaker Co.Ltd.(LGESR)	51.0%	49.0%	51.0%	49.0%	December	Production of electronic products	More than half of voting rights
	Saudi Arabia	LG Electronics Saudi Arabia LLC	100.0%	-	100.0%	-	December	Services	More than half of voting rights
	UAE	HI M SOLUTEK HVAC SERVICE AND MAINTENANCE LLC	100.0%	-	100.0%	-	December	Services	More than half of voting rights
Other	Kazakhstan	JSC Electronics Almaty Kazakhstan(LGEAK)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	Russia	LG Electronics RUS, LLC(LGERA)	100.0%	-	100.0%	-	December	Production and sales of electronic products	More than half of voting rights
	Ukraine	LG Electronics Ukraine(LGEUR)	100.0%	-	100.0%	-	December	Sales of electronic products	More than half of voting rights

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- ¹ Although the Group owns less than half of the voting rights of LG Innotek Co., Ltd. which is an intermediate parent company of its subsidiaries, the Group is deemed to have control over LG Innotek Co., Ltd. due to the size and dispersion of holdings of the other shareholders and their voting patterns at previous shareholders' meetings (Note 3).
- ² Although the Group owns less than a majority of the effective percentage of ownership of the entity, the Group has concluded that the Group controls the entity. This is because the Group has a right to appoint or dismiss the majority of its Board of Directors by virtue of an agreement with the other investors.
- ³ Although the Group owns less than a majority of the effective percentage of ownership of the entity, the Group has concluded that the Group controls the entity. This is because the Group has the substantial power to direct the relevant activities and is exposed to variable returns.
- ⁴ In the preparation of the consolidated financial statements, the financial statements for the 12-month period ended December 31, 2019 were used for those subsidiaries with different fiscal year ends.
- ⁵ Mommert Gewerbeimmobilien Verwaltungs GmbH and Mommert Immobilien GmbH changed its name to ZKW Austria Immobilien Holding GmbH and ZKW Austria Immobilien GmbH, respectively, during the year ended December 31, 2019.

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(b) Financial information of major subsidiaries as at December 31, 2019 and 2018, and for the years ended December 31, 2019 and 2018, is as follows (before elimination of intercompany transactions):

<i>(in millions of Korean won)</i>	2019				
	Assets	Liabilities	Equity	Sales	Profit (loss) for the year
LG Innotek Co., Ltd.	5,070,125	3,093,240	1,976,885	8,042,528	80,658
LG Electronics U.S.A., Inc.(LGEUS)	3,814,587	3,766,220	48,367	11,554,230	(227,850)
LG Electronics European Shared Service Center B.V.(LGESC)	2,187,220	2,154,955	32,265	486,702	1,328
LG Electronics Reynosa S.A. DE C.V.(LGERs)	1,615,801	546,341	1,069,460	3,090,342	311,769
Zenith Electronics Corporation(Zenith)	1,167,950	36,033	1,131,917	118,148	33,717
LG Electronics Mlawa Sp. z.O.O.(LGEMA)	1,245,535	747,770	497,765	2,792,718	67,949
LG Electronics do Brasil Ltda.(LGEBR)	1,105,865	520,535	585,330	2,088,580	53,506
LG Electronics Vietnam Haiphong Co., Ltd.(LGEVH)	1,343,056	823,654	519,402	4,101,008	178,711
LG Electronics India Pvt. Ltd.(LGEIL)	1,388,314	427,032	961,282	2,689,243	310,986
LG Electronics (China) Co., Ltd.(LGECH)	722,510	830,334	(107,824)	323,864	15,715
LG Electronics RUS, LLC(LGERA)	997,741	359,536	638,205	1,486,756	88,869
LG Innotek Vietnam Hai Phong Co.,Ltd.	830,101	614,326	215,775	1,489,375	80,488
Hiplaza Co., Ltd.	886,765	708,045	178,720	2,828,000	1,471
ZKW Lichtsysteme GmbH	821,432	441,363	380,069	898,127	41,856
LG Electronics Tianjin Appliances Co., Ltd.(LGETA)	648,200	368,298	279,902	1,301,208	50,704
ZKW Group GmbH	640,509	340,845	299,664	3,032	29,530
Inspur LG Digital Mobile Communications Co., Ltd.(LGEYT)	221,221	28,732	192,489	584,577	13,394
Taizhou LG Electronics Refrigeration Co., Ltd.(LGETR)	607,191	411,382	195,809	1,158,517	40,291
P.T. LG Electronics Indonesia(LGEIN)	589,151	215,266	373,885	1,349,015	65,682
LG Electronics Deutschland GmbH(LGEDG)	630,537	500,620	129,917	2,191,881	24,001
LG Electronics Thailand Co., Ltd.(LGETH)	589,208	244,389	344,819	1,242,288	44,509
LG Electronics Nanjing New Technology co.,LTD(LGENT)	482,000	273,422	208,578	1,385,210	43,991

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<i>(in millions of Korean won)</i>	2018				
	Assets	Liabilities	Equity	Sales	Profit (loss) for the year
LG Innotek Co., Ltd.	5,062,817	3,140,216	1,922,601	7,607,398	128,118
LG Electronics U.S.A., Inc.(LGEUS)	3,581,129	3,495,389	85,740	9,629,786	(216,883)
LG Electronics European Shared Service Center B.V.(LGESC)	1,853,240	1,822,647	30,593	223,260	1,164
LG Electronics Reynosa S.A. DE C.V.(LGERS)	1,298,166	565,836	732,330	2,712,182	198,988
Zenith Electronics Corporation(Zenith)	1,080,075	18,770	1,061,305	42,524	(19,166)
LG Electronics Mlawa Sp. z.O.O.(LGEMA)	1,068,222	648,999	419,223	2,467,782	40,165
LG Electronics do Brasil Ltda.(LGEBR)	1,003,964	468,001	535,963	1,926,146	128,573
LG Electronics Vietnam Haiphong Co., Ltd.(LGEVH)	1,002,255	671,022	331,233	2,912,499	100,432
LG Electronics India Pvt. Ltd.(LGEIL)	991,303	343,183	648,120	2,470,306	241,664
LG Electronics (China) Co., Ltd.(LGECH)	890,353	1,011,156	(120,803)	366,636	3,486
LG Electronics RUS, LLC(LGERA)	791,066	268,912	522,154	1,443,463	135,762
LG Innotek Vietnam Hai Phong Co.,Ltd.	734,010	601,413	132,597	1,080,063	46,376
Hiplaza Co., Ltd.	607,368	434,258	173,110	2,688,932	8,190
ZKW Lichtsysteme GmbH ¹	600,317	258,424	341,893	374,423	16,806
LG Electronics Tianjin Appliances Co., Ltd.(LGETA)	590,825	351,650	239,175	1,119,479	21,076
ZKW Group GmbH ¹	565,125	298,436	266,689	1,677	(10,461)
Inspur LG Digital Mobile Communications Co., Ltd.(LGEYT)	562,263	286,881	275,382	2,084,738	210,518
Taizhou LG Electronics Refrigeration Co., Ltd.(LGETR)	531,273	377,870	153,403	1,059,886	23,746
P.T. LG Electronics Indonesia(LGEIN)	516,151	218,568	297,583	1,213,874	44,887
LG Electronics Deutschland GmbH(LGEDG)	497,260	391,178	106,082	1,986,374	13,434
LG Electronics Thailand Co., Ltd.(LGETH)	490,113	223,418	266,695	1,074,558	22,031
LG Electronics Nanjing New Technology co.,LTD(LGENT)	479,292	279,917	199,375	1,286,070	40,296

¹ The amounts of sales and profit for the year after the business combination are presented.

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(c) Information of subsidiaries with material non-controlling interests is as follows:

- LG Innotek Co., Ltd. and its subsidiaries

i) Percentage of ownership of non-controlling interests and accumulated non-controlling interests

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Percentage of ownership in non-controlling interests	59.2%	59.2%
Accumulated non-controlling interests	1,319,261	1,259,456

ii) Profit and dividends attributable to non-controlling interests for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
Profit to non-controlling interests	69,221	101,981
Dividends to non-controlling interests	4,204	3,503

iii) Summarized consolidated statements of financial position of subsidiaries with material non-controlling interests, are as follows (before elimination of intercompany transactions):

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Current assets	2,530,944	2,233,328
Non-current assets	3,239,836	3,522,739
Total assets	5,770,780	5,756,067
Current liabilities	2,046,234	1,584,398
Non-current liabilities	1,519,942	2,053,434
Total liabilities	3,566,176	3,637,832
Equity attributable to owners of LG Innotek Co., Ltd.	2,204,604	2,118,233
Non-controlling interests	-	2
Total equity	2,204,604	2,118,235

iv) Summarized consolidated statements of comprehensive income of subsidiaries with material non-controlling interests for the years ended December 31, 2019 and 2018, are as follows (before elimination of intercompany transactions):

<i>(in millions of Korean won)</i>	2019	2018
Net sales	8,302,068	7,982,104
Profit for the year	102,300	163,100
Other comprehensive income (loss), net of tax	(8,832)	10,269
Total comprehensive income, net of tax	93,468	173,369

v) Summarized consolidated statements of cash flows of subsidiaries with material non-controlling interests for the years ended December 31, 2019 and 2018, are as follows (before elimination of intercompany transactions):

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<i>(in millions of Korean won)</i>	2019	2018
Cash flows from operating activities	769,041	1,062,343
Cash flows from investing activities	(354,331)	(1,414,462)
Cash flows from financing activities	(238,874)	603,612
Effects of exchange rate changes on cash and cash equivalents	2,492	221
Net increase in cash and cash equivalents	178,328	251,714
Cash and cash equivalents at the beginning of year	621,247	369,533
Cash and cash equivalents at the end of year	799,575	621,247

(d) Significant restrictions on subsidiaries

i) Significant restrictions on ability to use the assets and settle the liabilities of the Group

Cash and other short-term financial instruments held by subsidiaries in Egypt, Algeria, Russia and Kazakhstan are subject to exchange control regulations of each relevant country. Accordingly, there are transfer limits on their cash and short-term financial instruments from these countries.

ii) The nature and extent to which the protective rights of non-controlling interest can restrict the use of the assets and settlement of the liabilities of the Group are as follows:

Subsidiary	The nature and extent of the protective rights for non-controlling interest
LG-Shaker Co., Ltd.(LGESR)	An unanimous approval is required for the confirmation of the financial statements and dividend declaration.

(e) Changes in the Parent Company's interest in subsidiaries

There are no changes in the Parent Company's interest in subsidiaries without the loss of control for the years ended December 31, 2019 and 2018.

(f) Subsidiaries newly included in the scope of preparation of consolidated financial statements for the year ended December 31, 2019, are:

Subsidiary	Reason	Country	Percentage of ownership	Closing month	Major business
QINGGONGLIAN ELECTRICAL INSTALLATION ENGINEERING CO.,LTD.	Newly acquired	China	80%	December	Installation and sales of air conditioners
ZKW Lighting Systems Korea Co., Ltd.	Newly established	Korea	70%	December	R&D
LG CORP. U.S.A.	Newly acquired	USA	100%	December	Real estates

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- (g) Subsidiaries excluded from the scope of preparation of consolidated financial statements for the year ended December 31, 2019, are:

Subsidiary	Reason	Country
LG Electronics Service Kenya Limited(LGESK)	Liquidation	Kenya
LGE Alliance Fund	Liquidation	Korea
LGE Alliance Fund II	Liquidation	Korea
EASYTEC GLOBAL SERVICES INNOVATION LIMITED	Liquidation	Nigeria
LG Hitachi Water Solution Co., Ltd.	Disposal	Korea
Hi Entech Co., Ltd.	Disposal	Korea
HiEntech (Tianjin) Co., LTD.	Disposal	China

- (h) Gain or loss resulted from loss of control

During the year ended December 31, 2019, the Group disposed shares of LG Hitachi Water Solution Co., Ltd., Hi Entech Co., Ltd. and HiEntech (Tianjin) Co., LTD., and recognized gain on transfer of business amounting to ₩119,843 million. There are no gain or loss recognized from the loss of control with regard to liquidation of LGE Alliance Fund, LGE Alliance Fund II, LG Electronics Service Kenya Limited and EASYTEC GLOBAL SERVICES INNOVATION LIMITED.

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2. Significant Accounting Policies

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

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.

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

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

The preparation of consolidated financial statements requires the use of critical accounting estimates. Management also needs to exercise judgment 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 3.

Changes in Accounting Policies and Disclosures

(a) New and amended standards and interpretations effective for the financial year beginning January 1, 2019.

- Enactment of Korean IFRS 1116 *Leases*

Korean IFRS 1116 *Leases* replaces Korean IFRS 1017 *Leases*, Interpretation 2104 *Determining whether an Arrangement contains a Lease*, Interpretation 2015 *Operating Leases-Incentives*, and Interpretation 2027 *Evaluating the Substance of Transactions Involving the Legal Form of a Lease*.

At inception of a contract, the Group shall assess whether the contract is, or contains, a lease. Also, at the date of initial application, the Group shall assess whether the contract is, or contains, a lease in accordance with the standard. For a contract that is, or contains, a lease, a lessee or a lessor shall account for each lease component within the contract as a lease separately from non-lease components of the contract.

A lessee is required to recognize a right-of-use asset representing its right to use the underlying

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leased asset and a lease liability representing its obligation to make lease payments. The Group elected not to apply the requirements to short-term lease (a lease term of 12 months or less at the commencement date) and low-value assets (e.g. underlying assets below \$5,000).

Lessor accounting treatment did not change significantly from current Korean IFRS 1017 *Leases*.

Lessee accounting

A lessee shall apply this standard to its leases either:

- retrospectively to each prior reporting period presented applying Korean IFRS 1008 *Accounting Policies, Changes in Accounting Estimates and Errors* (Full retrospective application); or
- retrospectively with the cumulative effect of initially applying the standard recognized at the date of initial application (Cumulative catch-up method).

The Group applied Korean IFRS 1116 retrospectively with the cumulative effect of initially applying the standard as at January 1, 2019. The Group did not restate any comparative information. Instead, the cumulative effect of applying the standard was recognized as an adjustment to the opening balance of retained earnings at the date of initial application.

Under Korean IFRS 1116, with implementation of a single lease model, a lessee is required to recognize assets and liabilities for all lease whose lease terms are over 12 months and underlying assets are not low-value assets. A lessee is required to recognize a right-of-use asset and a lease liability representing its obligation to make lease payments.

On adoption of Korean IFRS 1116, the Group recognized right-of-use assets and lease liabilities in relation to leases which had previously been classified as 'operating leases' under the principles of Korean IFRS 1017. These liabilities were measured at the present value of the remaining lease payments, discounted using the lessee's incremental borrowing rate as at January 1, 2019. The lessee's weighted average incremental borrowing rate applied to the lease liabilities on January 1, 2019 was 4.1%.

For leases previously classified as 'finance leases', the Group recognized the carrying amount of the lease asset and lease liability immediately before transition as the carrying amount of the right-of-use asset and the lease liability at the date of initial application. The measurement principles of Korean IFRS 1116 are only applied after that date. The remeasurements to the lease liabilities were recognized as adjustments to the related right-of-use assets immediately after the date of initial application.

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As at January 1, 2019, the date of initial application, further details on the impact of the application of the standard are as follows:

<i>(in millions of Korean won)</i>	January 1, 2019
Operating lease commitments disclosed as at December 31, 2018	722,451
Discounted amount using the lessee's incremental borrowing rate of at the date of initial application	690,429
Add: finance lease liabilities recognized as at December 31, 2018	18,662
Less: short-term lease payments recognized on a straight-line basis as expenses	(77,618)
Less: low-value asset lease payments recognized on a straight-line basis as expenses	(9,014)
Lease liabilities recognized as at January 1, 2019	622,459
<i>(in millions of Korean won)</i>	January 1, 2019
Of which are:	
Current lease liabilities	177,456
Non-current lease liabilities	445,003
Total	622,459

The associated right-of-use assets for leases were measured as if the new rules had always been applied using the lessee's incremental borrowing rate at the date of initial application. Other right-of-use assets were measured at the amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments relating to that lease recognized in the consolidated statement of financial position as at December 31, 2018. Onerous lease contracts that would have required an adjustment to the right-of-use assets at the date of initial application, amounted to ₩1,374 million, and were accounted for as a deduction of the right-of-use assets.

Consolidated statements of financial position at the date of initial application (January 1, 2019):

<i>(in millions of Korean won)</i>	December 31, 2018	K-IFRS 1116	January 1, 2019
	(before adjustments)	Adjustments	(after adjustments)
Current assets			
Other assets	1,073,396	(17,375)	1,056,021
Current assets without financial effect	18,289,458	-	18,289,458
Total current assets	19,362,854	(17,375)	19,345,479
Non-current assets			
Other receivables	452,366	(2,179)	450,187
Property, plant and equipment	13,333,951	677,261	14,011,212
Intangible assets	3,001,155	(15,325)	2,985,830
Deferred tax assets	1,410,793	2,990	1,413,783
Other assets	789,497	(64,584)	724,913
Non-current assets without financial effect	5,977,827	-	5,977,827
Total non-current assets	24,965,589	598,163	25,563,752
Total assets	44,328,443	580,788	44,909,231

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<i>(in millions of Korean won)</i>	December 31, 2018	K-IFRS 1116	January 1, 2019
	(before adjustments)	Adjustments	(after adjustments)
Current liabilities			
Lease liabilities	-	177,456	177,456
Other payables	3,670,453	(20,694)	3,649,759
Other liabilities	2,861,341	(299)	2,861,042
Current liabilities without financial effect	10,603,235	-	10,603,235
Total current liabilities	17,135,029	156,463	17,291,492
Non-current liabilities			
Lease liabilities	-	445,003	445,003
Other payables	17,995	(11,349)	6,646
Deferred tax liabilities	127,014	(47)	126,967
Provisions	343,811	(1,374)	342,437
Non-current liabilities without financial effect	10,397,687	-	10,397,687
Total non-current liabilities	10,886,507	432,233	11,318,740
Total liabilities	28,021,536	588,696	28,610,232
Equity			
Equity attributable to owners of the Parent Company			
Retained earnings	12,075,414	(8,336)	12,067,078
Equity without financial effect	2,177,854	-	2,177,854
Non-controlling interests	2,053,639	428	2,054,067
Total equity	16,306,907	(7,908)	16,298,999

In applying Korean IFRS 1116 for the first time, the Group has used the following practical expedients permitted by the standard:

- the use of a single discount rate to a portfolio of leases with reasonably similar characteristics
- reliance on previous assessments on whether leases are onerous
- the accounting for operating leases with a remaining lease term of less than 12 months as at January 1, 2019, as short-term leases
- the exclusion of initial direct costs for the measurement of the right-of-use asset at the date of initial application, and
- the use of hindsight in determining the lease term where the contract contains options to extend or terminate the lease

The Group has also elected not to reassess whether a contract is, or contains a lease at the date of initial application. Instead, for contracts entered into before the date of initial application, the Group relied on its assessment made applying Korean IFRS 1017 and Interpretation 2104 *Determining whether an Arrangement contains a Lease*.

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Lessor accounting

There is no significant impact on the consolidated financial statements from applying the new standard as accounting for the Group, as a lessor, does not significantly change.

- Amendments to Korean IFRS 1109 *Financial Instruments*

The narrow-scope amendments made to Korean IFRS 1109 *Financial Instruments* enable entities to measure certain prepayable financial assets with negative compensation at amortized cost. When a modification of a financial liability measured at amortized cost that does not result in the derecognition, a modification gain or loss shall be recognized in profit or loss. The amendment does not have a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1019 *Employee Benefits*

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

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

The amendments clarify that an entity shall apply Korean IFRS 1109 to financial instruments in an associate or joint venture to which the equity method is not applied. The amendments also clarify that Korean IFRS 1109 requirements are applied to long-term interests that form part of the entity's net investment in an associate or joint venture before applying the impairment requirements of Korean IFRS 1028. The amendment does not have a significant impact on the consolidated financial statements.

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

The interpretation explains how to recognize and measure deferred and current income tax assets and liabilities where there is uncertainty over a tax treatment, and includes guidance on how to determine whether each uncertain tax treatment is considered separately or together. It also presents examples of circumstances where a judgement or estimate is required to be reassessed. The enactment does not have a significant impact on the consolidated financial statements.

(b) New, enacted and amended standards issued, but not effective for December 31, 2019, and not early adopted by the Group

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- Amendments to Korean IFRS 1001 *Presentation of Financial Statements* and Korean IFRS 1008 *Accounting policies, Changes in Accounting Estimates and Errors*

The amendments clarify the explanation of the definition of material and amended Korean IFRS 1001 and Korean IFRS 1008 in accordance with the clarified definitions. Materiality is assessed by reference to omission or misstatement of material information as well as effects of immaterial information, and to the nature of the users when determining the information to be disclosed by the Group. These amendments should be applied for annual periods beginning on or after January 1, 2020, and earlier application is permitted. The Group does not expect that these amendments have a significant impact on the consolidated financial statements.

- Amendments to Korean IFRS 1103 *Business Combination*

To determine whether an acquired set of activities and assets is 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 excludes economic benefits from the lower costs. An entity can apply a concentration test, an optional test, where substantially all of the fair value of gross assets acquired is concentrated in a single asset or a group of similar assets, the assets acquired would not represent a business. The Group does not expect that these amendments have a significant impact on the consolidated financial statements.

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

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

Goodwill is recognized as the excess of the aggregate of the consideration transferred, the amount of any non-controlling interest in the acquiree, and the acquisition-date fair value of the acquirer's

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previously held equity interest in the acquiree over the identifiable net assets acquired. If this consideration is lower than the fair value of the net assets of the subsidiary acquired, the difference is recognized in profit or loss.

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

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

If the Group loses control of a subsidiary, any investment continuously retained in the subsidiary is re-measured at its fair value at the date when control is lost and any resulting differences are recognized in profit or loss.

(b) Associates

Associates are all entities over which the Group has significant influence but not control, generally accompanying a shareholding of between 20% and 50% of the voting rights. Investments in associates are accounted for using the equity method of accounting and are initially recognized at cost. The Group's investment in associates includes goodwill identified at acquisition, net of any accumulated impairment loss (Note 14).

The Group's share of its associates' post-acquisition profits or losses is recognized in the consolidated statements of profit or loss, and its share of post-acquisition movements in reserves is recognized in reserves. The cumulative post-acquisition movements are adjusted against the carrying amount of the investment. When the Group's share of losses in an associate equals or exceeds its interest in the associate, including any unsecured receivables, the Group does not recognize further losses, unless it has incurred obligations or made payments on behalf of the associate.

Unrealized gains on transactions between the Group and its associates are eliminated to the extent of the Group's interest in the associates. Unrealized losses are also eliminated unless the transaction provides evidence of an impairment of the asset transferred. Accounting policies of associates have been changed where necessary to ensure consistency with the policies adopted by the Group. Dilution gains and losses arising in investments in associates are recognized in the consolidated statements of profit or loss.

(c) Joint Arrangements

A joint arrangement of which two or more parties have joint control is classified as either a joint operation or a joint venture. A joint operator has rights to the assets, and obligations for the liabilities, relating to the joint operation and recognizes the assets, liabilities, revenues and expenses relating to its interest in a joint operation. A joint venture has rights to the net assets relating to the joint

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venture and accounts for that investment using the equity method.

(d) Transactions with non-controlling interests

The Group applies a policy of treating transactions with non-controlling interests as transactions with owners of the Group. The difference between any consideration paid and the relevant share of the carrying value of net assets of the subsidiary is recorded in equity. Gains and losses on disposal of non-controlling interests are also recognized in other components of equity.

(e) Business Combinations

The acquisition method of accounting is used to account for the acquisition of subsidiaries by the Group. The cost of an acquisition is measured as the fair value of the assets given, equity instruments issued and liabilities incurred or assumed at the date of exchange. The consideration transferred in a business combination includes fair values of the assets and liabilities from arrangements for contingent payments. 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 measures non-controlling interests in the acquiree that entitle their holders to a proportionate share of the entity's net assets in the event of liquidation, on a case by case basis, at the proportionate share of the acquiree's identifiable net assets or fair value. All other components of non-controlling interests are measured at fair values, unless another measurement basis is required by IFRSs. Acquisition-related costs are recognized as expenses in the periods in which the costs are incurred.

In case of business combination achieved in stages, previously held equity interest in the acquiree is re-measured to fair value and a gain or loss is recognized in the consolidated statements of profit or loss.

The excess of the aggregate of the consideration transferred, the amount of any non-controlling interest in the acquiree and the acquisition-date fair value of the Group's previously held equity interest in the acquiree over the net identifiable assets at the date of acquisition is recorded as goodwill (Note 2). If the cost of the acquisition is less than the fair value of the net assets of the subsidiary acquired, the difference is recognized directly in the consolidated statements of profit or loss.

Segment Reporting

Operating segments are established on the basis of business divisions whose internal reporting is provided to the chief operating decision-maker who is the chief executive officer. Segmental disclosures are disclosed in Note 4 in accordance with Korean IFRS 1108 *Operating Segment*.

Foreign Currency Translation

(a) Functional and presentation currency

Items included in the financial statements of each of the Group's companies are measured using

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the currency of the primary economic environment in which the 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 prevailing at the dates of the transactions or valuation in case of items subject to re-measurement. 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, are recognized in the consolidated statements of profit or loss, except cash flow hedges qualifying to be recognized in other comprehensive income.

Changes in the fair value of monetary debt securities denominated in foreign currency classified as financial assets at fair value through other comprehensive income are analysed between translation differences resulting from changes in the amortized cost of the security and other changes in the carrying amount of the security. Translation differences related to changes in amortized cost are recognized in profit or loss, and other changes in carrying amount are recognized in other comprehensive income.

Translation differences on non-monetary financial assets and liabilities are recognized in the consolidated statements of profit or loss as part of the fair value gain or loss. Translation differences arising from equities held at fair value through profit or loss are recognized in profit or loss, and those arising from equities held at fair value through other comprehensive income are recognized in other comprehensive income.

(c) Translation into presentation currency

The results and financial position of all Group companies whose functional currency is different from the presentation currency are translated into the presentation currency as follows:

- i) Assets and liabilities are translated at the closing rate at the end of the reporting period;
- ii) Income and expenses are translated at monthly average exchange rates; and
- iii) All resulting exchange differences from above i) and ii) are recognized in other comprehensive income.

When the Parent Company ceases to control a subsidiary, exchange differences that were recorded in equity are recognized in the consolidated statements of profit or loss as part of the gain or loss on sale.

Goodwill and fair value adjustments arising on the acquisition of a foreign entity are treated as assets and liabilities of the foreign entity and translated at the closing rate at the end of the reporting period.

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Cash and Cash Equivalents

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

Financial Instruments

Classification

(a) Financial assets

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

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

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

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

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

(b) Financial Liabilities

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 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.

Recognition and Measurement

Typical purchases and sales of financial assets are recognized on the trade date. At initial recognition, the Group measures a financial asset and financial liabilities at its fair value plus, in

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the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial asset. Transaction costs of financial assets carried at fair value through profit or loss are expensed in profit or loss.

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

(a) Debt instruments

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

- **Amortized cost:** Assets that are held for collection of contractual cash flows where those cash flows represent solely payments of principal and interest are measured at amortized cost. A gain or loss on a debt investment that is subsequently measured at amortized cost and is not part of a hedging relationship is recognized in profit or loss when the asset is derecognized or impaired. Interest income from these financial assets is included in 'finance income' using the effective interest rate method.
- **Fair value through other comprehensive income:** Assets that are held for collection of contractual cash flows and for selling the financial assets, where the assets' cash flows represent solely payments of principal and interest, are measured at fair value through other comprehensive income. Movements in the carrying amount are taken through other comprehensive income, except for the recognition of impairment loss (reversal of impairment loss), interest income and foreign exchange gains and losses which are recognized in profit or loss. When the financial asset is derecognized, the cumulative gain or loss previously recognized in other comprehensive income is reclassified from equity to profit or loss. Interest income from these financial assets is included in 'finance income' using the effective interest rate method. Foreign exchange gains and losses are presented in 'other non-operating income and 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 '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, which are held for long-term investment or strategic purpose, in other comprehensive income, there is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition

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of the investment. Dividend income from such investments continue to be recognized in profit or loss as 'other non-operating income' when the right to receive payments is established.

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

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, contract assets, and lease receivables, the Group applies the simplified approach, which requires expected lifetime credit losses to be recognized from initial recognition of the receivables.

Offsetting of financial instruments

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

Derecognition

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.

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

Financial liabilities are derecognized 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.

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Derivative Financial Instruments

Derivatives are initially recognized at fair value on the date a derivative contract is entered into and are subsequently re-measured at their fair value. The resulting gain or loss that does not meet the conditions for hedge accounting is recognized in 'other non-operating income (expenses)' or 'financial income (expenses)' according to the nature of transactions.

The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in other comprehensive income. The gain or loss relating to the ineffective portion is recognized immediately in the consolidated statements of profit or loss within 'other non-operating income (expenses)' or 'financial income (expenses)'.

Amounts accumulated in other comprehensive income are reclassified to profit or loss in the periods when the hedged item affects profit or loss. When a forecast transaction is no longer expected to occur, the cumulative gain or loss that was reported in equity is immediately transferred to the consolidated statements of profit or loss within 'other non-operating income (expenses)' or 'financial income (expenses)'.

Trade Receivables

Trade receivables are amounts due from customers for goods sold or services performed in the ordinary course of business. If the collection of trade receivables is expected in one year or less, they are classified as current assets. If not, they are presented as non-current assets. Trade receivables are recognized initially at fair value, less allowance for doubtful debts.

Inventories

Inventories are stated at the lower of cost and net realizable value. Cost is determined using the weighted-average method, except for inventories in-transit whose cost is determined using the specific identification method. The cost of finished goods and work-in-process comprises of raw materials, direct labour, other direct costs and related production overheads (based on normal operating capacity). The Group periodically reviews a possibility of significant changes in net realizable value of inventories from not in use, decrease in market value and obsolescence, and recognizes as Allowances for Valuation of Inventories. Net realizable value is the estimated selling price in the ordinary course of business, less applicable selling expenses.

Assets Held for Sale and Discontinued Operations

Non-current assets (or disposal groups) are classified as 'assets held for sale' when their carrying amount is to be recovered principally through a sale transaction and a sale is considered highly probable. They are measured at the lower of carrying amount and the fair value less costs to sell.

When a component of discontinued operations or a component of the Group representing a separate major line of business or geographical area of operation has been disposed of, or is subject to a sale plan involving loss of control of a subsidiary, the Group discloses in the consolidated statements of profit or loss the post-tax profit or loss of discontinued operations and

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the post-tax gain or loss recognized on the measurement to fair value less costs to sell or on the disposal of the assets or disposal groups constituting the discontinued operation. The net cash flows attributable to the operating, investing and financing activities of discontinued operations are presented in the notes to the consolidated financial statements.

Property, Plant and Equipment

All 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.

Subsequent costs are included in the asset's carrying amount or recognized as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognized. All other repairs and maintenance are charged to the consolidated statements of profit or loss during the financial period in which they are incurred.

Land is not depreciated. Depreciation of other property, plant and equipment is calculated using the straight-line method to allocate their acquisition cost or revalued amounts, net of their residual values, over their estimated useful lives, as follows:

Buildings and Structures	20, 40 years
Machinery	5, 10 years
Tools and Equipment	5 years
Supplies	5 years
Other	5 years

Each asset's depreciation method, residual values, and useful lives are reviewed and adjusted if necessary, at the end of each reporting period. An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount. Gains and losses on disposals are determined by differences between the proceeds from the disposal of the asset and its carrying amount and are recognized within 'other non-operating income (expenses)' in the consolidated statements of profit or loss.

Borrowing Costs

General and specific borrowing costs that are directly attributable to the acquisition or construction of a qualifying asset are capitalized during the period of time that is required to prepare the asset for its intended use. 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.

Government Grants

Grants from a government are recognized at their fair value when there is a reasonable assurance that the grant will be received and the Group will comply with all attached conditions.

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Government grants relating to income are deferred and recognized in the consolidated statements of profit or loss over the period necessary to match them with the costs that they are intended to compensate.

Government grants relating to property, plant and equipment are presented as a deduction of related assets and are credited to depreciation over the expected lives of the related assets.

Intangible Assets

(a) Goodwill

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. Goodwill is tested annually for impairment and carried at cost less accumulated impairment losses. Impairment losses on goodwill are not reversed.

(b) Industrial property rights

Industrial property rights are shown at historical cost. Industrial property rights have a limited useful life and are carried at cost less accumulated amortization. Amortization is calculated using the straight-line method to allocate the cost of industrial property rights over their estimated useful lives of ten years.

(c) Development costs

New product development project is processed through product planning, design planning, product design, mass production verification, production readiness approval, and shipment approval. The Group generally recognizes expenditures incurred during and after the product design phase as development costs, and expenditures incurred before the phase are recognized as expenses within research and development expenses. Costs recognized as development costs are controlled by the Group and directly attributable to identifiable development projects, and meet all of the following criteria.

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

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Amortization of development costs based on the straight-line method over their estimated useful lives of one or three years begins at the commencement of sale or use of the related products.

(d) Membership

Membership rights are regarded as intangible assets with an indefinite useful life and are not amortized because there is no foreseeable limit to the period over which the assets are expected to be utilized. All membership rights are tested annually for impairment and stated at acquisition cost less accumulated impairment losses.

(e) Other intangible assets

Other intangible assets such as customer relationships, values of techniques and software which meet the definition of an intangible asset are amortized using the straight-line method over their estimated useful lives of five or ten years.

Investment Property

Investment property is held to earn rentals or for capital appreciation or both. Investment property is measured initially at its cost including transaction costs incurred in acquiring the asset. After its initial recognition, investment property is carried at its cost less any accumulated depreciation and accumulated impairment losses.

Subsequent costs are included in the asset's carrying amount or recognized as a separate asset, only when it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognized. All other repairs and maintenance are charged to the consolidated statements of profit or loss during the financial period in which they are incurred.

Land held for investment is not depreciated. Investment property, except for land, is depreciated using the straight-line method over their estimated useful lives of 20 or 40 years.

Management reviews the depreciation method, the residual value and the useful life of an asset at the end of each period. If it is decided that previous estimates should be adjusted, the adjustment is accounted for as a change in an accounting estimate.

Impairment of Non-Financial Assets

Goodwill and intangible assets that have indefinite useful lives are not subject to amortization and are tested annually for impairment. At the end of each reporting period, assets that are subject to amortization are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognized as profit or loss for the year 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 its value-in-use. The value-in-use is measured by determining the estimated pre-tax cash flows based on past performance and its expectations of market development, and applying the pre-tax discount

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rates that reflect specific risks relating to the relevant operating segments. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash-generating units). Non-financial assets other than goodwill that suffered impairment loss are reviewed for possible reversal of the impairment at the end of each reporting period.

Trade Payables

Trade payables are obligations to pay for goods or services that have been acquired in the ordinary course of business from suppliers. Trade payables are classified as current liabilities if payment is due within one year or less. If not, they are presented as non-current liabilities. Trade payables are recognized initially at fair value and subsequently measured at amortized cost using the effective interest method. Current trade payables measured initially at fair value are not significantly different from amortized cost using the effective interest method.

Borrowings

Borrowings are recognized initially at fair value, net of transaction costs incurred. Borrowings are subsequently carried at amortized cost; any difference between the proceeds (net of transaction costs) and the redemption value is recognized in the consolidated statements of profit or loss over the period of the borrowings using the effective interest method. The Group classifies the liability as current as long as it does not have an unconditional right to defer its settlement over 12 months after the end of the reporting period.

Financial Guarantee Contracts

Financial guarantee contracts are contracts that require the issuer to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payments when due, in accordance with the original or modified terms of a debt instrument. Financial guarantees contracts provided by the Group are initially measured at fair value on the date the guarantee was given. Subsequent to initial recognition, the Group's liabilities under such guarantees are measured at the higher of the following amounts below and recognized as '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*

Provisions

Provisions are recognized when the Group has a present legal or constructive obligation as a result of past events and an outflow of resources required to settle the obligation is probable and can be reliably estimated. The Group recognizes a warranty provision, a provision for restoration, and a provision for litigation.

A warranty provision is accrued for the estimated costs of future warranty claims based on historical

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experience. Where the Group, as a tenant, is required to restore its leased assets to their original state at the end of the lease-term, the Group recognizes the present value of the estimated cost of restoration as a provision for restoration. When there is a probability that an outflow of economic benefits will occur from litigation or disputes, and whose amount is reasonably estimable, a corresponding amount of provision is recognized as a provision for litigation in the consolidated financial statements.

A contingent liability is disclosed (Note 36) when;

- a possible obligation that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the entity; or
- a present obligation that arises from past events but is not recognized because: it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation; or the amount of the obligation cannot be measured with sufficient reliability.

Current and Deferred Income Tax

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

The tax expense is calculated on the basis of the tax laws enacted or substantively enacted at the end of the reporting period in countries where the Group operates and generates taxable income. Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation. It establishes provisions where appropriate on the basis of amounts expected to be paid to the tax authorities.

Deferred income tax is recognized on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements. It represents future tax consequences that will arise when recovering or settling the carrying amount of its assets and liabilities. However, the 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 tax profit or loss. Deferred income tax is determined using tax rates (and laws) that have been enacted or substantially enacted by the end of the reporting period and are expected to apply when the related deferred income tax asset is realized or the deferred income tax liability is settled.

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

Deferred income tax liabilities are provided on taxable temporary differences arising on investments in subsidiaries, associates and joint ventures, except where the timing of the reversal of the temporary difference is controlled by the Group, and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred income tax assets are recognized only to the extent

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that it is probable that the deductible temporary difference will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilized.

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

Employee Benefits

(a) Post-employment benefits

The Group operates various pension schemes. The schemes are generally funded through payments to insurance companies or trustee-administered funds, determined by periodic actuarial calculations. The Group operates both defined contribution and defined benefit plans.

A defined contribution plan is a pension plan under which the Group pays fixed contributions into a separate fund. The Group has no legal or constructive obligations to pay further contributions even if the fund does not hold sufficient assets to pay all employees the benefits relating to employee service in the current and prior periods. For the defined contribution plan, the Group pays contributions to publicly or privately administered pension insurance plans on a mandatory, contractual or voluntary basis. The contributions are recognized as employee benefit expenses when an employee has rendered service. Prepaid contributions are recognized as an asset to the extent that a cash refund or a reduction in the future payments is available.

A defined benefit plan is a pension plan that is not a defined contribution plan. Typically defined benefit plans define an amount of pension benefit that an employee will receive on retirement, usually dependent on one or more factors such as age, years of service and 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 qualified 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 and that have terms to maturity approximating to the terms of the related pension obligation. The remeasurements of the net defined benefit liabilities are recognized in other comprehensive income.

If any plan amendments, curtailments, or settlements occur, past service costs or any gains or losses on settlement are recognized as profit or loss for the year.

(b) Other long-term employee benefits

The Group provides other long-term employee benefits to their employees. The entitlement to these benefits is usually conditional on the employee working more than ten years. The expected costs of these benefits are accrued over the period of employment using the same accounting

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methodology as used for defined benefit pension plans. The Group recognizes past service cost, net interest on other long-term employee benefits and remeasurements as profit or loss for the year. These benefits are calculated annually by independent qualified actuaries.

(c) Termination benefits

Termination benefits are payable when employment is terminated by the Group before the normal retirement date, or whenever an employee accepts voluntary redundancy in exchange for these benefits. The Group recognizes termination benefits at the earlier of the following dates: when the entity can no longer withdraw the offer of those benefits or when the entity recognizes costs for a restructuring.

Share Capital

Ordinary shares and preferred shares without any obligation to repay are classified as equity.

Where the Parent Company purchases its own ordinary shares, the consideration paid, including any directly attributable incremental costs, is deducted from equity attributable to owners of the Parent Company until the shares are cancelled or reissued. Where such treasury shares are subsequently reissued, any consideration received is included in equity attributable to owners of the Parent Company.

Revenue Recognition

(a) Identify performance obligation

The Group sells home appliances, mobile communications equipment, TVs, monitors, automobile parts, information displays and others. If the contract with a customer includes any separate services in addition to sales of goods, the Group identifies performance obligations of the services to be rendered from such sales contracts.

According to the rules and guidance on the terms and conditions of international trading (INCOTERMS 2010), the Group recognizes the transportation services as a separate performance obligation apart from the sale of goods, under the transactions with the rules where seller is responsible for paying shipping cost and insurance premium.

The Group determines standard warranty coverage periods per product and country, considering warranty periods required by law and others when entering into contracts with customers for the sales of products. If the Group provides an extended warranty beyond the standard warranty coverage periods or a customer has the option to purchase an additional warranty separately, the Group identifies the warranty as a separate performance obligation and recognizes revenue.

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

Sales of goods are recognized when the Group has delivered products to the customer. Delivery does not occur until the products have been shipped to the specified location, the risks of

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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 products are often sold with volume discounts and customers have a right to return faulty products. Accumulated experience is used to estimate and provide for the discounts and returns. The volume discounts are assessed based on anticipated annual sales. The Group recognizes provisions for product warranties and contract liabilities for sales returns based on reasonable expectation reflecting warranty obligation and sales return rates incurred historically.

For royalty contracts, if there are no other goods or services provided to customer in the contracts other than obligations to provide license, the nature of the contracts are provision of right to use the Group's intellectual property that exist at the time of transfer. This means that the customer can direct the use of and obtain substantially all of the remaining benefits from the license at the point in time at which the license transfers. The Group determined the royalty income as a performance obligation satisfied at a point in time.

(c) A performance obligation satisfied over time

The Group builds and sells customized equipment and design plan for a customer. The revenue is recognized over time by measuring progress only if the Group's performance does not create an asset with an alternative use to the Group and the Group has an enforceable right to payment for performance completed to date. The Group performed an analysis on those contracts and determined the Group has an enforceable right to payment for performance completed to date; therefore, the revenue is recognized over time using input methods by measuring the percentage of completion.

When the outcome of a transaction involving the rendering of services provided separately to customers can be estimated reliably, revenue associated with such transaction is recognized by reference to the percentage of completion of the services. Any changes in expected revenue, cost or the amount of services rendered are accounted for as changes in estimates. These changes in estimates may bring adjustments to the expected revenue or cost which is recognized in the profit or loss in the period in which the management recognizes the changes in circumstances.

The Group receives licensing fees for the trademark held by the Group from subsidiaries and associates. The Group continues to develop the trademark's value and performs marketing activities through various media such as TV, internet, exhibitions, road shows and others. The nature of the Group's promise in granting a license is a promise to provide a right to access the Group's intellectual property over a license period; therefore, the Group determined the promised license is a performance obligation that is satisfied over time.

Income from rental, lease, extended guarantees and others is recognized on a straight-line basis over the period of the contract.

(d) Variable consideration

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

(e) Allocating the transaction price

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

(f) Returns

A gross contract liability (refund liability) for the expected returns to customers is recognized as adjustment to revenue, and the Group has a right to recover the product from the customer when 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.

(g) Significant financing component

In general, the period between the transfer of the promised goods or services to the customer and the payment made by the customer is less than one year. In this case, the Group uses the practical expedient in which the Group does not adjust the promised amount of consideration for the effects of a significant financing component.

Leases

The Group leases various offices, warehouses, retail stores, equipment and cars. A lease term is normally determined considering non-cancellable period of a lease and its extension options. Lease conditions 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.

Lessee accounting

Until the 2018 financial year, leases of property, plant and equipment were classified as either finance or operating leases. Payments made under operating leases (net of any incentives received from the lessor) were charged to profit or loss on a straight-line basis over the period of the lease.

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From January 1, 2019, 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 to the repayment of lease 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 lease 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.

(a) Right-of-use assets

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
- estimated restoration costs

(b) Lease liabilities

The lease liabilities are initially measured at the present value of the lease payments that are not paid at the commencement date. 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.

At the commencement date, the lease payments included in the measurement of the lease liability comprise the following payments:

- fixed lease payments (including in-substance fixed payments), less any lease incentives receivable
- variable lease payments that are based on an index or a rate
- amounts expected to be payable by the lessee under residual value guarantees
- the exercise price of a purchase option if the lessee is reasonably certain to exercise that option, and
- payments of penalties for terminating the lease, if the lease term reflects the lessee exercising that option

However, payments associated with short-term leases and 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 whose underlying assets are values below US\$ 5,000, and others.

Lessor accounting

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There is no significant impact on the consolidated financial statements from applying the new standard as the current accounting treatment for the Group, as a lessor, does not significantly change.

A lessor classifies each of its leases as either an operating lease or a finance lease. A lease that transfers substantially all the risks and rewards incidental to ownership of underlying asset is classified as a finance lease, and a lease other than a finance lease is classified as an operating lease.

At the commencement date, a lessor recognizes assets held under a finance lease in its statement of financial position and presents them as a receivable at an amount equal to the net investment in the lease using the interest rate implicit in the lease. Under an operating lease, a lessor recognizes lease payments from operating leases as income on either a straight-line basis or other systematic base.

Dividend Distribution

A dividend liability is recognized when the dividends are approved by the shareholders at their general meeting.

Earnings per Share

Basic earnings per share is calculated by dividing the profit attributable to shareholders of the Parent Company by the weighted average number of shares issued excluding shares purchased by the Parent Company that are held as treasury shares. Preferred shares have a right to participate in the profits of the Parent Company. These participation rights have been considered in presenting the EPS for ordinary shares and preferred shares.

Greenhouse Gas Emissions Rights (Allowances) and Obligations

Emission rights are defined as allowed amount of emissions that can be released, allocated by the Korean government as 'Act on the Allocation and Trading of Greenhouse-Gas Emission Permits' takes effect. Emission rights that are received free of charge from the government are measured at zero, while the rights purchased additionally from trading market such as the Korea Exchange are measured at acquisition cost. Emission rights are subsequently stated as acquisition cost less accumulated impairment loss. Emission liabilities are measured as the sum of the carrying amount of emission rights to be delivered to the government to settle the obligation for emissions occurred and expected expenditure required at the end of reporting period for any excess emissions. The emission rights and liabilities are classified as 'intangible assets' and 'provisions', respectively, in the consolidated statement of financial position.

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3. Critical Accounting Estimates and Judgments

The estimates and judgments are continuously evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable.

Critical Accounting Estimates and Assumptions

The Group makes estimates and assumptions concerning the future. 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 will, by definition, seldom equal the related actual results. The estimates and assumptions that have a significant risk of causing adjustments to the carrying amounts of assets and liabilities after the end of the reporting period are addressed below.

(a) Revenue Recognition

The Group recognizes revenue over time using the percentage of completion method for the rendering of service such as equipment production and installation. The Group measures the percentage of completion by estimating cost for the completion of the transaction, and the factors for the estimation of revenue may vary.

(b) Impairment of Goodwill and Others

The Group tests goodwill and others regularly for impairment. The recoverable amounts of cash-generating units have been determined based on fair value less costs of disposal or value in use calculations. These calculations require estimates.

(c) Income Taxes

The Group recognizes assets and liabilities for anticipated tax audit issues based on the best estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences will impact the current and deferred income tax assets and liabilities in the period in which such determination is made.

(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 makes assumptions that are mainly based on market conditions existing at the end of each reporting period.

(e) Provisions

The Group recognizes provisions for product warranties and others based on their historical data.

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(f) Net Defined Benefit Liabilities

The present value of the defined benefit liability depends on various factors that are determined on an actuarial basis. The assumptions used in determining the net cost (income) for pensions include the discount rate, which is the interest rate that is used to determine the present value of estimated future cash outflows expected to be required to settle the defined benefit liability. In determining the appropriate discount rate, the Group considers the interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid, and that have terms to maturity approximating the terms of the related pension liability. Other key assumptions for defined benefit liability are based on current market conditions.

(g) Development Costs

The Group capitalizes development costs when there is a reasonable assurance that projects have technical feasibility and the possibility of generating future economic benefits, and performs periodic impairment test. The recoverable amount of each project has been calculated on a basis of the value-in-use reflecting historical experience and future business plans. These calculations require estimates.

(h) 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 assessment of reasonable certainty to exercise (or not exercise) an extension option 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.

Significant Judgment on Accounting Policies Adopted by the Group

In order to determine the Group's de-facto control, the Group considers the size of the Group's holding of voting rights relative to the size and dispersion of holdings of the other vote holders and additional facts and circumstances including voting patterns at previous shareholders' meetings.

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4. Segment Information

The segments of the Group are strategic business divisions providing different products and services. They are reported separately because each business division requires different technologies and marketing strategies. The main products of each business division are as follows and the comparative information is presented in conformity with the same classification in the current period.

Operating segment	Type of products
Home Appliance & Air Solution (H&A)	Refrigerators, washing machines, residential and commercial air conditioners, microwaves, vacuum cleaners and others
Home Entertainment (HE)	TVs, monitors, PCs, audio, video and others
Mobile Communications (MC)	Mobile communications
Vehicle Component Solutions (VS)	Vehicle components and others
Business Solutions (BS)	Information displays, solar panels and others
LG Innotek Co., Ltd. and its subsidiaries (Innotek)	LED, camera modules, substrate & material, motor/sensor and others
Other segments	Equipment production and others

(a) The segment information for sales and operating profit (loss) for the years ended December 31, 2019 and 2018, is as follows:

<i>(in millions of Korean won)</i>	2019								
	H&A	HE	MC	VS	BS	Innotek	Other segments ¹	Inter-segment transactions ²	Total
Sales	21,515,495	16,151,676	5,966,679	5,465,403	2,672,490	8,302,068	3,147,212	(914,848)	62,306,175
External sales	21,465,991	16,134,832	5,963,894	5,465,367	2,671,689	7,711,517	2,892,885	-	62,306,175
Internal sales	49,504	16,844	2,785	36	801	590,551	254,327	(914,848)	-
Operating profit (loss) ³	1,996,128	980,024	(1,009,761)	(194,944)	246,895	403,129	14,668	-	2,436,139
Depreciation and amortization	606,890	329,834	162,540	433,636	170,557	590,450	184,721	-	2,478,628
	2018								
<i>(in millions of Korean won)</i>	H&A	HE	MC	VS	BS	Innotek	Other segments ¹	Inter-segment transactions ²	Total
Sales	19,360,797	16,312,230	7,876,162	4,287,637	2,405,662	7,982,104	4,397,178	(1,280,106)	61,341,664
External sales	19,316,147	16,301,494	7,874,882	4,287,637	2,403,015	7,278,287	3,880,202	-	61,341,664
Internal sales	44,650	10,736	1,280	-	2,647	703,817	516,976	(1,280,106)	-
Operating profit (loss) ³	1,544,972	1,506,692	(778,248)	(119,777)	167,845	263,517	118,290	-	2,703,291
Depreciation and amortization	464,509	275,430	189,466	313,430	180,215	507,849	50,840	-	1,981,739

¹ Other segments include operating segments that are not qualified as reportable segments and departments that support the operating segments and R&D.

² Sales between segments are accounted on terms equivalent to those that prevail in arm's length transactions.

³ Other income or expenses items not included in the operating profit (loss) are not separately disclosed because the Chief Operating Decision Maker does not review them by segment.

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(b) Segment assets and liabilities as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019		December 31, 2018	
	Assets	Liabilities	Assets	Liabilities
H&A	18,401,578	10,601,109	15,788,755	9,577,912
HE	13,284,076	10,165,914	11,971,528	9,603,530
MC	3,909,919	7,009,620	4,127,122	5,902,259
VS	6,076,567	6,293,054	5,704,878	5,281,526
BS	2,796,062	2,144,630	2,682,832	2,123,830
Innotek	5,770,780	3,566,176	5,756,067	3,637,832
Subtotal¹	50,238,982	39,780,503	46,031,182	36,126,889
Other segments and inter-segment transactions	(5,379,107)	(11,345,766)	(1,702,739)	(8,105,353)
Total	44,859,875	28,434,737	44,328,443	28,021,536

¹ The amounts of assets and liabilities of each segment are before inter-company elimination, and common assets and liabilities are allocated based on the operations of the segments.

(c) Non-current assets by geographic area as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	Non-current assets¹	
	December 31, 2019	December 31, 2018
Geographic areas		
Korea	12,044,015	12,316,318
China	1,061,738	970,706
Asia	1,050,815	951,524
North America	1,305,270	773,311
Europe	1,287,997	1,073,397
South America	144,053	109,667
Middle East & Africa	119,002	92,831
Russia and others	184,792	141,748
Total	17,197,682	16,429,502

¹ Non-current assets consist of property, plant and equipment, intangible assets and investment properties.

(d) There is no external customer contributing to more than 10% of net sales for the years ended December 31, 2019 and 2018.

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5. Financial Instruments by Category and Offsetting Financial Assets and Financial Liabilities

(a) Categorizations of financial instruments as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019				
	Financial assets at amortized cost	Financial assets at fair value through other comprehensive income	Financial assets at fair value through profit or loss	Other	Total
Cash and cash equivalents	4,777,368	-	-	-	4,777,368
Deposits held by financial institutions	105,339	-	-	-	105,339
Trade receivables	5,747,968	612,320	-	-	6,360,288
Other receivables	1,077,107	-	-	-	1,077,107
Other financial assets	1,612	69,762	25,867	4,400	101,641
Total	11,709,394	682,082	25,867	4,400	12,421,743

<i>(in millions of Korean won)</i>	December 31, 2019			
	Financial liabilities at amortized cost	Financial liabilities at fair value through profit or loss	Other	Total
Trade payables	6,820,644	-	-	6,820,644
Borrowings	10,487,338	-	-	10,487,338
Lease Liabilities	-	-	771,424	771,424
Other payables	3,319,986	-	-	3,319,986
Other financial liabilities	-	14,345	100,803	115,148
Total	20,627,968	14,345	872,227	21,514,540

<i>(in millions of Korean won)</i>	December 31, 2018				
	Financial assets at amortized cost	Financial assets at fair value through other comprehensive income	Financial assets at fair value through profit or loss	Other	Total
Cash and cash equivalents	4,270,388	-	-	-	4,270,388
Deposits held by financial institutions	126,369	-	-	-	126,369
Trade receivables	6,013,151	358,443	-	-	6,371,594
Other receivables	958,803	-	-	-	958,803
Other financial assets	1,729	56,070	26,841	1,833	86,473
Total	11,370,440	414,513	26,841	1,833	11,813,627

<i>(in millions of Korean won)</i>	December 31, 2018			
	Financial liabilities at amortized cost	Financial liabilities at fair value through profit or loss	Other	Total
Trade payables	7,216,739	-	-	7,216,739
Borrowings	10,901,186	-	-	10,901,186
Other payables	3,688,448	-	-	3,688,448
Other financial liabilities	-	11,273	81,337	92,610
Total	21,806,373	11,273	81,337	21,898,983

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(b) Net gains or losses on each category of financial instruments for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019				
	Financial assets at amortized cost	Financial assets at fair value through other comprehensive income	Financial assets at fair value through profit or loss	Other	Total
Interest income	143,484	-	-	-	143,484
Exchange differences	150,894	(38,827)	-	-	112,067
Bad debts expense	(27,526)	-	-	-	(27,526)
Loss on disposal of trade receivables	(6,162)	(12,957)	-	-	(19,119)
Dividend income	-	420	273	-	693
Gain on valuation of financial assets at fair value through profit or loss	-	-	120	-	120
Loss on valuation of financial assets at fair value through other comprehensive income	-	(206)	-	-	(206)
Gain on derivatives (through profit or loss)	-	-	51,413	-	51,413
Fair value gain, net of tax (through other comprehensive income)	-	8,633	-	-	8,633
Gain on derivatives, net of tax (through other comprehensive income)	-	-	-	144	144

<i>(in millions of Korean won)</i>	2019			
	Financial liabilities at amortized cost	Financial liabilities at fair value through profit or loss	Other	Total
Interest expense	(376,172)	-	(31,027)	(407,199)
Exchange differences	(144,103)	-	19,776	(124,327)
Loss on derivatives (through profit or loss)	-	(50,735)	-	(50,735)
Loss on derivatives, net of tax (through other comprehensive income)	-	-	(26,314)	(26,314)
Others	(2,852)	-	-	(2,852)

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<i>(in millions of Korean won)</i>	2018				
	Financial assets at amortized cost	Financial assets at fair value through other comprehensive income	Financial assets at fair value through profit or loss	Other	Total
Interest income	115,837	-	-	-	115,837
Exchange differences	301,675	2,055	-	-	303,730
Bad debts expense	(19,538)	-	-	-	(19,538)
Loss on disposal of trade receivables	(5,691)	(15,200)	-	-	(20,891)
Dividend income	-	452	-	-	452
Loss on valuation of financial assets at fair value through profit or loss	-	-	(2,282)	-	(2,282)
Gain on derivatives (through profit or loss)	-	-	72,714	-	72,714
Fair value loss, net of tax (through other comprehensive income)	-	(618)	-	-	(618)
Gain on derivatives, net of tax (through other comprehensive income)	-	-	-	597	597
Others	(827)	-	-	-	(827)

<i>(in millions of Korean won)</i>	2018			
	Financial liabilities at amortized cost	Financial liabilities at fair value through profit or loss	Other	Total
Interest expense	(403,709)	-	(10,815)	(414,524)
Exchange differences	(477,284)	-	33,485	(443,799)
Loss on derivatives (through profit or loss)	-	(47,316)	-	(47,316)
Loss on derivatives, net of tax (through other comprehensive income)	-	-	(36,148)	(36,148)
Others	(3,826)	-	-	(3,826)

(c) Recognized financial instruments that are subject to an enforceable master netting arrangements or similar arrangements as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019					
	Recognized financial instrument	Recognized financial instrument offset	Net amounts presented in the statement of financial position	Amounts not offset		Net amount
				Financial instruments	Cash collateral	
Financial assets						
Trade receivables	219,456	(207,926)	11,530	-	-	11,530
Financial liabilities						
Trade payables	319,739	(207,926)	111,813	-	-	111,813

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<i>(in millions of Korean won)</i>	December 31, 2018					
	Recognized financial instrument	Recognized financial instrument offset	Net amounts presented in the statement of financial position	Amounts not offset		Net amount
				Financial instruments	Cash collateral	
Financial assets						
Trade receivables	229,580	(210,189)	19,391	-	-	19,391
Financial liabilities						
Trade payables	399,779	(210,189)	189,590	-	-	189,590

6. Cash and Cash Equivalents and Deposits held by Financial Institutions

(a) Cash and cash equivalents

Cash and cash equivalents in the consolidated statements of financial position are equal to the cash and cash equivalents in the consolidated statements of cash flows. Details are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Cash on hand	331	396
Bank deposits	4,777,037	4,269,992
Total	4,777,368	4,270,388

(b) Deposits held by financial institutions

The deposits held by financial institutions restricted in use as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Current		
Fund for business cooperation	65,500	80,500
Others	471	16
Subtotal	65,971	80,516
Non-current		
Deposit for drawing a bill	-	6,227
Deposit for checking account	65	66
National project	1,456	1,178
Others	37,847	38,382
Subtotal	39,368	45,853
Total	105,339	126,369

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7. Trade Receivables and Other Receivables

(a) Trade receivables and other receivables, net of allowance for doubtful accounts, as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019			December 31, 2018		
	Original amount	Allowance for doubtful accounts	Carrying amount	Original amount	Allowance for doubtful accounts	Carrying amount
Trade receivables	6,471,588	(111,300)	6,360,288	6,462,609	(91,015)	6,371,594
Other receivables						
Current	655,673	(16,523)	639,150	519,330	(12,893)	506,437
Non-current	438,545	(588)	437,957	452,444	(78)	452,366

(b) Details of other receivables as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Current		
Loans	14,006	21,081
Non-trade receivables	362,395	281,652
Accrued income	167,624	149,703
Deposits	95,125	54,001
Subtotal	639,150	506,437
Non-current		
Loans	88,690	86,441
Non-trade receivables	58,532	12,639
Deposits	290,735	353,286
Subtotal	437,957	452,366
Total	1,077,107	958,803

(c) The aging analysis of trade receivables and other receivables as at December 31, 2019 and 2018, is as follows:

<i>(in millions of Korean won)</i>	December 31, 2019				December 31, 2018			
	Trade receivables	Other receivables		Total	Trade receivables	Other receivables		Total
		Current	Non-current			Current	Non-current	
Receivables not past due	5,597,436	622,192	421,649	6,641,277	5,535,187	492,511	439,320	6,467,018
Past due but not impaired								
Up to 6 months	634,275	15,934	13,460	663,669	715,731	11,822	11,964	739,517
7 to 12 months	20,937	568	1,844	23,349	79,800	2,487	648	82,935
Over 1 year	20,414	4,081	1,592	26,087	21,057	2,855	512	24,424
Subtotal	675,626	20,583	16,896	713,105	816,588	17,164	13,124	846,876
Impaired	198,526	12,898	-	211,424	110,834	9,655	-	120,489
Total	6,471,588	655,673	438,545	7,565,806	6,462,609	519,330	452,444	7,434,383

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- (d) The allowance for doubtful accounts is recognized based on aging analysis and historical experience.
- (e) The Group classifies individually impaired receivables as defaulted receivables if the receivables are impaired due to reasons including bankruptcy and insolvency of the debtors. Defaulted receivables are classified into two categories of rehabilitation related receivables and other defaulted receivables. The Group performs impairment test on rehabilitation related receivables based on expected repayment amount and recognizes impairment loss on other defaulted receivables based on types and values of collaterals.
- (f) Movements in allowance for doubtful accounts for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019				
	At Jan. 1	Addition (Reversal)	Write-off	Other	At Dec. 31
Trade receivables	91,015	23,270	(6,307)	3,322	111,300
Other receivables					
Current	12,893	3,747	(411)	294	16,523
Non-current	78	509	-	1	588

<i>(in millions of Korean won)</i>	2018				
	At Jan. 1	Addition (Reversal)	Write-off	Other	At Dec. 31
Trade receivables	78,883	20,475	(4,107)	(4,236)	91,015
Other receivables					
Current	13,132	(442)	(142)	345	12,893
Non-current	576	(495)	-	(3)	78

Bad debt expenses for trade receivables are included in 'selling and marketing expenses' in the consolidated statement of profit or loss and those for other receivables are included in 'other non-operating expenses'. Allowance for doubtful accounts decrease when reasons for allowance are resolved or when the receivables are written off as there is no reasonable expectation of recovery.

- (g) There are no financial assets that are not derecognized in their entirety, nor any associated liabilities recognized at the end of the reporting period.

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8. Other Financial Assets and Liabilities

(a) Details of other financial assets and liabilities as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Other financial assets		
Derivatives	6,943	8,575
Financial assets at fair value through other comprehensive income	69,762	56,070
Financial assets at fair value through profit or loss	23,324	20,099
Financial assets at amortized cost	1,612	1,729
Total	101,641	86,473
Current	5,138	8,401
Non-current	96,503	78,072
<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Other financial liabilities		
Derivatives	115,013	92,443
Financial guarantee liability	135	167
Total	115,148	92,610
Current	7,175	3,343
Non-current	107,973	89,267

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(b) Details of derivatives as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019		December 31, 2018	
	Assets	Liabilities	Assets	Liabilities
Current				
Currency forward	2,543	7,060	6,742	3,228
Currency swap	2,595	-	1,542	-
Subtotal	5,138	7,060	8,284	3,228
Non-current				
Currency swap	1,805	8,703	291	20,920
Interest rate swap	-	99,250	-	66,433
Share purchase contract	-	-	-	1,862
Subtotal	1,805	107,953	291	89,215
Total	6,943	115,013	8,575	92,443

The details of major derivative contracts at the end of the reporting period are presented in Note 39.

(c) Financial assets at fair value through other comprehensive income

i) Changes in financial assets at fair value through other comprehensive income for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019					
	At January 1	Acquisition	Disposal	Valuation (OCI)	Other	At December 31
Listed equity securities	20,463	-	(774)	(1,156)	105	18,638
Unlisted equity securities	34,055	17,115	(10,808)	10,224	538	51,124
Debt securities	1,552	-	(1,587)	(22)	57	-
Total	56,070	17,115	(13,169)	9,046	700	69,762

<i>(in millions of Korean won)</i>	2018						
	At January 1	Increase due to business combination	Acquisition	Disposal	Valuation (OCI)	Other	At December 31
Listed equity securities	13,844	7,225	-	-	(448)	(158)	20,463
Unlisted equity securities	21,076	-	17,050	(2,666)	(882)	(523)	34,055
Debt securities	-	1,744	-	(352)	198	(38)	1,552
Total	34,920	8,969	17,050	(3,018)	(1,132)	(719)	56,070

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- ii) In 2019, the Group disposed of debt securities measured at fair value through other comprehensive income amounting to ₩1,587 million (2018: ₩352 million). Accordingly, the Group eliminated ₩260 million (2018: ₩188 million) of accumulated other comprehensive income and recognized gain on disposal of ₩32 million (2018: ₩8 million) in other non-operating income and loss on disposal of ₩238 million (2018: ₩133 million) in other non-operating expenses, respectively.

- (d) Changes in carrying amount of financial assets at fair value through profit or loss for years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019						
	At January 1	Acquisition	Disposal	Decrease due to transfer of business	Valuation	Other	At December 31
Unlisted equity securities	18,488	10,932	(1,349)	(6,594)	8	87	21,572
Debt securities	1,611	-	-	-	112	29	1,752
Total	20,099	10,932	(1,349)	(6,594)	120	116	23,324

<i>(in millions of Korean won)</i>	2018						
	At January 1	Increase due to business combination	Acquisition	Disposal	Valuation	Other	At December 31
Unlisted equity securities	16,078	-	4,288	(113)	(2,341)	576	18,488
Debt securities	-	1,762	-	-	(114)	(37)	1,611
Total	16,078	1,762	4,288	(113)	(2,455)	539	20,099

- (e) Financial assets at amortized cost

- i) Maturity analysis of financial assets at amortized cost as at December 31, 2019 and 2018, is as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Within one year	-	117
One to five years	1,612	1,612
Total	1,612	1,729

- ii) The amount recognized as interest income in relation to financial assets at amortized cost for the year ended December 31, 2019, is ₩30 million (2018: ₩14 million). No impairment losses were recognized in relation to financial assets at amortized cost for the years ended December 31, 2019 and 2018.

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9. Inventories

(a) Inventories as at December 31, 2019 and 2018, consist of:

<i>(in millions of Korean won)</i>	December 31, 2019			December 31, 2018		
	Cost	Valuation allowance	Carrying amount	Cost	Valuation allowance	Carrying amount
Finished products and merchandise	3,477,772	(119,958)	3,357,814	3,411,675	(107,772)	3,303,903
Work-in-process	376,397	(12,665)	363,732	384,261	(12,323)	371,938
Raw materials and supplies	2,039,659	(138,212)	1,901,447	2,156,094	(71,882)	2,084,212
Other	280,725	(40,300)	240,425	291,718	(30,415)	261,303
Total	6,174,553	(311,135)	5,863,418	6,243,748	(222,392)	6,021,356

(b) The cost of inventories recognized as an expense under cost of sales during the year ended December 31, 2019 amounted to ₩45,222,834 million (2018: ₩44,525,555 million). These were included in 'cost of sales'. Loss on valuation of inventories during the year ended December 31, 2019 amounted to ₩241,040 million (2018: ₩145,421 million).

(c) There is no inventory provided as collateral for borrowings as at December 31, 2019.

10. Contract Assets and Contract Liabilities

(a) Contract assets as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Due from customers	614,294	711,135
(Less: allowance for doubtful accounts)	(9,769)	(5,898)
Right to recover returned products	88,312	78,499
Costs to fulfil contracts and others	184,658	201,048
Total	877,495	984,784
Current	671,519	763,776
Non-current	205,976	221,008

(b) Contract liabilities as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Expected promotional incentives for customers	775,117	635,287
Expected returns from customers	133,539	115,503
Customer loyalty program	70,033	51,015
Rendering of warranty services	58,733	52,104
Due to customers and others	209,993	289,684
Total	1,247,415	1,143,593
Current	1,219,507	1,119,806
Non-current	27,908	23,787

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(c) Revenue recognized in relation to contract liabilities for the years ended December 31, 2019 and 2018, is as follows:

<i>(in millions of Korean won)</i>	2019	2018
Revenue recognized that was included in the contract liability amount at the beginning of the period:		
Due to customers and others	211,392	261,315
Customer loyalty program	51,015	35,830
Rendering of warranty services	21,843	28,728
Total	284,250	325,873
Revenue recognized from performance obligations satisfied in previous periods	21,332	2,371

(d) Unsatisfied long-term contracts

At the end of the reporting period, the total amount of transaction price allocated to the unsatisfied or partially unsatisfied performance obligations is ₩ 1,054,454 million which are expected to be satisfied by 2024, at the latest. Also, as a practical expedient, the Group excluded performance obligation which a contract that has an original expected duration of one year or less.

(e) For the year ended December 31, 2019, the Group recognized an impairment loss amounting to ₩3,900 million (2018: ₩3,509 million) in relation to due from customers and an amortization and other loss of ₩175,950 million (2018: ₩30,673 million) in relation to costs to fulfil a contract.

11. Other Assets

Details of other assets as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Current:		
Advances	220,044	133,331
Prepaid expenses	423,346	393,792
Prepaid value added tax	564,157	546,273
Subtotal	1,207,547	1,073,396
Non-current:		
Long-term prepaid expenses	682,063	542,402
Long-term advances	233,709	246,932
Other investment assets	173	163
Subtotal	915,945	789,497
Total	2,123,492	1,862,893

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12. Property, Plant and Equipment

(a) Details of property, plant and equipment as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	Land	Buildings	Structures	Machinery	Tools	Equipment	Other	Construction -in-progress	Total
At December 31, 2019									
Acquisition cost	3,061,557	9,134,611	402,226	8,862,147	3,422,960	1,084,370	1,187,284	686,665	27,841,820
Accumulated depreciation	(106,334)	(2,722,307)	(199,303)	(5,731,800)	(2,896,881)	(760,929)	(468,950)	-	(12,886,504)
Accumulated impairment losses	-	(173,549)	(6,590)	(231,466)	(16,643)	(5,216)	(338)	-	(433,802)
Government grants	(10,956)	(741)	(8)	(3,849)	(346)	(195)	-	-	(16,095)
Net book amount	2,944,267	6,238,014	196,325	2,895,032	509,090	318,030	717,996	686,665	14,505,419

<i>(in millions of Korean won)</i>	Land	Buildings	Structures	Machinery	Tools	Equipment	Other	Construction -in-progress	Total
At December 31, 2018									
Acquisition cost	2,677,304	7,895,584	388,538	8,626,822	3,222,473	1,020,322	813,914	353,483	24,998,440
Accumulated depreciation	-	(2,041,520)	(188,880)	(5,386,085)	(2,722,808)	(713,706)	(287,439)	-	(11,340,438)
Accumulated impairment losses	-	(155,356)	(1,903)	(144,936)	(10,077)	(1,433)	(304)	-	(314,009)
Government grants	(4,427)	(456)	(9)	(4,765)	(153)	(232)	-	-	(10,042)
Net book amount	2,672,877	5,698,252	197,746	3,091,036	489,435	304,951	526,171	353,483	13,333,951

(b) Changes in property, plant and equipment for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019								Total
	Land	Buildings	Structures	Machinery	Tools	Equipment	Other	Construction -in-progress	
At January 1, 2019	2,672,877	5,698,252	197,746	3,091,036	489,435	304,951	526,171	353,483	13,333,951
Changes in accounting policy ¹	196,232	419,857	1,629	400	5,451	4,771	48,921	-	677,261
Restated net book amount	2,869,109	6,118,109	199,375	3,091,436	494,886	309,722	575,092	353,483	14,011,212
Acquisitions	70,191	478,234	10,553	166,821	233,438	108,466	342,452	1,215,677	2,625,832
Acquisition from business combination	70,132	-	-	222	-	3	-	259,560	329,917
Transfer-in (out)	725	158,321	8,312	727,344	163,812	13,546	19,512	(1,091,572)	-
Disposals and others	(21,005)	(67,417)	(2,359)	(122,029)	(15,326)	(4,228)	(26,265)	(52,978)	(311,607)
Decrease due to transfer of business	(231)	(622)	(104)	(41)	(83)	(708)	(557)	-	(2,346)
Depreciation	(41,353)	(468,619)	(17,152)	(870,583)	(365,042)	(108,926)	(194,945)	-	(2,066,620)
Impairment losses ²	-	(46,544)	(6,327)	(142,385)	(10,731)	(4,391)	(295)	-	(210,673)
Reclassification to assets held for sale	(8,673)	(6,073)	-	-	-	-	-	-	(14,746)
Exchange differences	5,372	72,625	4,027	44,247	8,136	4,546	3,002	2,495	144,450
At December 31, 2019	2,944,267	6,238,014	196,325	2,895,032	509,090	318,030	717,996	686,665	14,505,419

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<i>(in millions of Korean won)</i>	2018								Total
	Land	Buildings	Structures	Machinery	Tools	Equipment	Other	Construction -in-progress	
At January 1, 2018	2,474,436	5,049,170	209,158	2,553,965	508,693	217,899	354,441	433,020	11,800,782
Acquisitions ³	(7,292)	221,973	19,091	237,553	153,667	101,780	304,025	1,856,957	2,887,754
Acquisition from business combination	28,067	144,116	-	254,538	-	74,209	-	70,845	571,775
Transfer-in (out)	187,741	582,430	2,096	1,069,173	152,309	8,631	17,343	(2,019,723)	-
Disposals and others	(9,053)	(5,690)	(11,404)	(84,025)	(6,002)	(5,616)	(27,191)	(5,337)	(154,318)
Decrease due to transfer of business	-	-	-	(3,361)	(318)	(10)	-	-	(3,689)
Depreciation	-	(253,400)	(16,772)	(788,892)	(315,577)	(89,908)	(121,394)	-	(1,585,943)
Impairment losses ²	-	(28,262)	(2,120)	(24,309)	(1,770)	(222)	(1,151)	-	(57,834)
Reclassification to assets held for sale	-	-	-	(115,212)	-	-	-	-	(115,212)
Exchange differences	(1,022)	(12,085)	(2,303)	(8,394)	(1,567)	(1,812)	98	17,721	(9,364)
At December 31, 2018	2,672,877	5,698,252	197,746	3,091,036	489,435	304,951	526,171	353,483	13,333,951

¹ Property, plant and equipment as at January 1, 2019, amounting to ₩677,261 million, were newly recognized upon adoption of Korean IFRS 1116 *Leases*.

² Some of separate cash-generating units under MC, VS and BS segment were tested for impairment as accumulation of operating losses has been experienced and a future downturn in sales is expected. And impairment loss of ₩ 73,303 million (MC: ₩ 16,314 million, VS: ₩ 11,368 million, BS: ₩ 45,621 million) (2018: nil) was recognized as 'other non-operating expenses'. This impairment loss was allocated to machinery, equipment and others, after reducing goodwill allocated to the cash-generating units. The recoverable amount was measured at the higher of fair value less costs of disposal or value in use, and the fair value amount is categorized within 'level 3' of fair value hierarchy.

³ It includes settlement of land purchase price.

(c) Line items including depreciation in the consolidated statements of profit or loss for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
Cost of sales	1,593,586	1,349,890
Selling and marketing expenses	201,172	45,599
Administrative expenses	108,411	64,375
Research and development expenses	105,987	94,326
Service costs	28,982	12,066
Other non-operating expenses	28,482	19,687
Total	2,066,620	1,585,943

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(d) Changes of right-of-use assets for the year ended December 31, 2019, are as follows:

	2019								
<i>(in millions of Korean won)</i>	Land	Buildings	Structures	Machinery	Tools	Equipment	Other	Construction -in-progress	Total
At January 1, 2019	196,594	432,445	1,629	1,705	5,451	5,061	64,358	-	707,243
Acquisitions	64,259	334,204	190	-	6,507	-	80,941	856	486,957
Transfer-in (out)	-	976	-	(115)	-	(45)	-	(816)	-
Disposals and others	-	(50,637)	(241)	-	(35)	(56)	(11,791)	-	(62,760)
Decrease due to transfer of business	-	(300)	-	-	-	-	(194)	-	(494)
Depreciation	(41,353)	(184,620)	(593)	(991)	(2,496)	(2,559)	(40,101)	-	(272,713)
Exchange differences	1,192	12,191	40	87	14	57	3,722	5	17,308
At December 31, 2019	220,692	544,259	1,025	686	9,441	2,458	96,935	45	875,541

The amount recognized as lease income in relation to sublease of the above right-of-use assets for the year ended December 31, 2019, was ₩ 6,677 million (2018: ₩ 7,580 million).

(e) Capitalized borrowing costs and capitalization rates for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
Capitalized borrowing costs	4,384	12,368
Capitalization rate (%)	6.04	4.75

(f) Details of property, plant and equipment provided as collateral as at December 31, 2019 and 2018, are as follows:

i) Details of collateral provided for the Group

	December 31, 2019				
<i>(in millions of Korean won)</i>	Carrying amount	Secured amount	Related line item	Related amount	Secured party
Land and buildings	276,924	207,854	Borrowings and others	259,529	Korea Development Bank and others

	December 31, 2018				
<i>(in millions of Korean won)</i>	Carrying amount	Secured amount	Related line item	Related amount	Secured party
Land and buildings	226,310	192,350	Borrowings and others	248,111	Korea Development Bank and others

ii) Details of collateral provided for external parties

At the end of the reporting period, buildings were pledged as a collateral to guarantee the land lessor's obligation to Shinhan Bank, the mortgagee, within the secured amount of up to ₩7,680 million (2018: ₩6,480 million). The carrying amount of the pledged asset was ₩1,536 million as at December 31, 2019 (2018: ₩1,743 million).

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13. Intangible assets

(a) Details of intangible assets as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	Goodwill	Industrial property rights	Development costs¹	Membership rights	Other	Construction-in-progress¹	Total
At December 31, 2019							
Acquisition cost	642,889	1,012,709	3,140,664	83,231	1,228,265	760,641	6,868,399
Accumulated amortization and impairment losses	(31,108)	(499,933)	(2,648,366)	(1,567)	(783,336)	(212,117)	(4,176,427)
Net book amount	611,781	512,776	492,298	81,664	444,929	548,524	2,691,972
At December 31, 2018							
Acquisition cost	686,694	962,384	2,810,684	84,619	1,268,371	783,091	6,595,843
Accumulated amortization and impairment losses	(1,214)	(463,992)	(2,364,678)	(2,496)	(739,887)	(22,421)	(3,594,688)
Net book amount	685,480	498,392	446,006	82,123	528,484	760,670	3,001,155

¹ As at December 31, 2019, internally generated development costs are included in development costs and construction-in-progress amounting to ₩361,896 million and ₩488,942 million (2018: ₩302,292 million and ₩732,771 million), respectively.

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(b) Changes in intangible assets for the years ended December 31, 2019 and 2018, are as follows:

2019

<i>(in millions of Korean won)</i>	Goodwill	Industrial property rights	Development costs	Membership rights	Other	Construction-in-progress	Total
At January 1, 2019	685,480	498,392	446,006	82,123	528,484	760,670	3,001,155
Changes in accounting policy ¹	-	-	-	-	(15,325)	-	(15,325)
Restated net book amount	685,480	498,392	446,006	82,123	513,159	760,670	2,985,830
Acquisitions	-	169,593	19,583	25	33,167	85,747	308,115
Acquisitions due to business combination ²	1,853	-	-	-	77	-	1,930
Acquisitions by internal development	-	-	5,700	-	-	309,972	315,672
Transfer-in(out)	-	-	389,447	-	11,885	(401,332)	-
Disposals and others	-	(48,748)	(705)	(323)	(1,040)	(4,155)	(54,971)
Decrease due to transfer of business	(45,755)	(3)	-	-	(14,657)	(952)	(61,367)
Amortization	-	(97,396)	(247,450)	(4)	(94,898)	-	(439,748)
Impairment losses ^{3,4}	(29,894)	(9,557)	(120,785)	(197)	(4,795)	(201,379)	(366,607)
Exchange differences	97	495	502	40	2,031	(47)	3,118
At December 31, 2019	611,781	512,776	492,298	81,664	444,929	548,524	2,691,972

2018

<i>(in millions of Korean won)</i>	Goodwill	Industrial property rights	Development costs	Membership rights	Other	Construction-in-progress	Total
At January 1, 2018	145,316	498,152	345,531	79,850	186,244	599,527	1,854,620
Acquisitions	-	152,008	21,733	4,497	75,784	54,008	308,030
Acquisitions due to business combination ⁵	542,346	-	4,639	-	341,472	8,608	897,065
Acquisitions by internal development	-	-	1,762	-	5,291	492,773	499,826
Transfer-in(out)	-	-	357,264	-	12,945	(370,209)	-
Disposals and others	-	(56,532)	(344)	(1,151)	(829)	(1,368)	(60,224)
Decrease due to transfer of business	-	(183)	-	-	-	-	(183)
Amortization	-	(93,215)	(235,500)	-	(85,454)	-	(414,169)
Impairment losses ^{4,6}	(2,111)	(1,655)	(48,809)	(1,080)	(205)	(22,421)	(76,281)
Exchange differences	(71)	(183)	(270)	7	(6,764)	(248)	(7,529)
At December 31, 2018	685,480	498,392	446,006	82,123	528,484	760,670	3,001,155

¹ Intangible assets as at January 1, 2019, amounting to ₩15,325 million, were reclassified to property, plant and equipment upon adoption of Korean IFRS 1116 Leases.

² In 2019, the Group recognized goodwill amounting to ₩1,853 million arising from business combination with LG Corp. U.S.A..

³ Some of cash-generating units under MC, VS and BS segment, were tested for impairment as accumulation of operating losses has been experienced and a future downturn in sales is expected. And impairment loss of ₩44,896 million (MC: ₩40,041 million, VS: ₩1,894 million, BS: ₩2,961 million) (2018: nil) was recognized as 'other non-operating expenses'. This impairment loss was allocated to goodwill, industrial property rights and

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development costs. The recoverable amount was measured at the higher of fair value less costs of disposal or value in use, and the fair value amount is categorized within 'level 3' of fair value hierarchy.

⁴ As a result of an impairment test for all projects related to internally generated development costs and others, an impairment loss of development costs relating to certain projects determined to have less business value, was recognized as other non-operating expenses.

⁵ In 2018, the Group recognized goodwill amounting to ₩542,346 million and other identifiable intangible assets arising from business combination with ZKW Holding GmbH, its subsidiaries and related entities.

⁶ In 2018, the Group disposed of Membrane business under other segments, and an impairment loss on goodwill amounting to ₩2,111 million, based on the recoverable amount, was recognized as 'other non-operating expenses' before disposal.

(c) Line items including amortization of intangible assets for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
Cost of sales	253,963	224,871
Selling and marketing expenses	27,042	23,460
Administrative expenses	68,528	76,761
Research and development expenses	88,516	87,505
Service costs	1,682	1,570
Other non-operating expenses	17	2
Total	439,748	414,169

(d) Capitalized borrowing costs and capitalization rates for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
Capitalized borrowing costs	524	455
Capitalization rate (%)	3.07	3.15

(e) There are no intangible assets pledged as a collateral for borrowings as at December 31, 2019.

(f) Impairment tests for goodwill

i) Goodwill is allocated among the Group's cash generating units (CGUs) under each operating segment. As at December 31, 2019, an operating segment-level summary of goodwill allocation is presented below:

<i>(in millions of Korean won)</i>	H&A	VS	Others	Total
Goodwill	64,531	542,346	4,904	611,781

ii) The recoverable amount of CGUs has been determined based on value-in-use or fair value less costs of disposal. These calculations use pre-tax cash flow projections based on financial budgets approved by the management covering a five-year period. Cash flows beyond the five-year period are extrapolated using the estimated growth rate which does not exceed the long-term average growth rate for the industry in which the identified CGUs

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operate.

- iii) Management determined the estimated pre-tax cash flow based on past performance and its expectations of market development. Value-in-use is measured by applying the pre-tax discount rates according to the pre-tax cash flows reflecting specific risks relating to the relevant CGUs by operating segments. Discount rates and nominal long-term growth rates used for calculating the value-in-use of major divisions are as follows:

	<u>H&A</u>	<u>VS</u>	<u>Others</u>
Discount rates	12.3%	9.8%	9.8%
Nominal permanent growth rates	0.0%	2.0%	0.0%

- (g) Research and development expenses

Research and development expenses for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	<u>2019</u>	<u>2018</u>
Uncapitalized research and development expenditures	3,707,165	3,472,711
Amortization from internally generated development costs	186,938	162,520
Total	3,894,103	3,635,231

14. Investments in Associates and Joint Ventures

- (a) Investments in associates and joint ventures

- i) Carrying amounts of investments in associates and joint ventures, as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Associates	4,405,567	5,386,252
Joint ventures	138,954	151,304
Total	4,544,521	5,537,556

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ii) Investments in associates as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019				December 31, 2018			
	Acquisition cost	Net asset amount	Unrealized gain	Carrying amount	Acquisition cost	Net asset amount	Unrealized gain	Carrying amount
LG Display Co., Ltd.	679,218	4,298,463	(116,170)	4,182,293	679,218	5,298,615	(107,531)	5,191,084
Ericsson-LG Co., Ltd	12,649	52,716	-	52,716	12,649	47,227	-	47,227
Hitachi-LG Data Storage Inc.(HLDS)	101,961	49,686	(1,176)	48,510	101,961	28,380	(1,198)	27,182
Korea Information Certificate Authority Inc.	1,745	5,518	-	5,518	1,745	5,200	-	5,200
LG Fuel Cell Systems Inc. ¹	-	-	-	-	111,837	-	-	-
SKT Vietnam PTE., Ltd. ²	-	-	-	-	-	-	-	-
One-Red, LLC ³	2,257	2,260	-	2,260	3,128	2,971	-	2,971
Kiwigrid GmbH ³	13,019	7,873	-	7,873	13,019	9,880	-	9,880
CCP-LGE OWNER, LLC ³	11,652	11,288	-	11,288	11,652	10,819	-	10,819
ROBOTIS Co., Ltd. ³	9,000	9,086	-	9,086	9,000	9,381	-	9,381
Acryl Inc. ³	2,000	1,799	-	1,799	1,000	894	-	894
Robostar Co.,Ltd	88,112	85,158	(934)	84,224	82,045	81,614	-	81,614
Total	921,613	4,523,847	(118,280)	4,405,567	1,027,254	5,494,981	(108,729)	5,386,252

¹ Liquidation was completed in 2019.

² Liquidation was completed in 2018.

³ The financial statements as at November 30, 2019 were used due to a different closing date.

iii) Investments in joint ventures as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019				December 31, 2018			
	Acquisition cost	Net asset amount	Unrealized gain	Carrying amount	Acquisition cost	Net asset amount	Unrealized gain	Carrying amount
LG Holdings(HK) Ltd.	47,449	88,301	-	88,301	75,693	108,108	-	108,108
Arcelik-LG Klima Sanayi ve Ticaret A.S.(LGEAT)	14,718	31,396	(63)	31,333	14,718	27,348	(193)	27,155
EIC PROPERTIES PTE LTD.	9,636	15,696	-	15,696	9,636	14,882	-	14,882
LG-MRI LLC	516	1,216	-	1,216	516	1,159	-	1,159
Neolite ZKW Lightings PVT Ltd.	-	-	-	-	-	-	-	-
LG-LHT Aircraft Solutions GmbH	5,085	243	-	243	-	-	-	-
LG-LHT Passenger Solutions GmbH	4,553	1,600	-	1,600	-	-	-	-
GUANGDONG SMART LIFE TECHNOLOGY CO., LTD	591	565	-	565	-	-	-	-
Total	82,548	139,017	(63)	138,954	100,563	151,497	(193)	151,304

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(b) Associates and joint ventures

i) Associates as at December 31, 2019, are as follows:

Name of associate	Location	Closing month	Percentage of ownership	Nature of relationships with the Group
LG Display Co., Ltd.	Korea	December	37.9%	Production and supply of display products
Ericsson-LG Co., Ltd	Korea	December	25.0%	Supply of communication devices and network solution products
Hitachi-LG Data Storage Inc.(HLDS)	Japan	December	49.0%	Production and supply of data storage products
Korea Information Certificate Authority Inc. ¹	Korea	December	6.5%	Certificate services
One-Red, LLC	USA	March	25.0%	DVD related patent licensing
Kiwigrd GmbH ¹	Germany	December	16.3%	Supply of energy management solutions
CCP-LGE OWNER, LLC ²	USA	December	70.2%	Solar power plant
ROBOTIS Co., Ltd. ¹	Korea	December	8.5%	Production and sales of personal robot
Acryl Inc. ¹	Korea	December	14.5%	Development and sales of software
Robostar Co.,Ltd	Korea	December	33.4%	Production and sales of industrial robot

¹ Classified as an associate although the percentage of ownership is less than 20% because the Group can exercise a significant influence in the Board of Directors of the investee.

² Classified as an associate although the percentage of ownership is more than 50% because the Group does not have the right to control by an agreement with other shareholders.

ii) Joint ventures as at December 31, 2019, are as follows:

All joint arrangements, over which the Group has joint control, are structured through separate companies and are categorized as joint ventures as the parties with joint control are assumed to have rights to the net assets of the arrangement.

Name of joint venture	Location	Closing month	Percentage of ownership	Nature of relationships with the Group
LG Holdings(HK) Ltd.	China	December	49.0%	Real estates
Arcelik-LG Klima Sanayi ve Ticaret A.S.(LGEAT)	Turkey	December	50.0%	Production and supply of air conditioning products
EIC PROPERTIES PTE LTD.	Singapore	December	38.2%	Real estates
LG-MRI LLC	USA	December	50.0%	Production and supply of digital display products
Neolite ZKW Lightings PVT Ltd.	India	March	26.0%	Production and sales of vehicle components
LG-LHT Aircraft Solutions GmbH	Germany	December	49.0%	Production and sales of aircraft components
LG-LHT Passenger Solutions GmbH	Germany	December	49.0%	Production and sales of aircraft components
GUANGDONG SMART LIFE TECHNOLOGY CO., LTD	China	December	35.0%	Sales of electronic products

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iii) All associates and joint ventures are accounted for using the equity method.

(c) Changes in investments in associates and joint ventures

i) Changes in the carrying amounts of investments in associates for the years ended December 31, 2019 and 2018, are as follows:

	2019								
	Beginning balance	Acquisition	Share of profit(loss)	Other comprehensive income (excluding remeasurement)	Remeasurement component	Dividend/recovery	Exchange difference	Changes in ownership interest over associates	Ending balance
LG Display Co., Ltd.	5,191,084	-	(1,081,220)	36,935	35,494	-	-	-	4,182,293
Ericsson-LG Co., Ltd	47,227	-	8,674	(148)	(3,037)	-	-	-	52,716
Hitachi-LG Data Storage Inc.(HLDS)	27,182	-	20,064	1,264	-	-	-	-	48,510
Korea Information Certificate Authority Inc.	5,200	-	519	(40)	-	(161)	-	-	5,518
LG Fuel Cell Systems Inc.	-	-	-	-	-	-	-	-	-
One-Red, LLC	2,971	-	31	-	-	(871)	129	-	2,260
Kiwigrid GmbH	9,880	-	(2,029)	22	-	-	-	-	7,873
CCP-LGE OWNER, LLC	10,819	-	(330)	-	-	-	799	-	11,288
ROBOTIS Co.,Ltd.	9,381	-	(302)	7	-	-	-	-	9,086
Acryl Inc.	894	1,000	(95)	-	-	-	-	-	1,799
Robostar Co.,Ltd	81,614	6,067	(3,365)	54	-	(146)	-	-	84,224
Total	5,386,252	7,067	(1,058,053)	38,094	32,457	(1,178)	928	-	4,405,567

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(in millions of Korean won)

2018

	Beginning balance	Acquisition	Share of profit(loss) ¹	Other comprehensive income (excluding remeasurement)	Remeasurement component	Dividend/recovery	Exchange difference	Changes in ownership interest over associates	Ending balance
LG Display Co., Ltd.	5,357,492	-	(95,504)	(4,812)	1,721	(67,813)	-	-	5,191,084
Ericsson-LG Co., Ltd	43,004	-	2,734	1,206	283	-	-	-	47,227
Hitachi-LG Data Storage Inc.(HLDS)	-	-	28,608	(1,426)	-	-	-	-	27,182
Korea Information Certificate Authority Inc.	4,825	-	524	(49)	-	(100)	-	-	5,200
LG Fuel Cell Systems Inc.	34,290	7,178	(21,062)	404	(59)	-	-	(20,751)	-
SKT Vietnam PTE., Ltd.	-	-	-	-	-	-	-	-	-
One-Red, LLC	3,426	-	(532)	-	-	-	77	-	2,971
Kiwigrid GmbH	11,243	-	(1,551)	(11)	-	-	-	199	9,880
CCP-LGE OWNER, LLC	11,652	-	(1,319)	-	-	-	486	-	10,819
ROBOTIS Co.,Ltd.	9,000	-	(208)	(10)	-	-	-	599	9,381
Acryl Inc.	-	1,000	(124)	-	-	-	-	18	894
Robostar Co.,Ltd	-	82,045	(447)	16	-	-	-	-	81,614
Total	5,474,932	90,223	(88,881)	(4,682)	1,945	(67,913)	563	(19,935)	5,386,252

¹ The Group recognized additional equity method gain of ₩1,635 million for loans to Hitachi-LG Data Storage Inc. in 2018.

ii) Changes in the carrying amounts of investments in joint ventures for the years ended December 31, 2019 and 2018, are as follows:

(in millions of Korean won)

2019

	Beginning balance	Acquisition	Share of profit (loss)	Other comprehensive income (excluding remeasurement)	Remeasurement component	Dividend/recovery	Exchange difference	Changes in ownership interest over joint ventures	Ending balance
LG Holdings(HK) Ltd.	108,108	-	6,907	2,468	-	(29,182)	-	-	88,301
Arcelic-LG Klima Sanayi ve Ticarta A.S.(LGEAT)	27,155	-	6,431	(2,253)	-	-	-	-	31,333
EIC PROPERTIES PTE LTD.	14,882	-	103	711	-	-	-	-	15,696
LG-MRI LLC	1,159	-	331	-	-	(337)	63	-	1,216
Neolite ZKW Lightings PVT Ltd.	-	-	-	-	-	-	-	-	-
LG-LHT Aircraft Solutions GmbH	-	5,085	(4,850)	8	-	-	-	-	243
LG-LHT Passenger Solutions GmbH	-	4,553	(2,950)	(3)	-	-	-	-	1,600
GUANGDONG SMART LIFE TECHNOLOGY CO., LTD	-	591	(15)	(11)	-	-	-	-	565
Total	151,304	10,229	5,957	920	-	(29,519)	63	-	138,954

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	2018								
	Beginning balance	Acquisition	Share of profit (loss)	Other comprehensive income (excluding remeasurement)	Remeasurement component	Dividend/recovery	Exchange difference	Changes in ownership interest over joint ventures	Ending balance
LG Holdings(HK) Ltd.	95,632	-	6,835	5,641	-	-	-	-	108,108
Arcelic-LG Klima Sanayi ve Ticarta A.S.(LGEAT)	34,498	-	2,562	(9,905)	-	-	-	-	27,155
EIC PROPERTIES PTE LTD.	14,181	-	329	372	-	-	-	-	14,882
LG-MRI LLC	1,088	-	359	-	-	(321)	33	-	1,159
Neolite ZKW Lightings PVT Ltd.	-	-	-	-	-	-	-	-	-
Total	145,399	-	10,085	(3,892)	-	(321)	33	-	151,304

(d) Summarized financial information of the associates that are material to the reporting entity as at December 31, 2019 and 2018, and for the years ended December 31, 2019 and 2018, is as follows:

- LG Display Co., Ltd. and its subsidiaries

(in millions of Korean won)	December 31, 2019	December 31, 2018
Current assets	10,248,315	8,800,127
Non-current assets	25,326,248	24,375,583
Total assets	35,574,563	33,175,710
Current liabilities	10,984,976	9,954,483
Non-current liabilities	12,101,306	8,334,981
Total liabilities	23,086,282	18,289,464
Equity attributable to owners of LG Display Co., Ltd.	11,340,483	13,979,189
Non-controlling interests	1,147,798	907,057
Total equity	12,488,281	14,886,246

(in millions of Korean won)	2019	2018
Net sales	23,475,567	24,336,571
Loss for the year	(2,872,078)	(179,443)
Equity attributable to owners of LG Display Co., Ltd.		
Loss for the year	(2,829,705)	(207,239)
Other comprehensive loss, net of tax	192,757	(8,147)
Total comprehensive loss, net of tax	(2,636,948)	(215,386)

There are no dividends received from LG Display Co., Ltd. for the year ended December 31, 2019 (2018: ₩67,813 million).

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- (e) Reconciliations of the summarized financial information of associates that are material to the reporting entity to the carrying amount of the Group's interest for the years ended December 31, 2019 and 2018, are as follows:

- LG Display Co., Ltd. and its subsidiaries

<i>(in millions of Korean won)</i>	2019	2018
Opening equity attributable to owners of LG Display Co., Ltd.	13,979,189	14,373,483
Loss for the year	(2,829,705)	(207,239)
Other comprehensive loss, net of tax	192,757	(8,147)
Dividends		(178,908)
Others	(1,758)	-
Closing equity attributable to owners of LG Display Co., Ltd.	11,340,483	13,979,189
Group ownership (%)	37.9	37.9
The Group's share at the end of the reporting period	4,298,463	5,298,615
Unrealized gain	(116,170)	(107,531)
Carrying amount at the end of the reporting period	4,182,293	5,191,084

- (f) The Group's share in the operating results of the individually insignificant associates and joint ventures for the years ended December 31, 2019 and 2018, is as follows:

<i>(in millions of Korean won)</i>	2019		2018	
	Associates	Joint ventures	Associates	Joint ventures
Profit for the year	24,080	5,827	7,864	10,269
Other comprehensive income (loss), net of tax	(1,882)	921	925	(3,859)
Total comprehensive income, net of tax	22,198	6,748	8,789	6,410

- (g) There is no accumulated unrecognized change in equity due to discontinued use of the equity method for the years ended December 31, 2019 and 2018.

- (h) Details of marketable investments in associates as at December 31, 2019 and 2018, are as follows:

	Type	December 31, 2019			
		Shares held (Unit: shares)	Price per share (Unit: Korean won)	Fair value (in millions of Korean won)	Book amount
LG Display Co., Ltd.	Associate	135,625,000	16,250	2,203,906	4,182,293
Korea Information Certificate Authority Inc.	Associate	2,010,247	3,785	7,609	5,518
Robostar Co.,Ltd	Associate	3,256,500	17,400	56,663	84,224
ROBOTIS Co.,Ltd.	Associate	961,550	12,400	11,923	9,086

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	December 31, 2018				
	Type	Shares held (Unit: shares)	Price per share (Unit: Korean won)	Fair value (in millions of Korean won)	Book amount
LG Display Co., Ltd.	Associate	135,625,000	18,050	2,448,031	5,191,084
Korea Information Certificate Authority Inc.	Associate	2,010,247	3,775	7,589	5,200
Robostar Co.,Ltd	Associate	2,927,735	24,000	70,266	81,614
ROBOTIS Co.,Ltd.	Associate	961,550	17,200	16,539	9,381

15. Investment Properties

(a) Details of investment properties as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019		
	Land	Buildings	Total
At December 31, 2019			
Acquisition cost	194	1,265	1,459
Accumulated depreciation	-	(1,168)	(1,168)
Net book amount	194	97	291

<i>(in millions of Korean won)</i>	December 31, 2018		
	Land	Buildings	Total
At December 31, 2018			
Acquisition cost	63,864	53,960	117,824
Accumulated depreciation	-	(23,428)	(23,428)
Net book amount	63,864	30,532	94,396

(b) Changes in investment properties for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019		
	Land	Buildings	Total
At January 1	63,864	30,532	94,396
Depreciation	-	(759)	(759)
Disposals and others	(63,670)	(29,676)	(93,346)
At December 31	194	97	291

<i>(in millions of Korean won)</i>	2018		
	Land	Buildings	Total
At January 1	63,864	31,848	95,712
Depreciation	-	(1,316)	(1,316)
At December 31	63,864	30,532	94,396

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- (c) The fair value of investment property is valued by an independent professional appraiser with certified qualification or determined based on the evaluation reflecting official land value or recently available transaction price of similar properties, and it is classified as 'level 3' of the fair value hierarchy. The fair value of investment property as at December 31, 2019, is ₩829 million (December 31, 2018: ₩118,868 million).
- (d) Rental income amounting to ₩1,035 million (2018: ₩1,091 million) and rental expenses amounting to ₩1,511 million (2018: ₩2,112 million) are recognized in the consolidated statements of profit or loss relating to the investment properties for the year ended December 31, 2019.
- (e) Gains on disposal amounting to ₩ 6,317 million are recognized relating to investment properties for the year ended December 31, 2019.
- (f) At the end of the reporting period, the Group assumes obligation for repairs and maintenance of investment property owned by the Group.

16. Borrowings

- (a) The carrying amounts of borrowings as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Current		
Short-term borrowings	271,541	293,221
Current portion of long-term borrowings	410,329	128,760
Current portion of debentures	961,786	983,135
Subtotal	1,643,656	1,405,116
Non-current		
Long-term borrowings	3,908,525	4,241,936
Debentures	4,935,157	5,254,134
Subtotal	8,843,682	9,496,070
Total	10,487,338	10,901,186

- (b) Details of borrowings as at December 31, 2019 and 2018, are as follows:

- i) Short-term borrowings

<i>(in millions of Korean won)</i>	Annual interest rate at		Carrying amount	
	December 31, 2019	December 31, 2018	December 31, 2019	December 31, 2018
General loans				
HSBC and others	0.55 ~ 5.98	0.68 ~ 6.73	271,541	293,221
Total			271,541	293,221

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ii) Long-term borrowings

<i>(in millions of Korean won)</i>	Maturity date	Annual interest rate at December 31, 2019(%)	December 31, 2019		
			Total	Current	Non-current
Local currency loans					
Kookmin Bank	2022.10.12	3.18	30,000	-	30,000
Kookmin Bank	2027. 1.28	3M CD+0.91	190,000	20,357	169,643
Kookmin Bank	2029. 4.30	3M CD+1.14	190,000	20,000	170,000
Nonghyup Bank	2021. 9.13	2.68	30,000	-	30,000
Nonghyup Bank	2030. 7. 7	3M CD+1.05	190,000	4,750	185,250
Shinhan Bank	2023. 6. 8	3.79	20,000	-	20,000
Shinhan Bank	2026. 5.27	3.00	30,000	-	30,000
Shinhan Bank	2021. 8.30	2.38	50,000	25,000	25,000
Shinhan Bank	2021.10.18	2.68	69,870	-	69,870
Woori Bank	2030. 4.15	3M CD+0.82	390,000	19,500	370,500
Industrial & Commercial Bank of China	2020. 4.10	2.43	50,000	50,000	-
Agricultural Bank of China	2020. 4.10	2.43	40,000	40,000	-
Bank of China	2027. 1.15	3M CD+0.95	100,000	10,500	89,500
KEB Hana Bank	2024. 1. 3	3M CD+0.98	185,000	25,000	160,000
Korea Development Bank	2022. 7.10	2.90~3.27	150,000	-	150,000
Korea Development Bank	2023.12.19	2.65	120,000	30,000	90,000
Korea Development Bank	2023.12.19	2.69	80,000	20,000	60,000
Korea Development Bank	2023. 5.30	2.93~3.26	200,000	-	200,000
Korea Development Bank	2025. 9. 9	3.00	200,000	-	200,000
The Export-Import Bank of Korea	2026. 7.29	2.21	100,000	14,286	85,714
The Export-Import Bank of Korea	2026. 7.29	2.21	100,000	14,286	85,714
The Export-Import Bank of Korea	2027. 5.25	2.75	135,000	-	135,000
The Export-Import Bank of Korea	2027. 5.25	2.75	50,000	-	50,000
The Export-Import Bank of Korea	2027. 5.25	2.75	15,000	-	15,000
The Export-Import Bank of Korea	2030. 8. 1	3.50	200,000	-	200,000
Foreign currency loans					
KEB Hana Bank	2025. 4.23	3M LIBOR+1.2	115,780	-	115,780
KEB Hana Bank	2027. 5.17	3M LIBOR+1.6	115,780	-	115,780
The Export-Import Bank of Korea	2030. 8. 1	2.50	129,743	-	129,743
HSBC and others	2020.6.22 ~ 2030.2.26	0.75 ~ 12.12	1,042,681	116,650	926,031
Total			4,318,854	410,329	3,908,525

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<i>(in millions of Korean won)</i>	Maturity date	Annual interest rate at December 31, 2018(%)	December 31, 2018		
			Total	Current	Non-current
Local currency loans					
Kookmin Bank	2019.11. 8	2.35	10,000	10,000	-
Kookmin Bank	2022.10.12	3.18	50,000	20,000	30,000
Kookmin Bank	2027. 1.28	3M CD+0.91	190,000	-	190,000
Kookmin Bank	2029. 4.30	3M CD+1.14	200,000	10,000	190,000
Nonghyup Bank	2021. 9.13	2.68	30,000	-	30,000
Nonghyup Bank	2030. 7. 7	3M CD+1.05	190,000	-	190,000
Shinhan Bank	2020. 4.16	3.11	667	500	167
Shinhan Bank	2023. 6. 8	3.79	20,000	-	20,000
Shinhan Bank	2021. 8.30	2.38	50,000	-	50,000
Shinhan Bank	2021.10.18	2.68	69,801	-	69,801
Woori Bank	2030. 4.15	3M CD+0.82	390,000	-	390,000
Industrial & Commercial Bank of China	2020. 4.10	2.43	50,000	-	50,000
Agricultural Bank of China	2020. 4.10	2.43	40,000	-	40,000
Bank of China	2027. 1.15	3M CD+0.95	100,000	-	100,000
Kepco Energy Solution	2026. 1.31	4.00	8,025	2,260	5,765
KEB Hana Bank	2024. 1. 3	3M CD+0.98	200,000	15,000	185,000
Korea Development Bank	2019. 5.27	2.81	30,000	30,000	-
Korea Development Bank	2022. 7.10	2.90~3.27	150,000	-	150,000
Korea Development Bank	2023. 5.30	2.93~3.26	200,000	-	200,000
Korea Development Bank	2023.12.19	2.65	120,000	-	120,000
Korea Development Bank	2023.12.19	2.69	80,000	-	80,000
Korea Development Bank	2025. 9. 9	3.00	200,000	-	200,000
The Export-Import Bank of Korea	2026. 7.29	2.21	100,000	-	100,000
The Export-Import Bank of Korea	2026. 7.29	2.21	100,000	-	100,000
The Export-Import Bank of Korea	2027. 5.25	2.75	135,000	-	135,000
The Export-Import Bank of Korea	2027. 5.25	2.75	50,000	-	50,000
The Export-Import Bank of Korea	2027. 5.25	2.75	15,000	-	15,000
The Export-Import Bank of Korea	2030. 8. 1	3.50	200,000	-	200,000
Foreign currency loans					
KEB Hana Bank	2025. 4.23	3M LIBOR+1.20	111,810	-	111,810
KEB Hana Bank	2027. 5.17	3M LIBOR+1.60	111,810	-	111,810
The Export-Import Bank of Korea	2030. 8. 1	2.50	127,916	-	127,916
HSBC and others	2019.5.27 ~ 2030.2.26	0.75 ~ 12.12	1,040,667	41,000	999,667
Total			4,370,696	128,760	4,241,936

The Group entered into interest rate swap and cross-currency swap contracts to hedge cash flow risks related to floating interest rates and foreign exchange rates of some of these borrowings (Note 39).

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iii) Debentures

<i>(in millions of Korean won)</i>	Maturity Date	Annual interest rate at December 31, 2019(%)	December 31, 2019		
			Total	Current	Non-current
Fixed rate notes in local currency					
Private, non-guaranteed bonds(34-2nd)	2020. 2.13	2.90	90,000	90,000	-
Public, non-guaranteed bonds(35-2nd)	2020.11.26	2.54	60,000	60,000	-
Private, non-guaranteed bonds(36-2nd)	2020. 2.12	2.07	20,000	20,000	-
Public, non-guaranteed bonds(37-2nd)	2021. 4.19	2.21	70,000	-	70,000
Public, non-guaranteed bonds(39-1st)	2020. 2.13	1.94	150,000	150,000	-
Public, non-guaranteed bonds(39-2nd)	2022. 2.13	2.42	100,000	-	100,000
Private, non-guaranteed bonds(40-1st)	2025. 1.10	3.32	50,000	-	50,000
Private, non-guaranteed bonds(40-2nd)	2028. 1.10	3.92	30,000	-	30,000
Public, non-guaranteed bonds(41-1st)	2021. 5. 7	2.64	50,000	-	50,000
Public, non-guaranteed bonds(41-2nd)	2023. 5. 8	3.06	100,000	-	100,000
Private, non-guaranteed bonds(68-1st)	2020. 5.23	3.29	100,000	100,000	-
Private, non-guaranteed bonds(68-2nd)	2020. 5.24	3.29	20,000	20,000	-
Private, non-guaranteed bonds(68-3rd)	2023. 5.22	3.68	50,000	-	50,000
Private, non-guaranteed bonds(68-4th)	2023. 5.23	3.68	30,000	-	30,000
Public, non-guaranteed bonds(69-3rd)	2020. 7.31	3.85	150,000	150,000	-
Public, non-guaranteed bonds(71-2nd)	2020.10.18	3.82	110,000	110,000	-
Public, non-guaranteed bonds(71-3rd)	2023.10.18	4.25	90,000	-	90,000
Public, non-guaranteed bonds(73-3rd)	2021. 1.24	3.95	160,000	-	160,000
Public, non-guaranteed bonds(73-4th)	2024. 1.24	4.44	120,000	-	120,000
Public, non-guaranteed bonds(74-2nd)	2021. 5.29	3.52	130,000	-	130,000
Public, non-guaranteed bonds(74-3rd)	2024. 5.29	4.04	210,000	-	210,000
Public, non-guaranteed bonds(74-4th)	2029. 5.29	4.44	60,000	-	60,000
Private, non-guaranteed bonds(75th)	2026. 7.16	3.96	100,000	-	100,000
Private, non-guaranteed bonds(76-1st)	2028.11.17	3.79	40,000	-	40,000
Private, non-guaranteed bonds(76-2nd)	2028.11.18	3.79	60,000	-	60,000
Public, non-guaranteed bonds(77-1st)	2020. 2. 2	2.28	210,000	210,000	-
Public, non-guaranteed bonds(77-2nd)	2022. 2. 2	2.51	230,000	-	230,000
Public, non-guaranteed bonds(77-3rd)	2025. 2. 2	2.97	210,000	-	210,000
Public, non-guaranteed bonds(77-4th)	2030. 2. 2	3.45	100,000	-	100,000
Public, non-guaranteed bonds(78-2nd)	2021. 2.24	2.14	200,000	-	200,000
Public, non-guaranteed bonds(78-3rd)	2023. 2.24	2.45	140,000	-	140,000
Public, non-guaranteed bonds(79-2nd)	2021. 9. 6	1.75	90,000	-	90,000
Public, non-guaranteed bonds(79-3rd)	2023. 9. 6	2.08	130,000	-	130,000
Public, non-guaranteed bonds(79-4th)	2026. 9. 6	2.67	150,000	-	150,000

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<i>(in millions of Korean won)</i>	Maturity Date	Annual interest rate at December 31, 2019(%)	December 31, 2019		
			Total	Current	Non-current
Private, non-guaranteed bonds(81st)	2027. 3.10	3.42	50,000	-	50,000
Private, non-guaranteed bonds(82nd)	2027. 3.22	3.29	50,000	-	50,000
Public, non-guaranteed bonds(83-1st)	2022. 4.28	2.36	160,000	-	160,000
Public, non-guaranteed bonds(83-2nd)	2024. 4.28	2.79	130,000	-	130,000
Public, non-guaranteed bonds(83-3rd)	2027. 4.28	3.20	70,000	-	70,000
Private, non-guaranteed bonds(85-1st)	2027.11.17	3.62	30,000	-	30,000
Private, non-guaranteed bonds(85-2nd)	2032.11.17	4.03	20,000	-	20,000
Private, non-guaranteed bonds(87-1st)	2026. 1. 4	3.26	120,000	-	120,000
Private, non-guaranteed bonds(87-2nd)	2028. 1. 4	3.55	10,000	-	10,000
Private, non-guaranteed bonds(88-1st)	2033. 1.31	4.21	60,000	-	60,000
Private, non-guaranteed bonds(89-1st)	2026. 3.16	3.39	80,000	-	80,000
Private, non-guaranteed bonds(89-2nd)	2028. 3.16	3.71	10,000	-	10,000
Private, non-guaranteed bonds(90th)	2038. 4. 3	4.20	20,000	-	20,000
Public, non-guaranteed bonds(91-1st)	2025. 5.28	3.00	60,000	-	60,000
Public, non-guaranteed bonds(91-2nd)	2028. 5.28	3.52	200,000	-	200,000
Public, non-guaranteed bonds(91-3rd)	2033. 5.28	3.75	90,000	-	90,000
Public, non-guaranteed bonds(93-1st)	2024. 2.21	2.08	50,000	-	50,000
Public, non-guaranteed bonds(93-2nd)	2026. 2.21	2.29	60,000	-	60,000
Public, non-guaranteed bonds(93-3rd)	2029. 2.21	2.58	280,000	-	280,000
Public, non-guaranteed bonds(93-4th)	2034. 2.21	2.95	110,000	-	110,000
Private, non-guaranteed bonds(94th)	2034. 4. 3	2.79	70,000	-	70,000
Floating rate notes in foreign currency					
Private, non-guaranteed bonds(80th)	2022. 2. 2	1M LIBOR+0.90	115,780	-	115,780
Private, guaranteed bonds(84th)	2023. 2.24	3M EURIBOR+0.75	129,743	-	129,743
Private, non-guaranteed bonds(86-1st)	2020.11.22	1M LIBOR+0.78	52,101	52,101	-
Private, non-guaranteed bonds(86-2nd)	2022.11.22	1M LIBOR+0.86	98,414	-	98,414
Private, non-guaranteed bonds(92nd)	2028. 6. 8	3M LIBOR+1.61	115,780	-	115,780
Private, guaranteed bonds	2026.10.26	3M LIBOR+1.1	57,890	-	57,890
Less: discount on debentures			(12,765)	(315)	(12,450)
Total			5,896,943	961,786	4,935,157

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<i>(in millions of Korean won)</i>	Maturity Date	Annual interest rate at December 31, 2018(%)	December 31, 2018		
			Total	Current	Non-current
Fixed rate notes in local currency					
Public, non-guaranteed bonds(33-2nd)	2019.11.10	2.98	70,000	70,000	-
Private, non-guaranteed bonds(34-2nd)	2020. 2.13	2.90	90,000	-	90,000
Public, non-guaranteed bonds(35-2nd)	2020.11.26	2.54	60,000	-	60,000
Private, non-guaranteed bonds(36-1st)	2019. 2.12	2.02	30,000	30,000	-
Private, non-guaranteed bonds(36-2nd)	2020. 2.12	2.07	20,000	-	20,000
Public, non-guaranteed bonds(37-1st)	2019. 4.19	1.90	80,000	80,000	-
Public, non-guaranteed bonds(37-2nd)	2021. 4.19	2.21	70,000	-	70,000
Private, non-guaranteed bonds(38th)	2019. 9.21	1.95	60,000	60,000	-
Public, non-guaranteed bonds(39-1st)	2020. 2.13	1.94	150,000	-	150,000
Public, non-guaranteed bonds(39-2nd)	2022. 2.13	2.42	100,000	-	100,000
Private, non-guaranteed bonds(40-1st)	2025. 1.10	3.32	50,000	-	50,000
Private, non-guaranteed bonds(40-2nd)	2028. 1.10	3.92	30,000	-	30,000
Public, non-guaranteed bonds(41-1st)	2021. 5.07	2.64	50,000	-	50,000
Public, non-guaranteed bonds(41-2nd)	2023. 5.08	3.06	100,000	-	100,000
Private, non-guaranteed bonds(68-1st)	2020. 5.23	3.29	100,000	-	100,000
Private, non-guaranteed bonds(68-2nd)	2020. 5.24	3.29	20,000	-	20,000
Private, non-guaranteed bonds(68-3rd)	2023. 5.22	3.68	50,000	-	50,000
Private, non-guaranteed bonds(68-4th)	2023. 5.23	3.68	30,000	-	30,000
Public, non-guaranteed bonds(69-3rd)	2020. 7.31	3.85	150,000	-	150,000
Public, non-guaranteed bonds(71-2nd)	2020.10.18	3.82	110,000	-	110,000
Public, non-guaranteed bonds(71-3rd)	2023.10.18	4.25	90,000	-	90,000
Public, non-guaranteed bonds(73-2nd)	2019. 1.24	3.60	120,000	120,000	-
Public, non-guaranteed bonds(73-3rd)	2021. 1.24	3.95	160,000	-	160,000
Public, non-guaranteed bonds(73-4th)	2024. 1.24	4.44	120,000	-	120,000
Public, non-guaranteed bonds(74-1st)	2019. 5.29	3.30	200,000	200,000	-
Public, non-guaranteed bonds(74-2nd)	2021. 5.29	3.52	130,000	-	130,000
Public, non-guaranteed bonds(74-3rd)	2024. 5.29	4.04	210,000	-	210,000
Public, non-guaranteed bonds(74-4th)	2029. 5.29	4.44	60,000	-	60,000
Private, non-guaranteed bonds(75th)	2026. 7.16	3.96	100,000	-	100,000
Private, non-guaranteed bonds(76-1st)	2028.11.17	3.79	40,000	-	40,000
Private, non-guaranteed bonds(76-2nd)	2028.11.18	3.79	60,000	-	60,000
Public, non-guaranteed bonds(77-1st)	2020. 2. 2	2.28	210,000	-	210,000
Public, non-guaranteed bonds(77-2nd)	2022. 2. 2	2.51	230,000	-	230,000
Public, non-guaranteed bonds(77-3rd)	2025. 2. 2	2.97	210,000	-	210,000
Public, non-guaranteed bonds(77-4th)	2030. 2. 2	3.45	100,000	-	100,000

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<i>(in millions of Korean won)</i>	Maturity Date	Annual interest rate at December 31, 2018(%)	December 31, 2018		
			Total	Current	Non-current
Public, non-guaranteed bonds(78-1st)	2019. 2.24	1.88	110,000	110,000	-
Public, non-guaranteed bonds(78-2nd)	2021. 2.24	2.14	200,000	-	200,000
Public, non-guaranteed bonds(78-3rd)	2023. 2.24	2.45	140,000	-	140,000
Public, non-guaranteed bonds(79-1st)	2019. 9. 6	1.48	90,000	90,000	-
Public, non-guaranteed bonds(79-2nd)	2021. 9. 6	1.75	90,000	-	90,000
Public, non-guaranteed bonds(79-3rd)	2023. 9. 6	2.08	130,000	-	130,000
Public, non-guaranteed bonds(79-4th)	2026. 9. 6	2.67	150,000	-	150,000
Private, non-guaranteed bonds(81st)	2027. 3.10	3.42	50,000	-	50,000
Private, non-guaranteed bonds(82nd)	2027. 3.22	3.29	50,000	-	50,000
Public, non-guaranteed bonds(83-1st)	2022. 4.28	2.36	160,000	-	160,000
Public, non-guaranteed bonds(83-2nd)	2024. 4.28	2.79	130,000	-	130,000
Public, non-guaranteed bonds(83-3rd)	2027. 4.28	3.20	70,000	-	70,000
Private, non-guaranteed bonds(85-1st)	2027.11.17	3.62	30,000	-	30,000
Private, non-guaranteed bonds(85-2nd)	2032.11.17	4.03	20,000	-	20,000
Private, non-guaranteed bonds(87-1st)	2026. 1. 4	3.26	120,000	-	120,000
Private, non-guaranteed bonds(87-2nd)	2028. 1. 4	3.55	10,000	-	10,000
Private, non-guaranteed bonds(88-1st)	2033. 1.31	4.21	60,000	-	60,000
Private, non-guaranteed bonds(89-1st)	2026. 3.16	3.39	80,000	-	80,000
Private, non-guaranteed bonds(89-2nd)	2028. 3.16	3.71	10,000	-	10,000
Private, non-guaranteed bonds(90th)	2038. 4. 3	4.20	20,000	-	20,000
Public, non-guaranteed bonds(91-1st)	2025. 5.28	3.00	60,000	-	60,000
Public, non-guaranteed bonds(91-2nd)	2028. 5.28	3.52	200,000	-	200,000
Public, non-guaranteed bonds(91-3rd)	2033. 5.28	3.75	90,000	-	90,000
Floating rate notes in foreign currency					
Private, guaranteed bonds(70th)	2019. 1.31	3M LIBOR+1.60	223,620	223,620	-
Private, non-guaranteed bonds(80th)	2022. 2. 2	1M LIBOR+0.90	111,810	-	111,810
Private, guaranteed bonds(84th)	2023. 2.24	3M EURIBOR+0.75	127,916	-	127,916
Private, non-guaranteed bonds(86-1st)	2020.11.22	1M LIBOR+0.78	50,315	-	50,315
Private, non-guaranteed bonds(86-2nd)	2022.11.22	1M LIBOR+0.86	95,038	-	95,038
Private, non-guaranteed bonds(92nd)	2028. 6. 8	3M LIBOR+ 1.61	111,810	-	111,810
Less: discount on debentures			(13,240)	(485)	(12,755)
Total			6,237,269	983,135	5,254,134

The Group entered into interest rate swap and cross-currency swap contracts to hedge cash flow risk related to floating interest rates and foreign exchange rates of the debentures (Note 39).

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The principal and interests of private guaranteed bonds (84th and LG Innotek Co., Ltd.) are guaranteed by Shinhan Bank (Note 36).

17. Lease Liabilities

(a) Details of lease liabilities as at December 31, 2019 and January 1, 2019, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	January 1, 2019
Lease liabilities		
Current	274,245	177,456
Non-current	497,179	445,003
Total	771,424	622,459

(b) The amounts recognized in the consolidated statement of profit or loss relating to leases are as follows:

<i>(in millions of Korean won)</i>	2019
Interest expense relating on lease liabilities	24,724
Short term lease payments (included in cost of sales, selling and marketing expenses, administrative expenses, and others)	127,784
Payments for leases of low-value assets that are not short-term leases (included in cost of sales, selling and marketing expenses, administrative expenses, and others)	29,805

Total expenses for leases including short-term leases and leases of low-value assets are ₩458,429 million.

18. Other Payables

Details of other payables as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Current		
Non-trade payables	2,479,927	2,744,784
Accrued expenses	826,921	913,665
Dividends payable	266	230
Leasehold deposits received	11,670	11,774
Subtotal	3,318,784	3,670,453
Non-current		
Non-trade payables	14	16,271
Leasehold deposits received	1,188	1,724
Subtotal	1,202	17,995
Total	3,319,986	3,688,448

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19. Current and Deferred Income Tax

Income tax expense

(a) Details of income tax expense(benefit) for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
Current income taxes		
Current tax on profits for the year	550,487	528,271
Adjustments in respect of prior years	14	6,143
Deferred income taxes		
Changes in temporary differences	(271,053)	(25,601)
Changes in tax credit carryforwards	88,850	85,990
Changes in tax loss carryforwards	(19,608)	(59,042)
Income tax expense	348,690	535,761

(b) The reconciliation between profit before income tax and income tax expense for the years ended December 31, 2019 and 2018, is as follows:

<i>(in millions of Korean won)</i>	2019	2018
Profit before income tax	528,638	2,008,575
Tax expense based on applicable tax rate ¹	204,190	548,664
Income not subject to tax	(26,310)	(38,778)
Expenses not deductible for tax purposes	42,802	46,557
Recognition of deferred tax asset on tax credits	(112,519)	(144,970)
Adjustments in respect of prior years	14	6,143
Changes in unrecognized deferred tax assets	136,100	152,699
Tax effect on investment in subsidiaries and associates	122,224	(31,772)
Tax effect on deferred tax due to changes in tax rates	(17,811)	(2,782)
Income tax expense	348,690	535,761
Effective tax rate	66.0%	26.7%

¹ The applicable tax rate, calculated using the weighted average statutory tax rates applicable to each entity within the Group to the profit before tax of the Group is 38.6% (2018: 27.3%) for the year ended December 31, 2019. The applicable tax rate has increased due to changes in the proportions of each entity's profit (loss) before income tax.

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Deferred income tax

(a) Deferred tax assets and deferred tax liabilities after offsetting as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Deferred tax assets:		
Deferred tax asset to be recovered within 12 months	1,026,029	1,048,404
Deferred tax asset to be recovered after more than 12 months	2,282,737	2,001,223
Deferred tax assets before offsetting	3,308,766	3,049,627
Deferred tax liabilities:		
Deferred tax liability to be settled within 12 months	129,288	139,142
Deferred tax liability to be settled after more than 12 months	1,639,455	1,626,706
Deferred tax liabilities before offsetting	1,768,743	1,765,848
Deferred tax assets after offsetting	1,668,430	1,410,793
Deferred tax liabilities after offsetting	128,407	127,014

(b) Changes in deferred tax assets and liabilities for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019					
	At January 1	Business combination	Charged (credited) to the statements of profit or loss	Charged (credited) to other comprehensive income	Exchange differences	At December 31
Changes in temporary differences						
Investments in subsidiaries, associates and joint ventures	(551,303)	-	123,541	(2,595)	(582)	(430,939)
Property, plant and equipment	52,673	1,180	6,563	-	(1,824)	58,592
Accrued expenses	413,491	(1,752)	26,657	-	963	439,359
Provisions	174,478	(957)	38,757	-	(741)	211,537
Other ¹	400,532	(2,718)	75,535	62,206	(1,538)	534,017
Subtotal	489,871	(4,247)	271,053	59,611	(3,722)	812,566
Tax credit carryforwards	662,352	-	(88,850)	-	-	573,502
Tax loss carryforwards	134,593	-	19,608	-	(246)	153,955
Deferred tax assets(liabilities)	1,286,816	(4,247)	201,811	59,611	(3,968)	1,540,023

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<i>(in millions of Korean won)</i>	2018					
	At January 1	Business combination	Charged (credited) to the statements of profit or loss	Charged to other comprehensive income	Exchange differences	At December 31
Changes in temporary differences						
Investments in subsidiaries, associates, and joint ventures	(517,855)	(85,409)	52,043	160	(242)	(551,303)
Property, plant and equipment	4,029	2,685	45,898	-	61	52,673
Accrued expenses	552,035	-	(143,226)	-	4,682	413,491
Provisions	163,710	4,957	11,505	-	(5,694)	174,478
Other	331,049	(27,329)	59,381	39,886	(5,492)	397,495
Subtotal	532,968	(105,096)	25,601	40,046	(6,685)	486,834
Tax credit carryforwards	748,342	-	(85,990)	-	-	662,352
Tax loss carryforwards	75,298	256	59,042	-	(3)	134,593
Deferred tax assets(liabilities)	1,356,608	(104,840)	(1,347)	40,046	(6,688)	1,283,779

¹ Deferred tax assets as at January 1, 2019, amounting to ₩3,037 million, was newly recognized upon adoption of Korean IFRS 1116 *Leases*.

(c) Tax effects directly recognized in other comprehensive income directly for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019			2018		
	Before tax	Tax effects	After tax	Before tax	Tax effects	After tax
Remeasurements of net defined benefit liabilities	(197,065)	51,487	(145,578)	(100,533)	26,651	(73,882)
Cash flow hedge	(44,658)	11,240	(33,418)	(48,336)	12,785	(35,551)
Financial assets at fair value through other comprehensive income	9,154	(521)	8,633	(1,068)	450	(618)
Exchange differences on translation of foreign operations	298,939	(2,595)	296,344	(24,047)	160	(23,887)
Total	66,370	59,611	125,981	(173,984)	40,046	(133,938)

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

<i>(in millions of Korean won)</i>	Amount	Remark
Taxable temporary difference (investment in subsidiaries)	(7,503,263)	Planned permanent reinvestment of undistributed profit
Deductible temporary difference (investment in subsidiaries)	2,394,540	Unlikely to reverse(disposed of) in the foreseeable future
Tax credit carryforwards	329,159	Uncertainty of future taxable profit
Tax loss carryforwards	663,135	Uncertainty of future taxable profit

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- (e) Expirations of unrecognized tax credit and tax loss carryforwards as at December 31, 2019, are as follows:

<i>(in millions of Korean won)</i>	<u>1 year or less</u>	<u>1 to 2 years</u>	<u>2 to 3 years</u>	<u>Over 3 years</u>
Tax credit carryforwards	20,782	179,063	115,810	13,504
Tax loss carryforwards	62,984	89,870	219,513	290,768

20. Post-employment Benefits

Defined Benefit Plan

- (a) The amounts of net defined benefit liabilities as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Present value of funded obligations	3,567,014	3,170,154
Present value of unfunded obligations	61,713	45,705
Subtotal	3,628,727	3,215,859
Fair value of plan assets	(3,035,798)	(2,818,190)
Net defined benefit liabilities¹	592,929	397,669

¹ Net defined benefit assets are included.

- (b) The amounts recognized in the consolidated statements of profit or loss for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	<u>2019</u>	<u>2018</u>
Current service cost	389,992	340,596
Past service cost	(11,007)	(3,537)
Net interest cost	13,445	10,240
Operating management cost	3,041	2,920
Total	395,471	350,219

- (c) Line items in which expenses are included for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	<u>2019</u>	<u>2018</u>
Cost of sales	189,941	180,988
Selling and marketing expenses	63,285	55,469
Administrative expenses	27,502	25,113
Research and development expenses	91,515	81,478
Service costs	23,228	7,171
Total	395,471	350,219

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(d) Movements in the present value of defined benefit obligations for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
At January 1	3,215,859	2,917,271
Current service cost	389,992	340,596
Past service cost	(11,007)	(3,537)
Interest cost	79,215	86,207
Remeasurements for:		
- Actuarial loss arising from changes in demographic assumptions	145,477	25,874
- Actuarial loss arising from changes in financial assumptions	87,500	110,884
- Actuarial gain arising from experience adjustments	(42,945)	(65,290)
Benefits paid	(193,906)	(173,461)
Increase (decrease) due to business combination (transfer of business)	(21,588)	15,347
Decrease due to plan liquidation and other	(22,050)	(38,066)
Other	2,180	34
At December 31	3,628,727	3,215,859

(e) Movements in the fair value of plan assets for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
At January 1	2,818,190	2,591,256
Interest income	65,770	75,967
Remeasurements of plan assets	(6,887)	(29,065)
Employer contributions	348,562	354,249
Benefits paid	(145,966)	(135,713)
Decrease due to transfer of business	(19,708)	-
Decrease due to plan liquidation and other	(21,447)	(35,147)
Operating management cost	(3,041)	(2,920)
Other	325	(437)
At December 31	3,035,798	2,818,190

(f) The significant actuarial assumptions used as at December 31, 2019 and 2018, are as follows:

	December 31, 2019	December 31, 2018
Weighted average of discount rate of the Group	2.3%	2.6%
Weighted average of expected salary growth rate of the Group	4.9%	4.9%

As at December 31, 2019, the discount rates applied to the Parent Company and subsidiaries are within the

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range of 0.2% and 8.0% (2018: 0.3% and 10.2%), and the expected salary growth rates are within the range of 1.0% and 10.0% (2018: 1.0% and 10.0%).

- (g) The sensitivity analysis of the defined benefit obligation to changes in principal assumptions as at December 31, 2019, is as follows:

<i>(in millions of Korean won)</i>	1%p increase	1%p decrease
Discount rate	(317,623)	368,350
Expected salary growth rate	349,095	(318,768)

Above sensitivity analysis is 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.

- (h) Plan assets consist of:

<i>(in millions of Korean won)</i>	December 31, 2019		December 31, 2018	
	Amount	Composition (%)	Amount	Composition (%)
Securities combined with derivatives (guaranteed)	1,081,528	35.6	1,126,717	40.0
Time deposits and others	1,954,270	64.4	1,691,473	60.0
Total	3,035,798	100.0	2,818,190	100.0

- (i) The weighted average duration of the defined benefit obligations is 10.0 years. Expected maturity analysis of undiscounted pension benefits as at December 31, 2019, is as follows:

<i>(in millions of Korean won)</i>	Within 1 year	1 to 2 years	2 to 5 years	5 to 10 years	Over 10 years	Total
Pension benefits	166,495	299,054	651,626	1,153,137	2,314,050	4,584,362

The Group evaluates the fund contribution level annually, and if there is a shortfall in the funds, the Group has a policy to finance the funds. Expected contributions to post-employment benefit plans for the year ending December 31, 2020, are ₩395,891 million.

Defined Contribution Plan

The expense recognized in the current year in relation to defined contribution plan was ₩17,902 million (2018: ₩18,642 million).

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21. Provisions

(a) Changes in provisions for the years ended December 31, 2019 and 2018, are as follows:

2019				
<i>(in millions of Korean won)</i>	Warranty	Restoration	Litigation and others	Total
At January 1^{1,2}	740,839	39,013	214,374	994,226
Additions ³	971,391	4,005	12,399	987,795
Utilization	(840,837)	(3,137)	(62,886)	(906,860)
Decrease due to transfer of business	(3,516)	(1,942)	(1,400)	(6,858)
Exchange differences	10,678	505	3,514	14,697
At December 31	878,555	38,444	166,001	1,083,000
Current	797,877	18,947	7,655	824,479
Non-current	80,678	19,497	158,346	258,521

2018				
<i>(in millions of Korean won)</i>	Warranty	Restoration	Litigation and others	Total
At January 1	652,343	34,133	224,690	911,166
Increase due to business combination	16,039	-	13,711	29,750
Additions ³	824,280	8,340	41,687	874,307
Utilization	(746,719)	(3,519)	(38,914)	(789,152)
Decrease due to transfer of business	(80)	-	-	(80)
Exchange differences	(5,024)	59	(4,671)	(9,636)
At December 31	740,839	39,013	236,503	1,016,355
Current	642,791	11,082	18,671	672,544
Non-current	98,048	27,931	217,832	343,811

¹ Provision for "litigation and others" as at January 1, 2019, amounting to ₩1,374 million, was reclassified to accumulated impairment losses of right-of-use assets upon adoption of Korean IFRS 1116 *Lease*.

² Provision for "litigation and others" related to income tax as at January 1, 2019, amounting to ₩20,755 million, was reclassified to current income tax liabilities.

³ Net amount of additional provisions equals to additional provisions less reversed amounts.

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(b) Greenhouse Gas Emission Liabilities

As at December 31, 2019, emission rights received free of charge for each reporting period and greenhouse gas emission estimated by management, are as follows:

<i>(in tons)</i>	2019	2020
Emission rights received free of charge ¹	1,922,602	1,599,403

¹ Emission rights received free of charge are defined as allowed amount of emissions that can be released, allocated by the Korean government for free in accordance with 'Act on the Allocation and Trading of Greenhouse-Gas Emission Permits'.

In 2019, there is no emission right that the Group additionally purchased from the market and there is no recognized emission liability as greenhouse gas emission estimated by management is 1,197,900 tons.

22. Other Liabilities

Other liabilities as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Current		
Advances from customers	643,224	369,531
Withholding	714,278	632,673
Accrued expenses	2,019,034	1,859,070
Other	134	67
Subtotal	3,376,670	2,861,341
Non-current		
Advances from customers	99,571	220,456
Accrued expenses	217,365	169,397
Other	2,076	99
Subtotal	319,012	389,952
Total	3,695,682	3,251,293

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23. Paid-in Capital

(a) As at December 31, 2019 and 2018, the number of shares authorized is 600 million.

	Par value per share	December 31, 2019		December 31, 2018	
		Number of shares issued	Amount (in millions of Korean won)	Number of shares issued	Amount (in millions of Korean won)
Ordinary shares	5,000	163,647,814	818,239	163,647,814	818,239
Preferred shares	5,000	17,185,992	85,930	17,185,992	85,930
Total		180,833,806	904,169	180,833,806	904,169

The preferred shareholders have no voting rights and are entitled to preferred dividends at a rate of one percentage point over that of ordinary shares. This preferred dividend rate is not applicable to stock dividends. In addition, the preferred shareholders have same rights on the remaining assets as ordinary shareholders. Repayment and conversion are not applicable to preferred shares.

(b) Share premium balance as at December 31, 2019, is ₩3,088,179 million. The share premium of ₩1,876,153 million was recognized, which is ₩2,815,707 million of the carrying amount of net assets acquired from the entity split-off back on April 1, 2002, less the Parent Company's capital of ₩783,961 million and less the Parent Company's capital adjustment of ₩155,593 million. In addition, the amount of ₩331,766 million paid in excess of par value due to issuance of ordinary shares (merger with LG IBMPC Co., Ltd.) and the exercise of conversion option in 2005 and 2006 are included. The excess in paid-in capital amounting to ₩880,260 million over the par value was recognized as the share premium due to the issuance of ordinary shares in 2011.

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24. Retained Earnings and Dividends

(a) Retained earnings as at December 31, 2019 and 2018, consist of:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Legal reserves ¹	195,933	182,342
Discretionary reserves	5,128,769	5,347,641
Unappropriated retained earnings	6,532,600	6,545,431
Total	11,857,302	12,075,414

¹ The Commercial Code of the Republic of Korea requires the Parent Company to appropriate, as a legal reserve, an amount equal to a minimum of 10% of cash dividends paid until such reserve equals 50% of its issued share capital. The reserve is not available for the payment of cash dividends, but may be transferred to share capital or used to reduce accumulated deficit.

(b) Dividends of the Parent Company

Details of dividends per share and a total dividend in respect of the year ended December 31, 2019, which is to be proposed at the annual general meeting on March 15, 2019, are as follows. These consolidated financial statements do not reflect this dividend payable.

<i>(Unit: shares)</i>	2019		2018	
	Ordinary shares	Preferred shares	Ordinary shares	Preferred shares
Outstanding shares	163,647,814	17,185,992	163,647,814	17,185,992
Treasury shares	(763,173)	(4,692)	(763,172)	(4,692)
Numbers of shares for dividend	162,884,641	17,181,300	162,884,642	17,181,300
Par value <i>(in Korean won)</i>	5,000	5,000	5,000	5,000
Dividend rate	15%	16%	15%	16%
Dividends per share <i>(in Korean won)</i>	750	800	750	800
Total dividend amount <i>(in millions of Korean won)</i>	122,164	13,745	122,164	13,745
Dividend payout ratio ¹ (Dividends/Net profit)	-	-	-	-
Stock price ² <i>(in Korean won)</i>	72,050	28,925	62,025	25,913
Dividend yield ratio (Dividend per share/Market price)	1.04%	2.77%	1.21%	3.09%

¹ Dividend payout ratio is calculated based on the net profit of the Parent Company. It is not calculated for the year ended December 31, 2019 due to the net loss of the Parent Company.

² Average of prices in the stock market for one week preceding the two business days before the record date of the shareholders' list for the general meeting of shareholders related to above dividends.

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25. Accumulated Other Comprehensive Income

Accumulated other comprehensive income as at December 31, 2019 and 2018, consist of:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Accumulated other comprehensive loss of associates and joint ventures	(165,755)	(204,769)
Cash flow hedge	(91,295)	(61,887)
Financial assets at fair value through other comprehensive income	(34)	(8,400)
Exchange difference on translation of foreign operations	(1,052,717)	(1,329,674)
Total	(1,309,801)	(1,604,730)

26. Other Components of Equity

Other components of equity as at December 31, 2019 and 2018, consist of:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Treasury shares ¹	(44,893)	(44,893)
Consideration for conversion rights	9,891	9,891
Gain on disposal of treasury shares	2,183	2,183
Capital transactions within the Group	(176,945)	(176,945)
Total	(209,764)	(209,764)

¹ As at December 31, 2019, the Parent Company has treasury shares consisting of 763,173 ordinary shares (December 31, 2018: 763,172 shares) and 4,692 preferred shares (December 31, 2018: 4,692 shares) at the end of the reporting period. The Parent Company intends to either grant these treasury shares to employees and directors as compensation, or to dispose them in the future.

27. Net Sales

(a) Details of net sales for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
Revenue from contracts with customers:		
Sales of goods	60,550,106	59,851,079
Rendering of services	1,084,552	1,099,735
Royalty income	202,419	69,441
Subtotal	61,837,077	61,020,255
Revenue from other sources:		
Rental income and others	469,098	321,409
Total	62,306,175	61,341,664

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(b) Details of revenue from contracts with customers for the years ended December 31, 2019 and 2018, are as follows:

(in millions of Korean won)	2019								Total
	H&A	HE	MC	VS	BS	Innotek	Other segments	Inter-segment transactions	
Revenue from contracts with customers:									
External sales	21,010,973	16,119,262	5,960,981	5,464,492	2,669,298	7,711,040	2,901,031	-	61,837,077
Internal sales	49,504	16,736	2,785	36	799	590,129	248,497	(908,486)	-
	<u>21,060,477</u>	<u>16,135,998</u>	<u>5,963,766</u>	<u>5,464,528</u>	<u>2,670,097</u>	<u>8,301,169</u>	<u>3,149,528</u>	<u>(908,486)</u>	<u>61,837,077</u>
By type of products:									
Refrigerators/ washing machine/ air conditioners and others	17,921,891	-	-	-	-	-	-	(7,440)	17,914,451
TV/monitor/PC and others	-	15,004,821	-	-	-	-	-	(15,894)	14,988,927
Mobile communications	-	-	5,963,766	-	-	-	-	(2,785)	5,960,981
In-vehicle infotainment	-	-	-	3,240,422	-	-	-	(36)	3,240,386
Information display	-	-	-	-	1,527,084	-	-	(799)	1,526,285
Camera modules	-	-	-	-	-	5,425,630	-	(191,347)	5,234,283
Others	3,138,586	1,131,177	-	2,224,106	1,143,013	2,875,539	3,149,528	(690,185)	12,971,764
By major geographical market ¹ :									
Korea	7,145,311	2,204,578	1,501,968	922,887	323,391	7,910,781	3,098,741	(824,296)	22,283,361
North America	5,057,698	3,991,316	3,305,197	1,003,322	1,101,158	11,746	-	(598)	14,469,839
Asia	3,688,046	2,031,101	186,786	245,695	453,084	40,974	2	(31,944)	6,613,744
Europe	1,424,823	3,771,888	255,320	2,640,978	553,123	37,378	-	(770)	8,682,740
South America	877,835	1,919,854	629,361	59,068	99,343	-	3	(7)	3,585,457
Middle East & Africa	1,173,743	999,228	30,583	2,230	70,734	-	1	(157)	2,276,362
China	953,870	349,087	52,784	590,348	45,505	300,290	50,780	(50,707)	2,291,957
Russia and others	739,151	868,946	1,767	-	23,759	-	1	(7)	1,633,617
Timing of transfer:									
Transferred at a point in time	20,647,923	16,005,884	5,818,732	5,314,851	2,644,312	8,299,836	874,738	(705,092)	58,901,184
Transferred over time	412,554	130,114	145,034	149,677	25,785	1,333	2,274,790	(203,394)	2,935,893

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(in millions of Korean won)	2018								
	H&A	HE	MC	VS	BS	Innotek	Other segments	Inter-segment transactions	Total
Revenue from contracts with customers:									
External sales	19,006,417	16,286,065	7,873,873	4,286,792	2,400,741	7,277,511	3,888,856	-	61,020,255
Internal sales	44,650	10,507	1,280	-	2,643	703,811	510,911	(1,273,802)	-
	<u>19,051,067</u>	<u>16,296,572</u>	<u>7,875,153</u>	<u>4,286,792</u>	<u>2,403,384</u>	<u>7,981,322</u>	<u>4,399,767</u>	<u>(1,273,802)</u>	<u>61,020,255</u>
By type of products:									
Refrigerators/ washing machine/ air conditioners and others	16,247,684	-	-	-	-	-	-	(12,343)	16,235,341
TV/monitor/PC and others	-	14,945,616	-	-	-	-	-	(10,428)	14,935,188
Mobile communications	-	-	7,875,153	-	-	-	-	(1,280)	7,873,873
In-vehicle infotainment	-	-	-	2,932,590	-	-	-	-	2,932,590
Information display	-	-	-	-	1,490,059	-	-	(2,643)	1,487,416
Camera modules	-	-	-	-	-	5,096,596	-	(199,625)	4,896,971
Others	2,803,383	1,350,956	-	1,354,202	913,325	2,884,726	4,399,767	(1,047,483)	12,658,876
By major geographical market ¹ :									
Korea	6,658,152	2,180,566	1,404,346	954,796	360,978	7,450,075	4,283,378	(1,222,710)	22,069,581
North America	4,608,261	3,923,234	4,731,510	1,040,343	906,774	16,197	250	(344)	15,226,225
Asia	3,205,867	2,012,192	353,961	283,131	409,594	40,117	-	(24,878)	6,279,984
Europe	1,228,304	3,845,889	478,031	1,515,816	485,147	20,756	14	(9,582)	7,564,375
South America	823,233	2,098,764	697,834	61,688	80,513	-	734	(11)	3,762,755
Middle East & Africa	947,113	1,026,740	95,349	-	81,565	-	-	(183)	2,150,584
China	897,145	355,239	81,245	431,018	49,622	454,177	115,391	(16,088)	2,367,749
Russia and others	682,992	853,948	32,877	-	29,191	-	-	(6)	1,599,002
Timing of transfer:									
Transferred at a point in time	18,662,696	16,186,183	7,791,613	4,188,745	2,387,449	7,979,010	1,447,247	(816,306)	57,826,637
Transferred over time	388,371	110,389	83,540	98,047	15,935	2,312	2,952,520	(457,496)	3,193,618

¹ Sales by major geographical market are the sales by region in which the Group is located.

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(c) Changes in the estimates of total revenue and total costs

Due to the factors causing the changes in costs of VS and other segments in 2019, the estimated total revenue and total costs for contracts in progress have changed. Details of changes in estimated total contract revenue and costs and the impact on profit or loss for the year ended December 31, 2019 and the succeeding period are as follows:

<i>(in millions of Korean won)</i>	Changes in total contract revenue	Changes in total contract cost	Impact on profit or loss for the year	Impact on profit or loss for the succeeding year
VS	55,407	37,864	9,089	8,454
Other segments	32,461	34,729	(7,435)	5,167
Total	87,868	72,593	1,654	13,621

28. Expenses by Nature

Expenses that are recorded by nature for the years ended December 31, 2019 and 2018, consist of:

<i>(in millions of Korean won)</i>	2019	2018
Changes in finished goods and work-in-process	(77,260)	236,025
Raw materials and merchandise used	37,167,731	37,196,178
Employee benefit expense	7,889,685	6,825,822
Depreciation and amortization	2,478,628	1,981,739
Advertising expense	1,208,385	1,374,365
Promotion expense	762,052	785,333
Freight expense	1,728,118	1,570,672
Commission expense	3,494,056	3,121,469
Other expenses	5,218,641	5,546,770
Total¹	59,870,036	58,638,373

¹ Cost of sales, selling and marketing expenses, administrative expenses, research and development expenses and service costs are included.

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29. General Operating Expenses (Selling and Marketing Expenses, Administrative Expenses, Research and Development Expenses, and Service Costs)

Details of general operating expenses for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
Salaries	3,257,058	2,908,668
Post-employment benefits	235,622	176,587
Employee welfare benefits	701,248	622,042
Freight expense	1,698,586	1,553,670
Rental expense	144,155	361,414
Commission expense	2,460,720	2,252,020
Depreciation	445,311	217,682
Amortization	185,768	189,296
Taxes and dues	98,709	131,469
Advertising expense	1,208,385	1,374,365
Promotional expense	762,052	785,333
R&D expense	405,784	369,189
Direct service costs	698,548	721,173
Bad debts expense	27,170	23,984
Others	570,314	690,861
Total	12,899,430	12,377,753

30. Financial Income

Financial income for the years ended December 31, 2019 and 2018, consists of:

<i>(in millions of Korean won)</i>	2019	2018
Interest income	143,484	115,837
Exchange differences	254,391	358,230
Gain on derivatives	28,373	13,303
Total	426,248	487,370

31. Financial Expenses

Financial expenses for the years ended December 31, 2019 and 2018, consist of:

<i>(in millions of Korean won)</i>	2019	2018
Interest expense	407,199	414,524
Exchange differences	265,627	351,468
Loss on derivatives	19,204	5,033
Loss on disposal of trade receivables	19,119	20,891
Others	2,852	4,653
Total	714,001	796,569

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32. Other Non-operating Income

Other non-operating income for the years ended December 31, 2019 and 2018, consists of:

<i>(in millions of Korean won)</i>	2019	2018
Dividend income	693	452
Exchange differences	1,109,654	1,085,340
Gain on derivatives	32,470	60,329
Gain on disposal of property, plant and equipment	65,579	29,760
Gain on disposal of intangible assets	991	56
Gain on disposal of assets held for sale	-	25,184
Gain on valuation of financial assets at fair value through profit or loss	128	305
Gain on disposal of investments in associates and joint ventures	869	824
Gain on transfer of business	119,843	38,789
Others	45,740	10,560
Total	1,375,967	1,251,599

33. Other Non-operating Expenses

Other non-operating expenses for the years ended December 31, 2019 and 2018, consist of:

<i>(in millions of Korean won)</i>	2019	2018
Exchange differences	1,111,179	1,219,952
Loss on derivatives	40,961	43,201
Loss on disposal of property, plant and equipment	74,944	39,115
Impairment loss on property, plant and equipment	212,349	57,865
Loss on disposal of intangible assets	30,453	35,078
Impairment loss on intangible assets	366,607	76,481
Loss on valuation of financial assets at fair value through profit or loss	8	2,587
Loss on disposal of investments in associates and joint ventures	-	20,752
Others	107,118	64,924
Total	1,943,619	1,559,955

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34. Earnings per Share

The Group has no potential dilutive ordinary shares. Accordingly, basic earnings per share is identical to diluted earnings per share.

(a) Basic earnings per ordinary share for the years ended December 31, 2019 and 2018, is as follows:

	<u>2019</u>	<u>2018</u>
Profit attributable to ordinary shares ¹ (in millions of Korean won)	27,523	1,121,032
Weighted average number of ordinary shares outstanding (unit: shares) ²	162,884,641	162,884,641
Basic earnings per ordinary share (in Korean won)	169	6,882

(b) Basic earnings per preferred share for the years ended December 31, 2019 and 2018, is as follows:

	<u>2019</u>	<u>2018</u>
Profit attributable to preferred shares ¹ (in millions of Korean won)	3,762	119,107
Weighted average number of preferred shares outstanding (unit: shares) ²	17,181,300	17,181,300
Basic earnings per preferred share (in Korean won)	219	6,932

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

<i>(in millions of Korean won)</i>	<u>2019</u>	<u>2018</u>
Profit for the year (A)	31,285	1,240,139
Ordinary share dividends (B)	122,164	122,164
Preferred share dividends (C)	13,745	13,745
Undistributed profit(D=A-B-C)	(104,624)	1,104,230
Undistributed profit available for ordinary shares (E)	(94,641)	998,868
Undistributed profit available for preferred shares (F)	(9,983)	105,362
Profit attributable to ordinary shares (G=B+E)	27,523	1,121,032
Profit attributable to preferred shares (H=C+F)	3,762	119,107

² Weighted average numbers of shares are calculated as follows:

	<u>2019</u>	<u>2018</u>
Ordinary shares issued	163,647,814	163,647,814
Ordinary treasury shares	(763,173)	(763,173)
Ordinary shares outstanding	162,884,641	162,884,641
Weighted average number of ordinary shares outstanding	162,884,641	162,884,641
Preferred shares issued	17,185,992	17,185,992
Preferred treasury shares	(4,692)	(4,692)
Preferred shares outstanding	17,181,300	17,181,300
Weighted average number of preferred shares outstanding	17,181,300	17,181,300

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35. Cash Flow Information

Cash flows from operating activities are prepared using the indirect method. Details of cash generated from operations for the years ended December 31, 2019 and 2018, are as follows:

(a) Cash generated from operations

<i>(in millions of Korean won)</i>	2019	2018
Profit for the year	179,948	1,472,814
Adjustments:		
Interest expense, net	263,715	298,687
Exchange differences, net	(32,627)	49,841
Gain on derivatives, net	(678)	(25,398)
Depreciation	2,066,620	1,585,943
Amortization	439,748	414,169
Loss on disposal of property, plant and equipment and intangible assets, net	38,827	44,377
Provisions for severance benefits	395,471	350,219
Additional provisions, net	987,795	874,307
Income tax expense	348,690	535,761
Loss from equity method	1,052,096	77,161
Others	859,666	367,031
	<u>6,419,323</u>	<u>4,572,098</u>
Changes in operating assets and liabilities		
Decrease in trade receivables	101,988	1,997,436
Decrease (increase) in other receivables	(83,245)	16,488
Decrease (increase) in inventories	79,449	(157,020)
Decrease (increase) in contract assets	77,895	(366,048)
Increase in other assets	(482,992)	(14,960)
Decrease in trade payables	(477,154)	(998,016)
Increase (decrease) in other payables	(451,123)	375,325
Decrease in provisions	(906,860)	(803,668)
Increase in contract liabilities	99,279	141,432
Increase (decrease) in other liabilities	435,381	(504,172)
Payment of defined benefit liability	(48,543)	(40,667)
Deposit in plan assets, net	(404,404)	(398,231)
	<u>(2,060,329)</u>	<u>(752,101)</u>
Cash generated from operations	<u>4,538,942</u>	<u>5,292,811</u>

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(b) Changes in liabilities from financing activities

2019								
<i>(in millions of Korean won)</i>	At January 1	Net cash flow from financing activities	Non-cash transactions				Effects of exchange rate changes	At December 31
			Business combination (Transfer of business)	Addition and others	Exchange differences (profit/loss)	Amortization		
Short-term borrowings	293,221	(181,674)	116,840	-	19,784	-	23,370	271,541
Long-term borrowings	4,370,696	(70,306)	(7,993)	-	(15,289)	69	41,677	4,318,854
Debentures	6,237,269	(357,254)	-	-	13,327	3,601	-	5,896,943
Lease liabilities	622,459	(276,814)	(436)	410,858	380	698	14,279	771,424
Total	11,523,645	(886,048)	108,411	410,858	18,202	4,368	79,326	11,258,762

2018								
<i>(in millions of Korean won)</i>	At January 1	Net cash flow from financing activities	Non-cash transactions				Effects of exchange rate changes	At December 31
			Business combination (Transfer of business)	Exchange differences (profit/loss)	Amortization			
Short-term borrowings	314,246	(233,224)	216,114	31,287	-	(35,202)	-	293,221
Long-term borrowings	3,221,266	882,223	297,802	(11,910)	67	(18,752)	-	4,370,696
Debentures	5,914,968	292,822	-	24,988	4,491	-	-	6,237,269
Total	9,450,480	941,821	513,916	44,365	4,558	(53,954)	-	10,901,186

(c) Significant non-cash transactions:

<i>(in millions of Korean won)</i>	2019	2018
Reclassification of construction-in-progress to property, plant and equipment	1,091,572	2,019,723
Reclassification of construction-in-progress to intangible assets	401,332	370,209
Reclassification of current portion of borrowings and debentures	1,375,123	1,179,891
Other payables to acquire property, plant and equipment	422,907	359,064
Other payables to acquire intangible assets	24,261	19,908
Acquisition of right-of-use assets	486,957	-

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(d) Assets and liabilities arising from the transfer of business

- Transfer of water solution business

i) On September 26, 2019, the Parent Company transferred water solution business, consisting of LG Hitachi Water Solution Co., Ltd, Hi Entech Co., Ltd. and HiEntech (Tianjin) Co., Ltd., to Techcross Vision Investment Inc.

ii) Total consideration received and the assets and liabilities of the transferred business are as follows:

<i>(in millions of Korean won)</i>	Amount
Total consideration	
Cash and cash equivalents	222,759
Assets of the transferred business:	
Cash and cash equivalents	50,260
Trade receivables	70,517
Other receivables	9,689
Other financial assets	6,594
Inventories	6,554
Property, plant and equipment	2,346
Intangible assets	61,367
Current tax assets	310
Deferred tax assets	4,247
Contract assets	32,924
Other assets	4,138
Liabilities of the transferred business:	
Trade payables	29,643
Borrowings	7,993
Lease liabilities	436
Other payables	21,683
Current tax liabilities	185
Net defined benefit assets	1,880
Provisions	6,858
Contract liabilities	25,460
Other liabilities	31,546
Non-controlling interests	20,346

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- Transfer of Membrane business

iii) On December 17, 2018, Membrane business was transferred to LG Chem Ltd.

iv) Total consideration received and the assets of the transferred business are as follows:

<i>(in millions of Korean won)</i>	Amount
Total consideration	
Cash and cash equivalents	3,488
Other receivables ¹	529
Assets of the transferred business:	
Inventories	2,175
Property, plant and equipment	3,680
Intangible assets	183
Other assets	75
Liabilities of the transferred business:	
Other payables	510
Provisions	80
Other liabilities	399

¹ Collected during the three-month period ended March 31, 2019.

- Transfer of OLED T-Con chip design business

i) On July 1, 2018, OLED T-Con chip design business was transferred to Silicon Works Co., Ltd.

ii) Total consideration received and the assets of the transferred business are as follows:

<i>(in millions of Korean won)</i>	Amount
Total consideration	
Cash and cash equivalents	46,130
Assets of the transferred business:	
Trade receivables	7,880
Inventories	2,508
Property, plant and equipment	9
Liabilities of the transferred business:	
Trade payables	2,592
Contract liabilities	452
Other liabilities	12

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36. Contingencies

(a) At the end of the reporting period, borrowings are collateralized by a certain portion of property, plant and equipment (land, buildings and others) (Note 12).

(b) At the end of the reporting period, the Parent Company and domestic subsidiaries are provided with performance guarantees of ₩261,921 million (December 31, 2018: ₩355,761 million) from Seoul Guarantee Insurance and others relating to the performance guarantees. The Parent Company and LG Innotek Co., Ltd. is provided with guarantee of principal EUR 100 million, USD 50 million (December 31, 2018: USD 200 million, EUR 100 million) and interests from Shinhan Bank for the guaranteed private placement bonds.

(c) At the end of the reporting period, the Parent Company is providing KEB Hana Bank with a subrogation payment obligation for customers up to ₩46,000 million (December 31, 2018: ₩46,000 million). Also, LG Electronics U.S.A., Inc., a subsidiary, provides payment guarantee for Hitachi-LG Data Storage Inc.(HLDS) amounting to USD 6.25 million (December 31, 2018: USD 7.5 million).

(d) There are a number of legal actions, disputes and investigations arising from the normal course of business that remain pending at the end of the reporting period. The ultimate effect of those lawsuits on the financial position of the Group cannot reflect a reasonable expectation. Management does not expect the outcome of the litigations will have a material effect on the Group's financial position.

At the end of the reporting period, LG Display Co., Ltd., an associate of the Group, has been accused as a defendant in cases related to the infringement of patents. In addition, LG Display Co., Ltd. is currently under the investigation and civil suit for anti-competitive activities. The outcome of the case may affect the gain or loss from the equity method valuation, but the Group is not individually responsible for the above case and the investigation.

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37. Commitments

(a) At the end of the reporting period, the Parent Company has overdraft facility agreements with various banks, including Shinhan Bank, with a limit of ₩165,500 million (December 31, 2018: ₩165,500 million).

In addition, LG Innotek Co., Ltd. has overdraft facility agreements with various banks, including Shinhan Bank, with a limit of ₩27,000 million (December 31, 2018: ₩27,000 million). The total limit of overdrafts and comprehensive limits provided by financial institutions to the overseas subsidiaries of LG Innotek Co., Ltd. is ₩346,642 million (December 31, 2018: ₩389,791 million).

Other subsidiaries have overdraft facility agreements with a limit of ₩1,509,846 million (December 31, 2018: ₩1,387,534 million) with Citibank and others.

(b) At the end of the reporting period, the Parent Company has sales agreements for export trade receivables with KEB Hana Bank and 19 other banks amounting to ₩1,895,310 million (December 31, 2018: ₩1,926,486 million) and has sales agreements for domestic trade receivables with MUFG Bank and one other bank amounting to ₩900,000 million (December 31, 2018: ₩690,000 million).

In addition, LG Innotek Co., Ltd. has trade receivables transfer agreements with various banks, including ING Bank, amounting to ₩735,203 million (December 31, 2018: ₩709,994 million) at the end of the reporting period.

In addition, other subsidiaries transfer their trade receivable to Societe Generale Bank and others on a revolving basis, for up to US\$ 665 million (December 31, 2018: US\$ 768 million), and have sales agreements for trade receivables with a limit of US\$ 500 million (December 31, 2018: US\$ 400 million) with Credit Agricole. In addition, other subsidiaries have entered into corporate electronic settlement services contracts and discount note agreements with Shinhan Bank and others with a limit of ₩1,000 million (December 31, 2018: ₩81,000 million) in connection with the collection of the trade receivables.

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(c) At the end of the reporting period, the Parent Company has corporate electronic settlement services contracts and vendor prepayment services contracts with Shinhan Bank and seven other banks for up to ₩1,210,000 million (December 31, 2018: ₩1,160,000 million) in connection with the payment of trade payables.

In addition, LG Innotek Co., Ltd., a subsidiary, has corporate electronic settlement services contracts and vendor prepayment services contracts with Shinhan Bank and others for up to ₩204,000 million (December 31, 2018: ₩204,000 million) in connection with the payment of trade payables, where under the contracts the vendors of LG Innotek Co., Ltd. can transfer their receivables to these banks.

In addition, other subsidiaries have contract arrangements such as corporate electronic settlement services contracts and note discount agreements with Shinhan Bank and other banks for up to ₩38,900 million limit (December 31, 2018: ₩69,900 million) in connection with the payment of trade payables.

(d) At the end of the reporting period, other subsidiaries have commercial paper agreements with Shinhan Bank and others for ₩40,000 million (December 31, 2018: ₩40,000 million).

(e) At the end of the reporting period, the Group has other trade financing agreements and loan commitments with financial institutions, including Shinhan Bank, of up to ₩3,471,626 million (December 31, 2018: ₩3,663,920 million). In addition, the limit of long-term borrowing agreements that LG Innotek Co., Ltd. commits to additionally have after the end of the reporting period is ₩100,000 million.

(f) Contractual commitments for the acquisition of assets

The assets contracted for, but not yet acquired at the end of the reporting period, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Property, plant and equipment	214,719	228,841
Intangible assets	137,951	52,632
Investments in associates and joint ventures	88,968	9,863
Total	441,638	291,336

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(g) Operating lease commitments – the Group as a lessor

- i) The Group has non-cancellable operating lease agreements regarding healthcare rental business that lends water purifiers and others to customers and real estate rentals business. The future aggregate lease receipts under operating lease agreements at the end of the reporting period, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019				Total lease payments
	Within 1 year	1 to 2 years	2 to 3 years	3 to 4 years	
Healthcare rental	518,366	397,807	197,369	29,044	1,142,586
Real estate rental	105	-	-	-	105
Total	518,471	397,807	197,369	29,044	1,142,691

- ii) The Group recognized ₩439,812 million (2018: ₩292,402 million) of lease income for the year ended December 31, 2019.

- iii) Details of assets subject to operating lease are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Acquisition cost	726,976	631,976
Accumulated depreciation	(231,331)	(144,975)
Accumulated impairment losses	(67)	(105)
Net book amount	495,578	486,896

- iv) Changes in net book amount of assets subject to operating lease for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019	2018
At January 1	486,896	332,408
Acquisition	244,719	252,111
Disposal	(107,089)	(14,896)
Depreciation	(128,948)	(82,709)
Impairment loss	-	(18)
At December 31	495,578	486,896

(h) Trademark license agreements

At the end of the reporting period, the Group has various agreements as follows:

Purpose	Related products	Provided by	Used by
Use of license	Home appliance /Mobile/LED	Qualcomm Incorporated and others	The Group
Provision of license	Home appliance /Mobile/LED	The Group	Panasonic Corporation and others

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38. Related Party

(a) Major transactions for the years ended December 31, 2019 and 2018, and balances of receivables and payables from transaction with related parties as at December 31, 2019 and 2018, are as follows:

i) Major income and expense transactions with related parties

(in millions of Korean won)

		2019					
Classification	Name	Income transactions			Expense transactions		
		Sales	Others	Total	Purchases	Others	Total
Significantly influencing the Group	LG Corp.	910	-	910	841	388,830	389,671
Associates	LG Display Co., Ltd. and its subsidiaries	1,228,385	97,409	1,325,794	3,513,200	4,003	3,517,203
	Ericsson-LG Co., Ltd. and its subsidiaries	106	-	106	-	-	-
	Hitachi-LG Data Storage Inc. and its subsidiaries	2,329	-	2,329	66,690	368	67,058
	LG Fuel Cell Systems Inc. and its subsidiaries	760	510	1,270	13	69	82
	Korea Information Certificate Authority Inc.	1	-	1	-	86	86
	Acryl Inc.	-	-	-	-	704	704
	Kiwigrid GmbH	-	-	-	-	479	479
	ROBOTIS Co., Ltd.	-	-	-	-	205	205
	Robostar Co.,Ltd	11	-	11	53,207	8,177	61,384
	Subtotal	1,231,592	97,919	1,329,511	3,633,110	14,091	3,647,201
Joint ventures	Arcelik-LG Klima Sanayi ve Ticaret A.S.(LGEAT)	33,634	-	33,634	77,540	-	77,540
	LG HOLDINGS (HK) LIMITED and its subsidiaries	-	-	-	-	2,016	2,016
	EIC PROPERTIES PTE LTD.	-	-	-	-	809	809
	LG-MRI LLC	6,267	-	6,267	37,107	-	37,107
	Subtotal	39,901	-	39,901	114,647	2,825	117,472
Other related parties	LG CNS Co., Ltd. and its subsidiaries	142,093	48	142,141	134,776	530,933	665,709
	S&I Corp. and its subsidiaries ²	52,942	4,250	57,192	376,055	229,578	605,633
	LG Management Development Institute	3	-	3	8,168	24,743	32,911
	LG SPORTS Ltd.	16	21	37	-	15,540	15,540
	LG MMA Ltd.	157	-	157	135	-	135
	LG Holdings Japan Co., Ltd.	19	-	19	-	3,581	3,581
	LG Corp. U.S.A. ³	1,118	-	1,118	-	-	-
	Subtotal	196,348	4,319	200,667	519,134	804,375	1,323,509
Others ¹	LG Chem Ltd. and its subsidiaries and joint ventures	1,339,844	24,143	1,363,987	949,720	9,595	959,315
	LG INTERNATIONAL CORP and its subsidiaries	66,384	7,814	74,198	3,186,800	1,891,870	5,078,670
	LG Uplus Corp and its subsidiaries	520,894	96	520,990	50,169	7,423	57,592

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		2019					
Classification	Name	Income transactions			Expense transactions		
		Sales	Others	Total	Purchases	Others	Total
	LG HAUSYS,LTD. and its subsidiaries and associates	7,781	422	8,203	2,654	354	3,008
	Silicon Works Co., Ltd.	25,139	2,979	28,118	14,211	34	14,245
	LG HOUSEHOLD & HEALTH CARE LTD and its subsidiaries	30,876	4	30,880	309	624	933
	G II R Inc. and its subsidiaries	5,252	47	5,299	82	405,002	405,084
	SERVEONE Co., Ltd. and its subsidiaries ²	8,437	2,492	10,929	248,527	38,067	286,594
	Techcross Environmental Services Inc. ⁴	75	-	75	4,090	481	4,571
	Subtotal	2,004,682	37,997	2,042,679	4,456,562	2,353,450	6,810,012
	Total	3,473,433	140,235	3,613,668	8,724,294	3,563,571	12,287,865

(in millions of Korean won)

		2018					
Classification	Name	Income transactions			Expense transactions		
		Sales	Others	Total	Purchases	Others	Total
Significantly influencing the Group	LG Corp.	2,244	-	2,244	685	162,968	163,653
Associates	LG Display Co., Ltd. and its subsidiaries	1,833,944	42,687	1,876,631	4,180,458	24,026	4,204,484
	Ericsson-LG Co., Ltd. and its subsidiaries	1,636	52	1,688	3,460	-	3,460
	Hitachi-LG Data Storage Inc. and its subsidiaries	680	190	870	115,518	2,326	117,844
	LG Fuel Cell Systems Inc. and its subsidiaries	3,751	608	4,359	-	355	355
	Korea Information Certificate Authority Inc.	-	-	-	-	51	51
	Acryl Inc.	-	-	-	-	1,658	1,658
	Kiwigrd GmbH	-	-	-	-	906	906
	ROBOTIS Co., Ltd.	-	-	-	-	220	220
	Robostar Co.,Ltd	-	-	-	20,430	2,227	22,657
	Subtotal	1,840,011	43,537	1,883,548	4,319,866	31,769	4,351,635
Joint ventures	Arcelik-LG Klima Sanayi ve Ticaret A.S.(LGEAT)	57,051	-	57,051	7,038	-	7,038
	LG Holdings (HK) Ltd. and its subsidiaries	-	-	-	-	2,469	2,469
	EIC PROPERTIES PTE LTD.	-	-	-	-	775	775
	LG-MRI LLC	2,477	-	2,477	51,736	-	51,736
	Subtotal	59,528	-	59,528	58,774	3,244	62,018
Other related parties	LG CNS Co., Ltd. and its subsidiaries	116,332	144	116,476	139,434	541,082	680,516
	S&I Corp. and its subsidiaries ²	79,794	9,483	89,277	1,004,881	654,001	1,658,882
	LB Lusem Co., Ltd. ³	6,114	-	6,114	205	1	206

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		2018					
Classification	Name	Income transactions			Expense transactions		
		Sales	Others	Total	Purchases	Others	Total
	LG Management Development Institute	-	-	-	143	29,975	30,118
	LG SPORTS Ltd.	18	19	37	-	13,384	13,384
	LG MMA Ltd.	104	-	104	428	10	438
	LG Holdings Japan Co., Ltd.	18	-	18	-	3,195	3,195
	LG Corp. U.S.A.	1,297	-	1,297	-	-	-
	Subtotal	203,677	9,646	213,323	1,145,091	1,241,648	2,386,739
Others ¹	LG Chem Ltd. and its subsidiaries and joint ventures	1,746,406	59,756	1,806,162	1,034,621	2,258	1,036,879
	LG INTERNATIONAL CORP and its subsidiaries	105,499	8,338	113,837	2,808,018	1,968,601	4,776,619
	LG Uplus Corp and its subsidiaries	592,640	146	592,786	54,426	7,586	62,012
	LG HAUSYS,LTD. and its subsidiaries and associates	13,065	339	13,404	6,725	39	6,764
	Silicon Works Co., Ltd.	24,497	48,160	72,657	9,519	1,050	10,569
	LG HOUSEHOLD & HEALTH CARE LTD and its subsidiaries	7,484	5	7,489	372	900	1,272
	G II R Inc. and its subsidiaries	4,318	12	4,330	125	425,748	425,873
	Subtotal	2,493,909	116,756	2,610,665	3,913,806	2,406,182	6,319,988
	Total	4,599,369	169,939	4,769,308	9,438,222	3,845,811	13,284,033

¹ Although the entities are not the related parties of the Group in accordance with Korean IFRS 1024, the entities belong to a Large Enterprise Group in accordance with the Monopoly Regulation and Fair Trade Act.

² SERVEONE Co., Ltd. was spun off into S&I Corp. and SERVEONE Co., Ltd. on December 1, 2018. On May 15, 2019, S&I Corp., the existing entity, disposed 60.1% shares of SERVEONE Co., Ltd., a newly established entity. On July 24, 2019, SERVEONE Co., Ltd., a newly established entity, was excluded from the Large Enterprise Group in accordance with the Monopoly Regulation and Fair Trade Act.

³ LG Electronics U.S.A., Inc., a subsidiary, acquired all shares of LG Corp. U.S.A. from LG Corp. on October 30, 2019.

⁴ All shares of Hi Entech Co., Ltd. were disposed to Techcross Vision Investment Inc. on September 26, 2019. And, the name of Hi Entech Co., Ltd. was changed to Techcross Environmental Services Inc. On December 30, 2019, Techcross Environmental Services Inc. was excluded from the Large Enterprise Group in accordance with the Monopoly Regulations and Fair Trade Act.

⁵ All shares of LUSEM CO., LTD. were sold to LB SEMICON CO., LTD. on February 27, 2018, and the name of LUSEM CO., LTD. was changed to LB Lusem CO., LTD. on March 15, 2018.

⁶ The acquisition cost of right-of-use assets is included in others.

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ii) The balances of receivables from and payables to related parties

(in millions of Korean won)

		December 31, 2019							
Classification	Name	Receivables				Payables			
		Trade receivables	Loans	Other receivables	Total	Trade payables	Borrowings	Other payables ⁴	Total
Significantly influencing the Group	LG Corp.	38	-	29,207	29,245	-	-	55,798	55,798
Associates	LG Display Co., Ltd. and its subsidiaries	182,862	-	86,133	268,995	575,758	-	76,851	652,609
	Hitachi-LG Data Storage Inc. and its subsidiaries	714	-	-	714	19,421	-	410	19,831
	Korea Information Certificate Authority Inc.	-	-	-	-	-	-	18	18
	Acryl Inc.	-	-	-	-	-	-	229	229
	ROBOTIS Co., Ltd.	-	-	-	-	-	-	145	145
	Robostar Co.,Ltd	-	-	-	-	-	-	27,480	27,480
	Subtotal		183,576	-	86,133	269,709	595,179	-	105,133
Joint ventures	Arcelik-LG Klima Sanayi ve Ticaret A.S.(LGEAT)	5,827	-	-	5,827	7,685	-	-	7,685
	LG HOLDINGS (HK) LIMITED and its subsidiaries	-	-	-	-	-	-	807	807
	EIC PROPERTIES PTE LTD.	-	-	-	-	-	-	68	68
	LG-MRI LLC	2,311	-	384	2,695	1,645	-	2	1,647
	Subtotal		8,138	-	384	8,522	9,330	-	877
Other related parties	LG CNS Co., Ltd. and its subsidiaries	21,711	-	1,118	22,829	31,425	-	166,750	198,175
	S&I Corp. and its subsidiaries ²	18,296	-	55,086	73,382	5,985	-	52,949	58,934
	LG Management Development Institute	-	-	17,864	17,864	-	-	968	968
	LG SPORTS Ltd.	1	-	-	1	-	-	2,311	2,311
	LG MMA Ltd.	31	-	-	31	42	-	-	42
	LG Holdings Japan Co., Ltd.	-	-	3,940	3,940	-	-	-	-
Subtotal		40,039	-	78,008	118,047	37,452	-	222,978	260,430
Others ¹	LG Chem Ltd. and its subsidiaries and joint ventures	546,852	-	228,217	775,069	240,870	-	60,068	300,938
	LG INTERNATIONAL CORP and its subsidiaries	25,803	-	1,438	27,241	192,466	-	228,945	421,411
	LG Uplus Corp and its subsidiaries	10,695	-	98	10,793	180	-	554	734
	LG HAUSYS,LTD. and its subsidiaries and associates	2,550	-	133	2,683	469	-	1,496	1,965
	Silicon Works Co., Ltd.	3,792	-	279	4,071	3,022	-	485	3,507
	LG HOUSEHOLD & HEALTH CARE LTD and its subsidiaries	20,067	-	8,709	28,776	32	-	3,409	3,441

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		December 31, 2019							
Classification	Name	Receivables				Payables			
		Trade receivables	Loans	Other receivables	Total	Trade payables	Borrowings	Other payables ⁴	Total
	G IIR Inc. and its subsidiaries	41	-	210	251	710	-	182,130	182,840
	Subtotal	609,800	-	239,084	848,884	437,749	-	477,087	914,836
	Total	841,591	-	432,816	1,274,407	1,079,710	-	861,873	1,941,583

(in millions of Korean won)

		December 31, 2018							
Classification	Name	Receivables				Payables			
		Trade receivables	Loans	Other receivables	Total	Trade payables	Borrowings	Other payables	Total
Significantly influencing the Group	LG Corp.	42	-	29,398	29,440	-	-	742	742
Associates	LG Display Co., Ltd. and its subsidiaries	563,778	-	136,544	700,322	518,663	-	168,882	687,545
	Ericsson-LG Co., Ltd. and its subsidiaries	31	-	-	31	534	-	-	534
	Hitachi-LG Data Storage Inc. and its subsidiaries ²	109	7,257	31	7,397	32,687	-	397	33,084
	LG Fuel Cell Systems Inc. and its subsidiaries	12	-	240	252	-	-	28	28
	Korea Information Certificate Authority Inc.	-	-	-	-	-	-	55	55
	Acryl Inc.	-	-	-	-	-	-	312	312
	Kiwigrind GmbH	-	-	-	-	-	-	54	54
	ROBOTIS Co., Ltd.	-	-	-	-	-	-	168	168
	Robostar Co., Ltd.	-	-	-	-	13,406	-	519	13,925
	Subtotal	563,930	7,257	136,815	708,002	565,290	-	170,415	735,705
Joint ventures	Arcelik-LG Klima Sanayi ve Ticaret A.S.(LGEAT)	2,733	-	-	2,733	4,779	-	-	4,779
	LG Holdings (HK) Ltd. and its subsidiaries	-	-	-	-	-	-	1,210	1,210
	EIC PROPERTIES PTE LTD.	-	-	-	-	-	-	1	1
	LG-MRI LLC	643	-	-	643	9,228	-	63	9,291
	Subtotal	3,376	-	-	3,376	14,007	-	1,274	15,281
Other related parties	LG CNS Co., Ltd. and its subsidiaries	19,819	-	2,218	22,037	3,959	-	182,146	186,105
	S&I Corp. and its subsidiaries ³	10,819	-	67,510	78,329	247,412	-	225,331	472,743
	LG Management Development Institute	-	-	17,864	17,864	-	-	1,850	1,850
	LG SPORTS Ltd.	2	-	-	2	-	-	1,859	1,859
	LG MMA Ltd.	86	-	-	86	51	-	21	72
	LG Holdings Japan Co., Ltd.	-	-	3,546	3,546	-	-	-	-
	LG Corp. U.S.A. ³	4	-	8,062	8,066	-	-	-	-

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		December 31, 2018							
Classification	Name	Receivables				Payables			
		Trade receivables	Loans	Other receivables	Total	Trade payables	Borrowings	Other payables	Total
	Subtotal	30,730	-	99,200	129,930	251,422	-	411,207	662,629
Others ¹	LG Chem Ltd. and its subsidiaries and joint ventures	490,832	-	270,963	761,795	277,880	-	84,364	362,244
	LG INTERNATIONAL CORP and its subsidiaries	19,582	-	9,362	28,944	558,108	-	269,497	827,605
	LG Uplus Corp and its subsidiaries	19,219	-	182	19,401	-	-	378	378
	LG HAUSYS,LTD. and its subsidiaries and associates	725	-	1,354	2,079	29	-	485	514
	Silicon Works Co., Ltd.	3,309	-	-	3,309	2,011	-	748	2,759
	LG HOUSEHOLD & HEALTH CARE LTD and its subsidiaries	2,270	-	350	2,620	32	-	734	766
	G II R Inc. and its subsidiaries	83	-	137	220	334	-	251,174	251,508
	Subtotal	536,020	-	282,348	818,368	838,394	-	607,380	1,445,774
	Total	1,134,098	7,257	547,761	1,689,116	1,669,113	-	1,191,018	2,860,131

¹ Although the entities are not the related parties of the Group in accordance with Korean IFRS 1024, the entities belong to a Large Enterprise Group in accordance with the Monopoly Regulation and Fair Trade Act.

² SERVEONE Co., Ltd. was spun off into S&I Corp. and SERVEONE Co., Ltd. on December 1, 2018, and S&I Corp., the existing entity, disposed 60.1% shares of SERVEONE Co., Ltd., a newly established entity, on May 15, 2019. On July 24, 2019, SERVEONE Co., Ltd., a newly established entity, was excluded from the Large Enterprise Group in accordance with the Monopoly Regulation and Fair Trade Act.

³ LG Electronics U.S.A., Inc., a subsidiary, acquired all shares of LG Corp. U.S.A. from LG Corp. on October 30, 2019.

⁴ Other payables as at December 31, 2019 include lease liabilities.

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iii) Significant capital transactions with related parties and others for the years ended December 31, 2019 and 2018, are as follows:

(in millions of Korean won)

Classification	Name	Dividend income	Dividend paid	Cash distribution (reduction)	2019		Financing borrowing transactions	
					Loans	Collections	Borrowings	Repayments
Significantly influencing the Group	LG Corp. ¹	-	41,321	-	-	-	-	-
Associates	Korea Information Certificate Authority Inc.	161	-	-	-	-	-	-
	Hitachi-LG Data Storage Inc.(HLDS)	-	-	-	-	7,358	-	-
	LG-MRI LLC	337	-	-	-	-	-	-
	Robostar Co.,Ltd	146	-	-	-	-	-	-
	Acryl Inc.	-	-	1,000	-	-	-	-
	LG-LHT Passenger Solutions GmbH	-	-	702	-	-	-	-
	LG-LHT Aircraft Solutions GmbH	-	-	1,234	-	-	-	-
	LG HOLDINGS (HK) LIMITED	-	-	(29,182)	-	-	-	-
	GUANGDONG SMART LIFE TECHNOLOGY CO., LTD	-	-	291	-	-	-	-
		644	-	(25,955)	-	7,358	-	-
	Total	644	41,321	(25,955)	-	7,358	-	-

(in millions of Korean won)

Classification	Name	Dividend income	Dividend paid	Cash distribution	2018		Financing borrowing transactions	
					Loans	Collections	Borrowings	Repayments
Significantly influencing the Group	LG Corp.	-	22,038	-	-	-	-	-
	LG Display Co., Ltd.	67,813	-	-	-	-	-	-
	Hitachi-LG Data Storage Inc.(HLDS)	-	-	-	-	7,238	-	-
Associates and joint ventures	LG Fuel Cell Systems Inc.	-	-	7,178	-	-	-	-
	Korea Information Certificate Authority Inc.	100	-	-	-	-	-	-
	LG-MRI LLC	321	-	-	-	-	-	-
	Subtotal	68,234	-	7,178	-	7,238	-	-
	Total	68,234	22,038	7,178	-	7,238	-	-

¹ During 2019, right-of-use assets of ₩ 31,764 million and lease liabilities of ₩ 29,988 million are recognized in respect to office lease agreements which the Group has entered with LG Corp. The repayment of lease liabilities during the year is ₩ 2,194 million and interest expenses amount to ₩ 77 million.

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- (b) The compensation paid or payable to key management personnel for the years ended December 31, 2019 and 2018, consist of:

<i>(in millions of Korean won)</i>	2019	2018
Wages and salaries	18,173	19,257
Post-employment benefits	3,416	3,731
Other long-term benefits	107	111
Total	21,696	23,099

Key management refers to the directors who have significant control and responsibilities on the Group's business plans, operations and control.

- (c) LG Electronics U.S.A., Inc., a subsidiary, provides payment guarantee for Hitachi-LG Data Storage Inc.(HLDS) amounting to US\$ 6.25 million at the end of the reporting period (December 31, 2018: US\$ 7.5 million).
- (d) There is no collateral provided by the Group for the financial support of related parties at the end of the reporting period.
- (e) The Group has not recognized any bad debt expense or allowance for trade receivables from related parties at the end of the reporting period.

39. Risk Management

Financial Risk Management

The Group's financial risk management ("FRM") policy supports each business division to achieve excellent performance solidly and continuously against market risk, credit risk and liquidity risk. In addition, FRM helps the Group to enhance cost competitiveness through cost-efficient financing cost by improving financial structure and effective cash management.

While cooperating with other divisions, Finance Division in the Parent Company mainly implements FRM. This involves setting-up risk management policies and recognizing, evaluating and hedging risks from a global point of view.

The Group anticipatively and systematically manages the financial risks over global business activities through its four overseas treasury centers in New Jersey (United States), Amsterdam (Netherlands), Beijing (China), and Singapore in coordination with Finance Division in the Parent Company. And it also helps to improve overseas subsidiaries' business competitiveness by performing integration of their finance functions.

The Group mitigates the adverse effects from financial risk by monitoring the risk periodically and updating FRM policy each year.

The carrying amount and profit or loss of each category of financial instruments and the details of borrowings related to the financial risk management are presented in Note 5 and Note 16,

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respectively.

(a) Market risk

i) Foreign exchange risk

Due to its multinational business operations, the Group is mainly exposed to foreign exchange risk on the US Dollar and Euro.

The purpose of foreign exchange risk management is to provide the foundation of a stable business operation by minimizing the uncertainty and volatility of foreign exchange gains and losses from foreign exchange rate fluctuations.

The Group's foreign exchange risk management is implemented under its own foreign exchange policy through which the Group can minimize the exposure to foreign exchange risk by preferentially making equal amount of foreign exchange assets and liabilities from general operating activities. And the Group continuously considers efficient foreign exchange risk hedges against its remaining exposure with derivative financial instruments and scrutinizes changes in foreign exchange exposure and the results of hedging activities on a monthly basis. Speculative foreign exchange trading is prohibited in principle.

As at December 31, 2019 and 2018, if the foreign exchange rate of the Korean won fluctuated for monetary assets and liabilities denominated in major foreign currency other than functional currency by 10% while other variables were fixed, the effects on income (loss) before tax would be as follows:

<i>(in millions of Korean won)</i>	December 31, 2019		December 31, 2018	
	10% increase	10% decrease	10% increase	10% decrease
USD/KRW	(89,461)	89,461	(40,378)	40,378
EUR/KRW	2,049	(2,049)	18,956	(18,956)

ii) Interest rate risk

The Group is exposed to interest rate risk through changes in interest-bearing liabilities or assets. The risk mainly arises from borrowings and deposits held by financial institutions with variable interest rates linked to market interest rate changes in the future. The objective of interest rate risk management lies in improving corporate value by minimizing uncertainty caused by fluctuations in interest rates and minimizing net interest expense.

The Group minimizes its borrowings from others and optimizes its deposits by expanding internal finance sharing. The Group periodically establishes the plan for reaction by the monitoring trends of internal and external interest rates and minimizes the risk of net interest expense by properly operating short-term borrowings with variable interest rates and deposits.

If interest rates fluctuate by 1%p without other variables changing, the effects on income and expenses related to borrowings and deposits held by financial institutions with variable interest

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rates for the years ended December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	2019		2018	
	1%p increase	1%p decrease	1%p increase	1%p decrease
Interest income	45,006	(45,006)	40,372	(40,372)
Interest expense	7,161	(7,161)	4,719	(4,719)

iii) Details of derivatives contracts are as follows:

Derivatives for hedging purposes

The Group entered into the cross-currency swap contracts and the interest rate swap contracts to hedge cash flow risks related to the floating interest rates and foreign exchange rates of debentures.

Details of hedging instruments are as follows:

	Contractor	Contracted amount <i>(in millions)</i>	Contracted currency rate	Interest rate (paid) (%)	Starting date	Expiration date	Book amount <i>(in millions of Korean won)</i>	
							Assets	Liabilities
Cross-currency swap	MUFG Bank and others	USD 580 (USD/KRW)	1,067.9 ~ 1,171.0	2.06 ~ 3.64	2017. 2. 2~ 2019. 10. 25	2020.11.23 ~ 2028. 6. 8	4,102	8,703
	Commerzbank and others	CZK 260 (EUR/CZK)	26.2 ~ 26.3	-	2019. 6. 3~ 2019. 9. 4	2020. 1. 3 ~ 2020. 6. 1	298	-
Interest rate swap	Woori Bank and others	KRW 1,245,000 / EUR 100 / USD 235	-	1.00 ~ 4.53	2014. 1. 3 ~ 2018. 5.24	2023. 2.24 ~ 2030. 7. 7	-	91,965

Interest rates received for the above swap contracts are equal to annual interest rates of borrowings and debentures (Note 16).

Details of hedged items are as follows:

<i>(in millions of Korean won)</i>	Hedged items	Book amount	Changes in fair value (net of tax)
Cross-currency swap	Borrowings	682,540	(16,598)
Interest rate swap	Borrowings	1,645,973	32,665

The results of hedge accounting are as follows:

<i>(in millions of Korean won)</i>	Changes in fair value of derivatives (net of tax)	Line items in profit or loss	Reclassified to profit or loss (net of tax)	Other comprehensive loss (net of tax)	Accumulated other comprehensive loss
Cross-currency swap	16,598	Interest expense and exchange differences	(19,656)	(3,058)	(22,645)
Interest rate swap	(32,665)	Interest expense	9,553	(23,112)	(65,484)

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Non-derivative for hedging purposes

LG Innotek Co., Ltd., a subsidiary, applied cash flow hedging accounting by designating the amount of advances from customers as hedging instrument to hedge foreign exchange risk of the future expected sales.

Details of hedging instruments are as follows:

	Contracted amount (in millions)	Starting date	Expiration date	Book amount (in millions of Korean won)
Advances	USD 26	2019.12	2020.05	30,468
Advances	USD 172	2019.12	2021.12	199,142

The highly probable forecast transactions in relation to cash flow hedges are expected to happen on various dates in next 5 months/24 months, and they are expected to affect cash flows in next 5 months/24 months. Advances of ₩ 130,039 million and ₩ 99,571 million will be realized within one year and one to two years, respectively. At the end of the reporting period, the book amount of advances is a reasonable approximation of its fair value.

There is no forecasted transaction that needs to be changed for which hedges had previously been used, but which is no longer expected to occur.

The amount recognized in other comprehensive income in relation to cash flow hedges for the year ended December 31, 2019, is ₩ (-)7,248 million and there is no reclassified amount from equity to profit or loss.

Trading purposes

The Group entered into the currency forward contracts and the interest rate swap contracts to manage the risk against possible future changes in foreign exchange rates and interest rates. The subsidiaries' currency forward contracts and the interest rate swap contracts as at December 31, 2019, and related profit or loss for the year ended December 31, 2019, are as follows:

<i>(in millions of Korean won)</i>	Purchase	Sale	Loss on valuation	Gain on transaction
Currency forward	689,803	687,322	(5,362)	6,596
Interest rate swap	-	-	(1,038)	137

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Share Purchase Agreement

In 2018, the Group entered into a contract to additionally purchase shares of Robostar Co.,Ltd. in December 2019 at the average price of immediate four months with a 25% mark up. In relation to this share purchase contract, the Group recognized derivative liabilities amounting to ₩2,713 million at the time of acquisition of Robostar Co.,Ltd. and recognized gain on valuation of derivatives amounting to ₩345 million (2018: ₩851 million) during the year ended December 31, 2019. As at December 31, 2019, the share purchase contract was exercised.

iv) Price risk

The Group is exposed to price risk through equity securities owned by the Group classified as financial assets at fair value through other comprehensive income.

The listed securities owned by the Group are traded in the open market, and related to KOSDAQ Index and Austrian Traded Index.

The effect of price index's fluctuation related to the listed securities on the equity (before applying the tax effect) is set out in the below table. The analysis is performed in respect of 30% increase/decrease in the price index under the assumption that other variations are consistent and the listed securities owned by the Group have correlation with the relevant past index.

<i>(in millions of Korean won)</i>	December 31, 2019		December 31, 2018	
	30% increase	30% decrease	30% increase	30% decrease
KOSDAQ	2,654	(2,654)	3,057	(3,057)
Austrian Traded Index	2,867	(2,867)	3,108	(3,108)

The valuation and changes in book amounts of the financial assets at fair value through other comprehensive income related to the market risk above are presented in Note 8.

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(b) Credit risk

The Group operates a consistent Global Credit / TR (trade receivables) policy to manage credit risk exposures.

In regard to receivables, the Group operates an integrated receivable insurance program with the world top three receivable insurers (Euler Hermes, Atradius and Coface) and Korea Trade Insurance Corporation (K-SURE). In an effort to minimize receivable credit risk, the Group applies the credit rating of the counterparty when determining the insurance coverage. In addition, the Group performs stringent credit risk management based on credit valuation criteria for receivables without insurance coverage or collateral.

Details of credit quality for trade receivables that are neither past due nor impaired are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019	December 31, 2018
Trade receivables with insurance or collateral		
Excellent	1,736,057	1,485,652
Good	683,289	725,323
Fair	1,541,774	1,595,023
Poor ¹	395,299	310,500
Subtotal	4,356,419	4,116,498
Trade receivables without insurance or collateral		
Tier 1	697,240	803,089
Tier 2	365,324	440,352
Tier 3	178,453	175,248
Subtotal	1,241,017	1,418,689
Total	5,597,436	5,535,187

¹Debtors with insurance or collateral, but without credit rating are included herein.

Criteria of categorizing trade receivables with insurance or collateral are as follows:

Category	Atradius	Euler	Coface	K-SURE
Excellent	1~28	1~3	8~10	A~B
Good	29~40	4~5	7	C
Fair	41~72	6~7	3~6	D~E
Poor	73~	8~10	0~2	F~R

Debtors for which credit ratings are not provided by insurance company are categorized using the criteria from domestic credit rating agency.

Criteria of categorizing trade receivables without insurance or collateral are as follows:

Tier 1 – National or local government, domestic and global credit rating agency AA- ~ AAA+

Tier 2 – Debtors with domestic and global credit rating other than Tier 1

Tier 3 – Small debtors without credit history

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The credit rating of cash equivalents and deposits held by financial institutions estimated by the Group using external credit rating criteria as at December 31, 2019 and 2018, is as follows:

Category	December 31, 2019	December 31, 2018
Excellent	4,220,305	3,980,778
Good	495,099	295,938
Others	166,972	119,645
Total	4,882,376	4,396,361

Excellent: Equal to or more than A-(Global credit rating agency such as S&P), AAA(Domestic credit rating agency such as Korea investors service)

Good: Equal to or more than BBB-(Global credit rating agency such as S&P), AA(Domestic credit rating agency such as Korea investors service)

Others: Financial deposit without credit rating

(c) Liquidity risk

The Group forecasts its cash flow and liquidity status, and sets action plans on a regular basis to manage liquidity risk proactively. The Group systematically works with experts in four regional treasury centers to carry out fund and liquidity management that can react proactively to the changing global financial environment.

The Group maintains adequate amount of cash and committed credit facilities in Kookmin Bank and Shinhan Bank to cope with potential financial distress.

In addition, the Group is able to source funds any time in the domestic and international financial markets as at the end of reporting period because it has good investment credit grades of AA Stable from Korea Investors Service, Korea Ratings and NICE Information Service, BBB from Standard & Poors, and Baa3 from Moody's as at December 31, 2019.

- i) Cash flow information on maturity of financial liabilities as at December 31, 2019, are as follows:

<i>(in millions of Korean won)</i>	Total	Within 1 year	1 to 2 years	2 to 5 years	Over 5 years
Trade payables	6,820,644	6,820,644	-	-	-
Borrowings	11,965,548	1,941,448	1,655,389	3,936,374	4,432,337
Lease liabilities	925,194	318,054	225,217	280,207	101,716
Other payables	3,320,064	3,318,720	384	960	-
Other financial liabilities	14,304	8,628	1,744	3,932	-
Total	23,045,754	12,407,494	1,882,734	4,221,473	4,534,053

The above cash flows are calculated at nominal value based on the earliest maturity dates and include cash flows of principal and interests. The Group's trading portfolio derivative within other financial liabilities that are not qualified for hedge accounting have been included at their fair value of ₩7,060 million within the less than 1-year time bucket. This is because the contractual maturities are not essential for an understanding of the timing of the cash flows. These contracts are managed on a net-fair value basis rather than by maturity date. Derivatives for cash flow

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hedges from changes in interest rate and exchange rate are reflected in the cash flows of related borrowings.

- ii) The maturity analysis of financial guarantee contracts provided by the Group to third party companies as at December 31, 2019, are as follows:

<i>(in millions of Korean won)</i>	Total	Within 1 year	1 to 2 years	2 to 5 years	Over 5 years
Financial guarantee contracts	53,236	50,342	2,894	-	-

The above cash flow is the maximum amount of guarantees allocated to earliest period in which the Group can be required to make payments.

Capital Risk Management

The Group's capital risk management purpose is to maximize shareholders' value through maintaining a sound capital structure. The Group monitors financial ratios, such as liability to equity ratio and net borrowing ratio each month and implements required action plan to improve the capital structure.

Debt-to-equity ratio and net borrowing ratio as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won, except for ratios)</i>	December 31, 2019	December 31, 2018
Liability (A)	28,434,737	28,021,536
Equity (B)	16,425,138	16,306,907
Cash and cash equivalents (C)	4,777,368	4,270,388
Borrowings and lease liabilities (D)	11,258,762	10,901,186
Debt-to-equity ratio (A/B)	173.1%	171.8%
Net borrowings ratio ((D-C)/B)	39.5%	40.7%

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Fair Value Estimation

(a) The book amounts and fair values of the Group's financial assets and liabilities as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019			
	Current		Non-current	
	Book amount	Fair value	Book amount	Fair value
Assets at fair value				
Financial assets at fair value through profit or loss				
Other financial assets	2,543	2,543	23,324	1
Financial assets at fair value through other comprehensive income				
Trade receivables	612,320	1	-	-
Other financial assets				
Listed equity securities	-	-	18,638	18,638
Unlisted equity securities	-	-	51,124	1
Derivatives for hedging purposes				
Other financial assets	2,595	2,595	1,805	1,805
Assets at amortized cost				
Financial assets at amortized cost				
Cash and cash equivalents	4,777,368	1	-	-
Deposits held by financial institutions	65,971	1	39,368	39,368
Trade receivables	5,747,968	1	-	-
Other receivables	639,150	1	437,957	422,927
Other financial assets	-	-	1,612	1
Total	11,847,915		573,828	

<i>(in millions of Korean won)</i>	December 31, 2019			
	Current		Non-current	
	Book amount	Fair value	Book amount	Fair value
Liabilities at fair value				
Financial liabilities at fair value through profit or loss				
Other financial liabilities	7,060	7,060	7,285	7,285
Derivatives for hedging purposes				
Other financial liabilities	-	-	100,668	100,668
Liabilities at amortized cost				
Financial liabilities at amortized cost				
Trade payables	6,820,644	1	-	-
Borrowings	1,643,656	1	8,843,682	9,174,232
Other payables	3,318,784	1	1,202	1,192
Other liabilities				
Lease liabilities	274,245	2	497,179	2
Other financial liabilities	115	3	20	3
Total	12,064,504		9,450,036	

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<i>(in millions of Korean won)</i>	December 31, 2018			
	Current		Non-current	
	Book amount	Fair value	Book amount	Fair value
Assets at fair value				
Financial assets at fair value through profit or loss				
Other financial assets	6,742	6,742	20,099	1
Financial assets at fair value through other comprehensive income				
Trade receivables	358,443	1	-	-
Other financial assets				
Listed equity securities	-	-	20,463	20,463
Unlisted equity securities	-	-	34,055	1
Debt securities	-	-	1,552	1
Derivatives for hedging purposes				
Other financial assets	1,542	1,542	291	291
Assets at amortized cost				
Financial assets at amortized cost				
Cash and cash equivalents	4,270,388	1	-	-
Deposits held by financial institutions	80,516	1	45,853	45,853
Trade receivables	6,013,151	1	-	-
Other receivables	506,437	1	452,366	426,804
Other financial assets	117	1	1,612	1
Total	11,237,336		576,291	

<i>(in millions of Korean won)</i>	December 31, 2018			
	Current		Non-current	
	Book amount	Fair value	Book amount	Fair value
Liabilities at fair value				
Financial liabilities at fair value through profit or loss				
Other financial liabilities	3,228	3,228	8,045	8,045
Derivatives for hedging purposes				
Other financial liabilities	-	-	81,170	81,170
Liabilities at amortized cost				
Financial liabilities at amortized cost				
Trade payables	7,216,739	1	-	-
Borrowings	1,405,116	1	9,496,070	9,764,971
Other payables	3,670,453	1	17,995	18,407
Other liabilities				
Other financial liabilities	115	3	52	3
Total	12,295,651		9,603,332	

¹ Excluded from disclosure such as fair value hierarchy and measurement method as the carrying amount is the reasonable approximate of fair value.

² Lease liabilities were excluded from the fair value disclosures in accordance with Korean IFRS 1107 *Financial Instruments: Disclosures*.

³ Measured at the higher of the amount of the loss allowance determined in accordance with Korean IFRS 1109 *Financial Instruments*, and the amount initially recognized less cumulative amount of income recognized in accordance with Korean IFRS 1115 *Revenue from Contracts with Customers*.

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(b) Fair value measurements of assets and liabilities

i) Fair value hierarchy and measurement method

The fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. The fair value measurement is to estimate the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date under current market conditions. When measuring fair value using valuation techniques, the Group maximizes the use of market information and minimizes the use of unobservable inputs.

Financial instruments measured at fair value are categorized within the fair value hierarchy, and the defined levels are as follows:

- Level 1: Financial instruments measured at the quoted prices in an active market for identical assets or liabilities are included in 'level 1'. Assets or liabilities categorized within 'level 1' are financial instruments such as marketable equity securities traded.

- Level 2: When financial instruments are measured by using a discounted cash flow, if all significant inputs required to measure the fair value of an instrument are observable, the instrument is included in 'level 2'. Assets or liabilities categorized within 'level 2' are financial instruments such as derivative financial instruments.

- Level 3: When financial instruments are measured by using a discounted cash flow, if one or more of the significant inputs are unobservable market data, the instrument is included in 'level 3'. There are no assets or liabilities categorized within 'level 3'.

The fair value of financial instruments traded in active markets is based on quoted market prices at the end of the reporting period. A market is regarded as active if quoted prices are readily and regularly available from an exchange, dealer, broker, an entity within the same industry, pricing service, or regulatory agency, and those prices represent actual and regularly occurring market transactions on an arm's length basis. The quoted market price for financial assets held by the Group is the closing price at the end of the reporting period. These instruments are included in 'level 1'. Instruments included in 'level 1' comprise primarily equity investments classified as financial assets at fair value through other comprehensive income.

The fair value of financial instruments that are not traded in an active market is determined by using valuation techniques. The Group uses various valuation techniques that the Group develops or figures that external valuation agencies provide, and makes judgements based on current market conditions. These valuation techniques maximize the use of observable market data where it is available and rely as little as possible on entity specific estimates. If all significant inputs required to measure the fair value of an instrument are observable, the instrument is included in 'level 2'.

If one or more of the significant inputs are not based on observable market data, the instrument is included in 'level 3'. Financial instrument included 'level 3' uses other method including

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discounting cash flow method.

ii) Financial instruments measured at fair value

Fair value hierarchy classifications of the financial assets and financial liabilities that are measured at fair value as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019			
	Level 1	Level 2	Level 3	Total
Assets				
Other financial assets				
Financial assets at fair value through other comprehensive income				
- Listed equity securities	18,638	-	-	18,638
Financial assets at fair value through profit or loss	-	2,543	-	2,543
Derivatives for hedging purposes	-	4,400	-	4,400
Liabilities				
Other financial liabilities				
Financial liabilities at fair value through profit or loss	-	14,345	-	14,345
Derivatives for hedging purposes	-	100,668	-	100,668
December 31, 2018				
<i>(in millions of Korean won)</i>	Level 1	Level 2	Level 3	Total
Assets				
Other financial assets				
Financial assets at fair value through other comprehensive income				
- Listed equity securities	20,463	-	-	20,463
Financial assets at fair value through profit or loss	-	6,742	-	6,742
Derivatives for hedging purposes	-	1,833	-	1,833
Liabilities				
Other financial liabilities				
Financial liabilities at fair value through profit or loss	-	11,273	-	11,273
Derivatives for hedging purposes	-	81,170	-	81,170

The above fair value amounts are recurring fair value measurements.

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- Valuation technique and inputs for fair value measurements categorized within 'level 2'

Valuation technique and inputs for fair value measurements categorized within 'level 2' as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	Fair value		Valuation techniques	Inputs
	December 31, 2019	December 31, 2018		
Assets				
Other financial assets				
Financial assets at fair value through profit or loss	2,543	6,742	Discounted cash flow	Discount rate and exchange rate
Derivatives for hedging purposes	4,400	1,833	Discounted cash flow	Discount rate and exchange rate
Liabilities				
Other financial liabilities				
Financial liabilities at fair value through profit or loss	14,345	11,273	Discounted cash flow	Discount rate and exchange rate
Derivatives for hedging purposes	100,668	81,170	Discounted cash flow	Discount rate and exchange rate

- Fair value measurements categorized within 'level 3'

At the end of the reporting period, no financial instruments measured at fair value are categorized within 'level 3'.

iii) Financial instruments not measured at fair value but for which the fair value is disclosed

Financial instruments not measured at fair value but for which the fair value is disclosed as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019			
	Level 1	Level 2	Level 3	Total
Assets				
Non-current deposits held by financial institutions	-	-	39,368	39,368
Non-current other receivables	-	-	422,927	422,927
Liabilities				
Non-current borrowings	-	-	9,174,232	9,174,232
Non-current other payables	-	-	1,192	1,192

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<i>(in millions of Korean won)</i>	December 31, 2018			
	Level 1	Level 2	Level 3	Total
Assets				
Non-current deposits held by financial institutions	-	-	45,853	45,853
Non-current other receivables	-	-	426,804	426,804
Liabilities				
Non-current borrowings	-	-	9,764,971	9,764,971
Non-current other payables	-	-	18,407	18,407

- Valuation technique and inputs for fair value measurements categorized within 'level 2'

At the end of the reporting period, there are no financial instruments that are not measured at fair value but for which the fair value is disclosed and categorized within 'level 2'.

- Disclosure in relation to fair value measurements categorized within 'level 3'

Valuation technique, inputs and unobservable inputs of financial instruments that are not measured at fair value but for which the fair value is disclosed and categorized within 'level 3' as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019		December 31, 2018		Valuation techniques	Inputs	Significant but unobservable inputs	Range of significant but unobservable inputs
	Carrying amount	Fair value	Carrying amount	Fair value				
Assets								
Non-current deposits held by financial institutions	39,368	39,368	45,853	45,853	Discounted cash flow	Discount rate and exchange rate	Discount rate	0.1% ~ 2.0%
Non-current other receivables	437,957	422,927	452,366	426,804	Discounted cash flow	Discount rate and exchange rate	Discount rate	2.9% ~ 3.6%
Liabilities								
Non-current borrowings	8,843,682	9,174,232	9,496,070	9,764,971	Discounted cash flow	Discount rate and exchange rate	Discount rate	1.6% ~ 3.3%
Non-current other payables	1,202	1,192	17,995	18,407	Discounted cash flow	Discount rate and exchange rate	Discount rate	1.6% ~ 1.8%

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40. Business Combinations

- (a) On October 30, 2019, LG Electronics U.S.A., Inc., a subsidiary, acquired 100% shares of LG Corp. U.S.A. from LG Corp., which holds a building to be used for future office building.

The following table summarizes the consideration paid and the fair value of assets acquired and liabilities assumed:

<i>(in millions of Korean won)</i>	Amount
Consideration	
Cash and cash equivalents	192,786
Recognized amounts of identifiable assets acquired and liabilities assumed	
Current assets	
Cash and cash equivalents	2,739
Other assets	3
Non-current assets	
Property, plant and equipment	329,695
Other assets	474
Current liabilities	
Short-term borrowings	116,840
Other liabilities	23,285
Current liabilities	
Deferred tax liabilities	1,853
Fair value of total identifiable net assets	190,933
Goodwill	1,853

The acquisition-related direct costs incurred in relation to business combination amounting to ₩36 million was recognized as expenses as incurred.

Net loss of LG Corp. U.S.A. for the period from October 30, 2019, the acquisition date, included in the consolidated statements of profit or loss are ₩493 million. Net sales and profit for the current reporting period as though the acquisition date had been as at the beginning of the annual reporting period are as follows:

<i>(in millions of Korean won)</i>	Before adjustments	Adjustments	After adjustments
Net sales	62,306,175	-	62,306,175
Profit for the year	179,948	(516)	179,432

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- (b) On March 5, 2019, LG Electronics Tianjin Appliances Co., Ltd., a subsidiary, acquired 100% shares of QINGGONGLIAN ELECTRICAL INSTALLATION ENGINEERING CO., LTD. in order to secure competitiveness of sales and installation of air conditioners in China.

The following table summarizes the consideration paid and the fair value of assets acquired and liabilities assumed:

<i>(in millions of Korean won)</i>	Amount
Consideration	
Cash and cash equivalents	3,623
Recognized amounts of identifiable assets acquired and liabilities assumed	
Current assets	
Cash and cash equivalents	1,029
Trade receivables ¹	1,080
Other assets	5,165
Non-current assets	
Property, plant and equipment	222
Intangible assets	77
Current liabilities	
Trade and other payables	360
Other liabilities	3,590
Fair value of total identifiable net assets	3,623
Goodwill	-

¹ The fair value of above trade receivables is the same as the contractual amount in gross.

The acquisition-related direct costs incurred in relation to business combination amounting to ₩29 million was recognized as expenses as incurred.

Net sales and loss of QINGGONGLIAN ELECTRICAL INSTALLATION ENGINEERING CO., LTD. for the period from March 5, 2019, the acquisition date, included in the consolidated statements of profit or loss are ₩7,148 million and ₩441 million, respectively. Net sales and profit for the current reporting period as though the acquisition date had been as at the beginning of the annual reporting period are as follows:

<i>(in millions of Korean won)</i>	Before adjustments	Adjustments	After adjustments
Net sales	62,306,175	1,086	62,307,261
Profit for the year	179,948	4	179,952

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- (c) On August 3, 2018, the Group acquired 70% shares of ZKW Holding GmbH, its subsidiaries and related entities in order to secure competitiveness of the vehicle components business.

The following table summarizes the consideration paid and the fair value of assets acquired and liabilities assumed:

<i>(in millions of Korean won)</i>	Amount
Consideration	
Cash and cash equivalents	979,108
Recognized amounts of identifiable assets acquired and liabilities assumed	
Current assets	
Cash and cash equivalents	241,079
Trade receivables ¹	189,572
Other receivables ¹	28,118
Inventories	152,472
Other assets	182,918
Non-current assets	
Property, plant and equipment	571,775
Intangibles assets	354,719
Other receivables ¹	2,107
Other assets	254,969
Current liabilities	
Trade and other payables	201,785
Borrowings	216,114
Other liabilities	202,933
Non-current liabilities	
Borrowings	297,802
Other liabilities	202,332
Fair value of total identifiable net assets	856,763
Non-controlling interest²	420,001
Goodwill³	542,346

¹ The fair value of above trade and other receivables is the same as the total contract amount.

² The fair value of the non-controlling interest is measured as ₩420,001 million, which is the cash and cash equivalent amount paid by LG Corp., in acquiring 30% share of ZKW Holding GmbH, its subsidiaries and related entities.

³ Goodwill incurred in a business combination amounting to ₩542,346 million is due to an increase in sales from integration of business with ZKW Holding GmbH, its subsidiaries and related entities, which is not allowed to be tax deductible.

The acquisition-related direct costs in relation to business combination amounting to ₩18,533 million were recognized as expenses as incurred.

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41. Assets Classified as Held for Sale

(a) Details of assets classified as held for sale as at December 31, 2019 and 2018, are as follows:

<i>(in millions of Korean won)</i>	December 31, 2019¹	December 31, 2018²
Assets held for sale		
Land	8,673	-
Building	6,073	-
Machinery	-	115,212
Total	14,746	115,212

¹ At the end of the reporting period, sales procedure of the assets is in progress and the sale is expected to be completed by 2020.

² The Group entered into a sales contract in December 2018 and the sale was completed in April 2019.

(b) Assets held for sale were measured at fair value less costs to sell before the reclassification, and no impairment loss was recognized in relation to this.

42. Approval of the Consolidated Financial Statements

The issuance of the December 31, 2019 consolidated financial statements of the Group was approved by the Board of Directors on January 29, 2020.