SK HYNIX, INC.

Separate Financial Statements

December 31, 2019 and 2018

(With Independent Auditors' Report Thereon)

Contents

KPMG SAMJONG

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Independent Auditors' Report

Based on a report originally issued in Korean

To The Board of Directors and Shareholders of
SK hynix, Inc.:

Opinion

We have audited the accompanying separate financial statements of SK hynix, Inc. (the "Company"), which comprise the separate statements of financial position of the Company as of December 31, 2019 and 2018, the related separate statements of comprehensive income, changes in equity and cash flows for the years then ended, and notes to the separate financial statements, including significant accounting policies and other explanatory information.

In our opinion, the accompanying separate financial statements present fairly, in all material respects, the separate financial position of the Company as of December 31, 2019 and 2018, and its separate financial performance and its separate cash flows for the years then ended in accordance with Korean International Financial Reporting Standards ("K-IFRS").

We also have audited, in accordance with Korean Standards on Auditing, the Company's Internal Control over Financial Reporting as of December 31, 2019, based on the criteria established in Conceptual Framework for Designing and Operating Internal Control over Financial Reporting issued by the Operating Committee of Internal Control over Financial Reporting in Korea, and our report dated February 25, 2020 expressed an unmodified opinion on effectiveness of internal control over financial reporting.

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 Separate Financial Statements section of our report. We are independent of the Company in accordance with the ethical requirements that are relevant to our audit of the separate financial statements in the Republic of Korea, and we have fulfilled our ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the separate financial statements as of and for the year ended December 31, 2019. These matters were addressed in the context of our audit of the separate financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

(I) surement of fair value of financial instruments.

As described in note 5 and note 11 to the separate financial statements, the Company has equity investment ("SPC1") and convertible bonds ("SPC2") relating to investment in KIOXIA Holdings Corporation ("KIOXIA", formerly, Toshiba Memory Corporation). Those are measured at the fair value using significant unobservable inputs as of December 31, 2019 and amount to ₩4,216,218 million in the aggregate.

The fair values of financial instruments in connection with the investments in SPC1 and SPC2 are measured based on the equity value of KIOXIA, an unlisted company, which involves significant judgment in the application of probability-weighted expected return method and in determining the assumptions to be used, such as estimated future revenue, operating profit and discount rate. Accordingly, we identified the measurement of fair values of financial instruments in connection with the investments in SPC1 and SPC2 as a key audit matter.

The primary procedures we performed to address this key audit matter included:

- Testing certain internal controls relating to the fair value evaluation process of the financial instruments;
- Assessing the qualification and objectivity of the external institution engaged by the Company to assess the fair value of the financial instruments;
- Reading investment agreements to understand the relevant investment terms, identifying any conditions that were relevant to the valuation of financial instruments and confirming whether investment terms and conditions are considered in valuation;
- Involving our valuation professionals with specialized skills and knowledge who assisted us in evaluating the valuation result from the report issued by the external institution, and the valuation models (market approach, option-pricing method or present value method), and assumptions such as future revenue, operating profit and discount rate used by the Company to value investments in SPC1 and SPC2;
- Performing sensitivity analysis of significant unobservable inputs, including discount rate and weighting of different scenarios used in estimating the fair value of investments in SPC1 and SPC2 and assessing the impact of changes in the inputs on the fair value measurement and whether there were any indicators of management bias; and
- Assessing the appropriate disclosures of the separate financial statements for the valuation of fair value, key assumptions and source data in accordance with K-IFRS.

(II) Assessment and disclosure of contingencies for price-fixing class-action lawsuits in North America and the antitrust investigation in China.

As described in note 34, the price-fixing class-action lawsuits in North America and the antitrust investigation in China are ongoing, as of December 31, 2019. As described in note 3-(17) to the separate financial statements, a provision should be recognized for these lawsuits and investigation if they represent a present obligation as a result of past event; it is probable that an outflow of resources will occur; and reliable estimation of amounts can be made.

As the outcome of these litigation and regulatory investigation is uncertain, any position taking by management will involve significant judgment and estimation. The estimates underlying these contingent liabilities involve management's significant judgment in interpreting various relevant regulations, laws, and practices, and evaluation of past cases of jurisdictions. Accordingly, we identified the assessment of contingent liabilities and related disclosures for the above litigation and regulatory investigation as a key audit matter.

The primary procedures we performed to address this key audit matter included:

- Testing certain internal controls relating to the contingent liabilities evaluation and disclosure process;
- Discussing the status and potential exposures with the Company internal legal counsel and obtaining confirmation letters regarding the litigation and regulatory investigation from the Company's external legal counsels, including their views on the likely outcome of each litigation or regulatory investigation and whether the magnitude of potential exposure to the Company could be reliably estimated;
- Assessing the competence, capability and objectivity of external legal counsels, by considering professional qualifications, fee arrangements and other relevant factors;
- Assessing the recognition of provisions depending on whether those are a present obligation as a result of past event, probable that an outflow of resources, and reliable estimation of amounts in accordance with accounting standard; and
- Assessing whether the disclosures detailing the above litigation and regulatory investigation adequate in accordance with K-IFRS.

Other Matter

The procedures and practices utilized in the Republic of Korea to audit such separate financial statements may differ from those generally accepted and applied in other countries.

KPMG

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

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

In preparing the separate financial statements, management is responsible for assessing the Company'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 Company or to cease operations, or has no realistic alternative but to do so.

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

Auditors' Responsibility for the Audit of the Separate Financial Statements

Our objectives are to obtain reasonable assurance about whether these separate financial statements as a whole are free from material misstatements, whether due to fraud or error, and to issue an auditors' 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 aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these separate 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 separate 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.
- 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 Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, then we are required to draw attention in our auditors' report to the related disclosures in the separate 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 auditors' report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the separate financial statements, including the disclosures, and whether the separate financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

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 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 separate financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditors' 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 auditors' report is Heon Chang Oh.

KPMG Samjong Accounting Corp.

Seoul, Korea
February 25, 2020

This report is effective as of February 25, 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 separate financial statements and notes thereto. Accordingly, the readers of the audit report should understand that the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

SK HYNIX, INC.

Separate Statements of Financial Position

As of December 31, 2019 and 2018

(In millions of won)

	Note		2019	2018
Assets				
Current assets				
Cash and cash equivalents	*4,5*	₩	1,672,492	1,741,271
Short-term financial instruments	*4,5,6*		257,500	477,500
Short-term investment assets	*4,5*		973,513	2,919,140
Trade receivables, net	*4,5,7,33*		3,646,659	6,436,794
Loans and other receivables, net	*4,5,7,33*		26,170	19,454
Inventories, net	*8*		4,354,732	3,721,521
Current tax assets			198,257	-
Other current assets	*9*		596,208	582,139
			11,725,531	15,897,819
Non-current assets				
Investments in subsidiaries, associates, and joint ventures	*10*		6,323,449	7,874,684
Long-term investment assets	*4,5,11*		4,295,661	4,249,518
Loans and other receivables, net	*4,5,7,33*		63,636	32,794
Other financial assets	*4,5,6*		11	11
Property, plant and equipment, net	*12,15,34*		31,691,264	29,842,654
Right-of-use asset, net	*3,13*		608,253	-
Intangible assets, net	*14*		2,146,231	2,298,649
Investment property, net	*12,15*		258	1,400
Deferred tax assets	*21*		278,162	156,545
Employee benefit assets, net	*20*		-	4,581
Other non-current assets	*9,34*		577,614	621,953
			45,984,539	45,082,789
Total assets		₩	57,710,070	60,980,608

See accompanying notes to the separate financial statements.

(In millions of won)

	Note		2019	2018
Liabilities				
Current liabilities				
Trade payables	*4,5,33*	₩	1,158,561	1,505,170
Other payables	*4,5,33*		1,926,383	2,686,520
Other non-trade payables	*4,5,16,33*		1,088,225	1,704,766
Borrowings	*4,5,17,34*		1,703,235	1,028,170
Provisions	*19*		22,040	67,473
Current tax liabilities	*31*		52,479	4,530,712
Lease liabilities	*3,4,5,13*		141,217	-
Other current liabilities	*18*		166,742	158,479
			6,258,882	11,681,290
Non-current liabilities				
Other non-trade payables	*4,5,16*		15,228	16,104
Borrowings	*4,5,17,34*		4,760,546	3,546,141
Defined benefit liabilities, net	*20*		52,491	-
Lease liabilities	*3,4,5,13*		478,947	-
Other non-current liabilities	*18*		84,223	76,180
Other financial liabilities	*4,5,22*		15,532	-
			5,406,967	3,638,425
Total liabilities			11,665,849	15,319,715
Equity				
Capital stock	23		3,657,652	3,657,652
Capital surplus	*23*		4,183,564	4,183,564
Other equity	*23,36*		(2,504,713)	(2,506,451)
Accumulated other comprehensive income	*24*		12,753	-
Retained earnings	*25*		40,694,965	40,326,128
Total equity			46,044,221	45,660,893
Total liabilities and equity		₩	57,710,070	60,980,608

See accompanying notes to the separate financial statements.

SK HYNIX, INC.

Separate Statements of Comprehensive Income

For the years ended December 31, 2019 and 2018

(In millions of won, except per share information)

	Note		**2019**	**2018**
Revenue	*26,33*	₩	25,320,755	40,324,651
Cost of sales	*28,33*		18,387,763	15,704,210
Gross profit			6,932,992	24,620,441
Selling and administrative expenses	*27,28*		4,949,753	4,041,363
Operating profit			1,983,239	20,579,078
Finance income	*4,29*		902,300	1,302,566
Finance expenses	*4,29*		1,003,573	743,455
Other income	*30*		108,735	67,592
Other expenses	*30*		177,100	178,379
Profit before income tax			1,813,601	21,027,402
Income tax expense	*31*		329,307	5,620,316
Profit for the year			1,484,294	15,407,086
Other comprehensive income (loss)				
Item that will never be reclassified to profit or loss:				
Remeasurements of defined benefit liability, net of tax	*20*		(89,454)	(76,715)
Items that are or may be reclassified to profit or loss:				
Gain on valuation of derivatives, net of tax	*22, 24*		12,753	-
Other comprehensive loss for the year, net of tax			(76,701)	(76,715)
Total comprehensive income for the year		₩	1,407,593	15,330,371
Earnings per share	*32*			
Basic earnings per share (in won)			2,170	22,064
Diluted earnings per share (in won)			2,170	22,062

See accompanying notes to the separate financial statements.

SK HYNIX, INC.
Separate Statements of Changes in Equity
For the years ended December 31, 2019 and 2018

(In millions of won)

	Note		Capital stock	Capital surplus	Other equity	Accumulated other comprehensive income	Retained earnings	Total equity
Balance at January 1, 2018		₩	3,657,652	4,183,564	(771,100)	-	25,701,759	32,771,875
Total comprehensive income								
Profit for the year			-	-	-	-	15,407,086	15,407,086
Remeasurements of defined benefit liability, net of tax	20		-	-	-	-	(76,715)	(76,715)
Total comprehensive income			-	-	-	-	15,330,371	15,330,371
Transactions with owners of the Company								
Dividends paid	25		-	-	-	-	(706,002)	(706,002)
Acquisition of treasury shares			-	-	(1,736,514)	-	-	(1,736,514)
Share-based payment transactions	36		-	-	1,163	-	-	1,163
Transactions with owners of the Company			-	-	(1,735,351)	-	(706,002)	(2,441,353)
Balance at December 31, 2018		₩	3,657,652	4,183,564	(2,506,451)	-	40,326,128	45,660,893
Balance at January 1, 2019		₩	3,657,652	4,183,564	(2,506,451)	-	40,326,128	45,660,893
Total comprehensive income								
Profit for the year			-	-	-	-	1,484,294	1,484,294
Remeasurements of defined benefit liability, net of tax	20		-	-	-	-	(89,454)	(89,454)
Gain on valuation of derivatives, net of tax	22		-	-	-	12,753	-	12,753
Total comprehensive income			-	-	-	12,753	1,394,840	1,407,593
Transactions with owners of the Company								
Dividends paid	25		-	-	-	-	(1,026,003)	(1,026,003)
Share-based payment transactions	36		-	-	1,738	-	-	1,738
Transactions with owners of the Company			-	-	1,738	-	(1,026,003)	(1,024,265)
Balance at December 31, 2019		₩	3,657,652	4,183,564	(2,504,713)	12,753	40,694,965	46,044,221

See accompanying notes to the separate financial statements.

SK HYNIX, INC.
Separate Statements of Cash Flows
For the years ended December 31, 2019 and 2018

(In millions of won)

	Note		2019	2018
Cash flows from operating activities				
Cash generated from operating activities	*35*	₩	9,971,753	24,753,174
Interest received			22,610	68,935
Interest paid			(132,247)	(122,559)
Dividends received			26,737	49,018
Income tax paid			(5,098,321)	(3,435,185)
Net cash provided by operating activities			4,790,532	21,313,383
Cash flows from investing activities				
Net change in short-term financial instruments			220,000	4,051,380
Net change in short-term investment assets			1,981,435	(2,311,496)
Collection of loans and other receivables			6,523	17,660
Increase in loans and other receivables			(38,209)	(15,963)
Proceeds from disposal of long-term investment assets			4,091	7,118
Acquisition of long-term investment assets			(75,341)	(3,945,228)
Proceeds from disposal of property, plant and equipment			212,792	147,869
Acquisition of property, plant and equipment			(8,821,230)	(13,840,825)
Proceeds from disposal of intangible assets			170	2,433
Acquisition of intangible assets			(623,781)	(899,077)
Net change in investments in subsidiaries (MMT)			2,098,289	(2,108,768)
Acquisition of investments in subsidiaries			(402,870)	(858,748)
Acquisition of investments in associates			(114,470)	(110,880)
Net cash used in investing activities		₩	(5,552,601)	(19,864,525)

See accompanying notes to the separate financial statements.

Separate Statements of Cash Flows, Continued

For the years ended December 31, 2019 and 2018

(In millions of won)

	Note		2019	2018
Cash flows from financing activities				
Proceeds from borrowings	*35*	₩	5,107,104	2,402,196
Repayments of borrowings	*35*		(3,178,745)	(1,936,842)
Payments of lease liabilities	*35*		(201,449)	-
Acquisition of treasury shares			-	(1,736,514)
Dividends paid			(1,026,003)	(706,002)
Net cash provided by (used in) financing activities			700,907	(1,977,162)
Effect of movements in exchange rates on cash and cash equivalents			(7,617)	(461)
Net decrease in cash and cash equivalents			(68,779)	(528,765)
Cash and cash equivalents at beginning of the year			1,741,271	2,270,036
Cash and cash equivalents at end of the year		₩	1,672,492	1,741,271

See accompanying notes to the separate financial statements.

1. Reporting Entity

General information about SK hynix, Inc. ("the Company") is as follows:

The Company, incorporated in October 15, 1949, is engaged in the manufactures, distribution and sales of semiconductor products and its shares have been listed on the Korea Exchange since 1996. The Company's headquarter is located at 2091, Gyeongchung-daero, Bubal-eup, Icheon-si, Gyeonggi-do, South Korea, and the Company has manufacturing facilities in Icheon-si and Cheongju-si, South Korea.

As of December 31, 2019, the shareholders of the Company are as follows:

Shareholder	Number of shares	Percentage of ownership (%)
SK Telecom Co., Ltd.	146,100,000	20.07
National Pension Service	74,571,776	10.24
Other investors	463,330,019	63.65
Treasury shares	44,000,570	6.04
	728,002,365	100.00

The Company's common shares and depositary receipts (DRs) are listed on the Stock Market of Korea Exchange and the Luxembourg Stock Exchange.

2. Basis of Preparation

The separate financial statements have been prepared in accordance with Korean International Financial Reporting Standards ("K-IFRS"), as prescribed in the *Act on External Audits of Corporations in the Republic of Korea*.

These financial statements are separate financial statements prepared in accordance with K-IFRS No. 1027, *'Separate Financial Statements'* presented by a parent, an investor in an associate or a venturer in a joint venture, in which the investments are accounted for on the basis of the direct equity interest rather than on the basis of the reported results and net assets of the investees.

The separate financial statements were authorized for issuance by the board of directors on January 30, 2020, which will be submitted for approval at the shareholders' meeting to be held on March 20, 2020.

This is the first set of the Company's annual financial statements in which K-IFRS No. 1116 *'Leases'* ("K-IFRS No. 1116") has been applied. Changes to significant accounting policies are described in note 3-(26).

(1) Basis of measurement

The separate financial statements have been prepared on the historical cost basis, except for the following material items in the separate statement of financial position:

- derivative financial instruments are measured at fair value
- financial instruments at fair value through profit or loss are measured at fair value
- assets or liabilities for defined benefit plans are recognized at the net of the total present value of defined benefit obligations less the fair value of plan assets

(2) Functional and presentation currency

These separate financial statements are presented in Korean won, which is the Company's functional currency and the currency of the primary economic environment in which the Company operates.

(3) Use of estimates and judgments

The preparation of the separate financial statements in conformity with K-IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

(a) Judgments

Information about critical judgments in applying accounting policies that have the significant effect on the amounts recognized in the separate financial statements is included in the note for investments in associates and joint ventures.

2. Basis of Preparation, Continued

(3) Use of estimates and judgments, Continued

(b) Assumptions and estimation uncertainties

Information about assumptions and estimation uncertainties that have a significant risk of resulting in a material adjustment within the next fiscal year is included in the accompanying notes for in net realizable value of inventories, impairment of development costs and goodwill, recognition and measurement of provisions, measurement of defined benefit obligations, recognition of deferred tax assets, and valuation of short and long-term investment assets.

(c) Fair value measurement

The Company establishes fair value measurement policies and procedures as its accounting policies and disclosures require fair value measurements for various financial and non-financial assets and liabilities. Such policies and procedures are executed by the valuation department, which is responsible for the review of significant fair value measurements including fair value classified as level 3 in the fair value hierarchy.

The valuation department regularly reviews significant unobservable inputs and valuation adjustments. If third party information, such as broker quotes or pricing services, is used to measure fair values, then the valuation department assesses the evidence obtained from the third parties to support the conclusion that these valuations meet the requirements of K-IFRS, including the level in the fair value hierarchy in which the valuations should be classified.

The Company reports significant valuation issues to the audit committee.

When measuring the fair value of an asset or a liability, the Company uses observable market data as far as possible. Fair values are categorized into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows.

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2: inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices)
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs)

If various inputs used to measure fair value of assets or liabilities fall into different levels of the fair value hierarchy, the Company classifies the assets and liabilities at the lowest level of inputs among the fair value hierarchy which is significant to the entire measured value. The Company recognizes transfers between levels at the end of the reporting period of which such transfers occurred.

Information about assumptions used for fair value measurements is included in note 5 financial risk management.

3. Significant Accounting Policies

The significant accounting policies applied by the Company in preparation of its separate financial statements are explained below. Except for the new accounting standards that are effective for annual periods beginning on or after January 1, 2019, the accounting policies set out below have been applied consistently to all periods presented in these separate financial statements.

(1) Operating segments

The Company presents disclosures relating to operating segments on its consolidated financial statements in accordance with K-IFRS No. 1108, '*Operating Segments*' and such disclosures are not separately disclosed on these separate financial statements.

(2) Investments in subsidiaries and associates

These separate financial statements are prepared and presented in accordance with K-IFRS No. 1027, '*Separate Financial Statements*'. The Company applied the cost method to investments in subsidiaries and associates in accordance with K-IFRS No. 1027. Dividends from a subsidiary or associate are recognized in profit or loss when the right to receive the dividend is established.

(3) Cash and cash equivalents

Cash and cash equivalents comprise cash balances and call deposits with maturities of three months or less from the acquisition date that are subject to an insignificant risk of changes in their fair value, and are used by the Company in the management of its short-term commitments.

(4) Inventories

The cost of inventories is based on the weighted average method (except for goods in-transit that is based on the specific identification method), and includes expenditures incurred in acquiring the inventories, production or conversion costs and other costs incurred in bringing inventories to their existing location and condition. In the case of manufactured inventories and work-in-process, cost includes an appropriate share of production overheads based on the actual capacity of production facilities. However, the normal capacity is used for the allocation of fixed production overheads if the actual level of production is lower than the normal capacity.

Inventories are measured at the lower of cost and net realizable value. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and selling expenses. The amount of any write-down of inventories to net realizable value and all losses of inventories shall be recognized as an expense in the period the write-down or loss occurs. The amount of any reversal of any write-down of inventories, arising from an increase in net realizable value, shall be recognized as a reduction in the amount of inventories recognized as an expense in the period in which the reversal occurs.

3. Significant Accounting Policies, Continued

(5) Non-derivative financial assets

(a) Initial recognition and measurement

Trade and other receivables, and debt investment are initially recognized when they are originated. Other financial assets and financial liabilities are recognized when the Company becomes a party to the contractual provisions of the instruments.

A financial asset and financial liability (unless it is an account receivable - trade without a significant financing component that is initially measured at the transaction price) are initially measured at fair value plus, for an item not at fair value through profit or loss (FVTPL), transaction costs that are directly attributable to its acquisition.

(b) Classification and subsequent measurements

On initial recognition, a financial asset is classified as measured at: amortized cost; fair value through other comprehensive income (FVOCI) - debt investment; FVOCI - equity investment; or FVTPL. The classification of financial assets is generally based on the business model in which a financial asset is managed and its contractual cash flow characteristics. In case of changing its business model, all affected financial asset are reclssified on the first day of the first reporting period after the change in the business model.

A financial asset is measured at amortized cost if it meets both of the following conditions and is not designated as at FVTPL:

- it is held within a business model whose objective is to hold assets to collect contractual cash flow; and
- its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

A debt investments is measured at FVOCI if it meets both of the following conditions and is not designated as at FVTPL:

- it is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets; and
- its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

On initial recognition of an equity investment that is not held for trading, the Company may irrevocably elect to present subsequent changes in the investment's fair value in other comprehensive income. This election is made on an investment-by-investment basis and irrevocable election can be made at initial recognition.

All financial assets not classified as measured at amortized cost or FVOCI as described above are measured at FVTPL. This includes all derivative financial assets. On initial recognition, the Company may irrevocably designate a financial asset that otherwise meets the requirements to be measured at amortized cost or at FVOCI as at FVTPL if doing so eliminates or significantly reduces an accounting mismatch that would otherwise arise.

3. Significant Accounting Policies, Continued

(5) Non-derivative financial assets, Continued

(b) Classification and subsequent measurements, Continued

The Company makes an assessment of the objective of the business model in which, financial assets is held at a portfolio level because this best reflects the way the business is managed and information is provided to management. The information considered includes:

- The stated policies and objectives for the portfolio and the operation of those policies in practice;
- how the performance of the business model and the financial assets held within that business model are evaluated and reported to the entity's key management personnel;
- the risks that affect the performance of the business model (and the financial assets held within that business model) and, in particular, the way in which those risks are managed;
- how managers of the business are compensated (e.g. whether the compensation is based on the fair value of the assets managed or on the contractual cash flows collected); and
- the frequency, volume and timing of sales of financial assets in prior periods, the reason for those sales and expectation about future sales activity for financial asset.

Transfers of financial assets to third parties in transactions that do not qualify for derecognition are not considered sales for this purpose, consistent with the Company's continuing recognition of the assets.

For the purpose of this assessment, 'principal' is defined as the fair value of the financial assets on initial recognition. 'Interest' is defined as consideration for the time value of money and for the credit risk associated with the principal amount outstanding during a particular period of time and for other basic lending risks and costs (e.g. liquidity risk and administrative costs), as well as a profit margin.

In assessing whether the contractual cash flows are solely payments of principal and interest, the Company considers the contractual terms of the instrument. This includes assessing whether the financial asset contains a contractual term that could change the timing or amount of contractual cash flows such that it would not meet this condition. In making this assessment, the Company considers:

- contingent events that would change the amount or timing of cash flows;
- terms that may adjust the contractual coupon rate, including variable-rate features;
- prepayment and extension features; and
- terms that limit the Company's claim to cash flows from specified assets (e.g. non-recourse features).

A prepayment feature is consistent with the solely payments of principal and interest criterion if the prepayment amount substantially represents unpaid amounts of principal and interest on the principal amount outstanding, which may include reasonable additional compensation for early termination of the contract. Additionally, for a financial asset acquired at a discount or premium to its contractual par amount, a feature that permits or requires prepayment at an amount that substantially represents the contractual par amount plus accrued (but unpaid) contractual interest (which may also include reasonable additional compensation for early termination) is treated as consistent with this criterion if the fair value of the prepayment feature is insignificant at initial recognition.

3. Significant Accounting Policies, Continued

(5) Non-derivative financial assets, Continued

(b) Classification and subsequent measurements, Continued

The following accounting policies apply to subsequent measurements of financial assets.

Financial assets at FVTPL	These assets are subsequently measured at fair value. Net gains and losses, including any interest or dividend income, are recognized in profit or loss.
Financial assets at amortized cost	These assets are subsequently measured at amortized cost using the effective interest method. The amortized cost is reduced by impairment losses. Interest income, foreign exchange gains and losses and impairment are recognized in profit or loss. Any gain or loss on derecognition is recognized in profit or loss.
Debt investments at FVOCI	These assets are subsequently measured at fair value. Interest income is calculated using the effective interest method. Foreign exchange gains and losses and impairment are recognized in profit or loss. Other net gains and losses are recognized in OCI. On derecognition, gains and losses accumulated in OCI are reclassified to profit or loss.
Equity investments at FVOCI	These assets are subsequently measured at fair value. Dividends are recognized as income in profit or loss unless the dividend clearly represents a recovery of part of the cost of the investment. Other net gains and losses are recognized in OCI and are never reclassified to profit or loss.

(c) De-recognition

The Company derecognizes a financial asset when the contractual rights to the cash flows from the asset expire, or it transfers the rights to receive the contractual cash flows in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred or in which the Company neither transfers nor retains substantially all of the risks and rewards of ownership and it does not retain control of the financial asset.

The Company enters into transactions whereby it transfers assets recognized in its statement of financial position, but retain either all or substantially all of the risks and rewards of the transferred assets. In these cases, the transferred assets are not derecognized.

(d) Offsetting between financial assets and financial liabilities

Financial assets and financial liabilities are offset and the net amount is presented in the separate statement of financial position only when the Company currently has a legally enforceable right to offset the recognized amounts, and there is the intention to settle on a net basis or to realize the asset and settle the liability simultaneously.

3. Significant Accounting Policies, Continued

(6) Derivative financial instruments

Derivatives are initially recognized at fair value. Subsequent to initial recognition, derivatives are measured at fair value at the end of each reporting period, and changes in the fair value of derivatives therein are accounted for as described below.

(a) Hedge accounting

The Company enters into a fixed-to-fixed cross currency swap contract and a floating-to-fixed cross currency interest rate swap contract to hedge interest rate risk and currency risk.

On initial designation of the hedge, the Company formally documents the relationship between the hedging instrument(s) and hedged item(s), including the risk management objectives and strategy in undertaking the hedge transaction. In addition, the document includes hedging instruments; hedged items; initial commencement date of those hedge relationship; fair value of hedged items based on hedged risk during the subsequent period; and the method of valuation on hedging instruments offsetting changes in cash flow.

- Cash flow hedge

When a derivative is designated to hedge the variability in cash flows attributable to a particular risk associated with a recognized asset or liability, the effective portion of changes in the fair value of the derivative is recognized in other comprehensive income, net of tax, and presented in accumulated other comprehensive income. Any ineffective portion of changes in the fair value of the derivative is recognized immediately in profit or loss. If the hedging instrument no longer meets the criteria for hedge accounting, expires or is sold, terminated, exercised, or the designation is revoked, then hedge accounting is discontinued prospectively. The cumulative gain or loss on the hedging instrument that has been recognized in other comprehensive income is reclassified to profit or loss in the periods which the forecasted transaction occurs.

(b) Other derivative financial instruments

Other derivative financial instrument not designated as a hedging instrument are measured at fair value, and the changes in fair value of the derivative financial instrument is recognized immediately in profit or loss.

(7) Impairment of financial assets

(a) Recognition of impairment on financial assets

The Company recognizes loss allowances for expected credit losses (ECLs) on:

- financial assets measured at amortized costs; and
- contract assets.

The Company measures impairment losses at an amount equal to lifetime ECLs except for the below assets, which are measured at 12-month ELCs.

- credit risk of debt instruments is low at the end of reporting date
- credit risk has not increased significantly since the initial recognition of debt investment (lifetime ECL: ECL that resulted from all possible default events over the expected life of a financial instrument)

The Company adopted an accounting policy to recognize loss allowances at an amount equal to lifetime expected credit losses for trade receivables and contract assets.

3. Significant Accounting Policies, Continued

(7) Impairment of financial assets, Continued

(a) Recognition of impairment on financial assets, Continued

In assessing whether the credit risk on a financial instrument has increased significantly since initial recognition and estimating expected credit loss, the Company considers both quantitative and qualitative information that is reasonable and supportable, including historical experience and forward-looking information that is available without undue cost or effort.

12-month ECLs are the portion of ECLs that result from all default events that are possible within the 12 months after the reporting date (or a shorter period if the expected life of the instrument is less than 12 months).

The maximum period considered when estimating ECLs is the maximum contractual period over which the Company is exposed to credit risk.

(b) Measurement of expected credit loss

ECLs are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e. the difference between the cash flows due to the entity in accordance with the contract and the cash flows that the Company expects to receive). ECLs are discounted at the effective interest rate of the financial instrument.

(c) Credit-impaired financial instrument

A debt instrument carried at amortized cost and fair value through other comprehensive income (FVOCI) is assessed at the end of each reporting period to determine whether there is objective evidence that it is impaired. A financial asset is credit- impaired when one or more events that have a detrimental impact on the estimated future cash flows of that asset have occurred.

Objective evidence that a financial asset is impaired includes:

- significant financial difficulty of the issuer or borrower;
- a breach of contract, such as default or delinquency in interest or principal payments;
- the Company, for economic or legal reasons relating to the borrower's financial difficulty, granting to the borrower a concession that the Company would not otherwise consider;
- it becoming probable that the borrower will enter bankruptcy or other financial reorganization; or
- the disappearance of an active market for the financial asset because of financial difficulties.

(d) Presentation of credit loss allowance on financial position

Loss allowances for financial assets measured at amortized cost are deducted from the gross carrying amount of the assets.

(e) Write-off

The Company writes off a financial asset when it has no reasonable expectations of recovering the contractual cash flows on a financial asset in its entirety or a portion thereof. For corporate customers, the Company individually makes an assessment with respect to the timing and amount of write-off based on whether there is a reasonable expectation of recovery. However financial assets that are written off could still be subject to collection activities according to the Company's past due collection process.

3. Significant Accounting Policies, Continued

(8) Property, plant and equipment

Property, plant and equipment are initially measured at cost. The cost of property, plant and equipment includes expenditures arising directly from the construction or acquisition of the asset, any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management and the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

Subsequent to initial recognition, an item of property, plant and equipment is carried at its cost less any accumulated depreciation and any accumulated impairment losses.

Subsequent costs are recognized in the carrying amount of property, plant and equipment at cost or, if appropriate, as separate items if it is probable that future economic benefits associated with the cost will flow to the Company and it can be measured reliably. The carrying amount of the replaced part is derecognized. The costs of the day-to-day repair and maintenance are recognized in profit or loss as incurred.

Property, plant and equipment, except for land, are depreciated on a straight-line basis over estimated useful lives that appropriately reflect the pattern in which the asset's future economic benefits are expected to be consumed.

Gains and losses on disposal of an item of property, plant and equipment are determined by comparing the proceeds from disposal with the carrying amount of property, plant and equipment and are recognized as other income or expenses.

The estimated useful lives of the Company's property, plant and equipment are as follows:

	Useful lives (years)
Buildings	10 - 50
Structures	10 - 20
Machinery	5 - 15
Vehicles	5 - 10
Other	5 - 10

Depreciation methods, useful lives, and residual values are reviewed at the end of each reporting period and, if appropriate, accounted for as changes in accounting estimates.

(9) Borrowing costs

The Company capitalizes borrowing costs directly attributable to the acquisition, construction or production of a qualifying asset as part of the cost of that asset. Other borrowing costs are recognized in expense as incurred. A qualifying asset is an asset that requires a substantial period of time to get ready for its intended use or sale. Financial assets and inventories that are manufactured or otherwise produced over a short period of time are not qualifying assets. Assets that are ready for their intended use or sale when acquired are not qualifying assets.

To the extent that the Company borrows funds specifically for the purpose of obtaining a qualifying asset, the Company determines the amount of borrowing costs eligible for capitalization as the actual borrowing costs incurred on that borrowing during the period less any investment income on the temporary investment of those borrowings. To the extent that the Company borrows funds generally and uses them for the purpose of obtaining a qualifying asset, the Company determines the amount of borrowing costs eligible for capitalization by applying a capitalization rate to the expenditures on that asset. The capitalization rate is the weighted average of the borrowing costs applicable to the borrowings of the Company that are outstanding during the period, other than borrowings made specifically for the purpose of obtaining a qualifying asset. The amount of borrowing costs that the Company capitalizes during a period does not exceed the amount of borrowing costs incurred during that period.

3. Significant Accounting Policies, Continued

(10) Intangible assets

Intangible assets are measured initially at cost and, subsequently, are carried at cost less accumulated amortization and accumulated impairment losses.

Goodwill arising from business combinations is recognized as the excess of the consideration transferred in the acquisition over the net fair value of the identifiable assets acquired and liabilities assumed. Any deficit is a bargain purchase that is recognized in profit or loss. Goodwill is measured at cost less accumulated impairment losses.

Amortization of intangible assets is calculated on a straight-line basis over the estimated useful lives of intangible assets from the date that they are available for use. The residual value of intangible assets is zero. However, certain intangible assets are determined as having indefinite useful lives and not amortized as there is no foreseeable limit to the period over which the assets are expected to be available for use.

The estimated useful lives of the Company's intangible assets are as follows:

	Useful lives (years)
Industrial rights	5 - 10
Development costs	2
Other intangible assets	4 - 10

Useful lives and the amortization methods for intangible assets with finite useful lives are reviewed at the end of each reporting period. The useful lives of intangible assets that are not being amortized are reviewed at the end of each reporting period to determine whether events and circumstances continue to support indefinite useful life assessments for those assets. Changes are accounted for as changes in accounting estimates.

Expenditures on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding, are recognized in profit or loss as incurred. Development expenditures are capitalized only if development costs can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable, and the Company intends to and has sufficient resources to complete development and to use or sell the asset. Other development expenditures are recognized in profit or loss as incurred.

Subsequent expenditures are capitalized only when they increase the future economic benefits embodied in the specific asset to which it relates. All other expenditures, including expenditures on internally generated goodwill and others, are recognized in profit or loss as incurred.

(11) Government grants

Government grants are not recognized unless there is reasonable assurance that the Company will comply with the grant's conditions and that the grant will be received.

(a) Grants related to assets

Government grants whose primary condition is that the Company purchases, constructs or otherwise acquires non-current assets are deducted in calculating the carrying amount of the asset. The grant is recognized in profit or loss over the useful lives of depreciable assets.

(b) Grants related to income

Government grants which are intended to compensate the Company for expenses incurred are recognized in profit or loss by as deduction of the related expenses.

3. Significant Accounting Policies, Continued

(12) Investment property

Property held for the purpose of earning rental income or benefiting from capital appreciation is classified as investment property. Investment property is initially measured at its cost. Transaction costs are included in the initial measurement. Subsequently, investment property is carried at cost less accumulated depreciation and impairment losses.

Subsequent costs are recognized in the carrying amount of investment property at cost or, if appropriate, as separate items if it is probable that future economic benefits associated with the cost will flow to the Company and it can be measured reliably. The carrying amount of the replaced part is derecognized. The costs of the day-to-day repair and maintenance are recognized in profit or loss as incurred.

Investment property is depreciated on a straight-line basis over 40 years.

Depreciation methods, useful lives and residual values are reviewed at the end of each reporting period and, if appropriate, accounted for as changes in accounting estimates.

(13) Impairment of non-financial assets

The carrying amounts of the Company's non-financial assets, other than assets arising from employee benefits, inventories, and deferred tax assets, are reviewed at the end of the reporting period to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. Goodwill and intangible assets that have indefinite useful lives or that are not yet available for use, irrespective of whether there is any indication of impairment, are tested for impairment annually by comparing their recoverable amount to their carrying amount.

The Company estimates the recoverable amount of an individual asset; however if it is impossible to measure the individual recoverable amount of an asset, the Company estimates the recoverable amount of cash-generating unit ("CGU"). A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell.

The value in use is estimated by applying a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or CGU for which estimated future cash flows have not been adjusted, to the estimated future cash flows expected to be generated by the asset or CGU.

An impairment loss is recognized if the carrying amount of an asset or a CGU exceeds its recoverable amount.

Goodwill acquired in a business combination is allocated to each CGU that is expected to benefit from the synergies arising from business combination. Any impairment identified at the CGU level will first reduce the carrying value of goodwill and then be used to reduce the carrying amount of the other assets in the CGU on a pro rata basis.

Except for impairment losses in respect of goodwill which are never reversed, an impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

3. Significant Accounting Policies, Continued

(14) Leases

The Company has applied K-IFRS No. 1116 using the modified retrospective approach by recognizing the cumulative effect of initial application of K-IFRS No. 1116 as of January 1, 2019 (the date of initial application). Accordingly, the comparative information presented in accordance with K-IFRS No. 1017 has not been restated. The details of the accounting policies applied under K-IFRS No. 1017 and K-IFRS No. 1116 are as follows:

(a) Accounting policies applied from January 1, 2019.

The Company assesses whether a contract is or contains a lease at inception of a contract. Under K-IFRS No. 1116, a contract is, or contains, a lease if the contract conveys a right to control the use of an identified asset for a period of time in exchange for consideration.

(i) As a lessee

The Company recognizes for a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost, the initial amount of the lease liability, adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove of the underlying asset, or to restore the underlying asset or the site on which the underlying asset is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the end of the lease term. In case that ownership of the right-of-use asset is transferred at the end of the lease term, or the cost of the right-of-use asset includes the exercise price of a purchase option, the right-of-use asset will be depreciated over the useful life of the underlying asset, which is determined on the same basis as those of property and equipment. In addition, the right-of-use asset may be reduced by an impairment loss or adjusted for remeasurements of the lease liability.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate in implicit the lease or, if that rate cannot be readily determined, the Company's incremental borrowing rate. The Company generally uses its incremental borrowing rate as the discount rate.
Lease payments included in the measurement of the lease liability consist of the following:
- fixed payments (including in-substance fixed payments)
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date
- amounts expected to be payable under a residual value guarantee
- the exercise price under a purchase option that the Company is reasonably certain to exercise
- lease payments in an optional renewal period, if the company is reasonably certain to exercise extension option, and penalties for early termination of a lease unless the company is reasonably certain not to terminate early.

3. Significant Accounting Policies, Continued

(14) Leases, Continued

(a) Accounting policies applied from January 1, 2019, Continued

(i) As a lessee, Continued

The lease liability is subsequently increased by the interest expense recognized for the lease liability and decreased by reflecting the payment of the lease. The lease liability is remeasured when there is a change in future lease payments arising from changes in an index or a rate (interest rate), if there's a change in the Company's estimate of the amount expected to be paid under a residual value guarantee, or if the company changes in the assessment of whether the option to buy or extend is reasonably certain to be exercised or not to exercise the termination option.

When the lease liabilities are remeasured, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

A lessee shall remeasure the lease liability as an adjustment to the right-of-use asset, if either:
- a change in the lease term or a change in circumstances or significant events that result in a change in the assessment of the exercise of the purchase option. In such cases, the lease liability is remeasured by discounting the modified lease payment at the revised discount rate;

- the lease payment changes due to changes in the index or rate (interest rate) or the amount expected to be paid according to the residual value guarantee. In such cases, the lease liability measures the modified lease fee again by discounting it at an unchanged discount rate. However, if a change in the variable interest rate causes a change in the lease payments, the revised discount rate that reflects the change in interest rates is used; or

- the lease agreement changes and is not accounted for as a separate lease. In such cases, the lease liability is remeasured by discounting the modified lease payment at the revised discount rate as of the effective date of the lease change, based on the lease term of the modified lease.

The Company has elected not to recognize right-of-use assets and lease liabilities for some leases of low-value assets and short-term leases. The Company recognizes the lease payments associated with these leases as an expense on a straight-line basis over the lease term.

At inception or on reassessment of a contract that contains a lease component, the Company allocates the consideration in the contract to each lease and non-lease component on the basis of their relative stand-alone prices. However, for certain agreements, the Company has elected practical expedient not to separate non-lease components and account for the lease and non-lease components as a single lease component.

The Company separately presents right-of-use assets that do not meet the definition of investment property in the statement of financial position.

Subsequently, the right-of-use asset is accounted for consistently with the accounting policies applicable to the asset.

3. Significant Accounting Policies, Continued

(14) Leases, Continued

(a) Accounting policies applied from January 1, 2019, Continued

(ii) As a lessor

As a lessor, the Company determines whether the lease is a finance lease or an operating lease at the inception of the lease.

To classify each lease, the Company generally determines whether the lease transfers most of the risks and rewards of ownership of the underlying asset. If most of the risks and rewards of ownership of the underlying asset are transferred to the lessee, the lease is classified as a finance lease, otherwise the lease is classified as an operating lease. As part of this assessment, the Company considers whether the lease term represents a significant portion of the economic life of the underlying asset.

When the Company is an intermediate lessor, it accounts for its interests in the head lease and the sublease separately. In addition, the classification of a lease is determined by the right-of-use asset arising from the head lease, not the underlying asset. If a head lease is a short-term lease to which the Company applies the recognition exemption, then the sub-lease is classified as an operating lease.

The Company has applied K-IFRS No. 1115 *'Revenue from Contracts with Customers'* to allocate consideration in the contract to each lease and non-lease component.

The Company recognizes the lease payments received from operating leases on a straight-line basis over the lease term as revenue in 'other revenue'.

The accounting policies that the Company has applied to the comparative period as lessors are not different from those in K-IFRS No. 1116.

(b) Accounting policies applied before January 1, 2019.

The Company classifies and accounts for leases as either a finance or operating lease, depending on the terms. Leases where the Company assumes substantially all of the risks and rewards of ownership are classified as finance leases. All other leases are classified as operating leases.

(i) Finance leases

At the commencement of the lease term, the Company recognizes as finance lease assets initially at the lower of their fair value and the present value of the minimum lease payments. Any initial direct costs are added to the amount recognized as an asset.

Minimum lease payments consist of finance expense and the repayment of lease liabilities. The finance expense is allocated to each period during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability. Contingent rents are charged as expenses in the periods in which they are incurred.

The depreciable amount of a leased asset is charged to each accounting period during the period of expected use on a systematic basis consistent with the depreciation policy the lessee adopts for depreciable assets that are owned. If there is no reasonable certainty that the lessee will obtain ownership by the end of the lease term, the asset is fully depreciated over the shorter of the lease term and its useful life. The Company reviews whether the leased asset is impaired.

3. Significant Accounting Policies, Continued

(14) Leases, Continued

(b) Accounting policies applied before January 1, 2019, Continued

(ii) Operating leases

Payments made under operating leases are recognized as expenses on straight-line basis over the lease term. Lease incentives received are recognized as an integral part of the lease expense, over the term of the lease.

(iii) Determining whether an arrangement contains a lease

Determining whether an arrangement is, or contains, a lease is based on the substance of the arrangement and requires an assessment of whether fulfillment of the arrangement is dependent on the use of a specific asset or assets (the asset) and the arrangement conveys a right to use the asset.

If an arrangement contains lease, at inception or amendment of the arrangement, the Company separates payments and other consideration required by such an arrangement into those for the lease and those for other elements on the basis of their relative fair values. If the Company concludes for a finance lease that it is impracticable to separate the payments reliably, the Company recognizes an asset and a liability at an amount equal to the fair value of the underlying asset that was identified as the subject of the lease. Subsequently, the liability is reduced as payments are made and an imputed finance expense on the liability recognized using the purchaser's incremental borrowing rate.

(15) Non-derivative financial liabilities

The Company classifies non-derivative financial liabilities into financial liabilities at fair value through profit or loss or other financial liabilities in accordance with the substance of the contractual arrangement and the definitions of financial liabilities. The Company recognizes financial liabilities in the separate statement of financial position when the Company becomes a party to the contractual provisions of the financial liability.

(a) Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading or designated as such upon initial recognition. Subsequent to initial recognition, financial liabilities at fair value through profit or loss are measured at fair value, and changes therein are recognized in profit or loss. Upon initial recognition, any directly attributable transaction costs are recognized in profit or loss as incurred.

(b) Other financial liabilities

Non-derivative financial liabilities other than financial liabilities at fair value through profit or loss are classified as other financial liabilities. At the date of initial recognition, other financial liabilities are measured at fair value less any directly attributable transaction costs. Subsequent to initial recognition, other financial liabilities are measured at amortized cost using the effective interest rate method.

(c) Derecognition of financial liability

The Company derecognizes financial liability when its contractual obligations are discharged, cancelled or expire. The Company also derecognizes a financial liability, when its terms are modified and the cash flows of the modified liability are substantially different, in which case a new financial liability based on the modified terms is recognized at fair value. On derecognition of a financial liability, the difference between the carrying amount extinguished and the consideration paid (including any non-cash assets transferred of liabilities assumed) is recognized in profit or loss.

3. Significant Accounting Policies, Continued

(16) Employee benefits

(a) Short-term employee benefits

Short-term employee benefits are employee benefits that are due to be settled within 12 months after the end of the reporting period in which the employees render the related service. When an employee has rendered service to the Company during an accounting period, the Company recognizes the undiscounted amount of short-term employee benefits expected to be paid in exchange for that service.

(b) Other long-term employee benefits

Other long-term employee benefits include employee benefits that are settled beyond 12 months after the end of the reporting period in which the employees render the related service, and are calculated at the present value of the amount of future benefit that employees have earned in return for their service in the current and prior periods. Remeasurements are recognized in profit or loss in the period in which they arise.

(c) Retirement benefits: defined benefit plans

As of the end of reporting period, defined benefits liabilities relating to defined benefit plans are recognized as present value of defined benefit obligations, net of fair value of plan assets.

The calculation is performed annually by an independent actuary using the projected unit credit method. When the fair value of plan assets exceeds the present value of the defined benefit obligation, the Company recognizes an asset, to the extent of the present value of any economic benefits available in the form of refunds from the plan or reduction in the future contributions to the plan.

Remeasurements of the net defined benefit liability (asset) comprise of actuarial gains and losses, the return on plan assets excluding amounts included in net interest on the net defined benefit liability (asset), and any change in the effect of the asset ceiling, excluding amounts included in net interest on the net defined benefit liability (asset), and are recognized in other comprehensive income. The Company determines net interests on net defined benefit liability (asset) by multiplying discount rate determined at the beginning of the annual reporting period and considers changes in net defined benefit liability (asset) from contributions and benefit payments. Net interest costs and other costs relating to the defined benefit plan are recognized through profit or loss.

When the benefits of a plan are changed or when a plan is curtailed, the resulting change in benefit that relates to past service or the gain or loss on curtailment is recognized immediately in profit or loss. The Company recognizes gain or loss on a settlement of defined benefit plan when the settlement occurs.

(d) Retirement benefits: defined contribution plans

When an employee has provided service for a certain period of time in relation to the defined contribution plan, the contribution to the defined contribution plan is recognized in profit or loss except to be included in the cost of the asset. The contributions to be paid are recognized as liabilities (accrued expenses) less the contributions that have been already paid.

(e) Termination benefits

The Company recognizes a liability and expense for termination benefits at the earlier of the period when the Company can no longer withdraw the offer of those benefits and the period when the Company recognizes costs for a restructuring. If benefits are not payable within 12 months after the end of the reporting period, then they are discounted to their present value.

3. Significant Accounting Policies, Continued

(17) Provisions

Provisions are recognized when the Company has a present legal or constructive obligation as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

The risks and uncertainties that inevitably surround many events and circumstances are taken into account in reaching the best estimate of a provision. Where the effect of the time value of money is material, provisions are determined at the present value of the expected future cash flows.

Where some or all of the expenditures required to settle a provision are expected to be reimbursed by another party, the reimbursement is recognized when, and only when, it is virtually certain that reimbursement will be received if the Company settles the obligation. The reimbursement is treated as a separate asset.

Provisions are reviewed at the end of each reporting period and adjusted to reflect the current best estimates. If it is no longer probable that an outflow of resources embodying economic benefits will be required to settle the obligation, the provision is reversed.

A provision is used only for expenditures for which the provision was originally recognized.

(18) Emissions Rights

The Company accounts for greenhouse gases emission right and the relevant liability as below pursuant to the *Act on Allocation and Trading of Greenhouse Gas Emission* in Korea.

(a) Greenhouse Gases Emission Right

Greenhouse Gases Emission Right consists of emission allowances, which are allocated from the government free of charge or purchased from the market. The cost includes any directly attributable costs incurred during the normal course of business.

Emission rights held for the purpose of performing the obligation are classified as intangible asset and are initially measured at cost and after initial recognition are carried at cost less accumulated impairment losses. Emission rights held for short-swing profits are classified as current asset and are measured at fair value with any changes in fair value recognized as profit or loss in the respective reporting period.

The Company derecognizes an emission right asset when the emission allowance is unusable, disposed or submitted to government in which the future economic benefits are no longer expected to be probable.

(b) Emission liability

Emission liability is a present obligation of submitting emission rights to the government with regard to emission of greenhouse gas. Emission liability is recognized when it is probable that outflows of resources will be required to settle the obligation and the costs required to perform the obligation are reliably estimable. Emission liability is an amount of estimated obligations for emission rights to be submitted to the government for the performing period. The emission liability is measured based on the expected quantity of emission for the performing period in excess of emission allowance in possession and the unit price for such emission rights in the market at the end of the reporting period.

3. Significant Accounting Policies, Continued

(19) Foreign currencies

Transactions in foreign currencies are translated to the functional currencies of the Company at exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies are retranslated to the functional currency at the exchange rate at the reporting data. Non-monetary assets and liabilities denominated in foreign currencies that are measured at fair value are translated to the functional currency at the exchange rate at the date that the fair value was determined.

Foreign currency differences arising on the settlement or retranslation of monetary items are recognized in profit or loss. When a gain or loss on a non-monetary item is recognized in other comprehensive income, any exchange component of that gain or loss is recognized in other comprehensive income. Conversely, when a gain or loss on a non-monetary item is recognized in profit or loss, any exchange component of that gain or loss is recognized in profit or loss.

(20) Equity capital

Ordinary shares are classified as equity. Incremental costs directly attributable to the issuance of ordinary shares is recognized as a deduction from equity, net of any tax effects.

When the Company repurchases its share capital, the amount of the consideration paid is recognized as a deduction from equity and classified as treasury shares. The profits or losses from the purchase, disposal, reissue, or retirement of treasury shares are not recognized as current profit or loss. If the Company acquires and disposes treasury shares, the consideration paid or received is directly recognized in equity.

(21) Share-based payment

The Company has granted shares or share options to its employees. For equity-settled share-based payment transactions, the Company measures the goods or services received, and the corresponding increase in equity as a capital adjustment at the fair value of the goods or services received, unless that fair value cannot be estimated reliably. If the Company cannot reliably estimate the fair value of the goods or services received, the Company measures their value, and the corresponding increase in equity, indirectly, by reference to the fair value of the equity instruments granted. If the fair value of the equity instruments cannot be estimated reliably at the measurement date, the Company measures them at their intrinsic value and recognizes the goods or services received based on the number of equity instruments that ultimately vest.

For cash-settled share-based payment transactions, the Company measures the goods or services acquired and the liability incurred at the fair value of the liability. Until the liability is settled, the Company remeasures the fair value of the liability at each reporting date and at the date of settlement, with changes in fair value recognized in profit or loss for the period.

The Company accounts for share-based payment, with options to choose either cash-settled or equity-settled share-based payment, in accordance with the substance of transactions.

(22) Revenue from contracts with customers

The Company's accounting policies relating to revenue from contracts with customers are described in note 26.

3. Significant Accounting Policies, Continued

(23) Finance income and finance expenses

The Company's finance income and finance expenses include:
- Interest income;
- Interest expense;
- Dividend income;
- The net gain or loss on financial assets at fair value through profit or loss;
- Gain or loss on foreign exchange(currency) translation for financial asset and liabilities;
- Impairment losses and reversals on investment in debt securities carried at amortized cost method; and
- The gain on the remeasurement to fair value of any pre-existing interest in an acquire in a business combination

The Company uses effective interest rate method for recognizing interest income and expense. Dividend income is recognized in profit or loss on the date that the Company's right to receive dividend is established.

The 'effective interest rate' is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instrument to:
- The gross carrying amount of the financial asset; or
- The amortized cost of the financial liability

In calculating interest income and expense, the effective interest rate is applied to the gross carrying amount of the asset (when the asset is not credit-impaired) or to the amortized cost of the liability. However, for financial assets that have become credit-impaired subsequent to initial recognition, interest income is calculated by applying the effective interest rate to the amortized cost of the financial asset. If the asset is no longer credit-impaired, then the calculation of interest income reverts to the gross basis.

(24) Income taxes

Income tax expense comprises current and deferred tax. Current and deferred tax are recognized in profit or loss except to the extent that it relates to a business combination, or items recognized directly in equity or in other comprehensive income.

(a) Current tax

Current tax is the expected tax payable or refundable on the taxable income or loss for the year, using tax rates enacted or substantively enacted at the end of the reporting period and any adjustment to tax payable in respect of previous years. The amount of current tax payable or receivable is the best estimate of tax amount expected to be paid or received that reflects uncertainty related to income taxes. The taxable income is different from the accounting profit for the period since the taxable profit is calculated excluding the temporary differences, which will be taxable or deductible in determining taxable profit (tax loss) of future periods, and non-taxable or non-deductible items from the accounting profit. The tax expense is calculated on the basis of the tax laws enacted or substantively enacted at the end of the reporting period.

(b) Deferred tax

Deferred tax is recognized, using the asset-liability method, in respect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes.

3. Significant Accounting Policies, Continued

(24) Income taxes, continued

(b) Deferred tax, continued

The Company recognizes a deferred tax liability for all taxable temporary differences associated with investments in subsidiaries, associates and interests in joint ventures except to the extent that the Company is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. The Company recognizes deferred tax assets for all deductible temporary differences including unused tax loss and tax credit to the extent that it is probable that the temporary difference will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilized.

The carrying amount of a deferred tax asset is reviewed at the end of each reporting period and reduces the carrying amount to the extent that it is no longer probable that sufficient taxable profit will be available to allow the benefit of part or all of that deferred tax asset to be utilized.

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

The measurement of deferred tax liabilities and deferred tax assets reflects the tax consequences that would follow from the manner in which the Company expects, at the end of reporting period to recover or settle the carrying amount of its assets and liabilities.

Deferred tax assets and liabilities are offset only if there is a legally enforceable right to offset the related current tax liabilities and assets, and they relate to income taxes levied by the same tax authority and they intend to settle current tax liabilities and assets on a net basis. If there are any additional income tax expense incurred in accordance with dividend payments, such income tax expense is recognized when liabilities relating to the dividend payments are recognized.

(25) Earnings per share

The Company presents basic and diluted earnings per share (EPS) data for its ordinary shares. Basic EPS is calculated by dividing the profit or loss attributable to ordinary shareholders of the Company by the weighted average number of ordinary shares outstanding during the period, adjusted for own shares held. Diluted EPS is determined by adjusting the profit or loss attributable to ordinary shareholders and the weighted average number of outstanding ordinary shares, adjusted for own shares held, for the effects of all dilutive potential ordinary shares including stock options.

(26) Changes in accounting policies

The Company has initially adopted K-IFRS No. 1116 *'Leases'* from January 1, 2019. A number of other new standards are effective from January 1, 2019 and they do not have significant impact on the Company's separate financial statements.

K-IFRS No. 1116 introduced a single, on-balance sheet accounting model for lessees. As a result, the Company, as a lessee, has recognized right-of-use assets representing its rights to use the underlying assets and lease liabilities representing its obligation to make lease payments. Lessor accounting remains similar to previous accounting policies.

The Company recognized the cumulative effect of the initial application of K-IFRS No. 1116 in right-of-use assets and lease liabilities as of January 1, 2019 (the date of initial application). Accordingly, the comparative information presented for the prior year has not been restated - i.e. it is presented, as previously reported, under K-IFRS No. 1017 and related interpretations. Details of changes to the accounting policies are disclosed below

3. Significant Accounting Policies, Continued

(26) Changes in accounting policies, Continued

(a) Definition of a lease

Previously, the Company determined at contract inception whether an arrangement was or contained a lease under K-IFRS Interpretation No. 2104, *'Determining Whether an Arrangement contains a Lease'*. The Company now assesses whether a contract is or contains a lease based on the new definition of a lease. Under K-IFRS No. 1116, a contract is, or contains, a lease if the contract conveys a right to control the use of an identified asset for a period of time in exchange for consideration.

(b) As a lessee

The Company leases many assets, including structures and production machinery. As a lessee, the Company previously classified leases as operating or finance leases based on its assessment of whether the lease transferred substantially all of the risks and rewards of ownership. Under K-IFRS No. 1116, the Company recognizes right-of-use assets and lease liabilities for most leases on the condensed separate statements of financial position.

The Company separately presents right-of-use assets that do not meet the definition of investment property in the statement of financial position. The carrying amounts of right-of-use assets are as below.

(In millions of won)

		Properties	Structures	Machinery	Others	Total
Balance at January 1, 2019	₩	1,947	476,673	279,952	3,186	761,758
Balance at December 31, 2019	₩	988	443,428	152,063	11,774	608,253

Previously, the Company classified certain lease contracts for equipment and others as operating leases under K-IFRS No. 1017.

On transition, for leases classified as operating leases under K-IFRS No. 1017, lease liabilities were measured at the present value of the remaining lease payments, discounted at the Company's incremental borrowing rate as of January 1, 2019. Right-of-use assets are measured at an amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments.

The Company used the following practical expedients when applying K-IFRS No. 1116 to leases previously classified as operating leases under K-IFRS No. 1017.

- Excluded initial direct costs from the measurement of the right-of-use assets at the date of initial application.
- Used hindsight when determining the lease term if the contract contains options to extend or terminate the lease.
- Did not recognize right-of-use assets and liabilities for leases of which the lease term ends within 12 months of the date of initial application.
- Did not recognize right-of-use assets and liabilities for leases of low value assets.

The Company leases a number of production equipment and others. Certain items were classified as finance leases under K-IFRS No. 1017. For these finance leases, the carrying amount of the right-of-use assets and the lease liability at January 1, 2019 were determined at the carrying amount of the lease asset and lease liability under K-IFRS No. 1017 immediately before that date.

3. Significant Accounting Policies, Continued

(26) Changes in accounting policies, Continued

(c) As a lessor

The Company leases out its investment property and property, plant and equipment. The Company has classified these leases as operating leases. The accounting policies applicable to the Company as a lessor are not different from those under K-IFRS No. 1017.

The Company is not required to make any adjustments on transition to K-IFRS No. 1116 for leases in which it acts as a lessor. However, the Company has applied K-IFRS No. 1115 '*Revenue from Contracts with Customers*' to allocate consideration in the contract to each lease and non-lease component.

(d) Impacts on separate financial statements

(i) Impacts on transition

On transition to K-IFRS No. 1116, the Company recognized additional right-of-use assets and lease liabilities. The impact on transition is summarized below.

(In millions of won)

		January 1, 2019
Right-of-use assets	₩	761,758
Property, plant and equipment		(71,699)
Lease liabilities		765,518
Borrowings		(66,757)
Other current liabilities		(8,702)

When measuring lease liabilities for leases that were classified as operating leases, the Company discounted lease payments using its incremental borrowing rate at January 1, 2019. The weighted average incremental borrowing rate is 2.22%.

(In millions of won)

		Amount
Operating lease commitment at January 1, 2019	₩	787,735
Discounted using the incremental borrowing rate at January 1, 2019		700,116
Finance lease liabilities recognized as of December 31, 2018		66,757
- Recognition exemption for leases of low-value assets		(428)
- Recognition exemption for leases of short-term leases		(927)
Lease liabilities recognized at January 1, 2019	₩	765,518

3. Significant Accounting Policies, Continued

(26) Change in accounting policies, Continued

(d) Impacts on separate financial statements, Continued

(ii) Impacts for the period

As a result of initially applying K-IFRS No. 1116, in relation to the leases that were previously classified as operating leases, the Company recognized ₩542,288 million of right-of-use assets and ₩561,495 million of lease liabilities as of December 31, 2019.

Also in relation to those leases under K-IFRS No. 1116, the Company has recognized depreciation and interest expenses, instead of operating lease expense. For the year ended December 31, 2019, the Company recognized ₩184,932 million of depreciation expenses and ₩13,467 million of interest expense from these leases.

(e) K-IFRS No. 1116, '*Leases*' – 'Enforceable period' and determination of the '*Lease term*'

In December 2019, the International Financial Reporting Standards Interpretations Committee ("IFRIC") issued its final agenda decision that the concept of penalty that should be considered in determining the enforceable period under IFRS 16 *'Leases'*, shall be determined considering broader economics of the contract, and not only contractual termination payments. Further, if only one party has the right to terminate the lease without permission from the other party with no more than an insignificant penalty, the contract is enforceable beyond the date on which the contract can be terminated by that party.

In preparing the 2019 separate financial statements, the Company only considered the specified amount of termination payments in the contract in determining enforceable period. Therefore, applying the above-mentioned agenda decision may change the judgment of the enforceable period for certain lease contracts the Company has entered into.

However, considering the type, number and complexity of lease contracts entered into as of and from January 1, 2019, the Company does not believe it had sufficient time to complete the analysis on its lease portfolios to reflect the impact of the above IFRIC agenda decision, if any, in its 2019 separate financial statements. The Company plans to complete the assessment and reflect the impact, if any, in its separate financial statements and related notes during 2020. Any change as a result will be accounted for as an accounting policy change in the 2020 separate financial statements.

(27) Standards issued but not yet effective

The following new standards and amendments to standards are effective for accounting periods beginning on or after January 1, 2020 and earlier application is permitted; however, the Company has not early adopted them in preparing these separate financial statements.

(a) K-IFRS No. 1103, '*Business Combinations*' (Amendment)

This amendment clarifies that a business generally has outputs, but that an integrated set of activities and assets is not essential to meet the definition of a business. For acquired activities and groups of assets to be considered business, they should include at least inputs and substantive processes with the ability to contribute significantly together to the generation of output. It also provides judgment guidelines to help determine whether a substantive process has been acquired.
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3. Significant Accounting Policies, Continued

(27) Standards issued but not yet effective, Continued

(a) K-IFRS No. 1103, '*Business Combinations'* (Amendment), Continued

This amendment introduces optional concentration tests that provide a brief assessment of whether acquired activities and groups of assets are not business. This is an assessment that results in an asset acquisition if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or a similar identifiable group of assets.

This amendment applies prospectively to all business combinations and acquisitions of assets beginning the accounting period on or after January 1, 2020, and early application is permitted.

(b) K-IFRS Conceptual Framework for Financial Reporting (Amendment)

In addition to the revised '*Framework (2018)*', which was introduced with the announcement on December 21, 2018, the International Accounting Standards Board also published 'Amendments to the Conceptual Framework Reference' in the International Accounting Standards. This document includes amendments to K-IFRS No. 1102, 1103, 1106, 1114, 1001, 1008, 1034, 1037, 1038, 2112, 2119, 2120, 2122, and 2032.

However, not all amendments require such references or references to the revised *'Framework (2018)'*. Some statements have been amended to clarify whether the referenced *'Conceptual Framework'* is a *'Conceptual Framework for the Preparation and Presentation of Financial Statements (2007)'*, the *'Conceptual Framework (2010)'*, or the newly revised *'Conceptual Framework (2018)'*, and some other wordings have been amended to state that the definition in International Accounting Standards has not changed to the new definition developed in the revised *'Conceptual Framework (2018)'*.

The amendment shall be applied prospectively for accounting periods beginning on or after January 1, 2020, if any changes are made, and early application is permitted.

(c) Other Restated/Amended Standards

The following new standards and amendments to standards are not expected to have a significant impact on the Company's separate financial statements.
- Definition of materiality (Amendments to K-IFRS No. 1001 '*Presentation of Financial Statements*' and K-IFRS No. 1008 '*Accounting Policies, Changes in Accounting Estimates and Errors*')
- K-IFRS No. 1117 '*Insurance Contracts*'

4. Categories of Financial Instruments

(1) Categories of financial assets as of December 31, 2019 and 2018 are as follows:

(In millions of won)

	2019		
	Financial assets at fair value through profit or loss	**Financial assets at amortized cost**	**Total**
Cash and cash equivalents	₩ -	1,672,492	1,672,492
Short-term financial instruments	-	257,500	257,500
Short-term investment assets	973,513	-	973,513
Trade receivables	-	3,646,659	3,646,659
Loans and other receivables	-	89,806	89,806
Other financial assets	-	11	11
Long-term investment assets	4,295,661	-	4,295,661
	₩ 5,269,174	5,666,468	10,935,642

(In millions of won)

	2018		
	Financial assets at fair value through profit or loss	**Financial assets at amortized cost**	**Total**
Cash and cash equivalents	₩ -	1,741,271	1,741,271
Short-term financial instruments	-	477,500	477,500
Short-term investment assets	2,919,140	-	2,919,140
Trade receivables	-	6,436,794	6,436,794
Loans and other receivables	-	52,248	52,248
Other financial assets	-	11	11
Long-term investment assets	4,249,518	-	4,249,518
	₩ 7,168,658	8,707,824	15,876,482

4. Categories of Financial Instruments, Continued

(2) Categories of financial liabilities as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019		
		Financial liabilities at fair value through profit or loss	**Financial liabilities measured at amortized cost**	**Total**
Trade payables	₩	-	1,158,561	1,158,561
Other payables		-	1,926,383	1,926,383
Other non-trade payables		-	1,103,453	1,103,453
Borrowings		-	6,463,781	6,463,781
Other financial liabilities		15,532	-	15,532
Lease liabilities		-	620,164	620,164
	₩	15,532	11,272,342	11,287,874

(In millions of won)

		2018
		Financial liabilities measured at amortized cost
Trade payables	₩	1,505,170
Other payables		2,686,520
Other non-trade payables		1,720,870
Borrowings[1]		4,574,311
	₩	10,486,871

[1] As of December 31, 2018, borrowings include finance lease liabilities amounting to ₩66,757 million in accordance with K-IFRS No. 1017. Upon transition to K-IFRS No. 1116, lease liabilities are presented separately from borrowings in the separate statement of financial position as of December 31, 2019.

4. Categories of Financial Instruments, Continued

(3) Details of gain and loss on financial assets and liabilities by category for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Financial assets at amortized cost			
Interest income	₩	21,945	51,761
Foreign exchange differences		188,815	463,703
Reversal of impairment		3	4
		210,763	515,468
Financial assets at fair value through profit or loss			
Dividend income		358	2,121
Gain on disposal		31,428	23,559
Gain on valuation		(230,005)	190,857
Foreign exchange differences		209,563	122,375
		11,344	338,912
Financial liabilities measured at amortized cost			
Interest expenses		(125,051)	(90,907)
Foreign exchange differences		(224,797)	(251,235)
		(349,848)	(342,142)
	₩	(127,741)	512,238

5. Financial Risk Management

(1) Financial risk management

The Company's activities are exposed to a variety of financial risks: market risk (including foreign exchange risk, interest rate risk and price risk), credit risk and liquidity risk. The Company's overall risk management program focuses on the unpredictability of financial markets and seeks to minimize potential adverse effects on the Company's financial performance.

Risk management is carried out by the corporate finance division in accordance with policies approved by the board of directors. The Company's corporate finance division identifies, evaluates and hedges financial risks in close cooperation with the Company's operating units. The board of directors provides written principles for overall risk management, as well as written policies covering specific areas, such as foreign exchange risk, interest rate risk, credit risk, use of derivative financial instruments and non-derivative financial instruments, and investment of excess liquidity.

(a) Market risk

(i) Foreign currency risk

The Company operates internationally and is exposed to foreign currency risk arising from various currency exposures, primarily with respect to US dollar, Chinese Yuan, Euro and Japanese Yen. Foreign currency risk arises from future commercial transactions, recognized assets and liabilities in foreign currencies.

Monetary foreign currency assets and liabilities as of December 31, 2019 are as follows:

(In millions of won and millions of foreign currencies)

	Assets		**Liabilities**	
	Foreign currencies	**Korean won equivalent**	**Foreign currencies**	**Korean won equivalent**
USD	4,363	5,051,376	3,463	4,009,347
JPY	353	3,757	114,622	1,218,965
CNY	1,101	182,413	8	1,335
EUR	-	-	24	30,821

Also, as described in note 22, the Company entered into a fixed-to-fixed cross currency swap and a floating-to-fixed cross currency interest rate swap to hedge foreign currency rate risk relating to bonds and borrowings denominated in foreign currencies.

As of December 31, 2019, effects on profit before income tax as a result of strengthening or weakening of the foreign currencies by 10% are as follows:

(In millions of won)

	If strengthening by 10%	**If weakening by 10%**
USD	₩ 219,220	(219,220)
JPY	(121,521)	121,521
CNY	18,108	(18,108)
EUR	(3,082)	3,082

5. Financial Risk Management, Continued

(1) Financial risk management, Continued

(a) Market risk, Continued

(ii) Interest rate risk

Interest rate risk of the Company is defined as the risk that the interest expenses arising from borrowings will fluctuate because of changes in future market interest rate. The interest rate risk mainly arises through floating rate borrowings.

As of December 31, 2019, if interest rates on borrowings were 100 basis points higher/lower with all other variables held constant, profit before income tax for the following year would be ₩15,455 million (2018: ₩20,516 million) lower/higher, mainly as a result of higher/lower interest expense on floating rate borrowings (except for floating-rate borrowings amounting to ₩578,900 million under floating-to-fixed cross currency interest rate swap agreement).

(iii) Price risk

The Company invests in equity and debt securities resulted from its business needs and the purpose of liquidity management. The Company's equity and debt securities are exposed to price risk as of December 31, 2019.

(b) Credit risk

Credit risk is the risk of financial loss to the Company if a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises mainly from operating and investing activities. In order to manage credit risk, the Company periodically evaluates the credit worthiness of each customer or counterparty through the analysis of its financial information, historical transaction records and other factors, based on which the Company establishes credit limits for each customer or counterparty.

(i) Trade and other receivables

For each new customer, the Company individually analyzes its credit worthiness before standard payment and delivery terms and conditions are offered. In addition, the Company is consistently managing trade and other receivables by reevaluating the customer's credit worthiness and securing collaterals in order to limit its credit risk exposure.

The Company reviews at the end of each reporting period whether trade and other receivables are impaired and maintains credit insurance policies to manage credit risk exposure from overseas customers. The maximum exposure to credit risk as of December 31, 2019 is the carrying amount of trade and other receivables.

(ii) Other financial assets

Credit risk also arises from other financial assets such as cash and cash equivalents, short-term financial instruments, and deposits with banks and financial institutions as well as short-term and long-term loans mainly due to the bankruptcy of each counterparty to those financial assets. The maximum exposure to credit risk as of December 31, 2019 is the carrying amount of those financial assets. The Company transacts only with banks and financial institutions with high credit ratings, and accordingly management does not expect any significant losses from non-performance by the counterparties.

5. Financial Risk Management, Continued

(1) Financial risk management, Continued

(c) Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in having sufficient funds needed to meet obligations associated with its financial contracts until maturity. The Company forecasts its cash flow and liquidity status and sets action plans on a regular basis to manage liquidity risk proactively.

The Company invests surplus cash in interest-bearing current accounts, time deposits and demand deposits, choosing instruments with appropriate maturities or sufficient liquidity based on the above-mentioned forecasts.

Contractual maturities of financial liabilities as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019				
		Less than 1 year	**1 - 2 years**	**2 - 5 years**	**More than 5 years**	**Total**
Borrowings[1]	₩	1,819,175	1,729,285	2,568,355	794,297	6,911,112
Lease liabilities		142,786	118,999	140,473	300,886	703,144
Trade payables		1,158,561	-	-	-	1,158,561
Other payables		1,926,383	-	-	-	1,926,383
Other non-trade payables		1,088,225	15,228	-	-	1,103,453
Other financial liabilities		(15,826)	(13,862)	(16,732)	5,522	(40,898)
Financial guarantee contract		69,468	-	-	-	69,468
	₩	6,188,772	1,849,650	2,692,096	1,100,705	11,831,223

[1] The cash flow includes payment of interest under terms and condition of borrowing contracts and excludes the amount of lease liabilities as of December 31, 2019

(In millions of won)

		2018				
		Less than 1 year	**1 - 2 years**	**2 - 5 years**	**More than 5 years**	**Total**
Borrowings[1]	₩	1,106,302	976,113	2,570,868	94,208	4,747,491
Finance lease liabilities		10,379	10,379	31,137	24,369	76,264
Trade payables		1,505,170	-	-	-	1,505,170
Other payables		2,686,520	-	-	-	2,686,520
Other non-trade payables		1,710,509	1,096	9,265	-	1,720,870
Financial guarantee contract		4	-	-	-	4
	₩	7,018,884	987,588	2,611,270	118,577	10,736,319

[1] The cash flow includes payment of interest under terms and condition of borrowing contracts and excludes the amount of finance lease liabilities as of December 31, 2018.

5. Financial Risk Management, Continued

(1) Financial risk management, Continued

(c) Liquidity risk, Continued

The table above analyzes the Company's financial liabilities into relevant maturity groups based on the remaining period at the statement of financial position date to the contractual maturity date. The amounts disclosed in the table are the contractual undiscounted cash flows and include estimated interest payments.

(2) Capital management

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

In order to maintain or adjust the capital structure, the Company may adjust the amount of dividends to shareholders, proceeds and repayments of borrowings, issue new shares or sell assets to repay debt.

The debt-to-equity ratio and net borrowing ratio as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Total liabilities (A)	₩	11,665,849	15,319,715
Total equity (B)		46,044,221	45,660,893
Cash and cash equivalents; short-term financial instruments; and short-term investment asset (C)		2,903,505	5,137,911
Total borrowings (D)[1]		6,463,781	4,574,311
Debt-to-equity ratio (A/B)		25.34%	33.55%
Net borrowing ratio (D-C)/B[2]		7.73%	-

[1] As of December 31, 2018, borrowings include finance lease liabilities amounting to ₩66,757 million in accordance with K-IFRS No. 1017. Meanwhile, as a result of the transition to K-IFRS No. 1116, lease liabilities are presented separately from borrowings in the separate statement of financial position as of December 31, 2019.

[2] Net borrowing ratio as of December 31, 2018 is not presented as the ratio was negative.

5. Financial Risk Management, Continued

(3) Fair value

Fair values are categorized into different levels in a fair value hierarchy based on the inputs used in valuation techniques as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2: inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices)
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs)

(a) The following table presents the carrying amounts and fair values of financial instruments by categories, including their levels in the fair value hierarchy, as of December 31, 2019 and 2018:

(In millions of won)

		2019			
	Carrying amounts	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value					
Short-term investment asset	₩ 973,513	-	973,513	-	973,513
Long-term investment asset	4,295,661	-	-	4,295,661	4,295,661
	5,269,174	-	973,513	4,295,661	5,269,174
Financial assets not measured at fair value					-
Cash and cash equivalents[1]	1,672,492	-	-	-	-
Short-term financial instruments[1]	257,500	-	-	-	-
Trade receivables[1]	3,646,659	-	-	-	-
Loans and other receivables[1]	89,806	-	-	-	-
Other financial assets[1]	11	-	-	-	-
	5,666,468	-	-	-	-
Financial liabilities measured at fair value					
Other financial liabilities	15,532	-	15,532	-	15,532
	15,532	-	15,532	-	15,532
Financial liabilities not measured at fair value					
Trade payables[1]	1,158,561	-	-	-	-
Other payables[1]	1,926,383	-	-	-	-
Other non-trade payables[1]	1,103,453	-	-	-	-
Borrowings	6,463,781	-	6,525,654	-	6,525,654
Lease liabilities	620,164	-	-	-	-
	₩ 11,272,342	-	6,525,654	-	6,541,186

[1] Does not include fair values of financial assets and liabilities of which fair values have not been measured as carrying amounts are reasonable approximation of fair values.

5. Financial Risk Management, Continued

(3) Fair value, Continued

(a) The following table presents the carrying amounts and fair values of financial instruments by categories, including their levels in the fair value hierarchy, as of December 31, 2019 and 2018, Continued:

(In millions of won)

		2018			
	Carrying amounts	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value					
Short-term investment assets	₩ 2,919,140	-	2,919,140	-	2,919,140
Long-term investment assets	4,249,518	-	-	4,249,518	4,249,518
	7,168,658	-	2,919,140	4,249,518	7,168,658
Financial assets not measured at fair value					
Cash and cash equivalents[1]	1,741,271	-	-	-	-
Short-term financial instruments[1]	477,500	-	-	-	-
Trade receivables[1]	6,436,794	-	-	-	-
Loans and other receivables[1]	52,248	-	-	-	-
Other financial assets[1]	11	-	-	-	-
	8,707,824	-	-	-	-
Financial liabilities notmeasured at fair value					
Trade payables[1]	1,505,170	-	-	-	-
Other payables[1]	2,686,520	-	-	-	-
Other non-trade payables[1]	1,720,870	-	-	-	-
Borrowings[2]	4,574,311	-	4,592,699	-	4,592,699
	₩ 10,486,871	-	4,592,699	-	4,592,699

[1] Does not include fair values of financial assets and liabilities of which fair values have not been measured as carrying amounts are reasonable approximation of fair values.
[2] As of December 31, 2018, borrowings include finance lease liabilities in accordance with K-IFRS No. 1017.

5. Financial Risk Management, Continued

(3) Fair value, Continued

(b) Valuation Techniques

The valuation techniques of recurring and non-recurring fair value measurements and quoted prices classified as level 2 or level 3 are as follows:

(In millions of won)

		Fair value	Level	Valuation Techniques
Financial assets at fair value through profit or loss:				
Short-term investment assets	₩	973,513	2	Present value technique
Long-term investment assets		4,295,661	3	Present value technique and others
Financial liabilities at fair value through profit or loss:				
Fixed-to-fixed cross currency swap and floating-to-fixed cross currency interest rate swap	₩	15,532	2	Present value technique

Long-term investments measured at level 3 in the fair value hierarchy include investments in special purpose companies of BCPE Pangea Intermediate Holdings Cayman, L.P. ("SPC1") amounting to ₩2,780,758 million and BCPE Pangea Cayman2 Limited ("SPC2") amounting to ₩1,435,460 million in connection with the acquisition of KIOXIA Holdings Corporation ("KIOXIA", formerly, Toshiba Memory Corporation) (see note 11). The fair value of the long-term investments is measured based on the equity value of the underlying asset, KIOXIA.

The fair value of equity investment in SPC1 is measured using probability-weighted expected return method that represents the probability-weighted average of possible future cash flows. The fair values of different scenarios (such as initial public offering, merger and acquisition, and liquidation) are determined based on the KIOXIA's equity value, calculated using either market approach, option-pricing method or present value method. KIOXIA's estimated equity value is allocated to shareholder's value of each class of shares depending the capital structure of the investment. For the allocation, a waterfall approach is used, which allocates value based on the distribution priority described in SPC1 investment agreement depending on the nature of liquidity transaction or an ultimate liquidation.

The fair value of debt investment in SPC2 convertible bonds is measured based on KIOXIA's equity value, using binomial model.

5. Financial Risk Management, Continued

(3) Fair value, Continued

(b) Valuation Techniques, Continued

The valuation techniques and key inputs used in valuation of the equity investment in SPC1 and investment in SPC2 convertible bonds are as follows:

(In millions of won)

		Fair value	Valuation Techniques	Level 3 inputs	Input Range
Equity investment in SPC1	₩	2,780,758	Present value technique, probability-weighted expected return method, market approach, and option-pricing method	Terminal growth rate	0%
				Weighted-average capital cost	8.6%
				EV/EBITDA multiples	4.7 ~ 5.3
				Cost of equity	10.3%
SPC2 convertible bonds		1,435,460	Present value technique and binomial model	Terminal growth rate	0%
				Weighted-average capital cost	8.6%
				Volatility	21.3%
				Risk free rate	-0.13%

In these level 3 significant unobservable inputs, an increase in terminal growth rate, and EV/EBITDA multiples or a decrease in weighted-average capital cost and cost of equity will result in higher fair value of the equity investment in SPC1. In addition, an increase in terminal growth rate and volatility and a decrease in weighted-average capital cost will result in higher fair value of the investment in SPC2 convertible bonds, while any change in risk free rate may have either positive or negative impact on the fair value of the investment in SPC2 convertible bonds.

Any positive or negative changes in the above inputs will have a significant and direct impact on the fair value of investments in SPC1 and SPC2, respectively. They are significant, but unobservable. Accordingly, the investments are classified as fair value hierarchy level 3.

5. Financial Risk Management, Continued

(3) Fair value, Continued

(c) There was no transfer between fair value hierarchy levels during the year ended December 31, 2019 and changes in financial assets classified as level 3 fair value measurements during the year ended December 31, 2019 are as follows:

(In millions of won)

		Beginning Balance	Acquisition	Disposals	Valuation	Foreign Exchange Differences	Ending Balance
Long-term investment assets	₩	4,249,518	76,742	(3,717)	(234,760)	207,878	4,295,661

6. Restricted Financial Instruments

Details of restricted financial instruments as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018	Description
Short-term financial instruments	₩	227,500	227,500	Restricted for supporting small businesses
Other financial assets		11	11	Bank overdraft guarantee deposit
	₩	227,511	227,511	

7. Trade Receivables and Loans and Other Receivables

(1) Details of trade receivables as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Trade receivables	₩	38,602	50,089
Trade receivables to be collected from related parties		3,608,057	6,386,705
		3,646,659	6,436,794

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

(In millions of won)

		2019	2018
Current			
Other receivables	₩	23,757	15,818
Accrued income		1,389	3,456
Short-term loans		1,024	180
		26,170	19,454
Non-current			
Long-term loans		1,402	1,531
Guarantee deposits		62,234	31,263
		63,636	32,794
	₩	89,806	52,248

(3) Trade receivables and loans and other receivables, net of provision for impairment, as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019		
		Gross amount	Provision for impairment	Carrying amount
Trade receivables	₩	3,646,659	-	3,646,659
Current loans and other receivables		27,450	(1,280)	26,170
Non-current loans and other receivables		63,738	(102)	63,636
	₩	3,737,847	(1,382)	3,736,465

(In millions of won)

		2018		
		Gross amount	Provision for impairment	Carrying amount
Trade receivables	₩	6,436,794	-	6,436,794
Current loans and other receivables		20,736	(1,282)	19,454
Non-current loans and other receivables		32,896	(102)	32,794
	₩	6,490,426	(1,384)	6,489,042

7. Trade Receivables and Loans and Other Receivables, Continued

(4) Details of provision for impairment

Changes in the provision for impairment of trade receivables for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Beginning balance	₩	1,384	1,388
Reversal		(2)	(4)
Ending balance	₩	1,382	1,384

Changes in the provision for impairment of current loans and other receivables for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Beginning balance	₩	1,282	1,286
Reversal		(2)	(4)
Ending balance	₩	1,280	1,282

Changes in the provision for impairment of non-current loans and other receivables for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Beginning balance	₩	102	102
Reversal		-	-
Ending balance	₩	102	102

7. Trade Receivables and Loans and Other Receivables, Continued

(5) The aging analysis of trade receivables and loans and other receivables as of December 31, 2019 and 2018 are as follows:

(In millions of won)

	2019					
	Not impaired					
		Overdue				
	Not past due	Less than 3 months	Over 3 months and less than 6 months	Over 6 months	Impaired	Total
Trade receivables	₩ 3,646,659	-	-	-	-	3,646,659
Current loans and other receivables	26,170	-	-	-	1,280	27,450
Non-current loans and other receivables	63,636	-	-	-	102	63,738
	₩ 3,736,465	-	-	-	1,382	3,737,847

(In millions of won)

	2018					
	Not impaired					
		Overdue				
	Not past due	Less than 3 months	Over 3 months and less than 6 months	Over 6 months	Impaired	Total
Trade receivables	₩ 6,436,794	-	-	-	-	6,436,794
Current loans and other receivables	19,454	-	-	-	1,282	20,736
Non-current loans and other receivables	32,794	-	-	-	102	32,896
	₩ 6,489,042	-	-	-	1,384	6,490,426

8. Inventories

(1) Details of inventories as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019		
		Acquisition Cost	**Inventory valuation allowance**	**Carrying amount**
Finished goods	₩	1,179,702	(174,138)	1,005,564
Work-in-process		2,862,976	(394,424)	2,468,552
Raw materials		518,158	(33,024)	485,134
Supplies		334,408	(11,437)	322,971
Goods in transit		72,511	-	72,511
	₩	4,967,755	(613,023)	4,354,732

(In millions of won)

		2018		
		Acquisition Cost	**Inventory valuation allowance**	**Carrying amount**
Finished goods	₩	1,312,745	(106,701)	1,206,044
Work-in-process		2,048,275	(207,462)	1,840,813
Raw materials		407,127	(23,346)	383,781
Supplies		284,180	(6,820)	277,360
Goods in transit		13,523	-	13,523
	₩	4,065,850	(344,329)	3,721,521

(2) The amount of the inventories recognized as cost of sales and loss on valuation allowance of inventories charged to cost of sales are as follows:

(In millions of won)

		2019	2018
Inventories recognized as cost of sales	₩	18,273,957	15,561,633
Loss on valuation allowance of inventories		268,694	176,632

9. Other Current and Non-current Assets

Details of other current and non-current assets as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Current			
Advance payments	₩	56,719	92,704
Prepaid expenses		196,069	243,320
Value added tax refundable		258,898	211,899
Contract assets		84,434	34,008
Others		88	208
		596,208	582,139
Non-current			
Long-term advance payments		44,010	96,817
Long-term prepaid expenses		533,604	525,136
		577,614	621,953
	₩	1,173,822	1,204,092

10. Investments in Subsidiaries, Associates and Joint Ventures

(1) Investments in subsidiaries, associates and joint ventures as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Investments in subsidiaries	₩	5,747,927	7,411,833
Investments in associates and joint ventures		575,522	462,851
	₩	6,323,449	7,874,684

(2) Details of investments in subsidiaries as of December 31, 2019 and 2018 are as follows:

(In millions of won)

	Location	Percentage of ownership (%) in 2019		Book value 2019	Book value 2018
SK hyeng Inc.	Korea	100.00	₩	7,521	7,521
SK hystec Inc.	Korea	100.00		6,760	6,760
Happymore Inc.	Korea	100.00		7,400	7,400
SK hynix system ic Inc.	Korea	100.00		404,928	404,928
HAPPYNARAE Co., Ltd.	Korea	100.00		63,147	63,147
SK hynix America Inc.	U.S.A.	97.74		31	31
SK hynix Deutschland GmbH	Germany	100.00		22,011	22,011
SK hynix Asia Pte. Ltd.	Singapore	100.00		52,380	52,380
SK hynix Semiconductor Hong Kong Ltd.	Hong Kong	100.00		32,623	32,623
SK hynix U.K. Ltd.	U.K.	100.00		1,775	1,775
SK hynix Semiconductor Taiwan Inc.	Taiwan	100.00		37,562	37,562
SK hynix Japan Inc.	Japan	100.00		42,905	42,905
SK hynix Semiconductor (Shanghai) Co., Ltd.	China	100.00		4,938	4,938
SK hynix Semiconductor India Private Ltd.	India	1.00		5	5
SK hynix (Wuxi) Semiconductor Sales Ltd.	China	100.00		237	237
SK hynix Semiconductor (China) Ltd.[1]	China	100.00		3,868,622	3,533,222
SK hynix Italy S.r.l	Italy	100.00		18	18
SK hynix memory solutions America Inc.	U.S.A.	100.00		311,283	311,283
SK hynix memory solutions Taiwan Ltd.	Taiwan	100.00		7,819	7,819
SK hynix memory solutions Eastern Europe LLC.	Belarus	99.93		14,579	14,579
SK APTECH Ltd.[2]	Hong Kong	100.00		440,770	373,300
SK hynix Ventures Hong Kong Ltd.	Hong Kong	100.00		60,613	60,613
MMT (Money Market Trust)[3]	Korea	100.00		360,000	2,426,776
			₩	5,747,927	7,411,833

[1] Additional acquisition of ₩335,400 million occurred due to capital contribution during the year ended December 31, 2019.
[2] Additional acquisition of ₩67,470 million occurred due to capital contribution during the year ended December 31, 2019.
[3] The Company disposed total amount of MMT and acquired new MMT during the year ended December 31, 2019.

10. Investments in Subsidiaries, Associates and Joint Ventures, Continued

(3) Details of investments in associates and joint ventures as of December 31, 2019 and 2018 are as follows:

(In millions of won)

Type	Investee	Ownership (%) in 2019		Carrying amount 2019	Carrying amount 2018
Associate	Stratio, Inc. [1]	9.12	₩	395	2,194
	SK China Company Limited [2]	11.87		257,169	257,169
	SK South East Asia Investment Pte. Ltd. [3]	20.00		224,350	110,880
	WooYoung Farm Co., Ltd. [4]	31.95		1,000	-
Joint venture	HITECH Semiconductor (Wuxi) Co., Ltd.	45.00		92,608	92,608
			₩	575,522	462,851

[1] Loss on disposal of investments in associates amounting to ₩1,799 million is recognized for the year ended December 31, 2019.
[2] The Company is able to exercise significant influence through its right to appoint a director to the board of directors of each investee. Accordingly, the investments in these investees have been classified as associates.
[3] Additional acquisition of ₩113,470 million occurred during the year ended December 31, 2019.
[4] The Company acquired 31.95% of ownership in WooYoung Farm Co., Ltd. during the year ended December 31, 2019, and the Company has significant influence over WooYoung Farm Co., Ltd. Accordingly the investment in this investee has been classified as an associate.

11. Long-term investment assets

(1) Details of Long-term investment assets as of December 31, 2019 and 2018 are as follows:

(In millions of won)

	2019			2018
	Ownership (%)/ Type	Acquisition cost	Book value	Book value
ProMOS Technologies Inc.	0.88	₩ 21,847	-	-
Intellectual Discovery, Ltd.	4.80	4,000	2,392	1,376
Semiconductor Growth Fund	Certificate	25,000	24,480	24,878
Keyssa, Inc.	2.81	6,174	822	838
MEMS DRIVE, INC.	3.25	2,397	1,251	919
China Walden Venture Investments II, L.P.	Certificate	7,895	9,138	7,611
China Walden Venture Investments III, L.P.	Certificate	5,448	5,790	3,487
AutoTech Fund I, L.P.	Certificate	3,152	3,198	2,789
RENO SUB-SYSTEM, INC.	4.09	2,597	657	226
TransLinK Capital Partners IV L.P.	Certificate	2,386	2,175	1,627
Impact venture Capital I, LP	Certificate	3,174	4,010	2,707
BCPE Pangea Intermediate Holdings Cayman, L.P.[1]	Certificate	2,694,692	2,780,758	2,721,554
BCPE Pangea Cayman2 Limited[1]	Convertible Bond	1,280,294	1,435,460	1,461,451
FemtoMetrix, Inc	Convertible Bond	4,387	4,387	3,209
TidalScale, Inc	4.79	3,360	1,278	3,360
GigaIO Networks, Inc	8.97	4,066	4,066	1,678
Aeye, Inc.	1.46	2,819	1,187	2,819
Lion Semiconductor Inc.	6.55	3,539	3,474	-
TetraMem Holdings, Incorporation	Convertible Bond	2,349	2,349	-
Others	-	8,785	8,789	8,989
		₩ 4,088,361	4,295,661	4,249,518

[1] In 2017, the Company participated in a consortium that includes Bain Capital in connection with acquisition of a stake in Toshiba Memory Corporation ("TMC"). On March 1, 2019, Toshiba Memory Holdings Corporation ("TMCHD") was established as the holding company for TMC. Subsequently TMCHD and TMC were renamed KIOXIA Holdings Corporation ("KIOXIA") and KIOXIA Corporation respectively. As of December 31, 2019, the Company holds equity interests in SPC1, which holds equity interests in KIOXIA, and convertible bonds issued by SPC2, which may be later convertible to 15% stake in KIOXIA upon certain events. Management and decision-making rights of the Company for SPC1 and SPC2 are limited. Accordingly, the Company does not control or have any significant influence on SPC1 and SPC2. The investments in SPC1 and SPC2 are classified as financial assets which are debt instruments measured at fair value through profit or loss.

11. Long-term investment assets, Continued

(2) Changes in the carrying amount of long-term investment assets for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Beginning balance	₩	4,249,518	37,593
Acquisition		76,742	3,945,228
Disposal		(3,717)	(1,614)
Gain (loss) on valuation		(234,760)	181,717
Foreign exchange difference		207,878	86,594
Ending balance	₩	4,295,661	4,249,518

12. Property, Plant and Equipment

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

(In millions of won)

		2019							
		Land	**Buildings**	**Structures**	**Machinery**	**Vehicles**	**Others**	**Construction-in-progress**	**Total**
Beginning balance	₩	980,980	3,958,150	1,001,080	20,161,750	10,679	511,090	3,218,925	29,842,654
Impacts on transition to K-IFRS No. 1116		-	-	-	(71,699)	-	-	-	(71,699)
Beginning balance after transition adjustments		980,980	3,958,150	1,001,080	20,090,051	10,679	511,090	3,218,925	29,770,955
Changes during 2019									
Acquisitions		16,882	253,705	122,558	4,981,203	1,384	247,162	2,671,404	8,294,298
Disposals		(48)	(2)	-	(243,081)	(3)	(713)	(210)	(244,057)
Depreciation		-	(178,268)	(63,895)	(5,693,262)	(1,922)	(193,690)	-	(6,131,037)
Transfers[1]		3,051	684,498	48,883	1,635,772	32,184	38,170	(2,441,453)	1,105
Ending balance		1,000,865	4,718,083	1,108,626	20,770,683	42,322	602,019	3,448,666	31,691,264
Acquisition cost		1,000,865	5,759,417	1,546,882	52,447,928	46,225	1,522,794	3,448,666	65,772,777
Accumulated depreciation		-	(1,017,635)	(419,152)	(31,515,358)	(3,903)	(920,754)	-	(33,876,802)
Accumulated impairment		-	(23,699)	(19,104)	(159,060)	-	(21)	-	(201,884)
Government grants		-	-	-	(2,827)	-	-	-	(2,827)
	₩	1,000,865	4,718,083	1,108,626	20,770,683	42,322	602,019	3,448,666	31,691,264

[1] Certain investment property was transferred to property, plant and equipment during the year ended December 31, 2019.

12. Property, Plant and Equipment, Continued

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

(In millions of won)

		2018							
		Land	Buildings	Structures	Machinery	Vehicles	Others	Construction-in-progress	Total
Beginning balance	₩	577,877	2,688,853	645,389	14,237,939	661	369,452	2,802,772	21,322,943
Changes during 2018									
Acquisitions		278,813	784,443	325,931	9,307,943	10,835	274,980	2,732,543	13,715,488
Disposals		-	(25,106)	(2,398)	(124,471)	-	(378)	(28,562)	(180,915)
Depreciation		-	(130,148)	(49,289)	(4,687,495)	(817)	(148,097)	-	(5,015,846)
Transfers[1]		124,290	640,108	81,447	1,427,834	-	15,133	(2,287,828)	984
Ending balance		980,980	3,958,150	1,001,080	20,161,750	10,679	511,090	3,218,925	29,842,654
Acquisition cost		980,980	4,819,978	1,375,767	47,077,791	12,755	1,306,913	3,218,925	58,793,109
Accumulated depreciation		-	(838,129)	(355,583)	(26,752,065)	(2,076)	(795,802)	-	(28,743,655)
Accumulated impairment		-	(23,699)	(19,104)	(160,317)	-	(21)	-	(203,141)
Government grants		-	-	-	(3,659)	-	-	-	(3,659)
	₩	980,980	3,958,150	1,001,080	20,161,750	10,679	511,090	3,218,925	29,842,654

[1] Certain investment property was transferred to property, plant and equipment during the year ended December 31, 2018.

(2) Details of depreciation expense allocation for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Cost of sales	₩	5,538,449	4,563,485
Selling and administrative expenses		534,650	339,227
Other expenses		14,331	5,962
Development costs and other		43,607	107,172
	₩	6,131,037	5,015,846

(3) Certain machinery are pledged as collaterals for borrowings of the Company as of December 31, 2019 (see note 34).

(4) The Company capitalized borrowing costs amounting to ₩36,302 million (2018: ₩33,086 million) on qualifying assets for the year ended December 31, 2019. Borrowing costs were calculated using a capitalization rate of 2.84% (2018: 3.08%) for the year ended December 31, 2019.

12. Property, Plant and Equipment, Continued

(5) Details of insured assets as of December 31, 2019 is as follows:

(In millions of won)

	Insured assets		Insured amount	Insurance company
Package insurance	Property, plant and equipment; investment property; Inventories; and business interruption	₩	77,914,249	Hyundai Marine & Fire Insurance Co., Ltd. and others
Erection all risks insurance	Property, plant and equipment		8,147,662	
		₩	86,061,911	

In addition to the assets stated above, vehicles are insured by vehicle comprehensive insurance and liability insurance.

(6) The Company provides certain property, plant, and equipment as operating leases. Rental income from the property, plant and equipment during the year ended December 31, 2019 are ₩94,773 million (2018: ₩49,829 million).

13. Leases

(1) Leases as lessee

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

(In millions of won)

		2019				
		Properties	**Structures**	**Machinery**	**Others**	**Total**
Beginning balance	₩	-	-	-	-	-
Impacts on transition to K-IFRS No. 1116		1,947	476,673	279,952	3,186	761,758
Beginning balance after transition adjustments		1,947	476,673	279,952	3,186	761,758
Increase		148	7,124	15,838	-	23,110
Others		405	-	-	13,647	14,052
Depreciation		(1,512)	(40,369)	(143,727)	(5,059)	(190,667)
Ending Balance		988	443,428	152,063	11,774	608,253
Acquisition cost		2,019	498,988	231,830	16,302	749,139
Accumulated depreciation		(1,031)	(55,560)	(79,767)	(4,528)	(140,886)
	₩	988	443,428	152,063	11,774	608,253

(b) Changes in lease liabilities for the year ended December 31, 2019 are as follows.

(In millions of won)

		2019
Beginning balance	₩	-
Impacts on transition to K-IFRS No. 1116		765,518
Beginning balance after transition adjustments		765,518
Increase		23,110
Others		14,052
Interest expense		15,757
Payments		(204,504)
Foreign exchange difference		6,231
Ending balance	₩	620,164

13. Leases, Continued

(c) The details of the minimum lease payment to be paid in the future for each period in connection with lease liabilities, present value and current/non-current classification of lease liabilities as of December 31, 2019 are as follows:

(In millions of won)

		2019
Less than one year	₩	142,786
One to five years		259,472
More than five years		300,886
Total lease liabilities undiscounted as of December 31, 2019		703,144
Present value of lease liabilities recognized as of December 31, 2019		620,164
Current lease liabilities		141,217
Noncurrent lease liabilities		478,947

(d) The amounts recognized in profit or loss in relation to right-of-use assets and lease liabilities for the year ended December 31, 2019 are as follows:

(In millions of won)

		2019
Depreciation of right-to-use assets	₩	190,667
Interest expenses of lease liabilities		15,757
Expenses relating to short-term leases		2,428
Expenses relating to leases of low-value assets		551

(2) Leases as lessor

The Company provides certain property, plant, and equipment and investment property as leases (See note 12, 15). All leases are classified as operating leases.

Details of the undiscounted operating lease payments to be received in the future periods subsequent to December 31, 2019 are as follows:

(In millions of won)

		Property, Plant and Equipment	Investment Property	Total
Less than 1 year	₩	84,263	9	84,272
1~2 years		9,476	-	9,476
2~3 years		9,476	-	9,476
3~4 years		9,476	-	9,476
4~5 years		3,958	-	3,958
	₩	116,649	9	116,658

14. Intangible Assets

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

(In millions of won)

		2019				
		Goodwill	Industrial property rights	Development costs	Others	Total
Beginning balance	₩	419,046	95,790	1,153,956	629,857	2,298,649
Changes during 2019						
Internal development		-	-	332,888	-	332,888
External acquisition		-	9,611	-	281,282	290,893
Disposals		-	(3,957)	-	(6,567)	(10,524)
Amortization		-	(15,951)	(555,056)	(194,597)	(765,604)
Impairment		-	-	-	(71)	(71)
Ending balance		419,046	85,493	931,788	709,904	2,146,231
Acquisition cost		419,046	184,358	2,926,330	1,326,775	4,856,509
Accumulated amortization and impairment		-	(98,865)	(1,994,542)	(616,871)	(2,710,278)
	₩	419,046	85,493	931,788	709,904	2,146,231

(In millions of won)

		2018				
		Goodwill	Industrial property rights	Development costs	Others	Total
Beginning balance	₩	419,046	104,565	882,250	512,398	1,918,259
Changes during 2018						
Internal development		-	-	610,954	-	610,954
External acquisition		-	12,721	-	275,402	288,123
Disposals		-	(5,165)	-	(2,677)	(7,842)
Amortization		-	(16,331)	(334,766)	(155,266)	(506,363)
Impairment		-	-	(4,482)	-	(4,482)
Ending balance		419,046	95,790	1,153,956	629,857	2,298,649
Acquisition cost		419,046	185,477	2,593,442	1,057,357	4,255,322
Accumulated amortization and impairment		-	(89,687)	(1,439,486)	(427,500)	(1,956,673)
	₩	419,046	95,790	1,153,956	629,857	2,298,649

14. Intangible Assets, Continued

(2) Details of amortization expense allocation for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Cost of sales	₩	71,633	55,951
Selling and administrative expenses		692,630	448,471
Development costs		1,341	1,941
	₩	765,604	506,363

(3) Goodwill impairment tests

The Company performs goodwill impairment tests annually. For the purpose of impairment tests, goodwill is allocated to CGU. The recoverable amount of the CGU as of December 31, 2019 was determined based on fair value less costs to sell, which was determined using the current stock price as of December 31, 2019. No impairment loss of goodwill was recognized since the recoverable amount is higher than the carrying value of the CGU as of December 31, 2019.

(4) Details of development costs

(a) Detailed criteria for capitalization of development costs
The Company's development projects for a new product proceeds in the process of review and planning phases (Phase 0 ~ 4) and product design and mass production phases (Phase 5 ~ 8). The Company recognizes expenditures incurred after Phase 4 in relation with the development for new technology is recognized as an intangible asset. Expenditures incurred at phase 0 through 4 are recognized as expenses.

(b) Development cost capitalized and expenses on research and development
Among costs associated with development activities, ₩332,888 million (2018: ₩610,954 million) that met capitalization criteria, were capitalized as development cost for the year ended December 31, 2019. In addition, costs associated with research activities and other development expenditures that did not meet the criteria in the amount of ₩2,863,473 million (2018: ₩2,290,406 million) were recognized as expenses for the year ended December 31, 2019.

14. Intangible Assets, Continued

(4) Details of development cost, Continued

(c) Details of development costs as of December 31, 2019 and 2018 are as follows:
(In millions of won)

		2019	
		Book value	**Residual amortization period**
DRAM	₩	263,262	11~23 months
		1,068	[1]
NAND		203,307	12 months
		351,745	[1]
CIS		19,613	1~14 months
		92,793	[1]
	₩	931,788	

[1] Amortization has not started as of December 31, 2019.

(In millions of won)

		2018	
		Book value	**Residual amortization period**
DRAM	₩	457,682	7~23 months
		7,261	[1]
NAND		37,055	6 months
		573,658	[1]
CIS		4,298	13 months
		74,002	[1]
	₩	1,153,956	

[1] Amortization has not started as of December 31, 2018.

(d) The Company did not recognize impairment loss in development costs for the year ended December 31, 2019. The Company recognized ₩4,482 million as an impairment loss in development costs for the year ended December 31, 2018. There are no accumulated impairment losses in development costs as of December 31, 2019 and 2018.

15. Investment Property

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

(In millions of won)

		2019	2018
Beginning balance	₩	1,400	2,468
Depreciation		(37)	(84)
Transfer[1]		(1,105)	(984)
Ending balance		258	1,400
Acquisition cost		511	2,911
Accumulated depreciation		(253)	(1,511)
	₩	258	1,400

[1] Certain investment property was transferred to property, plant and equipment during the year ended December 31, 2019 and 2018

(2) The depreciation expense of ₩37 million was charged to cost of sales for the year ended December 31, 2019 (2018: ₩84 million).

(3) Rental income from investment property during the year ended December 31, 2019 was ₩123 million (2018: ₩308 million).

16. Other Payables

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

(In millions of won)

		2019	2018
Current			
Accrued expenses	₩	1,088,225	1,704,766
Non-current			
Rent deposits payable		14,458	15,008
Long-term accrued expenses		770	1,096
		15,228	16,104
	₩	1,103,453	1,720,870

17. Borrowings

(1) Details of borrowings as of December 31, 2019 and 2018, are as follows:

(In millions of won)

		2019	2018
Current			
Short-term borrowings	₩	784,237	-
Current portion of long-term borrowings[1]		609,175	578,320
Current portion of debentures		309,823	449,850
		1,703,235	1,028,170
Non-current			
Long-term borrowings		2,015,181	2,040,073
Debentures		2,745,365	1,506,068
		4,760,546	3,546,141
	₩	6,463,781	4,574,311

[1] As of December 31, 2018, the current portion of long-term borrowings and long-term borrowings include finance lease liabilities amounting to ₩10,177 million and ₩56,580 million, respectively, in accordance with K-IFRS No. 1017. Meanwhile, as a result of the transition to K-IFRS No. 1116, lease liabilities are presented separately from borrowings in the separate statement of financial position as of December 31, 2019.

(2) Details of short-term borrowings as of December 31, 2019 and 2018 are as follows:

(In millions of won)

	Financial institutions	Maturity date	Interest rate per annum in 2019 (%)		2019	2018
Usance	Hana Bank and others	2020.04.20 ~ 2020.05.15	2.91 ~ 2.92	₩	569,164	-
General borrowings	Hyundai Card	2020.01.17 ~ 2020.03.18	1.94 ~ 1.96		215,073	-
			.	₩	784,237	-

17. Borrowings, Continued

(3) Details of long-term borrowings as of December 31, 2019 and 2018 are as follows:

(In millions of won)	Financial institutions	Maturity date	Interest rate per annum in 2019 (%)[1]		2019	2018
Local currency borrowings:						
Funds for equipment	Korea Development Bank	2021.09.29 ~ 2022.04.07	2.02 ~ 2.50	₩	500,000	500,000
Finance lease liabilities[2]	Hansu Technical Service Ltd.	-	-		-	66,757
					500,000	566,757
Foreign currency borrowings:						
General borrowings	The Export-Import Bank of Korea	2021.05.31	3M JPY LIBOR + 0.57		850,776	810,544
Funds for equipment	The Export-Import Bank of Korea	2020.10.27 ~ 2022.03.10	3M USD LIBOR + 1.03 ~1.40		607,845	866,529
	Woori Bank	2020.03.11	3M USD LIBOR + 0.98		43,417	125,786
	NongHyup Bank	-	-		-	22,362
	Hana Bank	-	-		-	44,724
	Korea Development Bank	2020.06.30 ~ 2026.10.02	3M USD LIBOR + 0.95 ~1.10		622,318	181,691
					2,124,356	2,051,636
					2,624,356	2,618,393
Less: Current portion[2]					(609,175)	(578,320)
				₩	2,015,181	2,040,073

[1] As of December 31, 2019, the benchmark interest rates are as follows:

Type	Interest rate per annum as of December 31, 2019
3M USD LIBOR	1.91%
3M JPY LIBOR	-0.05%

[2] As of December 31, 2018, finance lease borrowings are subject to finance lease liabilities in accordance with K-IFRS No. 1017. As a result of the transition to K-IFRS No. 1116, lease liabilities are presented separately from borrowings in the separate statements of financial position as of December 31, 2019.

(4) Details of debentures as of December 31, 2019 and 2018 are as follows:

(In millions of won)	Maturity date	Interest rate per annum in 2019 (%)		2019	2018
Unsecured notes in local currency:					
Unsecured corporate bonds 212th	2019.05.30	-	₩	-	450,000
Unsecured corporate bonds 214-1st	2020.08.26	2.27		210,000	210,000
Unsecured corporate bonds 214-2nd	2022.08.26	2.63		140,000	140,000
Unsecured corporate bonds 215-2nd	2020.11.25	2.56		100,000	100,000
Unsecured corporate bonds 215-3rd	2022.11.25	2.75		10,000	10,000
Unsecured corporate bonds 216-2nd	2021.02.19	2.22		180,000	180,000
Unsecured corporate bonds 216-3rd	2023.02.19	2.53		80,000	80,000
Unsecured corporate bonds 217-2nd	2021.05.27	2.30		150,000	150,000
Unsecured corporate bonds 218th	2023.03.14	3.01		300,000	300,000
Unsecured corporate bonds 219-1st	2023.08.27	2.48		250,000	250,000
Unsecured corporate bonds 219-2nd	2025.08.27	2.67		90,000	90,000
Unsecured corporate bonds 220-1st	2022.05.09	1.96		410,000	-
Unsecured corporate bonds 220-2nd	2024.05.09	1.99		200,000	-
Unsecured corporate bonds 220-3rd	2026.05.09	2.17		120,000	-
Unsecured corporate bonds 220-4rd	2029.05.09	2.54		250,000	-
				2,490,000	1,960,000
Unsecured notes in foreign currency:					
Unsecured global bonds 9th	2024.09.17	3.00		578,900	-
				3,068,900	1,960,000
Less: Discounts on debentures				(13,712)	(4,082)
Less: Current portion				(309,823)	(449,850)
			₩	2,745,365	1,506,068

18. Other Current and Non-current Liabilities

Details of other current and non-current liabilities as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Current			
Advance receipts	₩	85	225
Unearned income		32	44
Withholdings		41,414	36,641
Contract liabilities		125,211	121,569
		166,742	158,479
Non-current			
Other long-term employee benefits		79,323	71,280
Long-term advance receipts		4,900	4,900
		84,223	76,180
	₩	250,965	234,659

19. Provisions

(1) Details of changes in provisions for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019				
		Beginning balance	Increase	Utilization	Reversal	Ending balance
Purchase commitments	₩	11,345	154	-	-	11,499
Warranty		3,912	45	(36)	-	3,921
Legal claims		5,881	-	(5,881)	-	-
Emission allowances		46,335	-	(2,702)	(37,013)	6,620
	₩	67,473	199	(8,619)	(37,013)	22,040

(In millions of won)

		2018			
		Beginning balance	Increase	Utilization	Ending balance
Purchase commitments	₩	7,316	4,029	-	11,345
Warranty		3,763	6,695	(6,546)	3,912
Legal claims		9,460	5,881	(9,460)	5,881
Emission allowances		37,412	8,923	-	46,335
	₩	57,951	25,528	(16,006)	67,473

(2) Accrual for loss on purchase commitment

The Company is committed to purchase wafers (semi-finished goods) from its overseas subsidiary, SK hynix Semiconductor (China) Ltd. For the work-in-process that will be purchased from the subsidiary, the Company records provisions for expected losses if the total manufacturing costs are expected to exceed the sale price of finished goods at the end of reporting period.

(3) Provisions for warranty

The Company estimates the expected warranty costs based on historical results and accrues provisions for warranty.

(4) Provisions for legal claims

The Company recognizes provisions for legal claims when the Company 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 the amount can be reliably estimated.

(5) Provision for emission allowances

The Company recognizes estimated future payment for the number of emission certificates required to settle the Company's obligation exceeding the actual number of certificates on hand as emission allowances according to the *Act on Allocation and Trading of Greenhouse Gas Emission Permits.*

20. Defined Benefit Liabilities

Under the defined benefit plan, the Company pays employee benefits to retired employees in the form of a lump sum based on their salaries and years of service at the time of their retirement. Accordingly, the Company is exposed to a variety of actuarial assumption risks such as risk associated with expected years of service, interest risk, and market (investment) risk.

(1) Details of defined benefit liabilities (assets) as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Present value of defined benefit obligations	₩	1,866,053	1,550,464
Fair value of plan assets		(1,813,562)	(1,555,045)
Net defined benefit liabilities (assets)	₩	52,491	(4,581)
Defined benefit liabilities		52,491	-
Defined benefit assets[1]		-	4,581

[1] The Company's fair value of plan assets in excess of the present value of defined benefit obligations, presented as employee benefit assets, amounted to ₩4,581 million as of December 31, 2018.

(2) Principal actuarial assumptions as of December 31, 2019 and 2018 are as follows:

	2019(%)	2018(%)
Discount rate for defined benefit obligations	3.41	3.78
Expected rate of salary increase	5.55	5.55

(3) Weighted average durations of defined benefit obligations as of December 31, 2019 and 2018 are 11.52 and 11.67 years, respectively.

(4) Changes in defined benefit obligations for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Beginning balance	₩	1,550,464	1,285,003
Current service cost		207,858	170,942
Interest expense		57,699	54,507
Transfer from associates		1,710	777
Remeasurements:		97,131	74,229
Demographic assumption		120	3,197
Financial assumption		74,371	99,514
Adjustment based on experience		22,640	(28,482)
Benefits paid		(48,809)	(34,994)
Ending balance	₩	1,866,053	1,550,464

20. Defined Benefit Liabilities, Continued

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

(In millions of won)

		2019	2018
Beginning balance	₩	1,555,045	1,298,388
Contributions		260,000	265,000
Interest income		57,824	55,107
Transfer from associates		2,517	1,578
Benefits paid		(35,571)	(33,445)
Remeasurements		(26,253)	(31,583)
Ending balance	₩	1,813,562	1,555,045

(6) The amounts recognized in profit or loss for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Current service cost	₩	207,858	170,942
Net interest cost		(125)	(600)
	₩	207,733	170,342

(7) The amounts in which defined benefit plan related expenses are included for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Cost of sales	₩	111,472	95,042
Selling and administrative expenses		96,261	75,300
	₩	207,733	170,342

(8) Details of plan assets as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Deposits	₩	1,812,335	1,553,765
Others		1,227	1,280
	₩	1,813,562	1,555,045

Actual return on plan assets for the years ended December 31, 2019 and 2018 amounted to ₩31,571 million and ₩23,524 million, respectively.

20. Defined Benefit Liabilities, Continued

(9) As of December 31, 2019, the Company funded defined benefit obligations through insurance plans with Mirae Asset Life Insurance Co., Ltd. and other insurance companies. The Company's reasonable estimation of contribution to the plan assets for the year ending December 31, 2020 is ₩186,000 million under the assumption that the Company maintains the defined benefit plan.

(10) The sensitivity analysis of the defined benefit obligations as of December 31, 2019 to changes in the principal assumptions is as follows:

(In millions of won)

	Effects on defined benefit obligation	
	Increase of rate	**Decrease of rate**
Discount rate (if changed by 1%)	₩ (191,211)	225,331
Expected salary increase rate (if changed by 1%)	224,054	(193,722)

The sensitivity analysis does not consider dispersion of all cash flows that are expected from the plan and provides approximate values of sensitivity for the assumptions used.

(11) Information about the maturity profile of the defined benefit obligation as of December 31, 2019 is as follows:

(In millions of won)

	Less than 1 year	2 - 5 years	6 - 10 years	More than 11 years	Total
Benefits paid	₩ 57,192	331,857	593,781	1,776,905	2,759,735

Information about the maturity profile is based on the undiscounted and vested amount of defined benefit obligation as of December 31, 2019, and classified by employee's expected years of remaining services.

(12) The Company adopted defined contribution plan for retirement benefit for employees subject to peak wage system. Contributions to defined contribution plans amounting to ₩406 million (2018: ₩192 million) was expensed for the year ended December 31, 2019.

21. Deferred income tax

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

(In millions of won)

		2019			
		January 1, 2019	**Profit or loss**	**Equity**	**December 31, 2019**
Inventories, net	₩	96,844	74,499	-	171,343
Property, plant and equipment, net		(46,091)	10,095	-	(35,996)
Defined benefits liabilities, net		-	(25,293)	33,931	8,638
Short-term investment assets, long-term investment assets, and others		(32,985)	5,410	-	(27,575)
Employee benefits		38,975	6,567	-	45,542
Provisions		18,555	(12,494)	-	6,061
Other assets and other liabilities		24,079	(12,865)	-	11,214
Accrued expenses		48,883	43,526	-	92,409
Others		8,285	(1,759)	-	6,526
Deferred tax assets recognized	₩	156,545	87,686	33,931	278,162

(In millions of won)

		2018			
		January 1, 2018	**Profit or loss**	**Equity**	**December 31, 2018**
Inventories, net	₩	45,272	51,572	-	96,844
Property, plant and equipment, net		(47,173)	1,082	-	(46,091)
Defined benefits liabilities, net		-	(29,098)	29,098	-
Short-term investment assets, long-term investment assets, and others		43,191	(76,176)	-	(32,985)
Employee benefits		33,272	5,703	-	38,975
Provisions		15,937	2,618	-	18,555
Other assets and other liabilities		12,415	11,664	-	24,079
Accrued expenses		13,641	35,242	-	48,883
Others		19,736	(11,451)	-	8,285
Deferred tax assets recognized	₩	136,291	(8,844)	29,098	156,545

(2) As of December 31, 2019 and 2018, the temporary differences that are not recognized as deferred tax assets (liabilities) are as follows:

(In millions of won)

		2019	**2018**
Investments in subsidiaries, associates, and joint ventures and others	₩	1,560,864	1,559,065

22. Derivative Financial Instruments

(1) Details of derivative financial instruments applying cash flow hedge accounting for the year ended December 31, 2019 is as follows:

(In millions of foreign currencies)

Hedged items			Hedging instruments		
Borrowing date	**Financial instrument**	**Hedged risk**	**Type of contract**	**Financial institution**	**Contract period**
2019.09.17	Foreign currency denominated bond with fixed rate (Par value: USD 500,000)	Foreign currency risk	Fixed-to-fixed cross currency swap	Kookmin Bank and other	2019.09.17~ 2024.09.17
2019.10.02	Foreign currency denominated borrowing for equipment with floating rate (Par value: USD 500,000)	Foreign currency and interest rate risk	Floating-to-fixed cross currency interest rate swap	Korea Development Bank	2019.10.02~ 2026.10.02

(2) The derivative financial instruments held by the Company are presented in non-current other financial liabilities in the separate financial statements of financial position and the details are as follows:

(In millions of won and millions of foreign currencies)

Type of contract	Hedged items		Cash flow hedge	Fair value
Fixed-to-fixed cross currency swap	Foreign currency denominated bond with fixed rate (Par value: USD 500,000)	₩	10,572	10,572
Floating-to-fixed cross currency interest rate swap	Foreign currency denominated borrowing for equipment with floating rate (Par value: USD 500,000)		4,960	4,960
		₩		15,532

As of December 31, 2019, changes of fair value of the derivative is recognized in other comprehensive income as all of designated hedging instruments are effective for foreign currency risk or foreign currency and interest rate risk.

23. Capital Stock, Capital Surplus and Other Equity

(1) The Company has 9,000,000,000 authorized shares and the face value per share is ₩5,000 as of December 31, 2019. The number of shares issued, common stock, capital surplus and other capital as of December 31, 2019 and 2018 are as follows:

(In millions of won and thousands of shares)

		2019	2018
Issued shares[1]		731,530	731,530
Capital stock:			
Common stock	₩	3,657,652	3,657,652
Capital surplus:			
Additional paid in capital		3,625,797	3,625,797
Others		557,767	557,767
		4,183,564	4,183,564
Other equity:			
Acquisition cost of treasury shares		(2,508,427)	(2,508,427)
Stock option		3,714	1,976
	₩	(2,504,713)	(2,506,451)
Number of treasury shares		44,001	44,001

[1] As of December 31, 2019, the number of outstanding shares is 728,002 thousand shares, which differs from total issued shares due to the effect of stock retirement.

(2) The number of outstanding shares, which deducted treasury shares held by the Company from listed shares, is 684,002 thousands as of December 31, 2019 and 2018.

24. Accumulated other comprehensive income

(1) Details of accumulated other comprehensive income as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Gain on valuation of derivatives	₩	12,753	-

(2) Changes in accumulated other comprehensive income for the years ended December 31, 2019 are as follows:

(In millions of won)

		Beginning balance	Change	Ending balance
Gain on valuation of derivatives	₩	-	12,753	12,753

25. Retained Earnings and Dividends

(1) Details of retained earnings as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Legal reserve[1]	₩	281,554	178,954
Discretionary reserve[2]		235,506	235,506
Unappropriated retained earnings		40,177,905	39,911,668
	₩	40,694,965	40,326,128

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

(2) Statement of Appropriations of Retained Earnings

(In millions of won, except for cash dividend per common stock)

		2019	2018
Retained earnings before appropriations			
Unappropriated retained earnings carried over from the prior year	₩	38,783,065	24,592,032
Remeasurements of defined benefit liability		(89,454)	(76,715)
Adjustments on initial application of K-IFRS No. 1109		-	(10,735)
Profit for the year		1,484,294	15,407,086
		40,177,905	39,911,668
Appropriation of retained earnings[1]			
Earned surplus reserve		68,400	102,600
Cash dividend (2019: ₩1,000 per share, 20% on par value, 2018: ₩1,500 per share, 30% on par value)		684,002	1,026,003
		752,402	1,128,603
Unappropriated retained earnings carried forward to the subsequent year	₩	39,425,503	38,783,065

[1] For the years ended December 31, 2019 and 2018, the date of appropriation is March 20, 2020 and March 22, 2019, respectively.

(3) Dividends

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

(In millions of won and in thousands of shares)

		2019	2018
Type of dividends		Cash dividends	Cash dividends
Outstanding ordinary shares		684,002	684,002
Par value (in won)	₩	5,000	5,000
Dividend rate		20%	30%
Total dividends	₩	684,002	1,026,003

25. Retained Earnings and Dividends, Continued

(b) Dividend payout ratio for the years ended December 31, 2019 and 2018 is as follows:

(In millions of won)

		2019	2018
Dividends	₩	684,002	1,026,003
Profit for the year		1,484,294	15,407,086
Dividend payout ratio		46.08%	6.66%

(c) Dividend yield ratio for the years ended December 31, 2019 and 2018 is as follows:

(In won)

		2019	2018
Dividends per share	₩	1000	1,500
Closing stock price		94,100	60,500
Dividend yield ratio		1.06%	2.48%

26. Revenue

(1) Details of the Company's revenue for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Sale of goods	₩	25,101,668	40,121,456
Providing services		219,087	203,195
	₩	25,320,755	40,324,651

(2) Details of the Company's revenue by product and service types for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
DRAM	₩	19,778,764	32,440,910
NAND Flash		4,954,952	7,543,310
Others		587,039	340,431
	₩	25,320,755	40,324,651

(3) Details of the Company's revenue by the timing of revenue recognition are as follows:

(In millions of won)

		2019	2018
Performance obligations satisfied at a point in time	₩	25,101,668	40,121,456
Performance obligations satisfied over time		219,087	203,195
	₩	25,320,755	40,324,651

26. Revenue, Continued

(4) Revenue recognition policies and performance obligations

Revenue is measured based on the promised consideration specified in a contract with a customer. The Company recognizes revenue when the Company transfers a promised good or service to a customer.

Revenue recognition policies regarding the nature and timing of performance obligation satisfaction in the contract are as follows:

	Nature and timing of performance obligation satisfaction.	Revenue recognition policies
Sale of goods	Revenue is recognized when the customer obtains control of that asset, which is typically upon delivery or shipment depending on the terms of the contract. When the good is defective, the customer is granted the right to return the defective goods in exchange for a functioning product or cash.	Revenue is measured at the amount of consideration for the sale of goods, reflecting the expected amount of return estimated through historical information. The Company's right to recover products from customers and refund liability are recognized. Refund liability is initially measured at the former carrying amount of the product less any expected costs to recover those products. Refund liability is included in other current liabilities (See note 18) and right to recover products from customers is included in other current assets (See note 9). The Company reviews its estimate of expected returns at the end of each reporting period and updates the amounts of the asset and liabilities accordingly.

27. Selling and Administrative Expenses

Selling and administrative expenses for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Selling and administrative expenses:			
Salaries	₩	347,191	416,894
Defined benefit plan		31,056	25,291
Employee benefits		100,002	79,492
Commission		414,222	338,696
Depreciation		167,572	115,005
Amortization		676,105	436,615
Freight and custody charges		20,016	12,870
Legal cost		29,834	33,025
Rental		2,734	2,275
Taxes and dues		8,152	5,590
Training		39,238	29,772
Advertising		92,256	91,591
Utilities		7,595	7,428
Supplies		88,802	92,764
Repair		26,354	22,078
Travel and transportation		9,404	9,230
Sales promotion		5,689	4,552
Sales repair		45	6,695
Others		20,013	21,094
		2,086,280	1,750,957
Research and development:			
Expenditure on research and development		3,196,361	2,901,360
Development cost capitalized		(332,888)	(610,954)
		2,863,473	2,290,406
	₩	4,949,753	4,041,363

28. Expenses by Nature

Nature of expenses for the years ended December 31, 2019 and 2018 is as follows:

(In millions of won)

		2019	2018
Changes in finished goods and work-in-process	₩	(427,259)	(1,227,731)
Raw materials, supplies and consumables		8,062,746	7,038,896
Employee benefit		2,685,762	3,080,045
Depreciation and others		7,027,836	5,407,218
Royalty		137,157	172,615
Commission		1,704,391	1,360,983
Utilities		1,075,253	927,478
Repair		771,281	797,887
Outsourcing		1,531,063	1,367,439
Others		769,286	820,743
Total[1]	₩	23,337,516	19,745,573

[1] Total expenses consist of cost of sales and selling and administrative expenses.

29. Finance Income and Expenses

Finance income and expenses for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Finance Income:			
Interest income	₩	21,945	51,761
Dividend income		26,737	49,017
Foreign exchange differences[1]		813,993	986,705
Gain on valuation of short-term investment assets		4,755	9,140
Gain on valuation of long-term investment assets		2,657	182,384
Gain on disposal of short-term investment assets		31,053	18,055
Gain on disposal of long-term investment assets		1,160	5,504
		902,300	1,302,566
Finance Expenses:			
Interest expense		125,051	90,907
Foreign exchange differences[1]		640,319	651,881
Loss on valuation of long-term investment assets		237,417	667
Loss on disposal of long-term investment assets		786	-
		1,003,573	743,455
Net finance income (expenses)	₩	(101,273)	559,111

[1] Foreign exchange differences related to fair value of long-term investment assets amounting to ₩207,878 million and ₩86,594 million are included for the years ended December 31, 2019 and 2018, respectively.

30. Other Income and Expenses

(1) Other income for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Gain on disposal of property, plant and equipment	₩	71,340	40,674
Gain on disposal of investment in subsidiaries		31,513	18,008
Others		5,882	8,910
	₩	108,735	67,592

(2) Other expenses for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Loss on disposal of property, plant and equipment	₩	97,318	73,550
Loss on disposal of intangible assets		7,653	5,409
Loss on disposal of trade receivables		1,197	1,598
Loss on impairment of intangible assets		71	4,482
Loss on disposal of investments in associates		1,799	-
Donation		44,778	60,642
Others		24,284	32,698
	₩	177,100	178,379

31. Income Tax Expense

(1) Income tax expense for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Current tax:			
Current tax on profits for the year	₩	494,762	5,630,654
Adjustments for the current tax liabilities attributable to prior year, but recognized in current year		(77,769)	(19,182)
		416,993	5,611,472
Deferred tax:			
Changes in net deferred tax assets		(87,686)	8,844
Income tax expense	₩	329,307	5,620,316

(2) The relationship between tax expense and accounting profit for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Profit before income tax	₩	1,813,601	21,027,402
Tax calculated at statutory income tax rates		488,378	5,772,173
Tax effects of:			
Tax-exempt income		(36,604)	(35,291)
Non-deductible expenses		9,435	5,208
Change in unrecognized deferred tax assets		495	4,368
Tax credits		(101,210)	(172,742)
Adjustments for the current tax liabilities attributable to prior year, but recognized in current year		(77,769)	(19,182)
Others		46,582	65,782
Income tax expense	₩	329,307	5,620,316

(3) Income taxes recognized in other comprehensive income (loss) for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Remeasurements of defined benefit liabilities	₩	33,931	29,098
Gain on valuation of derivatives		(4,837)	-
	₩	29,094	29,098

32. Earnings per Share

Basic earnings per share is calculated by dividing the profit attributable to ordinary shareholders of the Company by the weighted average number of outstanding ordinary shares during the years.

(1) Basic earnings per share for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won, except for shares and per share information)

		2019	2018
Profit attributable to ordinary shareholders	₩	1,484,294	15,407,086
Weighted average number of outstanding ordinary shares[1]		684,001,795	698,278,083
Basic earnings per share (in won)	₩	2,170	22,064

[1] Weighted average number of outstanding ordinary shares is calculated as follows:

(In shares)

	2019	2018
Outstanding ordinary shares	728,002,365	728,002,365
Acquisition of treasury shares	(44,000,570)	(29,724,282)
Weighted average number of outstanding ordinary shares	684,001,795	698,278,083

(2) Diluted earnings per share for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won, except for shares and per share information)

		2019	2018
Profit attributable to ordinary shareholders	₩	1,484,294	15,407,086
Weighted average number of diluted outstanding ordinary shares[1]		684,089,944	698,364,251
Diluted earnings per share (in won)	₩	2,170	22,062

[1] Weighted average number of diluted ordinary shares outstanding is calculated as follows:

(In shares)

	2019	2018
Weighted average number of outstanding ordinary shares	684,001,795	698,278,083
Stock options	88,149	86,168
Weighted average number of diluted outstanding ordinary shares	684,089,944	698,364,251

33. Transactions with Related Parties and Others

(1) Details of related parties as of December 31, 2019 are as follows:

Type	Name of related parties
Subsidiaries	SK Hynix America In. and other 31 entities[1]
Associates[2]	Stratio, Inc., SK China Company Limited, Gemini Partners Pte. Ltd., TCL Fund, SK South East Asia Investment Pte. Ltd., Hushan Xinju (Chengdu) Venture Investment Center (Smartsource) WooYoung Farm Co., Ltd.
Joint ventures[3]	HITECH Semiconductor (Wuxi) Co., Ltd., Hystars Semiconductor (Wuxi) Co., Ltd.
Other related parties	SK Telecom Co., Ltd., which has significant influence over the Company, SK Holdings Co., Ltd., which has control over SK Telecom Co., Ltd., and their subsidiaries

[1] MMT (Money Market Trust) was excluded from related to party transactions.
[2] Associates of subsidiaries are included.
[3] Joint venture of a subsidiary is included.

33. Transactions with Related Parties and Others, Continued

(2) Subsidiaries of the Company as of December 31, 2019 are as follows:

Company	Controlling company	Remarks
SK hyeng Inc.	SK hynix, Inc.	Domestic subsidiary
SK hystec Inc.	SK hynix, Inc.	Domestic subsidiary
Happymore Inc.	SK hynix, Inc.	Domestic subsidiary
SK hynix system ic Inc.	SK hynix, Inc.	Domestic subsidiary
Happynarae Co., Ltd.	SK hynix, Inc.	Domestic subsidiary
SK hynix America Inc.	SK hynix, Inc.	Overseas sales subsidiary
SK hynix Deutschland GmbH	SK hynix, Inc.	Overseas sales subsidiary
SK hynix Asia Pte. Ltd.	SK hynix, Inc.	Overseas sales subsidiary
SK hynix Semiconductor Hong Kong Ltd.	SK hynix, Inc.	Overseas sales subsidiary
SK hynix U.K. Ltd.	SK hynix, Inc.	Overseas sales subsidiary
SK hynix Semiconductor Taiwan Inc.	SK hynix, Inc.	Overseas sales subsidiary
SK hynix Japan Inc.	SK hynix, Inc.	Overseas sales subsidiary
SK hynix Semiconductor (Shanghai) Co., Ltd.	SK hynix, Inc.	Overseas sales subsidiary
SK hynix Semiconductor India Private Ltd.	SK hynix Asia Pte. Ltd.	Overseas sales subsidiary
SK hynix (Wuxi) Semiconductor Sales Ltd.	SK hynix, Inc.	Overseas sales subsidiary
SK hynix Semiconductor (China) Ltd.	SK hynix, Inc.	Overseas manufacturing subsidiary
SK hynix Semiconductor (Chongqing) Ltd.	SK APTECH Ltd.	Overseas manufacturing subsidiary
SK hynix Italy S.r.l	SK hynix, Inc.	Overseas R&D center
SK hynix memory solutions America Inc.	SK hynix, Inc.	Overseas R&D center
SK hynix memory solutions Taiwan Ltd.	SK hynix, Inc.	Overseas R&D center
SK hynix memory solutions Eastern Europe LLC.	SK hynix, Inc.	Overseas R&D center
SK APTECH Ltd.	SK hynix, Inc.	Overseas investing subsidiary
SK hynix Ventures Hong Kong Ltd.	SK hynix, Inc.	Overseas investing subsidiary
SK hynix (Wuxi) Investment Ltd.	SK hynix Semiconductor (China) Ltd.	Overseas investing subsidiary
SK hynix (Wuxi) Industry Development Ltd.	SK hynix (Wuxi) Investment Ltd.	Other overseas subsidiary
SK hynix Happiness (Wuxi) Hospital Management Ltd.	SK hynix (Wuxi) Investment Ltd.	Other overseas subsidiary
SK hynix system ic (Wuxi) Co., Ltd.	SK hynix system ic Inc.	Overseas manufacturing subsidiary
SK hynix cleaning (Wuxi) Ltd.	SK hynix (Wuxi) Investment Ltd.	Other overseas subsidiary
SUZHOU HAPPYNARAE Co., Ltd.	Happynarae Co., Ltd.	Other overseas subsidiary
CHONGQING HAPPYNARAE Co., Ltd.	SUZHOU HAPPYNARAE Co., Ltd.	Other overseas subsidiary
SkyHigh Memory Limited	SK hynix system ic Inc.	Overseas manufacturing subsidiary
SK hynix (Wuxi) Education Technology Co., Ltd.	SK hynix (Wuxi) Investment Ltd.	Other overseas subsidiary

33. Transactions with Related Parties and Others, Continued

(3) Significant transactions for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019			
	Company	**Operating revenue and others**	**Operating expense and others**	**Asset acquisition**	**Dividend income**
Subsidiaries	Domestic subsidiary	₩ 238,565	1,168,531	162,190	9,200
	Overseas sales subsidiaries	24,985,704	306,209	1,071,623	2,288
	Overseas manufacturing subsidiaries[1]	171,936	3,447,187	34,397	-
	Overseas R&D centers	732	219,241	-	433
Associate	SK China Company Limited	-	10,954	-	-
Joint venture	HITECH Semiconductor (Wuxi) Co., Ltd.	1,040	656,689	-	14,458
Other related parties	SK Telecom Co., Ltd.[2]	255	240,453	6,069	-
	SK Holdings Co., Ltd.[3]	15,470	239,987	200,136	-
	SK Engineering & Construction Co., Ltd.	126	1,249	1,597,712	-
	SK Energy Co., Ltd.	1,144	73,301	-	-
	SK Networks Co., Ltd.	-	6,456	-	-
	SKC Solmics Co., Ltd.	-	35,847	160	-
	Chungcheong energy service Co., Ltd.	20	26,991	-	-
	SK Materials Co., Ltd.	4	69,658	-	-
	SK Siltron Co., Ltd	3,059	218,189	-	-
	SK Airgas Co., Ltd.	-	72,673	-	-
	Others	250	326,416	35,095	-
		₩ 25,418,305	7,120,031	3,107,382	26,379

[1] Operating revenue and others in overseas manufacturing subsidiaries for the year ended December 31, 2019 include proceeds from asset disposal that amount to ₩166,166 million.
[2] Operating expense and others include dividend payments of ₩219,200 million.
[3] For the year ended December 31, 2019 royalty on the use of the SK brand amounted to ₩80,566 million.

33. Transactions with Related Parties and Others, Continued

(3) Significant transactions for the years ended December 31, 2019 and 2018 are as follows, Continued:

(In millions of won)

		2018			
	Company	**Operating revenue and others**	**Operating expense and others**	**Asset acquisition**	**Dividend income**
Subsidiaries	Domestic subsidiary	₩ 238,253	1,161,402	241,285	22,500
	Overseas sales subsidiaries	39,637,916	244,322	2,319,396	11,056
	Overseas manufacturing subsidiaries [1]	32,753	2,645,213	86,880	-
	Overseas R&D centers	110	234,484	117	219
Associate	SK China Company Limited	-	9,699	-	-
Joint venture	HITECH Semiconductor (Wuxi) Co., Ltd.	3,329	621,980	1,901	13,120
Other related parties	SK Telecom Co., Ltd.[2]	313	161,158	42,287	-
	SK Holdings Co., Ltd.[3]	383	202,256	495,995	-
	ESSENCORE Limited	940	-	-	-
	SK Engineering & Construction Co., Ltd.	304	25,461	2,111,699	-
	SK Energy Co., Ltd.	1,106	70,636	-	-
	SK Networks Co., Ltd.	-	2,702	10,600	-
	SKC Solmics Co., Ltd.	-	5,778	1,098	-
	Chungcheong energy service Co., Ltd.	-	18,945	203	-
	SK Materials Co., Ltd.	-	57,530	-	-
	SK Siltron Co., Ltd	3,100	167,952	-	-
	SK Airgas Co., Ltd.	-	37,608	259	-
	Others	117	232,860	53,023	-
		₩ 39,918,624	5,899,986	5,364,743	46,895

[1] Operating revenue and others in overseas manufacturing subsidiaries for the year ended December 31, 2018 include proceeds from asset disposal that amount to ₩27,119 million.
[2] Operating expense and others include dividend payments of ₩146,100 million.
[3] For the year ended December 31, 2018 royalty on the use of the SK brand amounted to ₩60,374 million.

33. Transactions with Related Parties and Others, Continued

(4) The balances of significant transactions as of December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	
	Company	**Trade receivables and others**	**Other payables and others**
Subsidiaries	Domestic subsidiaries	₩ 21,646	187,028
	Overseas sales subsidiaries	3,556,293	247,976
	Overseas manufacturing subsidiaries	45,539	450,126
	Overseas R&D centers	30	17,060
Associate	SK China Company Limited	-	10,883
Joint venture	HITECH Semiconductor (Wuxi) Co., Ltd.	22	116,385
Other related parties	SK Telecom Co., Ltd.	46	5,602
	SK Holdings Co., Ltd.	1,362	141,794
	SK Engineering & Construction Co., Ltd.	-	754,542
	SK Energy Co., Ltd.	37	24,203
	SK Networks Co., Ltd.	-	1,068
	SKC Solmics Co., Ltd.	-	14,951
	Chungcheong energy service Co., Ltd.	-	3,599
	SK Materials Co., Ltd.	-	6,792
	SK Siltron Co., Ltd.[1]	96,438	15,230
	SK Airgas Co., Ltd.	-	277,059
	Others	19	97,594
		₩ 3,721,432	2,371,892

[1] Trade receivable and others include ₩96,216 million advance paid for the purchase of wafers (See note 34-(9)).

33. Transactions with Related Parties and Others, Continued

(4) The balances of significant transactions as of December 31, 2019 and 2018 are as follows, Continued:

(In millions of won)

		2018	
	Company	Trade receivables and others	Other payables and others
Subsidiaries	Domestic subsidiaries	₩ 19,940	246,165
	Overseas sales subsidiaries	6,290,142	766,016
	Overseas manufacturing subsidiaries	117,893	600,493
	Overseas R&D centers	25	40,567
Associate	SK China Company Limited	-	9,060
Joint venture	HITECH Semiconductor (Wuxi) Co., Ltd.	5	102,733
Other related parties	SK Telecom Co., Ltd.	89	12,840
	SK Holdings Co., Ltd.	21	138,453
	SK Engineering & Construction Co., Ltd.	28	668,307
	SK Energy Co., Ltd.	33	9,005
	SK Networks Co., Ltd.	-	962
	SKC Solmics Co., Ltd.	-	3,771
	Chungcheong energy service Co., Ltd.	-	3,644
	SK Materials Co., Ltd.	-	16,630
	SK Siltron Co., Ltd.	150,246	15,960
	SK Airgas Co., Ltd.	-	24,026
	Others	1	67,177
		₩ 6,578,423	2,725,809

(5) Key management compensation

The Company considers registered directors who have authority and responsibility for planning, directing and controlling the activities of the Company as key management. The compensation paid to key management for employee services for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

Details	2019	2018
Salaries	₩ 3,849	2,999
Defined benefit plan related expenses	406	351
Share-based payment	954	51
	₩ 5,209	3,401

33. Transactions with Related Parties and Others, Continued

(6) The significant transactions between the Company and the companies that are in the same conglomerate group according to '*Fair Trade Law*' as of December 31, 2019 and 2018 are as follows. These entities are not related parties according to K-IFRS No. 1024, '*Related Party Disclosures*'.

(In millions of won)

	2019				
	Company	**Operating revenue and others**	**Operating expense and others**	**Asset acquisition**	**Dividend income**
Companies in the Conglomerate	SK Chemicals Co., Ltd.	₩ -	1,507	-	-
	SK Bioscience Co., Ltd	-	68	-	-
		₩ -	1,575	-	-

(In millions of won)

	2018				
	Company	**Operating revenue and others**	**Operating expense and others**	**Asset acquisition**	**Dividend income**
Companies in the Conglomerate	SK Chemicals Co., Ltd.	₩ -	1,208	-	-
	SK Bioscience Co., Ltd	-	32	-	-
		₩ -	1,240	-	-

(7) The balances of significant transactions between the Company and the companies that are in the same conglomerate group designated by '*Fair Trade Law*'. The details of the balances as of December 31, 2019 and 2018 are as follows. These entities are not related parties according to K-IFRS No. 1024, '*Related Party Disclosures*'.

(In millions of won)

	2019		
	Company		**Other payables and others**
Companies in the Conglomerate	SK Chemicals Co., Ltd.	₩	114

(In millions of won)

	2018		
	Company		**Other payables and others**
Companies in the Conglomerate	SK Chemicals Co., Ltd.	₩	331

(8) The Company's establishments of subsidiaries and additional contributions to associates during the year ended December 31, 2019 are presented in note 10.

34. Commitments and Contingencies

(1) The details of litigations and claims of the Company as of December 31, 2019 are as follows:

(a) Lawsuit from Netlist, Inc.
Netlist, Inc. filed lawsuits against the Company, SK hynix America Inc. and SK hynix memory solutions America Inc. alleging infringement of multiple patents to the U.S. District Court for the Central District of California, on August 31, 2016 and on June 14, 2017, to the U.S. International Trade Commission ("ITC") on September 1, 2016 and October 31, 2017.

Meanwhile, the lawsuit filed to the U.S. ITC on September 1, 2016 was provisionally concluded on January 16, 2018 that the Company and its subsidiaries, SK hynix America Inc. and SK hynix memory solutions America Inc., did not infringe the patents of Netlist, Inc. Against the conclusion, Netlist, Inc. filed a petition on March 26, 2018. As the U.S. Federal Court of Appeals rejected Netlist, Inc.'s appeal on December 12, 2019, the ruling that the Parent Company and its subsidiaries, SK hynix America Inc. and SK hynix memory solutions America Inc., did not infringe the patent was finalized.

Regarding the lawsuit filed to the U.S. ITC on October 31, 2017, the U.S. ITC issued an initial determination on October 21, 2019, finding the Company and its subsidiaries, SK hynix America Inc. and SK hynix memory solutions America Inc., violated one patent of Netlist, Inc. A decision on whether to have a rehearing the tentative decision will be made. As of December 31, 2019, the final result cannot be predicted.

Meanwhile, Netlist, Inc. filed a lawsuit against the Company for infringement of one German patent to the District Court of Munich on July 11, 2017. The District Court of Munich rendered its decision finding no infringement by the Company on January 31, 2019. Netlist, Inc. filed a notice of appeal against the decision to the Higher Regional Court of Munich on March 5, 2019 but withdrew the notice of appeal on June 11, 2019, thus the non-infringement decision of the District Court of Munich became the final and conclusive ruling.

(b) Price-fixing class-action lawsuits in North America
On April 27, 2018, a purported class-action lawsuit was filed against the Company and its subsidiary, SK hynix America Inc. in the U.S. District Court for the Northern District of California asserting claims based on alleged price-fixing of DRAM products during the period from June 1, 2016 to February 1, 2018. Similar lawsuits were subsequently filed in federal court in the U.S., as well as in Canadian courts in British Columbia, Quebec and Ontario. As of December 31, 2019, the lawsuits filed have not been finalized and the Company is unable to predict the outcome of these matters and therefore cannot reliably estimate the range of possible loss.

(c) The antitrust investigation in China
The State Administration for Market Regulation of China initiated to investigate the violation of the antitrust law regarding on primary DRAM businesses' sales in China in May 2018. The investigation is ongoing. As of December 31, 2019, the Company is unable to predict the outcome of these matters and therefore cannot reliably estimate the range of possible loss.

(d) Other patent infringement claims and litigation
In addition to the above litigations, the Company has responded to various disputes related to intellectual property rights and has recognized a liability when it represents a present obligation as a result of past event and it is probable that an outflow of resources will arise and a loss can be reliably estimated.

(2) Technology and patent license agreements
The Company has entered into a number of patent license agreements with several companies. The related royalties are paid on a lump-sum or running basis in accordance with the respective agreements. The lump-sum royalties are expensed over the contract period using the straight-line method.

34. Commitments and Contingencies, Continued

(3) Contract for supply of industrial water
The Company has entered into a new contract with Veolia Water Industrial Development Co., Ltd. ("Veolia") under which the Company purchases industrial water from Veolia during the period of June 2018 through May 2023. According to the contract, the Company is obligated to pay base service charges, which are predetermined and additional service charges which are variable according to the volume of water used.

(4) Post- process service contract with HITECH Semiconductor (Wuxi) Co., Ltd. (“HITECH”)
The Company has entered into an agreement with HITECH to be provided with post-process service by HITECH. The conditions of the service provided includes package, package test, modules and others. According to the agreement, the Company is liable to guarantee a certain level of margin to HITECH.

(5) Assets provided as collateral
Details of assets provided as collateral as of December 31, 2019 are as follows:

(In millions of won and millions of U.S. dollars)

			Pledged amount			
		Book value	**Currency**	**Amount in USD**	**Amount in KRW**	**Remark**
Machinery	₩	1,245,378	USD	690	798,882	Borrowings for
			KRW	-	600,000	equipment and

(6) Financing agreements
Details of credit lines with financial institutions as of December 31, 2019 are as follows:

(In millions of won, millions of U.S. dollars)

Financial institution	Commitment	Currency	Amount
Hana Bank and others	Import finance including usance	USD	275
	Comprehensive limit contract for import and export including usance	USD	1,060
	Commitment as form of issuance for commercial paper	KRW	400,000
	Overdrafts with banks	KRW	20,000
	Accounts receivable factoring contracts which have no right to recourse	KRW	140,000

(7) Details of guarantees provided to others as of December 31, 2019 are as follows:

(In millions of U.S. dollars)	Currency	Amount	Remark
Taiwan Semiconductor Manufacturing Company, Limited.[1]	USD	60	Guarantees for supply agreement

[1] The Company received a deposit of ₩1,000 million as collateral from ADTechnology Inc. regarding payment guarantee for Taiwan Semiconductor Manufacturing Company, Limited.

34. Commitments and Contingencies, Continued

(8) Capital commitments
The Company's commitments in relation to capital expenditures on property, plant and equipment as of December 31, 2019 are ₩183,433 million (as of December 31, 2018: ₩1,638,776 million).

(9) Long-term purchase agreement for raw materials
The Company has entered into a procurement agreement with SK Siltron Co., Ltd. from 2019 to 2023 for stable supply of wafer with an advanced payment of ₩150,000 million during the year ended December 31, 2017. The advanced payment used in connection with the purchase of wafer during 2019 is ₩53,784 million, and the balance of the advance payment as of December 31, 2019 is ₩96,216 million. Meanwhile, SK Siltron Co., Ltd. has committed to providing a certain portion of its investment assets as collateral to secure the advanced payment.

(10) Agreement with SK hynix system ic Inc.
The Company has entered into a Wafer Foundry supply agreement with SK hynix system ic Inc., a subsidiary of the Company, and received related services. After agreeing to outsourcing and shared service contract with SK hynix system ic Inc., the Company provides production of the product, operation of equipment, development, and management support services.

(11) Investment in KIOXIA Holdings Corporation ("KIOXIA")
In regards to the Company's interests in KIOXIA through its investments in BCPE Pangea Intermediate holdings Cayman, L.P. and BCPE Pangea Cayman2 Limited, equity shares in KIOXIA owned, directly or indirectly, by the Company are limited to a certain percentage during certain periods after the date of acquisition. In addition, during the same periods, the Company does not have the right in appointing KIOXIA's directors and is unable to exercise significant influence over decision-making for KIOXIA's operation and management.

35. Statements of Cash Flows

(1) Reconciliations between profit for the year and net cash inflow from operating activities for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Profit for the year	₩	1,484,294	15,407,086
Adjustment			
Income tax expense		329,307	5,620,316
Defined benefit plan		207,733	170,342
Depreciation		6,131,037	5,015,846
Depreciation of investment property		37	84
Amortization		765,604	506,363
Depreciation of right-of-use assets		190,667	-
Share-based compensation expenses		1,738	1,163
Loss on disposal of property, plant and equipment		97,318	73,550
Loss on disposal of intangible assets		7,653	5,409
Loss on impairment of intangible assets		71	4,482
Loss on valuation of long-term investment assets		237,417	667
Loss on disposal of long-term investment assets		786	-
Loss on disposal of investments in associates		1,799	-
Interest expense		125,051	90,907
Loss on foreign currency translation		139,334	147,174
Loss on disposal of trade receivables		1,197	1,598
Gain on disposal of investment in subsidiaries		(31,513)	(18,008)
Gain on disposal of property, plant and equipment		(71,340)	(40,674)
Gain on disposal of short-term investment assets		(31,053)	(18,055)
Gain on valuation of short-term investment assets		(4,755)	(9,140)
Gain on disposal of long-term investment assets		(1,160)	(5,504)
Gain on valuation of long-term investment assets		(2,657)	(182,384)
Interest income		(21,945)	(51,761)
Gain on foreign currency translation		(239,451)	(102,489)
Dividend income		(26,737)	(49,017)
Others, net		(197)	166
Changes in operating assets and liabilities			
Decrease (increase) in trade receivables		2,743,621	(1,227,813)
Increase in loans and other receivables		(2,838)	(501)
Increase in inventories		(633,211)	(1,496,781)
Decrease (increase) in other assets		30,839	(35,777)
Increase (decrease) in trade payables		(336,234)	401,190
Increase (decrease) in other payables		(192,406)	198,695
Increase in other non-trade payables		(637,048)	506,536
Decrease in provisions		(42,711)	(35,645)
Increase in other liabilities		14,948	148,634
Payment of defined benefit liabilities		(3,442)	(8,485)
Contribution to plan assets		(260,000)	(265,000)
Cash generated from operating activities	₩	9,971,753	24,753,174

35. Statements of Cash Flows, Continued

(2) Details of significant financing and investing transactions, except for reclassifications between long-term and short-term balances, without inflows and outflows of cash for the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Transfer of investment property to property, plant and equipment	₩	1,105	984

(3) Changes in liabilities arising from financing activities during the years ended December 31, 2019 and 2018 are as follows:

(In millions of won)

		2019	2018
Beginning balance	₩	4,574,311	4,029,356
Adjustments on initial application of K-IFRS No. 1116[1]		698,761	-
Beginning balance after adjustments		5,273,072	4,029,356
Cash flows from financing activities			
Proceeds from borrowings		5,107,104	2,402,196
Repayments of borrowings		(3,178,745)	(1,936,842)
Payments of lease liabilities		(201,449)	-
Increase of lease liabilities		23,110	-
Foreign currency differences		45,673	77,989
Present value discount (interest expense)		18,235	1,612
Interest paid		(3,055)	-
Ending Balance	₩	7,083,945	4,574,311

[1] Lease liabilities are recognized upon adoption of K-IFRS No. 1116 as of January 1, 2019.

36. Share-based Payment

(1) The Company accounts for share-based payment in which the Company has a choice of either cash-settled payment or equity-settled payment in accordance with its substance. The details of share options as of December 31, 2019 are as follows:

(In shares)

	Total numbers of share option granted	Exercised	Forfeited or Cancelled	Outstanding at December 31, 2019
1st	99,600	-	-	99,600
2nd	99,600	-	-	99,600
3rd	99,600	-	-	99,600
4th	7,747	-	-	7,747
5th	7,223	-	-	7,223
6th	8,171	-	-	8,171
7th	61,487	-	-	61,487
8th	61,487	-	-	61,487
9th	61,487	-	-	61,487
	506,402	-	-	506,402

	Grant date	Service Period for Vesting	Exercisable Period	Exercise price
1st	March 24, 2017	March 24, 2017 - March 24, 2019	March 25, 2019 - March 24, 2022	₩ 48,400
2nd	March 24, 2017	March 24, 2017 - March 24, 2020	March 25, 2020 - March 24, 2023	52,280
3rd	March 24, 2017	March 24, 2017 - March 24, 2021	March 25, 2021 - March 24, 2024	56,460
4th	January 01, 2018	January 1, 2018 - December 31, 2019	January 1, 2020 - December 31, 2022	77,440
5th	March 28, 2018	March 28, 2018 - March 28, 2020	March 29, 2020 - March 28 2023	83,060
6th	February 28, 2019	February 28, 2019 - February 28, 2021	March 1, 2021 - February 29, 2024	73,430
7th	March 22, 2019	March 22, 2019 - March 22, 2021	March 23, 2021 - March 22, 2024	71,560
8th	March 22, 2019	March 22, 2019 - March 22, 2022	March 23, 2022 - March 22, 2025	77,290
9th	March 22, 2019	March 22, 2019 - March 22, 2023	March 23, 2023 - March 22, 2026	83,470

(2) Measurement of fair value

The compensation cost is calculated by applying a binomial option-pricing model in estimating the fair value of the option at grant date. The inputs used are as follows:

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
Expected volatility	23.23%	23.23%	23.23%	22.50%	25.30%	25.60%	26.20%	26.20%	26.20%
Estimated fair value of share option	₩ 10,026	9,613	9,296	16,687	18,362	16,505	17,744	16,888	16,093
Dividend yield ratio	1.20%	1.20%	1.20%	0.78%	1.23%	2.04%	1.98%	1.98%	1.98%
Risk free rate	1.86%	1.95%	2.07%	2.38%	2.46%	1.89%	1.82%	1.88%	1.91%

(3) The compensation expense for the year ended December 31, 2019 was ₩1,738 million (2018: ₩1,163 million).

KPMG SAMJONG

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Independent Auditors' Report on Internal Control over Financial Reporting

Based on a report originally issued in Korean

To The Board of Directors and Shareholders of
SK hynix, Inc.:

Opinion on Internal Control over Financial Reporting

We have audited the Internal Control over Financial Reporting ("ICFR") of SK hynix, Inc. (the "Company") as of December 31, 2019, based on the criteria established in Conceptual Framework for Designing and Operating ICFR issued by the Operating Committee of ICFR in the Republic of Korea.

In our opinion, the Company maintained, in all material respects, effective ICFR as of December 31, 2019, based on the criteria established in Conceptual Framework for Designing and Operating ICFR issued by the Operating Committee of ICFR in the Republic of Korea.

We also have audited, in accordance with Korean Standards on Auditing ("KSAs"), the separate statement of financial position of the Company as of December 31, 2019, the related separate statements of comprehensive income, changes in equity, cash flows for the year then ended and the related notes including significant accounting policies and other explanatory information (collectively, the separate financial statements), and our report dated February 25, 2020 expressed an unmodified opinion on those separate financial statements.

Basis for Opinion

We conducted our audits in accordance with KSAs. Our responsibilities under those standards are further described in the *Auditors' Responsibilities for the Audit of the ICFR* section of our report. We are independent of the Company in accordance with the ethical requirements that are relevant to our audit of the ICFR in the Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Internal Control over Financial Reporting

Management is responsible for designing, implementing, and maintaining effective ICFR, and for its assessment about the effectiveness of ICFR, included in the accompanying Report on the Effectiveness of Internal Control over Financial Reporting.

Those charged with governance are responsible for overseeing the Company's ICFR.

Auditors' Responsibilities for the Audit of the Internal Control over Financial Reporting

Our responsibility is to express an opinion on the Company's ICFR based on our audit. We conducted our audit in accordance with KSAs. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective ICFR was maintained in all material respects.

An audit of ICFR involves performing procedures to obtain audit evidence about whether a material weakness exists. The procedures selected depend on the auditor's judgment, including the assessment of the risks that a material weakness exists. An audit includes obtaining an understanding of ICFR and testing and evaluating the design and operating effectiveness of ICFR based on the assessed risk.

KPMG

Definition and Inherent Limitations of Internal Control over Financial Reporting

An entity's ICFR is a process effected by those charged with governance, management, and other personnel, designed to provide reasonable assurance regarding the preparation of reliable separate financial statements in accordance with Korean International Financial Reporting Standards ("K-IFRS"). An entity's ICFR includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the entity; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of separate financial statements in accordance with K-IFRS and that receipts and expenditures of the entity are being made only in accordance with authorizations of management and those charged with governance; and (3) provide reasonable assurance regarding prevention, or timely detection and correction of unauthorized acquisition, use, or disposition of the entity's assets that could have a material effect on the separate financial statements.

Because of its inherent limitations, ICFR may not prevent, or detect and correct, misstatements. Also, projections of any assessment of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The engagement partner on the audit resulting in this independent auditors' report is Heon Chang Oh.

KPMG Samjong Accounting Corp.

Seoul, Republic of Korea
February 25, 2020

This report is effective as of February 25, 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 Company's Internal Control over Financial Reporting. Accordingly, the readers of the audit report should understand that the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

Report on the Effectiveness of the Internal Control over Financial Reporting

To the Shareholders, Board of Directors and Audit Committee of SK HYNIX INC.

We, as the Chief Executive Officer and the Internal Accounting Manager of SK HYNIX INC. ("the Company"), assessed operating status of the Company's Internal Control over Financial Reporting ("ICFR") for the year ending December 31, 2019.

Design and operation of ICFR is the responsibility of the Company's management, including the Chief Executive Officer and the Internal Accounting Manager. We evaluated whether the Company effectively designed and operated its ICFR to prevent and detect errors or frauds which may cause a misstatement in financial statements to ensure preparation and disclosure of reliable financial information

We used the 'Conceptual Framework for Designing and Operating Internal Control over Financial Reporting' established by the Operating Committee of Internal Control over Financial Reporting in Korea (the "ICFR Committee")' as the criteria for design and operation of the Company's ICFR. And we conducted an evaluation of ICFR based on the 'Management Guideline for Evaluating and Reporting Effectiveness of Internal Control over Financial Reporting' established by the ICFR Committee

Based on our assessment, we concluded that the Company's ICFR is designed and operated effectively as of December 31, 2019, in all material respects, in accordance with the 'Conceptual Framework for Designing and Operating Internal Control over Financial Reporting.

We certify that this report does not contain any untrue statement of a fact, or omit to state a fact necessary to be presented herein. We also certify that this report does not contain or present any statements which might cause material misunderstandings of the readers, and we have reviewed and verified this report with sufficient care.

Jan 15, 2020

Seok Hee Lee Chief Executive Officer Seokhee Lee

Jin Seok Cha, Internal Accounting Manager