1. General Information

Doosan Corporation (the “Company”) was incorporated on December 18, 1933, under the name of Sohwa-Kirin Beer, Ltd. to manufacture and sell beer. The Company has changed its name to Dongyang Beer, Ltd. in February 1948 and again to OB Beer, Ltd. in February 1996 and finally to Doosan Corporation on September 1, 1998.

Since June 1973, the Company’s shares have been listed on the KOSPI market of the Korea Exchange. After several capital issues, the Company’s share capital as at December 31, 2017, is ₩134,846 million, including ₩26,984 million of preferred shares.

The Company’s ordinary shares as at December 31, 2017, are owned as follows:

	Number of ordinary shares owned	Ownership percentage (%)
Related parties	9,369,395	48.80
Treasury shares	4,266,070	22.22
Others	5,562,538	28.98
	19,198,003	100.00

Meanwhile, 48.3% of preferred shares are owned by the related parties including the largest shareholder and others and 51.7% of preferred shares are owned by other entities and individual shareholders.

2. Summary of significant accounting policies

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

2.1 Basis of preparation

The financial statements of the Company are the separate financial statements prepared in accordance with the KIFRS 1027 *Separate Financial Statements*. Investments in subsidiaries, joint ventures and associates are recognized at cost under the direct equity method. Management applied the carrying amounts under the previous Korean GAAP at the time of transition to the KIFRS as deemed cost of investments.

The significant accounting policies under KIFRS followed by the Company in the preparation of its separate financial statements are summarized below, and these accounting policies, except for the effects of the changes in accounting policies that are described below, have been applied consistently to the separate financial statements for the current period and the accompanying comparative period.

The accompanying separate financial statements have been prepared on the historical cost basis, except for certain properties/non-current assets and financial instruments that are measured at fair values, as explained in the accounting policies below. Historical cost is based on the fair values of the consideration given in exchange for assets.

2. Summary of significant accounting policies (cont'd)

2.2 Changes in accounting policies and disclosures

1) Standards issued but not yet effective

The standards and interpretations that are issued, but not yet effective, and that the Company has not early adopted are listed below.

Amendments to KIFRS 1109 - *Financial Instruments*

The new standard for financial instruments issued on September 25, 2015 are effective for annual periods beginning on or after January 1, 2018 with early application permitted. This standard will replace KIFRS 1039 *Financial Instruments: Recognition and Measurement.* The Company will apply the standards for annual periods beginning on or after January 1, 2018.

The standard requires retrospective application with some exceptions. For example, an entity is not required to restate prior period in relation to classification and measurement (including impairment) of financial instruments. The standard requires prospective application of its hedge accounting requirements for all hedging relationships except the accounting for time value of options and other exceptions.

KIFRS 1109 *Financial Instruments* requires all financial assets to be classified and measured on the basis of the entity's business model for managing financial assets and the contractual cash flow characteristics of the financial assets. A new impairment model, an expected credit loss model, is introduced and any subsequent changes in expected credit losses will be recognized in profit or loss. Also, hedge accounting rules amended to extend the hedging relationship, which consists only of eligible hedging instruments and hedged items, qualifies for hedge accounting.

An effective implementation of KIFRS 1109 requires preparation processes including financial impact assessment, accounting policy establishment, accounting system development and the system stabilization. The impact on the Company's financial statements due to the application of the standard is dependent on judgements made in applying the standard, financial instruments held by the Company and macroeconomic variables.

Based on the available information as at December 31, 2017, the Company has analyzed the impact on the 2017 financial statements to assess financial impact of adopting KIFRS 1109. This assessment is based on currently available information and may be subject to changes arising from further reasonable and supportable information being made available to the Company in 2018 when the Company will adopt KIFRS 1109. The Company expects no significant impact on its statement of financial position and equity except for the effect of applying the classification requirements of KIFRS 1109.

2. Summary of significant accounting policies (cont'd)

Amendments to KIFRS 1109 - *Financial Instruments* (cont'd)

(1) Classification and measurement of financial assets

When implementing KIFRS 1109, the classification of financial assets will be driven by the Company's business model for managing the financial assets and contractual terms of cash flow. The following table shows the classification of financial assets measured subsequently at amortized cost, at fair value through other comprehensive income and at fair value through profit or loss. If a hybrid contract contains a host that is a financial asset, the classification of the hybrid contract shall be determined for the entire contract without separating the embedded derivative.

<table>
<tr><th rowspan="2">Business model for the contractual cash flows characteristics</th><th colspan="2">Characteristics of contractual cash flows</th></tr>
<tr><th>Solely represent payments of principal and interest</th><th>All other</th></tr>
<tr><td>Hold the financial asset for the collection of the contractual cash flows</td><td>Measured at amortized cost (*1)</td><td rowspan="3">Recognized at fair value through profit or loss (*2)</td></tr>
<tr><td>Hold the financial asset for the collection of the contractual cash flows and trading</td><td>Recognized at fair value through other comprehensive income (*1)</td></tr>
<tr><td>Hold for trading</td><td>Recognized at fair value through profit or loss</td></tr>
</table>

(*1) A designation at fair value through profit or loss is allowed only if such designation mitigates an accounting mismatch (irrevocable).
(*2) Equity investments not held for trading can be recorded in other comprehensive income (irrevocable).

With the implementation of KIFRS 1109, the criteria to classify the financial assets at amortized cost or at fair value through other comprehensive income are more strictly applied than the criteria applied with KIFRS 1039. Accordingly, the financial assets at fair value through profit or loss may increase by implementing KIFRS 1109 and may result an extended fluctuation in profit or loss. As at December 31, 2017, the Company owns loan and trade receivables of ₩587,966 million and financial assets available-for-sales of ₩91,130 million.

According to KIFRS 1109, a debt instrument is measured at amortized cost if: a) the objective of the business model is to hold the financial asset for the collection of the contractual cash flows, and b) the contractual cash flows under the instrument solely represent payments of principal and interest. As at December 31, 2017, the Company measured loan and trade receivables of ₩587,966 million at amortized cost.

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According to KIFRS 1109, a debt instrument is measured at fair value through other comprehensive income if the objective of the business model is achieved both by collecting contractual cash flows and selling financial assets; and the contractual cash flows represents solely payments of principal and interest on a specific date under contract terms. As at December 31, 2017, the Company owns debt instruments classified as available-for-sale of ₩88,475 million.

According to KIFRS 1109, equity instruments that are not held for trading, the Company can make an irrevocable election at initial recognition to classify the instruments as assets measured at fair value through other comprehensive income, which all subsequent changes in fair value being recognized in other comprehensive income and not recycled to profit or loss. As at December 31, 2017, the Company holds equity instruments of ₩2,655 million classified as available-for-sale financial instruments.

According to KIFRS 1109, debt instruments those contractual cash flows do not represent solely payments of principal and interest and held for trading, and equity instruments that are not designated as instruments measured at fair value through other comprehensive income are measured at fair value through profit or loss. As at December 31, 2017, the Company does not own any debt instruments and equity instruments classified as held for trading.

2. Summary of significant accounting policies (cont'd)

Amendments to KIFRS 1109 - *Financial Instruments* (cont'd)

(2) Classification and measurement of financial liabilities

Under KIFRS 1109, changes in the fair value of a financial liability designated as measured at FVTPL that arise from changes in the liability's credit risk are presented in other comprehensive income, instead of profit or loss. The changes in the liability's credit risk are recognized in profit or loss if the changes create or enlarge an accounting mismatch had it been presented in other comprehensive income.

Some of the changes in the fair value of financial liabilities designated as at FVTPL, which were recognized in profit or loss under the current KIFRS 1039, are presented in other comprehensive income, therefore, gains and losses on valuation of financial liabilities may decrease.

The Company does not hold any financial liabilities designated as measured at FVTPL as at December 31, 2017.

(3) Impairment: financial assets and contract assets

Under KIFRS 1039, impairment losses are recognized when there is objective evidence of impairment based on the incurred loss model. However, under KIFRS 1109, impairment losses are recognized on debt instruments, lease receivables, contract assets, loan commitment, and financial guarantee contracts that were accounted for at amortized cost, or FVOCI, based on the expected credit loss (ECL) impairment model.

KIFRS 1109 outlines a three-stage model for 12-month expected credit losses, or lifetime expected credit losses based on changes in credit risk since initial recognition of financial assets. As a result, credit losses can be recognized earlier than the current KIFRS 1039.

<table>
<tr><th colspan="2">Classification (*1)</th><th>Loss allowance</th></tr>
<tr><td>Stage 1</td><td>Credit risk on a financial instrument has not increased significantly since initial recognition. (*2)</td><td>12-month ECL: Expected credit losses that result from default events on a financial instrument that are possible within 12 months after the reporting date.</td></tr>
<tr><td>Stage 2</td><td>Credit risk on a financial instrument has increased significantly since initial recognition.</td><td rowspan="2">Lifetime ECL: Expected credit losses that result from all possible default events over the expected life of a financial instrument.</td></tr>
<tr><td>Stage 3</td><td>Credit-impaired</td></tr>
</table>

(*1) For trade receivables or contract assets that arise from transactions within the scope of KIFRS 1115 *Revenue from Contracts with Customers* and that do not contain a significant financing component, loss allowance is measured at an amount equal to lifetime expected credit losses. If the trade receivables or contract assets contain a significant financial component, a policy election may be made such that the loss allowance is measured at an amount equal to lifetime expected credit losses. Also, for lease receivables, a policy election may be made such that the loss allowance is measured at an amount equal to lifetime expected credit losses.

(*2) Low credit risk at the reporting date may be deemed as no significant increase in credit risk.

Under KIFRS 1109, the cumulative changes in lifetime expected credit losses since initial recognition are recognised as loss allowance for a financial asset that is considered credit-impaired at initial recognition.

As at December 31, 2017, the Company holds debt instruments measured at amortized cost and recognizes loss allowance of ₩23,393 million for these assets.

2. Summary of significant accounting policies (cont'd)

Amendments to KIFRS 1109 - *Financial Instruments* (cont'd)

(4) Hedge accounting

KIFRS 1109 applies mechanics of hedge accounting (fair value hedge accounting, cash flow hedge, foreign entities net investment hedge) specified in the current KIFRS 1039. However, the Company changed from the complex and rule-based hedge accounting requirements of KIFRS 1039 to the principle-based approach which focuses on the risk management activities. Requirements for application of hedge accounting are relaxed by enlarging items designated as hedges and hedging instruments, evaluating the high risk avoidance effects, and eliminating the quantitative criteria (80 ~ 125%).

Upon application of hedge accounting of KIFRS 1109, some transactions that do not meet the criteria for hedge accounting of the current KIFRS 1039 may be accounted for using the hedge accounting; therefore, volatility in profit or loss may be reduced.

Based on the transitional provisions, the Company may elect to continue to apply the requirements of hedge accounting under KIFRS 1039 upon initial application of KIFRS 1109.

Amendments to KIFRS 1115 *Revenue from Contracts with Customers*

The Company will apply KIFRS 1115 *Revenue from Contracts with Customer*s issued on November 6, 2015 for annual reporting periods beginning on or after January 1, 2018. Earlier adoption is permitted under KIFRS. This standard replaces KIFRS 1018 *Revenue*, KIFRS 1011 *Construction Contracts*, Interpretation 2031 *Revenue-Barter Transactions Involving Advertising Services*, Interpretation 2113 *Customer Loyalty Programs*, Interpretation 2115 *Agreements for the Construction of Real Estate* and Interpretation 2118 *Transfers of assets from customers*.

The Company will apply the standard for the annual period beginning on or after January 1, 2018 to the extent that the cumulative effect of the first application of this standard is reflected in the retained earnings (or, if appropriate, other capital element), and will only retrospectively apply the standard to contracts that are not completed on the initial application date in accordance with the applicable rules.

The current KIFRS 1018 provides the criteria for recognition of revenue relating to sale of goods, rendering of services, interest income, royalties, dividends and construction contracts. However, under the new KIFRS 1115, revenue is recognized by applying a five-stage revenue recognition model (① Identification of a contract with a customer → ② Identification of performance obligations in the contract → ③ Determination of the transaction price → ④ Allocation of the transaction price to the separate performance obligations in the contract → ⑤ Recognition of revenue upon satisfying the performance obligations) to its all contracts with customers.

Based on the available information as at December 31, 2017, the Company has preliminary assessed the potential impact of adopting KIFRS 1115 on the 2017 financial statements. This assessment is based on currently available information and may be subject to changes arising from further reasonable and supportable information being made available to the Company in 2018 when the Company will adopt KIFRS 1115.

The major impact on the financial statements of the Company as a result of the adoption of the standard are as follows.

1) Identification of performance obligations in the contract

In applying KIFRS 1115, the Company will identify distinct performance obligations such as (1) sale of goods, (2) additional services, (3) provision of additional warranty, and (4) other services, etc. and recognize revenue in contracts with customer. The timing of the Company's revenue recognition differs depending on whether each performance obligation is fulfilled at one time or over a period of time.

2. Summary of significant accounting policies (cont'd)

Amendments to KIFRS 1115 *Revenue from Contracts with Customers* (cont'd)

2) Allocation of the transaction price
In applying KIFRS 1115, the Company allocates the transaction prices based on the relative stand-alone selling prices to the different performance obligations identified in one contract. The Company will use the method such as the expected cost-plus-value approach that estimates expected cost for each transaction and adding appropriate profits.

3) Variable consideration
In applying KIFRS 1115, the Company will estimate the variable consideration to which it will be entitled, by the method that better predicts the amount of variable consideration among expected value or the most highly likely amount. And the company will recognize the revenue on transaction prices including variable consideration to the extent it is much highly likely that a significant portion of revenue will not be reversed when the period of refund reaches the end.

As a result of the preliminary assessment of 2017 financial year, the Company expects that the above impact on the Company's financial statements will not be material.

Amendments to KIFRS 1110 and KIFRS 1028 *Sale or Contribution of Assets between an Investor and its Associate or Joint Venture*

The amendments address the conflict between KIFRS 1110 and KIFRS 1028 in dealing with the loss of control of a subsidiary that is sold or contributed to an associate or joint venture. The amendments clarify that the gain or loss resulting from the sale or contribution of assets that constitute a business, as defined in KIFRS 1103, between an investor and its associate or joint venture, is recognized in full. Any gain or loss resulting from the sale or contribution of assets that do not constitute a business, however, is recognized only to the extent of unrelated investors' interests in the associate or joint venture. The KASB has deferred the effective date of these amendments indefinitely, but an entity that early adopts the amendments must apply them prospectively.

Amendments to KIFRS 1102 *Classification and Measurement of Share-based Payment Transactions*

The KASB issued amendments to KIFRS 1102 *Share-based Payment* that address three main areas, the effects of vesting conditions on the measurement of a cash-settled share-based payment transaction, the classification of a share-based payment transaction with net settlement features for withholding tax obligations, and accounting where a modification to the terms and conditions of a share-based payment transaction changes its classification from cash settled to equity settled. On adoption, entities are required to apply the amendments without restating prior periods, but retrospective application is permitted if elected for all three amendments and other criteria are met. The amendments are effective for annual periods beginning on or after January 1, 2018, with early application permitted.

2. Summary of significant accounting policies (cont'd)

KIFRS 1116 *Leases*

KIFRS 1116 *Leases* replaces KIFRS 1017 *Leases*, KIFRS 2104 *Determining Whether an Arrangement Contains a Lease*, KIFRS 2015 *Operating Leases-Incentives* and KIFRS 2027 *Evaluating the Substance of Transactions Involving the Legal Form of a Lease*. KIFRS 1116 sets out the principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to account for all leases under a single on-balance sheet model similar to the accounting for finance leases under KIFRS 1017. The standard includes two recognition exemptions for lessees – leases of low-value assets (e.g., personal computers) and short-term leases (i.e., leases with a lease term of 12 months or less). At the commencement date of a lease, a lessee will recognise a liability to make lease payments (i.e., the lease liability) and an asset representing the right to use the underlying asset during the lease term (i.e., the right-of-use asset). Lessees will be required to separately recognise the interest expense on the lease liability and the depreciation expense on the right-of-use asset.

Lessees will be also required to remeasure the lease liability upon the occurrence of certain events (e.g., a change in the lease term, a change in future lease payments resulting from a change in an index or rate used to determine those payments). The lessee will generally recognise the amount of the remeasurement of the lease liability as an adjustment to the right-of-use asset. Lessor accounting under KIFRS 1116 is not significantly changed from today's accounting under KIFRS 1017. Lessors will continue to classify all leases using the same classification principle as in KIFRS 1017 and distinguish between two types of leases: operating and finance leases.

KIFRS 1116 also requires lessees and lessors to make more extensive disclosures than under KIFRS 1017.

KIFRS 1116 is effective for annual periods beginning on or after January 1, 2019. Early application is permitted, but not before an entity applies KIFRS 1115. A lessee can choose to apply the standard using either the full retrospective approach or the cumulative catch-up transition method. The standard's transition provisions permit certain reliefs.

Amendments to KIFRS 1040 *Transfers of Investment Property*

The amendments clarify when an entity should transfer property, including property under construction or development into, or out of investment property. The amendments state that a change in use occurs when the property meets, or ceases to meet, the definition of investment property and there is evidence of the change in use. Entities should apply the amendments prospectively to changes in use that occur on or after the beginning of the annual reporting period in which the entity first applies the amendments. An entity should reassess the classification of property held at that date and, if applicable, reclassify property to reflect the conditions that exist at that date. Retrospective application in accordance with KIFRS 1008 is only permitted if it is possible without the use of hindsight. These amendments are effective for annual periods beginning on or after 1 January 2018, with early application permitted.

Annual Improvements 2014-2016 Cycle

These improvements include:

KIFRS 1101 *First-time Adoption of Korean International Financial Reporting Standards - Deletion of short-term exemptions for first-time adopters*

Short-term exemptions in paragraphs E3–E7 of KIFRS 1101 were deleted because they have now served their intended purpose. The amendment is effective from January 1, 2018.

2. Summary of significant accounting policies (cont'd)

KIFRS 1028 *Investments in Associates and Joint Ventures - Clarification that measuring investees at fair value through profit or loss is an investment-by-investment choice*
The amendments clarify that:

- An entity that is a venture capital organisation, or other qualifying entity, may elect, at initial recognition on an investment-by-investment basis, to measure its investments in associates and joint ventures at fair value through profit or loss.
- If an entity, that is not itself an investment entity, has an interest in an associate or joint venture that is an investment entity, the entity may, when applying the equity method, elect to retain the fair value measurement applied by that investment entity associate or joint venture to the investment entity associate's or joint venture's interests in subsidiaries. This election is made separately for each investment entity associate or joint venture, at the later of the date on which: (a) the investment entity associate or joint venture is initially recognized, (b) the associate or joint venture becomes an investment entity, and (c) the investment entity associate or joint venture first becomes a parent.

The amendments should be applied retrospectively and are effective from January 1, 2018, with earlier application permitted. If an entity applies those amendments for an earlier period, it must disclose that fact.

KIFRS 2122 *Foreign Currency Transactions and Advance Consideration*
The Interpretation clarifies that, in determining the spot exchange rate to use on initial recognition of the related asset, expense or income (or part of it) on the derecognition of a non-monetary asset or non-monetary liability relating to advance consideration, the date of the transaction is the date on which an entity initially recognises the non-monetary asset or non-monetary liability arising from the advance consideration. If there are multiple payments or receipts in advance, then the entity must determine the transaction date for each payment or receipt of advance consideration. Entities may apply the amendments on a fully retrospective basis. Alternatively, an entity may apply the Interpretation prospectively to all assets, expenses and income in its scope that are initially recognised on or after:

(i) The beginning of the reporting period in which the entity first applies the interpretation, or

(ii) The beginning of a prior reporting period presented as comparative information in the financial statements of the reporting period in which the entity first applies the interpretation.

The impact of the interpretation on the separate financial statements of the Company is not material.

2) New and amended standards and interpretations
The Company applied for the first time certain standards and amendments, which are effective for annual periods beginning on January 1, 2017. The nature and the impact of each new standard amendment are described below:

Amendments to KIFRS 1007 Statement of Cash Flows: *Disclosure Initiative*
The amendments require entities to provide disclosure of changes in their liabilities arising from financing activities. The Company has provided the information of the amendments in Note 33.

Amendments to KIFRS 1012 Income Taxes: *Recognition of Deferred Tax Assets for Unrealised Losses*
The amendments are: 1) temporary differences arise when the book amount of a fixed rate financial instrument measured at fair value decreases but the tax basis price remains at cost, regardless of the expected recovery method, such as sale or use, 2) future taxable income for the purpose of reviewing the realization of the temporary difference to be deducted can be estimated as an amount exceeding the book amount of the asset, and 3) when examining whether future taxable income is sufficient, we should compare future taxable income before deducting temporary differences and deductible effects of deductible temporary differences.

2. Summary of significant accounting policies (cont'd)

Annual Improvements Cycle - 2014-2016
Amendments to KIFRS 1112 *Disclosure of Interests in Other Entities*
The amendments clarify that the disclosure requirements in KIFRS 1112, other than those in paragraphs B10–B16, apply to an entity's interest in a subsidiary, a joint venture or an associate (or a portion of its interest in a joint venture or an associate) that is classified (or included in a disposal group that is classified) as held for sale.

2.3 Investments in subsidiaries, joint ventures and associates

The Company has elected to use book amount under previous generally accepted accounting principles as deemed cost for subsidiaries, joint ventures and associates at the date of transition to KIFRS. After the date of transition, subsidiaries, joint ventures and associates are measured at cost.

The requirements of KIFRS 1036 are applied to determine whether it is necessary to recognize any impairment loss with respect to the Company's investment in a subsidiary or an associate. When necessary, the entire book amount of the investment is tested for impairment by comparing its recoverable amount (higher of value in use and fair value less costs to sell) with its book amount, any impairment loss recognized forms part of the book amount of the investment. Any reversal of that impairment loss is recognized in accordance with KIFRS 1036 to the extent that the recoverable amount of the investment subsequently increases.

2.4 Segment Reporting

The Company's operating segments are disclosed in a manner consistent with the business segment reporting provided to the chief operating decision-maker, and the information is disclosed in Note 24 in accordance with KIFRS 1108 *Operating Segments*.

2.5 Goodwill

Goodwill arising on an acquisition of a business is carried at cost as established at the date of acquisition of the business less accumulated impairment losses, if any.

For the purpose of impairment testing, goodwill is allocated to each of the Company's CGUs (or groups of CGUs) that is expected to benefit from the synergies of the combination.

A CGU to which goodwill has been allocated is tested for impairment annually, or more frequently when there is indication that the unit may be impaired. If the recoverable amount of the CGU is less than its book amount, the impairment loss is allocated first to reduce the book amount of any goodwill allocated to the unit and then to the other assets of the unit on a pro rata basis based on the book amount of each asset in the unit. Any impairment loss for goodwill is recognized directly in profit or loss. An impairment loss recognized for goodwill is not reversed in subsequent periods.

On disposal of the relevant CGU, the attributable amount of goodwill is included in the determination of the profit or loss on disposal.

2. Summary of significant accounting policies (cont'd)

2.6 Non-current assets held for sale

Non-current assets and disposal groups are classified as held for sale if their book amount will be recovered principally through a sale transaction rather than through continuing use. This condition is regarded as met only when the sale is highly probable and the non-current asset (or disposal group) is available for immediate sale in its present condition. Management must be committed to the sale, which should be expected to qualify for recognition as a completed sale within one year from the date of classification.

Non-current assets (and disposal groups) classified as held for sale are measured at the lower of their previous book amount and fair value less costs to sell.

2.7 Revenue recognition

Revenue is measured at the fair value of the consideration received or receivable for the sale of goods and rendering of services arising in the course of the ordinary activities of the Company. Revenue is reduced for value-added tax, estimated customer returns, rebates and trade discounts. The Company recognizes revenue when the amount of revenue can be measured reliably and it is probable that the economic benefits associated with the transaction will flow to the Company and when transaction meets the revenue recognition criteria specified by activity.

1) Sale of goods
Revenue from the sale of goods is recognized when the Company has transferred the significant risks and rewards of ownership of the goods to the buyer.

2) Rendering of services
Revenue from a contract to provide services is recognized by reference to the stage of completion of the contract. Depending on the nature of the transaction, the Company determines the stage of completion by reference to surveys of work performed, services performed to date as a percentage of total services to be performed or the proportion that costs incurred to date bear to the estimated total costs of the transaction, as applicable.

3) Dividend income and interest income
Dividend income from investments is recognized when the shareholders' right to receive payment has been established.

Interest income is accrued on a timely basis, by reference to the principal outstanding and at the effective interest rate applicable, which is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset to that asset's net book amount on initial recognition.

4) Rental income
The Company's policy for recognition of revenue from operating leases is described in Note 2.8.

2. Summary of significant accounting policies (cont'd)

2.8 Leases

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

1) The Company as lessor

Amounts due from lessees under finance leases are recognized as receivables at the amount of the Company's net investment in the leases. Finance lease income is allocated to accounting periods, so as to reflect a constant periodic rate of return on the Company's net investment outstanding in respect of the leases.

Rental income from operating leases is recognized on a straight-line basis over the term of the relevant lease. Initial direct costs incurred in negotiating and arranging an operating lease are added to the book amount of the leased asset and recognized on a straight-line basis over the lease term.

2) The Company as lessee

Assets held under finance leases are initially recognized as assets of the Company at their fair value at the inception of the lease or, if lower, at the present value of the minimum lease payments. The corresponding liability to the lessor is included in the separate statement of financial position as a finance lease obligation.

Lease payments are apportioned between finance expenses and reduction of the lease obligation, so as to achieve a constant rate of interest on the remaining balance of the liability. Finance expenses are recognized immediately in profit or loss, unless they are directly attributable to qualifying assets, in which case they are capitalized in accordance with the Company's general policy on borrowing costs (see Note 2.10). Contingent rentals are recognized as expenses in the periods in which they are incurred.

Operating lease payments are recognized as an expense on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed. Contingent rentals arising under operating leases are recognized as an expense in the period in which they are incurred.

2.9 Foreign currencies

The separate financial statements of the Company are presented in the currency of the primary economic environment in which the entity operates (its functional currency). For the purpose of the separate financial statements, the results and financial position of the Company are expressed in Korean won, which is the functional currency of the entity and the presentation currency for the separate financial statements.

In preparing the financial statements, transactions in currencies other than the entity's functional currency (foreign currencies) are recognized at the rates of exchange prevailing at the dates of the transactions. At the end of each reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Non-monetary items carried at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Non-monetary items that are measured in terms of historical cost in a foreign currency are not retranslated.

Exchange differences are recognized in profit or loss in the period in which they arise, except for:

- exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings
- exchange differences on transactions entered into in order to hedge certain foreign currency risks (see Note 2.23 below for hedging accounting policies)
- exchange differences on monetary items forming part of the net investment in the foreign operation.

2. Summary of significant accounting policies (cont'd)

2.10 Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale.

Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs eligible for capitalization.

All other borrowing costs are recognized in profit or loss in the period in which they are incurred.

2.11 Post-employment benefit costs and termination benefits

The Company operates a defined benefit pension plan. For post-employment benefit obligations, the cost of providing benefits is determined using the projected unit credit method, with actuarial valuations being carried out at the end of each reporting period. Remeasurement, comprising actuarial gains and losses, the effect of the changes to the asset ceiling (if applicable) and the return on plan assets (excluding interest), is reflected immediately in the separate statement of financial position with a charge or credit recognized in other comprehensive income in the period in which they occur. Remeasurement recognized in other comprehensive income is reflected immediately in retained earnings and will not be reclassified to profit or loss. Past service cost is recognized in profit or loss in the period of a plan amendment. Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit liability or asset.

Defined benefit costs are composed of service cost (including current service cost, past service cost, as well as gains and losses on curtailments and settlements), net interest expense (income) and remeasurement.

The Company presents the service cost and net interest expense (income) components in profit or loss, and the remeasurement component in other comprehensive income. Curtailment gains and losses are accounted for as past service costs.

The post-employment benefit obligation recognized in the separate statement of financial position represents the actual deficit or surplus in the Company's defined benefit plans. Any surplus resulting from this calculation is limited to the present value of any economic benefits available in the form of refunds from the plans or reductions in future contributions to the plans.

A liability for a termination benefit is recognized at the earlier of when the entity can no longer withdraw the offer of the termination benefit and when the entity recognizes any related restructuring costs.

Contributions to defined contribution retirement benefit plans are recognized as an expense when employees have rendered service entitling them to the contributions.

2.12 Share-based payment arrangements

Equity-settled share-based payments to employees are measured at the fair value of the equity instruments at the grant date.

The fair value determined at the grant date of the equity-settled share-based payments is expensed on a straight-line basis over the vesting period, based on the Company's estimate of equity instruments that will eventually vest. At the end of each reporting period, the Company revises its estimate of the number of equity instruments expected to vest. The impact of the revision of the original estimates, if any, is recognized in profit or loss, such that the cumulative expense reflects the revised estimate, with a corresponding adjustment in other component of equity.

2. Summary of significant accounting policies (cont'd)

2.13 Current and Deferred tax

Income tax expense represents the sum of the tax currently payable and deferred tax.

1) Current tax
The tax currently payable is based on taxable profit for the year. Taxable profit differs from profit as reported in the separate statement of profit or loss and comprehensive income because of items of income or expense that are taxable or deductible in other years and items that are never taxable or deductible. The Company's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period.

2) Deferred tax
Deferred tax is recognized on temporary differences between the book amounts of assets and liabilities in the separate financial statements and the corresponding tax bases used in the computation of taxable profit. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilized. Such deferred tax assets and liabilities are not recognized if the temporary difference arises from goodwill or from the initial recognition (other than in a business combination) of other assets and liabilities in a transaction that affects neither the taxable profit nor the accounting profit.

The book amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow all or part of the asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset realized, 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 assets reflects the tax consequences that would follow from the manner in which the Company expects, at the end of the reporting period, to recover or settle the book amount of its assets and liabilities.

3) Current and deferred tax for the year
Current tax and deferred tax are recognized in profit or loss, except when they relate to items that are recognized in other comprehensive income or directly in equity, in which case, the current and deferred taxes are also recognized in other comprehensive income or directly in equity, respectively. Where current tax or deferred tax arises from the initial accounting for a business combination, the tax effect is included in the accounting for the business combination.

2.14 Government grants

Government grants are not recognized until there is reasonable assurance that the Company will comply with the conditions attaching to them and that the grants will be received.

The benefit of a government loan at a below-market rate of interest is treated as a government grant, measured as the difference between proceeds received and the fair value of the loan based on prevailing market interest rates.

Government grants related to assets are presented in the separate statement of financial position by deducting the grant from the book amount of the asset. The related grant is recognized in profit or loss over the life of a depreciable asset as a reduced depreciation expense.

2. Summary of significant accounting policies (cont'd)

Government grants related to income are recognized in profit or loss on a systematic basis over the periods in which the Company recognizes as expenses the related costs for which the grants are intended to compensate. Government grants that are receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the Company with no future-related costs are recognized in profit or loss in the period in which they become receivable.

2.15 Property, plant and equipment

Property, plant and equipment are initially stated at cost and subsequently recorded at cost, less accumulated depreciation, and accumulated impairment losses, except for land, which is recorded using revaluation model. The cost of an item of property, plant and equipment is directly attributable to their purchase or construction, which includes 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. It also includes the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located.

Subsequent costs are recognized in book amount of an asset or as a separate asset, if it is probable that future economic benefits associated with the assets will flow to the Company and the cost of an asset can be measured reliably. Costs associated with routine repairs and maintenance are expensed as they are incurred.

The Company does not depreciate land. Depreciation expense is computed using the straight-line method, based on the estimated useful lives of the assets as follows:

	Estimated useful lives (in years)
Buildings	5–50
Structures	2–30
Machinery	2–15
Others	2–10

If each part of an item of property, plant and equipment has a cost that is significant in relation to the total cost of the item, then it is depreciated separately.

The Company reviews the depreciation method, the estimated useful lives and residual values of property, plant and equipment at the end of each annual reporting period. If expectations differ from previous estimates, the changes are accounted for as a change in an accounting estimate.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected to arise from the continued use of the asset. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the book amount of the asset) is included in profit or loss for the period in which the property is derecognized.

2. Summary of significant accounting policies (cont'd)

2.16 Investment properties

Investment properties are properties held to earn rentals and/or for capital appreciation (including property under construction for such purposes). Investment properties are measured initially at cost, including transaction costs. Subsequent to initial recognition, investment properties are stated at fair value, with any gains or losses arising on fair value fluctuation recognized in profit or loss.

Subsequent costs are recognized in book amount of an asset or as a separate asset if it is probable that future economic benefits associated with the assets will flow into the Company and the cost of an asset can be measured reliably. Costs associated with routine repairs and maintenance are expensed as they incurred.

An investment property is derecognized upon disposal or when the investment property is permanently withdrawn from use and no future economic benefits are expected from the disposal. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the book amount of the asset) is included in profit or loss in the period in which the property is derecognized.

2.17 Intangible assets

1) Intangible assets acquired separately
Intangible assets with finite useful lives that are acquired separately are carried at cost, less accumulated amortization and accumulated impairment losses. Amortization is recognized on a straight-line basis over their estimated useful lives. The estimated useful life and amortization method are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis. Intangible assets with indefinite useful lives that are acquired separately are carried at cost, less accumulated impairment losses.

2) Internally generated intangible assets
Expenditure on research activities is recognized as an expense in the period in which it is incurred.

Expenditure arising from development (or from the development phase of an internal project) is recognized as an intangible asset, if, and only if, the development project is designed to produce new or substantially improved products, and the Company can demonstrate the technical and economic feasibility and measure reliably the resources attributable to the intangible asset during its development.

Subsequent to initial recognition, internally generated intangible assets are reported at cost, less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

3) Intangible assets acquired in a business combination
Intangible assets that are acquired in a business combination and recognized separately from goodwill are initially recognized at their fair value at the acquisition date. Subsequent to initial recognition, intangible assets acquired in a business combination are reported at cost, less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

4) Derecognition of intangible assets
An intangible asset is derecognized on disposal or when no future economic benefits are expected from its use. Gains or losses arising from derecognition of an intangible asset, measured as the difference between the net disposal proceeds and the book amount of the asset, are recognized in profit or loss when the asset is derecognized.

2. Summary of significant accounting policies (cont'd)

5) Amortization of intangible assets

Intangible assets (membership) with indefinite useful lives are not amortized. Intangible assets other than not amortized intangible assets are using the straight-line method, based on the estimated useful lives of the assets as follows:

	Estimated useful lives (in years)
Development costs	5–10
Industrial rights	5
Other intangible assets	4–15

2.18 Impairment of tangible and intangible assets other than goodwill

At the end of each reporting period, the Company reviews the book amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). When it is not possible to estimate the recoverable amount of an individual asset, the Company estimates the recoverable amount of the CGU to which the asset belongs.

Membership with indefinite useful lives or intangible assets that are not yet available for use are tested for impairment at least annually, and whenever there is an indication that the asset may be impaired.

Recoverable amount is the higher of fair value, less costs to sell and value in use. If the recoverable amount of an asset (or a CGU) is estimated to be less than its book amount, the book amount of the asset (or the CGU) is reduced to its recoverable amount and the reduced amount is recognized in profit or loss.

When an impairment loss subsequently reverses, the book amount of the asset (or a CGU) is increased to the revised estimate of its recoverable amount, but so that the increased book amount does not exceed the book amount that would have been determined had no impairment loss been recognized for the asset (or the CGU) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

2.19 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost of inventories, except for those in transit, are measured under the total average cost method and consists of the purchase price, cost of conversion and other costs incurred in bringing the inventories to their present location and condition. Net realizable value represents the estimated selling price for inventories, less all estimated costs of completion and costs necessary to make the sale.

When inventories are sold, the book amount of those inventories is recognized as an expense (cost of sales) in the period in which the related revenue is recognized. The amount of any write-down of inventories to net realizable value and all losses of inventories is 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, is recognized as a reduction in the amount of inventories recognized as an expense in the period in which the reversal occurs.

2.20 Provisions

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

2. Summary of significant accounting policies (cont'd)

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. When a provision is measured using the cash flows estimated to settle the present obligation, its book amount is the present value of those cash flows (where the effect of the time value of money is material). The discount rate used is a pretax rate that reflects current market assessments of the time value of money and the risks specific to the liability. Where discounting is used, the increase in the provision due to the passage is recognized in profit or loss as financial cost.

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

At the end of each reporting period, the remaining provision balance is reviewed and assessed to determine if the current best estimate is being recognized. If the existence of an obligation to transfer economic benefit is no longer probable, the related provision is reversed during the period.

2.21 Financial instruments

Financial assets are recognized when an entity becomes a party to the contractual provisions of the instruments. Financial assets are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issue of financial assets are added to or deducted from the fair value of the financial assets, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets at fair value through profit or loss ("FVTPL") are recognized immediately in profit or loss.

Financial assets are classified into the following specified categories: 'financial assets at FVTPL', 'held-to-maturity investments', 'available-for-sale ("AFS") financial assets' and 'loans and receivables'. The classification depends on the nature and purpose of the financial assets, and is determined at the time of initial recognition.

1) Effective interest method
The effective interest method is a method of calculating the amortized cost of a debt instrument and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the debt instrument, or, where appropriate, a shorter period, to the net book amount on initial recognition.

Interest income is recognized on an effective interest basis for debt instruments other than those financial assets classified as at FVTPL.

2) Financial assets at FVTPL
Financial assets are classified as at FVTPL when the financial asset is either held for trading or it is designated as at FVTPL. A financial asset is classified as held for trading, if it has been acquired principally for the purpose of selling it in the near term; or on initial recognition it is part of a portfolio of identified financial instruments that the Company manages together and has a recent actual pattern of short-term profit-taking; or it is a derivative that is not designated and effective as a hedging instrument. Financial assets at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss.

2. Summary of significant accounting policies (cont'd)

3) Held-to-maturity investments
Non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the Company has the positive intent and ability to hold to maturity are classified as held-to-maturity investments. Held-to-maturity investments are measured at amortized cost using the effective interest method, less any impairment, with revenue recognized on an effective-yield basis.

4) AFS financial assets
AFS financial assets are non-derivatives that are either designated as AFS or are not classified as loans and receivables, held-to-maturity investments or financial assets at FVTPL.

They are subsequently measured at fair value at the end of each reporting period. Changes in the book amount of AFS monetary financial assets are recognized in other comprehensive income (as investments revaluation reserve). When the investment is disposed of, or is determined to be impaired, the cumulative gain or loss previously accumulated in other comprehensive income is reclassified to profit or loss.

Dividends on AFS equity instruments are recognized in profit or loss when the Company's right to receive the dividends is established.

AFS equity investments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured and derivatives that are linked to and must be settled by delivery of such unquoted equity investments are measured at cost, less any identified impairment losses at the end of each reporting period.

5) Loans and receivables
Non-derivative financial assets that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Loans and receivables are measured at amortized cost using the effective interest method, less any impairment. Interest income is recognized by applying the effective interest rate, except for short-term receivables when the effect of discounting is immaterial.

6) Impairment of financial assets
Financial assets, other than those at FVTPL, are assessed for indicators of impairment at the end of each reporting period. Financial assets are considered to be impaired when there is objective evidence that more events occurred after the initial recognition of the financial asset and the estimated future cash flows of the investment have been affected.

For AFS equity investments, a significant or prolonged decline in the fair value of the security below its cost is considered to be objective evidence of impairment.

For certain categories of financial asset, such as trade receivables, assets that are assessed not to be impaired individually are, in addition, assessed for impairment on a collective basis. Objective evidence of impairment for a portfolio of receivables could include the Company's past experience of collecting payments, an increase in the number of delayed payments in the portfolio past the average credit period, as well as observable changes in national or local economic conditions that correlate with default on receivables.

For financial assets carried at amortized cost, the amount of the impairment loss recognized is the difference between the asset's book amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

2. Summary of significant accounting policies (cont'd)

For financial assets that are carried at cost, the amount of the impairment loss recognized is the difference between the asset's book amount and the present value of estimated future cash flows, discounted at the current market rate of return for a similar financial asset. Such impairment loss will not be reversed in subsequent periods.

When an AFS financial asset is considered to be impaired, cumulative gains or losses previously recognized in other comprehensive income are reclassified to profit or loss in the period.

For financial assets measured at amortized cost, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, the previously recognized impairment loss is reversed through profit or loss to the extent that the book amount of the investment at the date the impairment is reversed does not exceed what the amortized cost would have been had the impairment not been recognized.

In respect to AFS equity securities, impairment losses previously recognized in profit or loss are not reversed through profit or loss. Any increase in fair value subsequent to an impairment loss is recognized in other comprehensive income. In respect to AFS debt securities, impairment losses are subsequently reversed through profit or loss if an increase in the fair value of the investment can be objectively related to an event occurring after the recognition of the impairment loss.

7) Derecognition of financial assets
The Company derecognizes a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity. If the Company neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the Company recognizes its retained interest in the asset and an associated liability for amounts it may have to pay. If the Company retains substantially all the risks and rewards of ownership of a transferred financial asset, the Company continues to recognize the financial asset and also recognizes a collateralized borrowing for the proceeds received.

On derecognition of a financial asset, the difference between the asset's book amount and the sum of the consideration received and receivable, and the cumulated gain or loss that had been recognized in other comprehensive income and accumulated in equity is recognized in profit or loss.

On derecognition of a financial asset other than in its entirety (e.g., when the Company retains an option to repurchase part of a transferred asset, or it retains a residual interest, and such a retained interest indicates that the transferor has neither transferred nor retained substantially all the risks and rewards of ownership and has retained control of the transferred asset), the Company allocates the previous book amount of the financial asset between the part it continues to recognize under continuing involvement and the part it no longer recognizes on the basis of the relative fair value of those parts on the date of the transfer.

2.22 Financial liabilities and equity instruments

1) Classification as debt or equity
Debt and equity instruments are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangement and the definitions of financial liability and an equity instrument.

2. Summary of significant accounting policies (cont'd)

2) Equity instruments
An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by the Company are recognized at the proceeds received, net of direct issue costs.

Repurchase of the Company's own equity instruments is recognized and deducted directly in equity. No gain or loss is recognized in profit or loss on the purchase, sale, issue or cancellation of the Company's own equity instruments.

3) Compound instruments
The component parts of compound instruments (convertible bonds) issued by the Company are classified separately as financial liabilities and equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and equity instrument. Conversion option that will be settled by the exchange of a fixed amount of cash or another financial asset for a fixed number of the Company's own equity instruments is an equity instrument.

At the date of issue, the fair value of the liability component is estimated using the prevailing market interest rate for a similar non-convertible instrument. This amount is recorded as a liability on an amortized cost basis using the effective interest method until extinguished upon conversion or at the instrument's maturity date.

The conversion option classified as equity is determined by deducting the amount of the liability component from the fair value of the compound instrument as a whole. This is recognized and included in equity, net of income tax effects, and is not subsequently remeasured. In addition, the conversion option classified as equity will remain in equity until the conversion option is exercised, in which case, the balance recognized in equity will be transferred to share premium. No gain or loss is recognized in profit or loss upon conversion or expiration of the conversion option.

4) Financial liabilities
Financial liabilities are recognized when the Company becomes a party to the contractual provisions of the instruments. Financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the issue of financial liabilities are deducted from the fair value of the financial liabilities on initial recognition. Transaction costs directly attributable to acquisition of financial liabilities at FVTPL are recognized immediately in profit or loss.

Financial liabilities are classified as either financial liabilities at FVTPL or other financial liabilities.

5) Financial liabilities at FVTPL
Financial liabilities are classified as financial liabilities at FVTPL when the financial liability is either held for trading or it is designated as financial liabilities at FVTPL.

Financial liabilities at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any interest paid on the financial liability and is included in the 'Other non-operating income and expenses' line item in the separate statements of profit or loss.

6) Other financial liabilities
Other financial liabilities are subsequently measured at amortized cost using the effective interest method, with interest expense recognized on an effective yield basis.

2. Summary of significant accounting policies (cont'd)

7) Financial guarantee liabilities
A financial guarantee contract is a contract that requires the issuer to make specified payments to reimburse the holder for a loss it incurs because a specified debtor fails to make payments when due in accordance with the terms of a debt instrument.

Financial guarantee liabilities are initially measured at their fair values and, if not designated as at FVTPL, are subsequently measured at the higher of:

- the amount of the obligation under the contract, as determined in accordance with KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets* and
- the amount initially recognized, less cumulative amortization recognized in accordance with the KIFRS 1018 *Revenue*

8) Derecognition of financial liabilities
The Company derecognizes financial liabilities when the Company's obligations are discharged, canceled or expired. The difference between the book amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

2.23 Derivative financial instruments

The Company enters into a variety of derivative financial instruments to manage its exposure to foreign exchange rate risk, including foreign exchange forward contracts, interest rate swaps and cross currency swaps.

Derivatives are initially recognized at fair value at the date the derivative contract is entered into and are subsequently remeasured to their fair value at the end of each reporting period. The resulting gain or loss is recognized in profit or loss immediately, unless the derivative is designated and effective as a hedging instrument, in such case, the timing of the recognition in profit or loss depends on the nature of the hedge relationship.

A derivative with a positive fair value is recognized as a financial asset, a derivative with a negative fair value is recognized as a financial liability. A derivative is presented as a non-current asset or a non-current liability, if the remaining maturity of the instrument is more than 12 months and it is not expected to be realized or settled within 12 months. Other derivatives are presented as current assets or current liabilities.

1) Embedded derivatives
Derivatives embedded in non-derivative host contracts are treated as separate derivatives when they meet the definition of a derivative, their risks and characteristics are closely related to those of the host contracts and the contracts are not measured at FVTPL.

2) Hedge accounting
The Company designates certain hedging instruments, which include derivatives, embedded derivatives and non-derivatives in respect to foreign currency risk, as either fair value hedges, cash flow hedges or hedges of net investments in foreign operations.

At the inception of the hedge relationship, the entity documents the relationship between the hedging instrument and the hedged item, along with its risk management objectives and its strategy for undertaking various hedge transactions. Furthermore, at the inception of the hedge and on an ongoing basis, the Company documents whether the hedging instrument is highly effective in offsetting changes in fair values or cash flows of the hedged item.

2. Summary of significant accounting policies (cont'd)

3) Fair value hedges
Changes in the fair value of derivatives that are designated and qualify as fair value hedges are recognized in profit or loss immediately, together with any changes in the fair value of the hedged asset or liability that are attributable to the hedged risk. The change in the fair value of the hedging instrument and the change in the hedged item attributable to the hedged risk are recognized in the line of the separate statements of comprehensive income relating to the hedged item.

Hedge accounting is discontinued when the Company revokes the hedging relationship, when the hedging instrument expires or is sold, terminated or exercised, or when it no longer qualifies for hedge accounting. The fair value adjustment to the book amount of the hedged item arising from the hedged risk is amortized to profit or loss from that date.

4) Cash flow hedges
The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognized in other comprehensive income. The gain or loss relating to the ineffective portion is recognized immediately in profit or loss, and is included in the 'Finance income and expenses' line item.

Amounts previously recognized in other comprehensive income and accumulated in equity are reclassified to profit or loss in the periods when the hedged item is recognized in profit or loss, in the same line of the separate statements of comprehensive income as the recognized hedged item.

Hedge accounting is discontinued when the Company revokes the hedging relationship, when the hedging instrument expires or is sold, terminated or exercised, or it no longer qualifies for hedge accounting. Any gain or loss accumulated in equity at that time remains in equity and is recognized when the forecast transaction is ultimately recognized in profit or loss. When a forecast transaction is no longer expected to occur, the gain or loss accumulated in equity is recognized immediately in profit or loss.

2.24 Fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, regardless of whether that price is directly observable or estimated using another valuation technique. In estimating the fair value of an asset or a liability, the Company takes into account the characteristics of the asset or liability if market participants would take those characteristics into account when pricing the asset or liability at the measurement date. Fair value for measurement and/or disclosure purposes in these separate financial statements is determined on such a basis, except for share-based payment transactions that are within the scope of KIFRS 1102 *Share-based Payment*, leasing transactions that are within the scope of KIFRS 1017 *Leases,* and measurements that have some similarities to fair value but are not fair value, such as net realizable value in KIFRS 1002 *Inventories*, or value in use in KIFRS 1036 *Impairment of Assets*.

In addition, for financial reporting purposes, fair value measurements are categorized into Levels 1, 2 or 3 based on the degree to which the inputs to the fair value measurements are observable and the significance of the inputs to the fair value measurement in their entireties, which are described in Note 10.

2.25 Approval of issuance of the financial statements

The separate financial statements as at and for the year ended December 31, 2017, were approved by the Board of Directors on March 5, 2018 and are subject to change with the approval of shareholders at their Annual General Meeting.

3. Critical accounting estimates and assumptions

In the application of the Company's accounting policies, which are described in Note 2, management is required to make judgments, estimates and assumptions about the book amounts of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period or in the period of the revision and future periods if the revision affects both current and future periods.

3.1 Revenue recognition

Revenue from a contract to provide services is recognized by reference to the stage of completion of the contract. The stage of completion of the contract is determined as reasonable estimation and is subject to change as related factors change.

3.2 Impairment of goodwill

Determining whether goodwill is impaired requires an estimation of the recoverable amount of the CGUs to which goodwill has been allocated. The recoverable amount calculation requires the directors to estimate the future cash flows expected to arise from the CGU and a suitable discount rate in order to calculate the present value.

3.3 Defined benefit obligation

The Company's defined benefit obligation is determined based on the actuarial valuation carried out at the end of each annual reporting period. Actuarial assumptions are the Company's best estimates of the variables, such as discount rates, rates of expected future salary increases and mortality rates.

3.4 Provisions

Provisions for the expected cost of warranty obligations are recognized at the best estimate of the expenditure required to settle the Company's current and future obligations. Provisions are determined by the estimate based on past experience.

3.5 Fair value model on investment properties

As stated in Note 14, the Company uses evaluation technique, including inputs that are not based on observable market data to approximate revalued amount of land classified as property, plant and equipment and fair value of investment property. The Company's management believes that the evaluation technique and assumptions that are used for valuation on land and investment in real properties are fair.

3.6 Deferred tax

Recognition and measurement of deferred tax assets and liabilities require the management's judgment, in particular, whether to recognize if the scope of deferred tax assets is affected by management's judgment and assumption in the future.

3.7 Estimated useful lives of property, plant, equipment and intangible assets

It is required to estimate useful lives for depreciation and amortization.

4. Financial risk management

The Company is exposed to various financial risks, such as market (foreign currency risk and interest rate risk), credit and liquidity related to the operations of the Company. The purpose of risk management policy is to minimize potential risks, which could have an adverse effect on financial performance.

Financial risk management activities are performed by Treasury and International Finance department, in accordance with the aforementioned documented risk management policies. In addition, the Company enters into derivative contracts to hedge against certain risks.

4.1. Market risk

1) Foreign currency risk

The Company's exposure to the risk of changes in foreign exchange rates relates primary to the Company's international operating activities. The Company's objectives of foreign currency risk management is to minimize uncertainty and volatility arising from fluctuations in foreign currency. Foreign currency risk is managed in accordance with to the Company's policy on foreign currency, and currency trading for speculative purpose is prohibited.

The Company reduces exposure to foreign currency risk by matching the inflow and the outflow of foreign currencies (natural hedge) and manages foreign currency risk by using currency derivatives, such as currency forwards, for the remaining exposure.

The book amount of the Company's monetary assets and liabilities denominated in foreign currencies, which represents the maximum exposure to foreign currency risk as at December 31, 2017 and 2016, is as follows (Korean won in millions):

	December 31, 2017					
	USD	EUR	JPY	GBP	Others(*1)	Total
Assets	₩ 224,167	₩ 29,666	₩ 887	₩ 32,683	₩ 29,277	₩ 316,680
Liabilities	(166,462)	(1,438)	(2,824)	(573)	(160)	(171,457)
Net assets (liabilities)	₩ 57,705	₩ 28,228	₩ (1,937)	₩ 32,110	₩ 29,117	₩ 145,223

	December 31, 2016					
	USD	EUR	JPY	GBP	Others (*1)	Total
Assets	₩ 205,371	₩ 21,657	₩ 1,885	₩ 27,387	₩ 17,400	₩ 273,700
Liabilities	(213,184)	(1,606)	(2,187)	(312)	(598)	(217,887)
Net assets (liabilities)	₩ (7,813)	₩ 20,051	₩ (302)	₩ 27,075	₩ 16,802	₩ 55,813

(*1) Others are assets and liabilities denominated in foreign currencies other than USD, EUR, JPY and GBP.

Net loss on foreign currency translation recognized in profit or loss for the years ended December 31, 2017 and 2016, is ₩ 1,697 million and ₩ (4,876) million, respectively.

4. Financial risk management (cont'd)

The table below summarizes the impact of increases/decreases of currency exchange rates on profit before income tax expense for the period. The analysis is based on the assumption that the currency exchange rates has increased/decreased by 10% with all other variables held constant (Korean won in millions).

	Impact on profit before income tax expense	
	2017	2016
Increase	₩ 14,522	₩ 5,581
Decrease	(14,522)	(5,581)

The above-mentioned sensitivity analysis is based on monetary assets and liabilities denominated in foreign currencies other than the Company's functional currency as at December 31, 2017 and 2016.

2) Interest rate risk

The Company's interest rate risk is related to borrowings and bank deposits with floating interest rates, and related interest income and expense are exposed to interest rate risk. The Company is exposed to interest rate risk mainly due to its borrowing with floating interest rates. The purpose of interest rate risk management is to minimize uncertainty and financial expense arising from interest rate fluctuation.

To manage its interest rate risk, the Company minimizes external borrowings using internal funds and reduces borrowings with high interest rates and maintains an appropriate balance between borrowings with floating interest rate and fixed-interest rate and short-term and long-term borrowings. The Company manages its interest rate risk preemptively through regular monitoring and adjustments to the changing domestic and overseas markets conditions and nature of its interest rates.

The book amount of the Company's financial assets and liabilities with floating interest rates exposed to interest rate risk as at December 31, 2017 and 2016, is as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Financial assets	₩ 54,872	₩ 154,175
Financial liabilities	(304,284)	(554,804)
Net liabilities	₩ (249,412)	₩ (400,629)

A sensitivity analysis on the Company's income before tax assuming a 1% increase and decrease in interest rates for the years ended December 31, 2017 and 2016, is as follows (Korean won in millions):

	Impact on profit before income tax expense	
	2017	2016
Increase	₩ (2,494)	₩ (4,006)
Decrease	2,494	4,006

4. Financial risk management (cont'd)

3) Price risk

The Company is exposed to equity price risks arising from its listed equity investments among AFS equity investments. The Company periodically measures the risk as the fair value or future cash flows of equity investments may fluctuate due to the changes in market prices. Important investments in the Company's portfolio are individually managed, and acquisition and disposal are approved by the Board of Directors.

4.2. Credit risk

The credit risk refers to risk of financial losses to the Company when the counterparty defaults on the obligations of the contract. The credit risk arises from AFS financial assets, which are not equity securities, deposits in financial institution, financial derivatives and guarantee limit as well as from the Company's normal transaction and investing activity. To manage credit risk, the Company evaluates the creditworthiness of each customer or counterparty considering the financial status, past experience and other factors. The Company establishes credit limit for each customer and counterparty.

The Company evaluates the creditworthiness using open financial information and information provided by credit rating institution when the Company contracts with new customers. The Company decides credit transaction limit and is provided with collateral and guarantee based on evaluation.

Also, the Company revaluates customers' creditworthiness periodically, reassesses credit transaction limit and readjusts level of collateral. The Company reports the present condition of delayed collection and collection measures periodically to financial assets, which has delayed collection and takes measures by causes of delay.

The book amount of the Company's financial assets and liabilities, which represents the maximum exposure to credit risk as at December 31, 2017 and 2016, is as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Loans and receivables:		
Cash and cash equivalents	₩ 56,560	₩ 155,824
Financial instruments	69	69
Trade and other receivables	490,637	453,464
Deposits provided	40,700	41,257
AFS financial assets:		
Long and short-term investment securities	88,475	1,497
Derivative assets	3,247	402
	₩ 679,688	₩ 652,513

Above-mentioned cash and cash equivalents include the amount of cash held by the Company.

Apart from the above financial assets, the maximum exposure to credit risk of financial guarantee contract is the maximum amount to be paid if the guarantee will be charged (Note 30).

4. Financial risk management (cont'd)

Details of trade and other receivables among the financial assets as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017			
	Receivables not past due	Past due but not impaired	Impaired	Total
Trade receivables	₩ 329,940	₩ 42,347	₩ 26,945	₩ 399,232
Other receivables	59,202	10,189	1,039	70,430
Accrued income	197	-	-	197
Loans	44,154	-	5	44,159
	₩ 433,493	₩ 52,536	₩ 27,989	₩ 514,018

	December 31, 2016			
	Receivables not past due	Past due but not impaired	Impaired	Total
Trade receivables	₩ 221,054	₩ 45,667	₩ 33,947	₩ 300,668
Other receivables	83,132	35,289	1,017	119,438
Accrued income	1,584	-	-	1,584
Loans	56,227	-	5	56,232
	₩ 361,997	₩ 80,956	₩ 34,969	₩ 477,922

The Company has recognized the provision for impairment of ₩23,380 million as at December 31, 2017 (2016: ₩23,457 million).

The aging analysis of financial assets not impaired as at December 31, 2017 and 2016, is as follows (Korean won in millions):

	December 31, 2017				
	Less than 3 months	Between 3–6 months	Between 6–12 months	Over 1 year	Total
Trade receivables	₩ 20,591	₩ 7,179	₩ 9,036	₩ 5,541	₩ 42,347
Other receivables	6,171	381	1,481	2,156	10,189
	₩ 26,762	₩ 7,560	₩ 10,517	₩ 7,697	₩ 52,536

	December 31, 2016				
	Less than 3 months	Between 3–6 months	Between 6–12 months	Over 1 year	Total
Trade receivables	₩ 24,890	₩ 12,169	₩ 7,595	₩ 1,013	₩ 45,667
Other receivables	26,896	1,319	2,443	4,631	35,289
	₩ 51,786	₩ 13,488	₩ 10,038	₩ 5,644	₩ 80,956

Provision for impaired trade receivables is recognized by applying appropriate allowance rate for receivables that are assessed to be impaired individually due to insolvency, bankruptcy and others. A group of financial assets that is not individually significant but have similar credit risk characteristics is assessed for impairment on a collective basis. Provision for impaired trade receivables is recognized based on aging analysis and the Company's past experience of receivables collection.

AFS financial assets, held-to-maturity financial assets, deposits in financial institutions and derivative instruments are individually assessed to be impaired.

4. Financial risk management (cont'd)

4.3. Liquidity risk

Liquidity risk is the risk that the Company is unable to meet its payment obligations arising from financial liabilities as they fall due.

The Company regularly establishes funding plan in order to manage liquidity risk. Ongoing analysis and review on the budget and actual cash outflow to correspond maturity structure of financial assets and financial liabilities have been made.

Maturity analysis of financial liabilities except for derivatives as at December 31, 2017 and 2016, is as follows (Korean won in millions):

	December 31, 2017					
		Nominal cash flows according to contract				
	Book amount	Total	Less than 1 year	Between 1–2 years	Between 2–5 years	Over 5 years
Financial liabilities	₩ 1,475,021	₩ 1,477,257	₩ 995,550	₩ 347,818	₩ 133,889	₩ -
Interest on financial liabilities	-	43,616	30,554	11,888	1,174	-
	₩ 1,475,021	₩ 1,520,873	₩ 1,026,104	₩ 359,706	₩ 135,063	₩ -

	December 31, 2016					
		Nominal cash flows according to contract				
	Book amount	Total	Less than 1 year	Between 1–2 years	Between 2–5 years	Over 5 years
Financial liabilities	₩ 1,467,766	₩ 1,469,641	₩ 934,573	₩ 408,924	₩ 126,144	₩ -
Interest on financial liabilities	-	51,050	30,651	15,386	5,013	-
	₩ 1,467,766	₩ 1,520,691	₩ 965,224	₩ 424,310	₩ 131,157	₩ -

The above-mentioned maturity analysis is based on undiscounted cash flow according to the contract, which is different from non-derivative liabilities in the separate statements of financial position. Apart from the above-mentioned non-derivative liabilities, as at December 31, 2017, financial guarantee contract liabilities of the Company are explained in Note 30.

4.4. Capital risk

The Company performs capital risk management to maintain its ability to continuously provide profits to shareholders and parties in interest and to maintain optimum capital structure to reduce capital expenses.

Consistent with others in the industry, the Company monitors capital on the basis of debt-to- equity ratio. Debt-to-equity ratio calculated as total liabilities divided by equity is used as an index to manage the Company's capital similar to overall industry practice.

Debt-to-equity ratios as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Total liabilities	₩ 1,750,271	₩ 1,632,123
Total equity	2,199,759	2,112,550
Debt-to-equity ratio	79.57%	77.26%

5. Restricted financial assets

Details of restricted financial assets as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017	December 31, 2016	Description
Long-term financial instruments	₩ 69	₩ 69	Bank transaction deposits, establish the right of pledge and others

6. Short-term and long-term investment securities

Details of short-term and long-term investment securities as at December 31, 2017 and 2016, are as follows (Korean won in millions):

			December 31, 2017	December 31, 2016
Short-term investment securities	Available-for-sale financial assets	Beneficiary certificates	₩ 1,497	₩ 1,497
Long-term investment securities	Available-for-sale financial assets	Unmarketable equity securities	235	235
		Beneficiary certificates(*1)	88,051	454
		Equity investments	1,347	999
			₩ 89,633	₩ 1,688

(*1) Included in unsecured bond with warrants issued by Doosan Heavy Industries & Construction Co., Ltd. ("DHC") on May 4, 2017, and the Company has separately recognized stock warrants.

	Bonds with warrants
Par value	₩ 92,043 million
Due date	2022.5.4(5 years from the issue date)
Nominal interest rate	1.00%
Guaranteed rate of return	2.00% (105.2448% of the principal amount)
The option of early redemption	Can be exercised 3 years (2020.5.4) from the issue date (103.0839% of the principal amount)
Exercise price	₩18,800
Exercise rate	124.73%

The short-term and long-term investment securities are measured at fair value or cost, taking into account the market prices announced in active markets.

Changes in unrealized gain on AFS financial assets for the years ended December 31, 2017, are as follows (Korean won in millions):

	2017			
	Beginning balance	Valuation	Disposals and others	Ending balance
Beneficiary certificates	₩ -	₩ (2,533)	₩ -	₩ (2,533)
Tax effect	-	613	-	613
	₩ -	₩ (1,920)	₩ -	₩ (1,920)

7. Trade and other receivables

Trade and other receivables as at December 31, 2017 and 2016, consist of the following (Korean won in millions):

	December 31, 2017			December 31, 2016		
	Gross	Provision for impairment	Book amount	Gross	Provision for impairment	Book amount
Current:						
Trade receivables	₩ 399,051	₩ (22,093)	₩ 376,958	₩ 300,487	₩ (23,182)	₩ 277,305
Other receivables	70,395	(1,066)	69,329	119,403	(1,054)	118,349
Accrued income	197	-	197	1,584	-	1,584
Short-term loans	38,933	(5)	38,928	913	(5)	908
	₩ 508,576	₩ (23,164)	₩ 485,412	₩ 422,387	₩ (24,241)	₩ 398,146
Non-current:						
Trade receivables	₩ 181	₩ (181)	₩ -	₩ 181	₩ (181)	₩ -
Other receivables	35	(35)	-	35	(35)	-
Long-term loans	5,226	-	5,226	55,318	-	55,318
	₩ 5,442	₩ (216)	₩ 5,226	₩ 55,534	₩ (216)	₩ 55,318

The changes in allowance for doubtful accounts are as follows (Korean won in millions):

	Beginning balance	Provision for impaired receivables	Write off	Ending balance
Trade receivables	₩ (23,182)	₩ (19)	₩ 1,108	₩ (22,093)
Other receivables	(1,054)	(12)	-	(1,066)
Short-term loans	(5)	-	-	(5)
Long-term trade receivables	(181)	-	-	(181)
Long-term other receivables	(35)	-	-	(35)
	₩ (24,457)	₩ (31)	₩ 1,108	₩ (23,380)

The creation of provision for impaired trade receivables has been included in 'selling and administrative expense' in the separate statement of profit or loss. And that of other receivables have been included in 'other operating expense'.

8. Inventories

Inventories as at December 31, 2017 and 2016, are summarized as follows (Korean won in millions):

	December 31, 2017			December 31, 2016		
	Acquisition cost	Valuation allowance	Book amount	Acquisition cost	Valuation allowance	Book amount
Merchandise	₩ 108,566	₩ (2,131)	₩ 106,435	₩ 57,183	₩ (1,226)	₩ 55,957
Finished goods	89,226	(1,588)	87,638	43,949	(2,533)	41,416
Work in progress	31,773	(798)	30,975	24,343	(79)	24,264
Raw materials	123,595	(4,238)	119,357	76,727	(3,460)	73,267
Materials in transit	32,682	-	32,682	15,449	-	15,449
Others	6,013	(153)	5,860	4,549	-	4,549
	₩ 391,855	₩ (8,908)	₩ 382,947	₩ 222,200	₩ (7,298)	₩ 214,902

Loss (reversal of loss) on inventory valuation (charged to cost of sales) amounted to ₩1,610 million and ₩ (144) million for the years ended December 31, 2017 and 2016, respectively.

9. Derivatives

Details of these derivative contracts are as follows:

Derivative contracts	Purpose	Description
Currency forward exchange contracts	Cash flow hedge	Adjustment from foreign currency sales to Korean won to avoid cash flow risk arising from foreign currency forecast sales
Interest rate swap	Held for trading	Recognized in profit or loss of gap between floating-interest rate and fixed-interest rate
Warrants and others	Held for trading	Recognized gap of fair value as profit or loss

Details of gain and loss on valuation of derivatives as at December 31, 2017 and 2016, are as follows (Korean won in millions, in thousands of foreign currency):

December 31, 2017						
Buy		Sell				
Currency	Amount	Currency	Amount	Derivative assets (liabilities)	Gain (loss) on valuation of derivatives	Accumulated other comprehensi-ve income(*1)
Currency forward contracts:						
KRW	15,935	USD	14,000	₩ 952	₩ -	₩ 952
KRW	6,172	GBP	4,000	393	-	393
Interest rate swap						
KRW 5,000, 3.15%		KRW 5,000, MOR 3M+1.38%		(1)	(1)	-
KRW 30,000, 3.63%		KRW 30,000, MOR 3M+1.80%		-	(16)	-
Warrants and others(*2)				1,902	(1,826)	-
				₩ 3,246	₩ (1,843)	₩ 1,345

(*1) The amounts are cash flow hedges gain (loss) on valuation of derivatives before reflecting income tax effect.
(*2) Assessment of shareholders' agreement in relation to warrants issued by DHC(Note 6) and redeemable convertible preference shares issued by Doosan Cuvex Co., Ltd. and DLI Corporation(Note 30).

9. Derivatives (cont'd)

December 31, 2016						
Buy		Sell				
Currency	Amount	Currency	Amount	Derivative assets (liabilities)	Gain (loss) on valuation of derivatives	Accumulated other comprehensi -ve income(*1)
Currency forward contracts:						
KRW	156,884	USD	133,000	₩ (3,682)	₩	₩ (3,682)
KRW	8,553	EUR	6,600	119		119
KRW	3,290	GBP	2,200	23		23
USD	8,500	KRW	9,673	260	260	-
Interest rate swap:						
KRW 5,000, 3.15%		KRW 5,000, MOR 3M+1.38%		(22)	(16)	-
KRW 30,000, 3.63%		KRW 30,000, MOR 3M+1.80%		(88)	(88)	-
				₩ (3,390)	₩ 156	₩ (3,540)

(*1) The amounts are cash flow hedges gain (loss) on valuation of derivatives before reflecting income tax effect.

10. Financial instruments by category

Categorizations of financial assets and liabilities as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017					
	Financial assets at FVTPL	Loans and receivables	AFS financial assets	Derivatives for hedging	Book amount	Fair value
Cash and cash equivalents	₩ -	₩ 56,560	₩ -	₩ -	₩ 56,560	₩ 56,560
Long and short-term financial instruments	-	69	-	-	69	69
Long and short-term investment securities	-	-	91,130	-	91,130	91,130
Trade and other receivables	-	490,637	-	-	490,637	490,637
Derivative assets	1,902	-	-	1,345	3,247	3,247
Deposits provided	-	40,700	-	-	40,700	40,700
	₩ 1,902	₩ 587,966	₩ 91,130	₩ 1,345	₩ 682,343	₩ 682,343

	December 31, 2017					
	Financial liabilities at FVTPL	Financial liabilities at amortized cost	Derivatives for hedging	Financial guarantee contract	Book amount	Fair value
Trade and other payables	₩ -	₩ 521,592	₩ -	₩ 1,084	₩ 522,676	₩ 522,676
Borrowings, bonds	-	953,429	-	-	953,429	953,429
Derivative liabilities	1	-	-	-	1	1
	₩ 1	₩ 1,475,021	₩ -	₩ 1,084	₩ 1,476,106	₩ 1,476,106

10. Financial instruments by category (cont'd)

	December 31, 2016					
	Financial assets at FVTPL	Loans and receivables	AFS financial assets	Derivatives for hedging	Book amount	Fair value
Cash and cash equivalents	₩ -	₩ 155,824	₩ -	₩ -	₩ 155,824	₩ 155,824
Long and short-term financial instruments	-	69	-	-	69	69
Long and short-term investment securities	-	-	3,185	-	3,185	3,185
Trade and other receivables	-	453,464	-	-	453,464	453,464
Derivative assets	260	-	-	142	402	402
Deposits provided	-	41,257	-	-	41,257	41,257
	₩ 260	₩ 650,614	₩ 3,185	₩ 142	₩ 654,201	₩ 654,201

	December 31, 2016					
	Financial liabilities at FVTPL	Financial liabilities at amortized cost	Derivatives for hedging	Financial guarantee contract	Book amount	Fair value
Trade and other payables	₩ -	₩ 384,337	₩ -	₩ 1,141	₩ 385,478	₩ 385,478
Borrowings, bonds	-	1,083,429	-	-	1,083,429	1,083,429
Derivative liabilities	110	-	3,682	-	3,792	3,792
	₩ 110	₩ 1,467,766	₩ 3,682	₩ 1,141	₩ 1,472,699	₩ 1,472,699

Fair value hierarchy classifications of the financial instruments as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at fair value through profit or loss	₩ -	₩ -	₩ 1,902	₩ 1,902
Derivatives for hedging	-	1,345	-	1,345
Available-for-sale financial assets	-	86,978	-	86,978
	-	88,323	1,902	90,225
Financial liabilities:				
Financial liabilities at fair value through profit or loss	-	(1)	-	(1)
Derivatives for hedging	-	-	-	-
	-	(1)	-	(1)
	₩ -	₩ 88,322	₩ 1,902	₩ 90,224

10. Financial instruments by category (cont'd)

	December 31, 2016			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at fair value through profit or loss	₩ -	₩ 260	₩ -	₩ 260
Derivatives for hedging	-	142	-	142
Available-for-sale financial assets	-	-	-	-
	-	402	-	402
Financial liabilities:				
Financial liabilities at fair value through profit or loss	-	(110)	-	(110)
Derivatives for hedging	-	(3,682)	-	(3,682)
	-	(3,792)	-	(3,792)
	₩ -	₩ (3,390)	₩ -	₩ (3,390)

The above table does not include information on financial assets and liabilities, which are not measured at fair value because there are no material differences between the fair values and the book amounts.

Definitions for each fair value hierarchy levels of the above financial instruments, are as follows:

	Significance of input variables
Level 1:	Unadjusted quoted prices in active markets for identical assets or liabilities
Level 2:	Inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly
Level 3:	Inputs that are not based on observable market data (unobservable inputs)

The fair value of financial instruments traded in active markets is based on quoted market prices at the dates of the separate statements of financial position. These instruments are included in Level 1. Instruments included in Level 1 comprise primarily listed equity investments classified as trading securities or AFS securities.

The fair value of financial instruments that are not traded in an active market (for example, over-the-counter derivatives) is determined by using valuation techniques. These valuation techniques maximize the use of observable market data where it is available and rely as little as possible on entity-specific estimates. If all significant inputs required for fair value of an instrument are observable, the instrument is included in Level 2.

If one or more of the significant inputs is not based on observable market data, the instrument is included in Level 3.

Valuation techniques and the inputs used in fair value measurements of derivative (level 2), are as follows:

Valuation technique	Observable inputs	Explanation of input parameters
Discounted cash flow method	Forward exchange rate	It is based on forward exchange rate, disclosed on the market that remaining period is the same until maturity of forward contracts. If the forward exchange rate is not disclosed on the market, it is calculated by using interpolation method.
	Discount rate	It is determined by using yield curve that is disclosed at the end of the reporting period.

10. Financial instruments by category (cont'd)

Comprehensive income (loss) on each category of financial instruments for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017													
	Profit (loss) for the period												Other comprehensive income(*1)	
	Interest		Dividends		Financial guarantee		Impairment and reversal		Disposal		Foreign exchange			
Financial assets:														
Loans and receivables	₩	4,998	₩	-	₩	-	₩	(1,392)	₩	(5,161)	₩	63,361	₩	-
Available-for-sale financial assets		1,656		24		-		-		-		-		(2,533)
		6,654		24		-		(1,392)		(5,161)		63,361		(2,533)
Financial liabilities:														
Financial liabilities at amortized cost	₩	(42,336)	₩	-	₩	-	₩	-	₩	-	₩	22,143	₩	-
Financial guarantee contract		-		-		1,272		-		-		-		-
		(42,336)		-		1,272		-		-		22,143		-

(*1) Amounts before tax effect.

	2016													
	Profit (loss) for the period												Other comprehensive income(*1)	
	Interest		Dividend		Financial guarantee		Impairment and reversal		Disposal		Foreign exchange			
Financial assets:														
Loans and receivables	₩	6,692	₩	-	₩	-	₩	(1,520)	₩	(2,819)	₩	(257)	₩	-
Available-for-sale financial assets		-		25		-		-		-		-		-
		6,692		25		-		(1,520)		(2,819)		(257)		-
Financial liabilities:														
Financial liabilities at amortized cost	₩	(38,164)	₩	-	₩	1,588	₩	-	₩	-	₩	(6,331)	₩	-

(*1) Amounts before tax effect.

10. Financial instruments by category (cont'd)

Apart from the above financial instruments, comprehensive income (loss) on derivative financial instruments for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017			2016		
	Profit or loss		Other comprehensive income(*1)	Profit or loss		Other comprehensive income(*1)
	Valuation	Disposal		Valuation	Disposal	
Derivative financial instruments for trading	₩ (1,843)	₩ 137	₩ -	₩ 156	₩ (9)	₩ -
Derivative financial instruments for hedging	-	-	4,885	-	-	(4,781)
	₩ (1,843)	₩ 137	₩ 4,885	₩ 156	₩ (9)	₩ (4,781)

(*1) Amounts before tax effect.

Financial assets and liabilities subject to an enforceable master-netting arrangement or similar agreement as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017			December 31, 2016		
	Gross recognized financial instruments	Gross financial instruments set off	Net amounts presented in the statement of financial position	Gross recognized financial instruments	Gross financial instruments set off	Net amounts presented in the statement of financial position
Financial assets:						
Trade receivables	₩ 11,691	₩ (6,246)	₩ 5,445	₩ 9,386	₩ (4,422)	₩ 4,964
Other receivables	261	(64)	196	144	(14)	130
	₩ 11,951	₩ (6,310)	₩ 5,641	₩ 9,530	₩ (4,436)	₩ 5,094
Financial liabilities:						
Trade payables	₩ 74,087	₩ (6,310)	₩ 67,777	₩ 50,775	₩ (4,436)	₩ 46,339

11. Investments in subsidiaries, associates and joint ventures

Details of investments in subsidiaries, associates and joint ventures as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	Location	Ownership interests (%)	December 31, 2017	December 31, 2016
Subsidiaries:				
Doosan Heavy Industries & Construction Co., Ltd. ("b")	Korea	36.82	₩ 1,232,946	₩ 1,232,946
Oricom Inc. ("Oricom")	Korea	63.41	23,168	23,168
Dootamall Co., Ltd.(*6)	Korea	100.00	231,550	231,550
Doosan Feed & Livestock Co., Ltd.(*1)	Korea	-	-	15,757
Doosan Bears Inc.	Korea	100.00	11,138	11,138
DIP Holdings Co., Ltd. ("DIP")(*5)	Korea	100.00	164,169	164,169
DLI Corporation	Korea	100.00	8,000	4,000
Doosan Information and Communications America LLC	U.S.	100.00	4,889	4,889
Doosan Information and Communications China Co., Ltd.	China	100.00	3,230	3,230
Doosan Information and Communications Europe Ltd	U.K.	100.00	4,870	4,870
Doosan Mottrol (Jiangyin) Co., Ltd.	China	100.00	21,601	21,601
Doosan Electro-Materials (Changshu) Co., Ltd.	China	100.00	45,964	45,964
Doosan Electro-Materials America, LLC	US	100.00	1,101	282
Doosan Electro-Materials Luxembourg Sarl	Luxembourg	100.00	28,111	28,111
Doosan Industrial Vehicle Europe N.A.	Belgium	100.00	16,934	16,934
Doosan Industrial Vehicle U.K. Ltd.	U.K.	100.00	1,909	1,909
Doosan Logistics Europe GmbH	Germany	100.00	1,909	1,909
Doosan Industrial Vehicle America Corp.	U.S.	100.00	27,016	27,016
Doosan Industrial Vehicle Yantai Co., Ltd.	China	100.00	10,617	10,617
Doosan Fuel Cell America, Inc.	U.S.	100.00	61,402	61,402
Doosan Energy Solutions America, Inc.(*2)	U.S.	100.00	1,680	-
Treasury stock trust(*3)	Korea	100.00	-	30,000
Doosan Cuvex Co., Ltd.(*4)	Korea	29.19	32,636	33,217
DBC Co., Ltd.(*2)	Korea	18.70	49,181	-
DRA Co., Ltd.(*2)	Korea	14.39	2,000	-
DAE Co., Ltd.(*2)	Korea	24.49	2,200	-
			1,988,221	1,974,679
Associates:				
Guang Dong Xingpu Steel Center(*1)	China	-	-	2,076
Prestoliteasia	Korea	28.36	468	468
			468	2,544
Joint venture:				
Sichuan Kelun-Doosan Biotechnology Company Limited	China	50.00	2,526	2,526
			₩ 1,991,215	₩ 1,979,749

11. Investments in subsidiaries, associates and joint ventures (cont'd)

(*1) The whole investment was disposed in the current year.
(*2) Acquired newly in the current year.
(*3) The trust contract was canceled in the current year.
(*4) The Company acquired additional capital stock as investment in kind in the current year and reduced its capital by ₩ 15,396 million.
(*5) As at March 1, 2018, the merger was completed.
(*6) As at June 1, 2018, the merger will be completed.

Details of quoted price in an active market for the investments in subsidiaries, associates and joint ventures as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017		December 31, 2016	
	Book amount	Fair value	Book amount	Fair value
Subsidiaries:				
DHC	₩ 1,232,946	₩ 674,570	₩ 1,232,946	₩ 1,195,328
Oricom	23,168	36,966	23,168	43,674

12. Property, plant and equipment

Changes in property, plant and equipment for the years ended December 31, 2017 and 2016, consist of the following (Korean won in millions):

	2017					
	Land	Buildings and Structures	Machinery	Others	Construction in progress	Total
Beginning balance	₩ 220,441	₩ 87,775	₩ 105,311	₩ 59,094	₩ 45,008	₩ 517,629
Acquisition/capital expenditures	318	2,609	11,336	27,898	29,800	71,961
Reclassification	-	520	9,596	4,585	(16,821)	(2,120)
Disposal	(21,415)	(908)	(261)	(2,602)	(33,937)	(59,123)
Investment in kind	-	-	-	(113)	-	(113)
Depreciation	(43)	(5,570)	(18,956)	(22,662)	-	(47,231)
Net increase in revaluation	16,193	-	-	-	-	16,193
Impairments	(2,405)	-	-	-	-	(2,405)
Ending balance	₩ 213,089	₩ 84,426	₩ 107,026	₩ 66,200	₩ 24,050	₩ 494,791
Acquisition cost	₩ 169,599	₩ 137,237	₩ 348,701	₩ 196,850	₩ 24,050	₩ 876,437
Accumulated depreciation (accumulated impairment losses are included)	-	(52,811)	(240,950)	(130,635)	-	(424,396)
Government grants	-	-	(725)	(15)	-	(740)
Accumulated revaluation surplus	43,490	-	-	-	-	43,490

12. Property, plant and equipment (cont'd)

	2016					
	Land	Buildings and Structures	Machinery	Others	Construction in progress	Total
Beginning balance	₩ 197,189	₩ 71,556	₩ 96,200	₩ 40,998	₩ 15,000	₩ 420,943
Acquisition/capital expenditures	18,144	16,258	15,837	33,680	85,609	169,528
Reclassification	5,151	9,240	22,518	6,421	(55,601)	(12,271)
Disposal	-	(3,952)	(1,479)	(1,558)	-	(6,989)
Depreciation	(43)	(5,055)	(16,877)	(20,223)	-	(42,198)
Impairments	-	(272)	(10,888)	(224)	-	(11,384)
Ending balance	₩ 220,441	₩ 87,775	₩ 105,311	₩ 59,094	₩ 45,008	₩ 517,629
Acquisition cost	₩ 184,341	₩ 136,456	₩ 356,968	₩ 177,530	₩ 45,008	₩ 900,303
Accumulated depreciation (accumulated impairment losses are included)	-	(48,681)	(250,739)	(118,404)	-	(417,824)
Government grants	-	-	(918)	(32)	-	(950)
Accumulated revaluation surplus	36,100	-	-	-	-	36,100

The Company recognized the land subsequently measured at revaluation amount, if the land were stated at cost, the land would amount to ₩169,599 million and ₩184,341 million as at December 31, 2017 and 2016, respectively.

As at December 31, 2017, a certain portion of the Company's land and buildings are pledged as collaterals for loans from KDB and others (Note 31).

The details of revaluation model, which the Company applies to measurement of the land, are as follows:

The Company recognizes subsequent measurement of the land as revaluation, and the revaluation amount is the fair value of the revaluation date. As at December 31, 2017, the fair value of land assets was determined from the appraisal that was undertaken by independently qualified valuators, the First Appraisal & Consulting Co., Ltd ("FACC") and Mirae & Saehan Appraisal Co., Ltd., on October 31, 2017.

FACC and Mirae & Saehan Appraisal Co., Ltd. are members of Korea Association of Property Appraisers and comprise of certified professionals that have a significant amount of industry experience.

Fair value hierarchy classifications of the land as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017			December 31, 2016		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
Land	₩ -	₩ -	₩ 213,089	₩ -	₩ -	₩ 220,441

12. Property, plant and equipment (cont'd)

Valuation techniques and inputs used for fair value measurement of land (Level 3) are as follows:

Valuation technique	Significant and unobservable inputs	Correlation between unobservable inputs and fair value arguments
Official Assessed Reference Land Price ("OARLP"): OARLP of similar parcels nearby the subject land and reflating corrections necessary for differences between the subject and the comparable	Fluctuation rate of land price and others	Fair value increases (decreases), if rate of land price increases (decreases).
	Parcel conditions and others	Fair value increases (decreases), if correction of parcel conditions and others increases (decreases).
	Land conditions affecting the sales price and others	Fair value increases (decreases), if correction of land conditions affecting the sales price increases (decreases).

There are no significant differences between the fair value of land in 2017 and 2016.

Change in revaluation model, for which the Company applies to measure the land for the year ended December 31, 2017, are as follows (Korean won in millions):

			Revaluation			
Beginning balance	Acquisition	Disposal	Other comprehensive income	Loss for the period	Others(*1)	Ending balance
₩ 220,441	₩ 318	₩ (21,415)	₩ 16,193	₩ (2,405)	₩ (43)	₩ 213,089

(*1) Depreciation related to provision for restoration of land.

Finance lease assets in machinery and others as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Acquisition cost	₩ 33,006	₩ 58,742
Accumulated depreciation	(17,986)	(46,716)
Book amount	₩ 15,020	₩ 12,026

Details of present value and minimum lease payments of finance leases liabilities as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017		December 31, 2016	
	Minimum lease payments	Present value	Minimum lease payments	Present value
Within one year	₩ 7,633	₩ 7,104	₩ 8,263	₩ 7,775
Later than one year and not later than five years	10,532	10,117	8,157	7,812
	18,165	₩ 17,221	16,420	₩ 15,587
Present value adjustment	(944)		(833)	
Present value of finance leases liabilities	₩ 17,221		₩ 15,587	

12. Property, plant and equipment (cont'd)

Classification of depreciation expenses for the years ended December 31, 2017 and 2016, is as follows (Korean won in millions):

	2017	2016
Cost of sales	₩ 37,266	₩ 33,713
Selling and administrative expenses	8,776	7,032
Research and development cost and others	1,189	1,453
	₩ 47,231	₩ 42,198

13. Intangible assets

Changes in intangible assets for the years ended December 31, 2017 and 2016, consist of the following (Korean won in millions):

2017	Goodwill	Industrial rights	Development costs	Other intangible assets	Total
Beginning balance	₩ 138,361	₩ 1,293	₩ 8,126	₩ 46,331	₩ 194,111
Acquisition/capital expenditures	-	1,067	9,741	1,946	12,754
Government grants	-	-	(1,177)	-	(1,177)
Reclassification	-	-	1,276	1,167	2,443
Disposal	-	(26)	-	(1,527)	(1,553)
Investment in kind	(6,420)	-	-	(516)	(6,936)
Amortization	-	(410)	(1,133)	(10,214)	(11,757)
Impairments	-	-	(1,243)	-	(1,243)
Ending balance	₩ 131,941	₩ 1,924	₩ 15,590	₩ 37,187	₩ 186,642
Acquisition cost	₩ 131,941	₩ 4,425	₩ 34,304	₩ 93,766	₩ 264,436
Accumulated amortization (accumulated impairment losses are included)	-	(2,501)	(12,684)	(56,579)	(71,764)
Government grants	-	-	(6,030)	-	(6,030)

2016	Goodwill	Industrial rights	Development costs	Other intangible assets	Total
Beginning balance	₩ 138,361	₩ 1,318	₩ 3,661	₩ 35,228	₩ 178,568
Acquisition/capital expenditures	-	389	6,889	11,503	18,781
Government grants	-	-	(1,898)	-	(1,898)
Reclassification	-	-	706	11,565	12,271
Disposal	-	(12)	-	(207)	(219)
Amortization	-	(402)	(1,232)	(11,758)	(13,392)
Ending balance	₩ 138,361	₩ 1,293	₩ 8,126	₩ 46,331	₩ 194,111
Acquisition cost	₩ 138,361	₩ 3,386	₩ 23,653	₩ 98,091	₩ 263,491
Accumulated amortization (accumulated impairment losses are included)	-	(2,093)	(10,066)	(51,760)	(63,919)
Government grants	-	-	(5,461)	-	(5,461)

13. Intangible assets (cont'd)

The book amount of membership with indefinite useful lives in other intangible assets item is ₩13,069 million and ₩14,425 million as at December 31, 2017 and 2016, respectively.

Meanwhile, expenditure on research and development, which was recognized as expenses, amounted to ₩30,825 million and ₩29,282 million for the years ended December 31, 2017 and 2016, respectively.

Details of impairment test of goodwill, are as follows:

Before recognition of impairment losses, the book amount of goodwill was allocated to CGUs as follows (Korean won in millions):

CGUs	December 31, 2017	December 31, 2016	Description
Mottrol BG	₩ 84,562	₩ 84,562	Manufacturing and sale of hydraulic components
Information and communications BU	2,015	2,015	Operation and development of software
FM BU	-	6,420	Building maintenance service
Industrial vehicles BG	15,076	15,076	Manufacturing and sale of forklifts
Fuel Cell BU	30,290	30,290	Manufacturing and sale of fuel cell
	₩ 131,943	₩ 138,361	

The recoverable amount of CGU is determined based on a value-in-use calculation, and a discount rate used as follows:

	Mottrol BG	Duty free BG	Industrial vehicles BG	Fuel Cell BU
Discount rate	10.60%	10.70%	8.30%	11.30%
Long-term sustainable growth rate	1.00%	1.00%	1.00%	1.00%

Estimates for value-in-use calculation are as follows.

The Company uses cash flow projections based on financial budgets approved by the directors covering five-year periods for a value-in-use calculation. The financial budgets are determined based on historical result and expectation of market growth. Cash flows beyond that five-year periods have been estimated using expected growth rate, and the growth rate does not exceed long-term average growth rate of market. The discount rates used reflect relevant risks specific to the CGUs.

The result of recoverable amount of the Company calculated based on value-in-use calculation was not to cause the aggregate book amount to exceed the aggregate recoverable amount of the CGU. Therefore, no impairment loss is recognized based on the impairment test for the year ended December 31, 2017.

A reasonably possible change in a key assumption would cause the change of recoverable amount. So, management has observed related sales and industrial trend subsequently. Meanwhile, if discount rate changes by 50 basis points, no additional impairment losses will be incurred.

13. Intangible assets (cont'd)

Classification of amortization expense for the years ended December 31, 2017 and 2016, is as follows (Korean won in millions):

	2017	2016
Cost of sales	₩ 2,612	₩ 3,056
Selling and administrative expenses	8,978	10,155
Research and development cost and others	167	180
	₩ 11,757	₩ 13,391

14. Investment properties

Changes in investment properties for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017			2016		
	Land	Building	Total	Land	Building	Total
Beginning balance	₩ 135,947	₩ 1,232	₩ 137,179	₩ 163,851	₩ 2,703	₩ 166,554
Disposal	(515)	-	(515)	(26,571)	(1,410)	(27,981)
Fair value gain (loss)	16,348	(104)	16,244	(1,333)	(61)	(1,394)
Ending balance	₩ 151,780	₩ 1,128	₩ 152,908	₩ 135,947	₩ 1,232	₩ 137,179

Certain of the Company's land and buildings included in the above investment properties are pledged as collaterals for borrowings from Woori Bank and others (see Note 31).

Details of fair value model that the Company applies to measurement of investment properties are as follows:

For the year ended December 31, 2017, the Company measured all investment properties using revaluation model. As at December 31, 2017, the fair value of investment properties was determined from the appraisal that was undertaken by independently qualified valuators, the First Appraisal & Consulting Co., Ltd ("FACC") and Mirae & Saehan Appraisal Co., Ltd., on November 30, 2017.

FACC and Mirae & Saehan Appraisal Co., Ltd. are members of Korea Association of Property Appraisers, and comprise of certified professionals who have a significant amount of industry experience.

Fair value hierarchy classifications of investment properties as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017			December 31, 2016		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
Land	₩ -	₩ -	₩ 151,780	₩ -	₩ -	₩ 135,947
Building	-	-	1,128	-	-	1,232
	₩ -	₩ -	₩ 152,908	₩ -	₩ -	₩ 137,179

14. Investment properties (cont'd)

Valuation techniques and inputs used for fair value measurement of land assets (Level 3) are as follows:

Valuation technique	Significant and unobservable inputs	Correlation between unobservable inputs and fair value arguments
Official Assessed Reference Land Price ("OARLP"):	Fluctuation rate of land price and others	Fair value increases (decreases), if rate of land price increases (decreases).
OARLP of similar parcels nearby the subject land and reflating corrections are necessary for differences between the subject and the comparable	Parcel conditions and others	Fair value increases (decreases), if correction of parcel conditions and others increases (decreases).
	Land conditions affecting the sales price and others	Fair value increases (decreases), if correction of land conditions affecting the sales price increases (decreases).
Estimated cost price approach: Fair value is based on depreciation and replacement costs considered with structure, building materials, construction condition, building equipment, end use, present condition and management condition	Replacement cost	Fair value decreases (increases), if replacement cost increases (decreases).

Changes in revaluation model, which the Company applies to investment properties for the year ended December 31, 2017, are as follows (Korean won in millions):

	Beginning balance	Acquisition (disposal)	Revaluation: Other comprehensive income	Revaluation: Gain (loss) for the period	Ending balance
Land	₩ 135,947	₩ (515)	₩ -	₩ 16,348	₩ 151,780
Building	1,232	-	-	(104)	1,128

15. Bonds and borrowings

Bonds as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	Annual interest rate (%)	December 31, 2017	December 31, 2016
The 283-1st	3.84	₩ -	₩ 20,000
The 283-2nd	4.27	80,000	80,000
The 284	4.33	80,000	100,000
The 285	4.16	60,000	60,000
The 286	4.42	75,000	75,000
The 287	3.92	30,000	-
The 288	3.92	30,000	-
The 289	4.40	120,000	-
The 290	5.08	100,000	-
		575,000	335,000
Discount on bonds payable		(1,251)	(982)
		573,749	334,018
Transfer of current portion of long-term bonds:			
Principal amount of bonds		275,000	20,000
Discount on bonds payable		(380)	(14)
		(274,620)	(19,986)
		₩ 299,129	₩ 314,032

Short-term borrowings as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	Creditor	Annual interest rate (%)	December 31, 2017	December 31, 2016
Usance and D/A, D/P	KEB Hana Bank and others	2.10-4.25	₩ 2,436	₩ 4,306
General borrowings	Kwangju Bank and others	2.97-3.35	133,000	449,273
			₩ 135,436	₩ 453,579

Short-term borrowings related to transferred trade receivables, which did not meet the derecognition criteria, amounted to ₩2,436 million and ₩4,306 million as at December 31, 2017 and 2016, respectively. The trade receivables were pledged as collateral for these liabilities (see Note 30).

15. Bonds and borrowings (cont'd)

Long-term borrowings as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	Annual interest rate (%)	December 31, 2017	December 31, 2016
Borrowings in Korean won:			
KDB	2.89-3.28	₩ 60,000	₩ 60,000
Woori Bank	3.48-3.63	20,000	50,000
Shinhan Bank	3.01-3.42	80,000	40,000
Kookmin Bank	2.76-3.04	5,000	5,088
China Bank	3.83	30,000	-
Nonghyup Bank	-	-	30,000
KEB Hana Bank	-	-	25,000
		195,000	210,088
Borrowings in foreign currency:			
KDB	-	-	30,213
The Export-Import Bank of Korea	2.99-3.51	49,284	55,591
		49,284	85,804
Present value discounts		(40)	(59)
		244,244	295,833
Transfer of current portion of long-term borrowings		(177,321)	(85,301)
		₩ 66,923	₩ 210,532

16. Net defined benefit liabilities

The Company operates a defined benefit plan for employees, and the actuarial valuation of plan assets and the defined benefit liabilities is performed by a reputable actuary using the projected unit credit method.

Details of net defined benefit liabilities as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Present value of defined benefit obligation	₩ 162,928	₩ 160,432
Fair value of plan assets	(128,535)	(122,898)
Net defined benefit liabilities	₩ 34,393	₩ 37,534

Post-employment benefits recognized in separate statements of profit or loss the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Current service cost	₩ 20,948	₩ 20,674
Net interest cost	1,360	1,516
	₩ 22,308	₩ 22,190

16. Net defined benefit liabilities (cont'd)

Details of post-employment benefits recognized in the separate statements of profit or loss for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Cost of sales	₩ 12,414	₩ 13,250
Selling and administrative expenses	9,569	8,718
Others	325	222
	₩ 22,308	₩ 22,190

Changes in net defined benefit liabilities for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017		
	Defined benefit obligations	Plan assets	Net defined benefit liabilities
Beginning balance	₩ 160,432	₩ (122,898)	₩ 37,534
Current service cost	20,948	-	20,948
Interest cost (income)	4,215	(2,855)	1,360
	25,163	(2,855)	22,308
Remeasurements:			
Actuarial gain or loss from change in demographic assumptions	363	-	363
Actuarial gain or loss from change in financial assumptions	(2,933)	-	(2,933)
Others	1,271	1,530	2,801
	(1,299)	1,530	231
Transfer in	976	(629)	347
Transfer out	(2,077)	976	(1,101)
Changes due to investment in kind	(9,482)	6,920	(2,562)
Contributions by employer directly to plan assets	-	(17,074)	(17,074)
Benefit payments	(10,785)	5,495	(5,290)
Ending balance	₩ 162,928	₩ (128,535)	₩ 34,393

16. Net defined benefit liabilities (cont'd)

	2016		
	Defined benefit obligations	Plan assets	Net defined benefit liabilities
Beginning balance	₩ 146,339	₩ (102,504)	₩ 43,835
Current service cost	20,674	-	20,674
Interest cost (income)	4,075	(2,559)	1,516
	24,749	(2,559)	22,190
Remeasurements:			
Return on plan assets (excluding amounts included in interest income)	-	1,349	1,349
Actuarial gain or loss from change in demographic assumptions	(977)	-	(977)
Actuarial gain or loss from change in financial assumptions	815	-	815
Others	(949)	-	(949)
	(1,111)	1,349	238
Transfer in	3,173	(1,396)	1,777
Transfer out	(3,058)	1,919	(1,139)
Contributions by employer directly to plan assets	-	(25,360)	(25,360)
Benefit payments	(9,660)	5,653	(4,007)
Ending balance	₩ 160,432	₩ (122,898)	₩ 37,534

Assumptions used for actuarial valuation as at December 31, 2017 and 2016, are as follows:

	December 31, 2017	December 31, 2016
Discount rate	3.04%	2.77%
Salary growth rate		
Employee	2.8~4.4%	2.0~6.2%
Executive	2.4%	3.2%

Details of plan assets as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Equity securities	₩ -	₩ 799
Debt securities	2,008	2,352
Deposits and others	126,527	119,747
	₩ 128,535	₩ 122,898

Plan assets are mostly invested in assets that have a quoted market price in an active market.

16. Net defined benefit liabilities (cont'd)

The sensitivity analysis of the defined benefit obligation as at December 31, 2017 and 2016, is as follows (Korean won in millions):

			Amount	Ratio
December 31, 2017	Discount rate	1% increase	₩ (10,248)	(-)6.29%
		1% decrease	11,666	7.16%
	Salary growth rate	1% increase	11,046	6.78%
		1% decrease	(9,922)	(-)6.09%
December 31, 2016	Discount rate	1% increase	(10,325)	(-)6.44%
		1% decrease	11,716	7.31%
	Salary growth rate	1% increase	11,044	6.89%
		1% decrease	(9,957)	(-)6.21%

The weighted average maturity of the defined benefit liabilities as at December 31, 2017, is 6.9 years. The Company expects to contribute ₩19,134 million for the defined benefit plans in the following period.

17. Provisions

Changes in provisions for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017					
	Beginning balance	Addition (Reversal)	Used	Ending balance	Current	Non-current
Provision for product warranties	₩ 4,230	₩ 700	₩ -	₩ 4,930	₩ 4,930	₩ -
Provision for restoration	849	801	-	1,650	-	1,650
Other provisions	37	-	-	37	37	-
	₩ 5,116	₩ 1,501	₩ -	₩ 6,617	₩ 4,967	₩ 1,650

	2016					
	Beginning balance	Addition (Reversal)	Used	Ending balance	Current	Non-current
Provision for product warranties	₩ 5,692	₩ (442)	₩ (1,020)	₩ 4,230	₩ 4,230	₩ -
Provision for restoration	795	54	-	849	-	849
Other provisions	140	-	(103)	37	37	-
	₩ 6,627	₩ (388)	₩ (1,123)	₩ 5,116	₩ 4,267	₩ 849

The Company estimates expenditure required to settle the Company's obligations from product warranty, refund, related after service and others based on warranty period, and historical claim rate and recognizes provisions based on the estimated expenditure.

18. Share capital and share premium

Changes in share capital and share premium for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions, except for share data):

	Number of shares		Share capital			
	Ordinary shares	Preferred shares	Ordinary shares	Preferred shares	Total	Share premium
Balance at January 1, 2016	21,270,888	5,396,759	₩ 107,854	₩ 26,984	₩ 134,838	₩ 355,736
Retirement of treasury shares	(1,064,000)	-	-	-	-	-
Balance at December 31, 2016	20,206,888	5,396,759	₩ 107,854	₩ 26,984	₩ 134,838	₩ 355,736
Balance at January 1, 2017	20,206,888	5,396,759	₩ 107,854	₩ 26,984	₩ 134,838	₩ 355,736
Exercise of stock options	800	-	4	-	4	65
Retirement of treasury shares	(1,010,385)	-	-	-	-	-
Exercise of stock options	700	-	4	-	4	115
Balance at December 31, 2017	19,198,003	5,396,759	₩ 107,862	₩ 26,984	₩ 134,846	₩ 355,916

The Company's number of shares authorized amounted to 400,000,000 shares, with a par value of ₩5,000 per share. There is a difference arising from retirement of treasury shares through retained earnings, and capital stock is not the same as total par value of shares issued.

The number of shares that are having limitation on voting right under commercial law amounted to 4,266,070 and 5,276,455 as at December 31, 2017 and 2016, respectively. Preferred shares does not have voting right.

19. Capital surplus

Details of capital surplus as at December 31, 2017 and 2016, are summarized as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Share premium	₩ 355,916	₩ 355,736
Gain from merger	1,390	1,390
Other reserves	45,367	43,565
Revaluation reserve	277,542	277,542
	₩ 680,215	₩ 678,233

20. Other components of equity

Other components of equity as at December 31, 2017 and 2016, are summarized as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Treasury shares	₩ (261,976)	₩ (296,831)
Loss on sale of treasury shares	(16,738)	(16,738)
Stock option	10,431	12,295
Loss on capital reduction	(127,318)	(127,318)
	₩ (395,601)	₩ (428,592)

Treasury shares

The Company held treasury shares for the purpose of stabilizing the share price and changes in treasury shares for the year ended December 31, 2017, are as follows (Korean won in millions, except for share data):

	Number of treasury shares			Book amount of treasury shares		
	Ordinary shares	Preferred shares	Total	Ordinary shares	Preferred shares	Total
Beginning balance	4,926,128	673,054	5,599,182	₩ (281,778)	₩ (15,053)	₩ (296,831)
Acquisition	350,327	-	350,327	(26,625)	-	(26,625)
Disposal (Retirement of treasury shares)	(1,010,385)	-	(1,010,385)	61,480	-	61,480
Ending balance	4,266,070	673,054	4,939,124	₩ (246,923)	₩ (15,053)	₩ (261,975)

Share-based payment

The Company granted stock options to its directors several times. Stock options are settled based on the Board of Directors' decision by issuance of new share, treasury share or cash settlement. Vesting condition offers two-year service after the resolution at the shareholders' meeting.

The number of granted options as at December 31, 2017, is as follows (Korean won, except for share data):

	Date of grant	Number of granted options	Exercisable period	Exercisable price	Expected fair value at the date of grant
8th	2007.3.16	-	2010.3.16 - 2017.3.15	₩ 59,600	₩ 28,930
9th	2008.3.21	11,900	2011.3.21 - 2018.3.20	165,100	68,846
10th	2009.3.27	1,850	2012.3.27 - 2019.3.26	106,500	53,382
12th	2010.3.26	39,310	2013.3.26 - 2020.3.26	116,500	56,460
13th	2011.3.25	15,500	2014.3.25 - 2021.3.25	137,500	68,045
14th	2012.3.30	23,300	2015.3.30 - 2022.3.30	156,200	63,647
15th	2013.3.29	50,400	2016.3.29 - 2023.3.28	128,100	43,353
16th	2014.3.28	65,000	2017.3.28 - 2024.3.27	134,300	39,558

20. Other components of equity (cont'd)

The Company calculated expenses by applying the fair value approach. Assumptions used in determining fair value of stock options are as follows:

	Risk-free interest rate	Expected exercisable period	Expected volatility	Expected dividend yield ratio
8th	4.79%	3.00	46.73%	0%
9th	5.18%	3.00	58.89%	0%
10th	3.71%	3.53	69.82%	22%
12th	3.82%	3.27	71.67%	35%
13th	3.66%	3.29	73.42%	40%
14th	3.57%	3.41	62.76%	43%
15th	2.45%	3.42	49.22%	46%
16th	2.88%	3.60	40.90%	48%

Risk-free interest rate is based on a three-year treasury bond yield rate.

Changes in stock options for the year ended December 31, 2017, are as follows (Korean won in millions, except for share data):

	Number of ordinary shares to be issued				
	Beginning	Granted	Exercised	Forfeited	Ending
8th	800	-	(800)	-	-
9th	11,900	-	-	-	11,900
10th	2,250	-	(200)	(200)	1,850
12th	40,810	-	(500)	(1,000)	39,310
13th	16,300	-	-	(800)	15,500
14th	25,000	-	-	(1,700)	23,300
15th	53,000	-	-	(2,600)	50,400
16th	101,900	-	-	(36,900)	65,000
	251,960	-	(1,500)	(43,200)	207,260

	Valuation amount				
	Beginning	Granted	Exercised	Forfeited	Ending
8th	₩ 23	₩ -	₩ (23)	₩ -	₩ -
9th	819	-	-	-	819
10th	120	-	(11)	(11)	99
12th	2,304	-	(28)	(56)	2,219
13th	1,109	-	-	(54)	1,055
14th	1,591	-	-	(108)	1,483
15th	2,298	-	-	(113)	2,185
16th	4,031	-	-	(1,460)	2,571
	₩ 12,295	₩ -	₩ (62)	₩ (1,802)	₩ 10,431

The weighted-average remaining contractual period (from December 31, 2017 to maturity) of stock options is 4.4 years.

21. Accumulated other comprehensive income

Accumulated other comprehensive income as at December 31, 2017 and 2016, is summarized as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Cash flow hedge	₩ 1,019	₩ (2,684)
Loss on valuation of available-for-sale financial assets	(1,920)	-
Land revaluation surplus	49,446	42,022
	₩ 48,546	₩ 39,338

22. Retained earnings

Retained earnings as at December 31, 2017 and 2016, are as follows (Korean won in millions):

	December 31, 2017	December 31, 2016
Legal reserve	₩ 62,906	₩ 52,864
Discretionary reserves	26,666	51,666
Retained earnings before appropriation	1,642,180	1,584,204
	₩ 1,731,752	₩ 1,688,734

The Commercial Code of the Republic of Korea requires the Company to appropriate an amount equal to a minimum of 10% of annual cash dividends declared as a legal reserve until the reserve equals 50% of its issued share capital.

Changes in retained earnings for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Beginning balance	₩ 1,688,733	₩ 1,689,925
Profit for the period	205,100	153,802
Actuarial loss on retained earnings	(175)	(181)
Dividends payments	(100,426)	(91,267)
Retirement of treasury shares	(61,480)	(63,546)
Ending balance	₩ 1,731,752	₩ 1,688,733

22. Retained earnings (cont'd)

Separate statements of appropriation of retained earnings for the years ended December 31, 2017 and 2016, are as follows (Korean won):

	2017	2016
Unappropriated retained earnings:		
Unappropriated retained earnings carried over from the prior year	₩ 1,498,735,803,305	₩ 1,494,128,278,455
Profit for the period	205,100,275,058	153,802,056,181
Remeasurements of defined benefit plan	(174,792,586)	(180,539,444)
Retirement of treasury shares	(61,480,484,781)	(63,545,813,297)
	1,642,180,800,996	1,584,203,981,895
Transfers retained earnings:		
Reversal of research and development reserves	16,666,000,000	25,000,000,000
	16,666,000,000	25,000,000,000
Appropriation of retained earnings:		
Earned profit reserves	4,516,717,500	10,042,561,690
Dividends	100,433,266,900	100,425,616,900
	104,949,984,400	110,468,178,590
Unappropriated retained earnings to be carried forward	₩ 1,553,896,816,596	₩ 1,498,735,803,305

Details of dividends for the years ended December 31, 2017 and 2016, are as follows (Korean won, except for share data and dividend amount):

	2017			2016		
	Preferred shares (old)	Preferred shares (new)	Ordinary shares	Preferred shares (old)	Preferred shares (new)	Ordinary shares
Face value per share	₩ 5,000	₩ 5,000	₩ 5,000	₩ 5,000	₩ 5,000	₩ 5,000
Year-end dividends:						
Number of shares issued	4,411,074	985,685	19,198,003	4,411,074	985,685	20,206,888
Number of treasury shares	(620,812)	(52,242)	(4,266,070)	(620,812)	(52,242)	(5,276,455)
Shares eligible for dividends	3,790,262	933,443	14,931,933	3,790,262	933,443	14,930,433
Rate of dividend per face value	103%	102%	102%	103%	102%	102%
Dividend per share	₩ 5,150	₩ 5,100	₩ 5,100	₩ 5,150	₩ 5,100	₩ 5,100
Dividend amount (in millions)	₩ 19,520	₩ 4,761	₩ 76,153	₩ 19,520	₩ 4,761	₩ 76,145
Average closing price(*1)	₩ 79,150	₩ 78,375	₩ 123,750	₩ 70,480	₩ 70,200	₩ 112,300
Dividend yield	6.51%	6.51%	4.12%	7.31%	7.26%	4.54%

(*1) Average of prices in the stock market for one week preceding the two business days before the record date of the shareholders' list related to above dividends.

23. Revenues

Details of revenues for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Sales of goods:		
Manufactured products	₩ 1,614,445	₩ 1,317,929
Merchandise	677,740	327,226
	2,292,185	1,645,155
Others:		
Dividend	94,260	179,334
Others	238,384	242,647
	332,644	421,981
	₩ 2,624,829	₩ 2,067,136

24. Breakdown of expenses by nature

Expenses classified by nature for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Changes in inventories	₩ (168,045)	₩ (62,552)
Purchases of raw materials and goods	1,526,737	992,934
Employee benefits expenses	362,678	354,092
Depreciation and amortization	58,988	55,589
Others	567,714	501,701
Total cost of sales and administrative expenses	₩ 2,348,072	₩ 1,841,764

25. Selling and administrative expenses

Selling and administrative expenses for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Salaries	₩ 112,607	₩ 105,157
Post-employment benefits	9,181	7,881
Employee benefits	24,422	21,637
Travel expenses	9,054	8,983
Utility expenses	2,466	2,137
Sales commission	17,536	18,761
Taxes and dues	3,915	3,929
Rental expenses	20,928	24,171
Depreciation	8,776	7,032
Advertising expenses	8,959	24,918
Packaging expenses	4,492	2,552
Research and development	30,825	29,282
Training expenses	4,728	5,685
Freight expenses	10,027	8,056
Commission expenses	104,197	52,989
Maintenance of office	5,420	3,216
Service contract expenses	20,098	15,345
Samples expenses	1,999	1,952
Impairment loss	19	1,543
Amortization	8,978	10,155
Others	6,674	9,543
	₩ 415,301	₩ 364,924

26. Finance income and expenses

Finance income and expenses for the years ended December 31, 2017 and 2016, are summarized as follows (Korean won in millions):

	2017	2016
Finance income:		
Interest income	₩ 6,654	₩ 6,692
Dividend income	24	25
Gain on foreign currency transaction	21,626	17,900
Gain on foreign currency translation	12,660	12,211
Gain on derivative transactions	175	-
Gain on valuation of derivatives	-	260
Financial guarantee income	1,272	1,588
	42,411	38,676
Finance expenses:		
Interest expense	42,336	38,164
Loss on foreign currency transactions	28,150	19,612
Loss on foreign currency translations	10,963	17,087
Loss on derivative transactions	38	9
Loss on valuation of derivatives	1,843	104
Financial guarantee expense	376	-
Other financial expenses	691	-
	84,397	74,976
	₩ (41,986)	₩ (36,300)

27. Other non-operating income and expenses

Other non-operating income and expenses for the years ended December 31, 2017 and 2016, consist of the following (Korean won in millions):

	2017	2016
Other non-operating income:		
Gain on disposal of investments in associates	₩ 18,079	₩ -
Gain on disposal of property, plant and equipment	374	971
Gain on disposal of intangible assets	792	112
Gain on disposal of investment properties	333	235
Gain on valuation of investment properties	16,348	934
Gain on transfer of business	7,805	-
Reversal of impairment of property, plant and equipment	157	-
Others	4,031	1,751
	47,919	4,003
Other non-operating expenses:		
Loss on disposal of trade receivables	5,161	2,819
Loss on disposal of investments in associates	362	-
Loss on disposal of property, plant and equipment	3,090	5,216
Impairment loss of property, plant and equipment	2,562	11,384
Loss on disposal of intangible assets	45	142
Impairment loss of intangible assets	1,243	-
Loss on disposal of investment properties	-	1,025
Loss on valuation of investment properties	104	2,327
Impairment loss of non-current assets held for sale	183	-
Donations	7,088	7,162
Others	10,113	8,702
	29,951	38,777
Other non-operating income(expenses), net	₩ 17,968	₩ (34,774)

28. Tax expenses and deferred tax

Income tax expense for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Current tax on profits for the year	₩ 52,337	₩ 4,019
Deferred tax:		
Origination and reversal of temporary differences	(1,815)	(6,789)
Charged or credited directly to equity	(2,884)	1,215
Others	-	2,050
Income tax expenses	₩ 47,638	₩ 495

28. Tax expenses and deferred tax (cont'd)

The movement in deferred tax assets and liabilities for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017			
	Beginning balance	Changes		Ending balance
		Profit or loss	Equity	
Accrued revenues	₩ (6)	₩ (2)	₩ -	₩ (8)
Loss on valuation of inventories	1,766	390	-	2,156
Investment in securities	872	(1,059)	613	426
Property, plant and equipment	(21,434)	1,376	(2,370)	(22,428)
Investment properties	(12,924)	(3,530)	-	(16,454)
Accrued expenses	12,559	2,816	-	15,375
Post-employment benefit obligations	6,817	1,131	56	8,004
Reserve for research and human resource	(6,453)	4,033	-	(2,420)
Others	6,543	(456)	(1,183)	4,904
	₩ (12,260)	₩ 4,699	₩ (2,884)	₩ (10,445)

	2016			
	Beginning balance	Changes		Ending balance
		Profit or loss	Equity	
Accrued revenues	₩ (13)	₩ 7	₩ -	₩ (6)
Loss on valuation of inventories	1,801	(35)	-	1,766
Investment in securities	5,844	(4,972)	-	872
Property, plant and equipment	(24,988)	3,554	-	(21,434)
Investment properties	(15,162)	2,238	-	(12,924)
Accrued expenses	11,966	593	-	12,559
Post-employment benefit obligations	7,861	(1,102)	58	6,817
Reserve for research and human resource	(12,834)	6,381	-	(6,453)
Others	6,476	(1,090)	1,157	6,543
	₩ (19,049)	₩ 5,574	₩ 1,215	₩ (12,260)

Temporary differences, net loss and tax credit carryforwards, which have not been recognized as deferred income tax assets and expired, unused as at December 31, 2017 and 2016, are nil.

The probability of realizing deferred tax assets depends on the Company's ability to generate taxable income in future years, economic situation and industry forecast. The Company periodically reviews these matters.

Temporary differences from investments in subsidiaries, associates and joint ventures, which are not recognized as deferred tax assets, are as follows (Korean won in millions):

	December 31, 2017	December 31, 2016	Remarks
Investments in subsidiaries	₩ (937,749)	₩ (931,409)	Able to control the reversal of the temporary difference

28. Tax expenses and deferred tax (cont'd)

The aggregate deferred tax relating to items that are charged or credited directly to equity for the years ended December 31, 2017 and 2016, is as follows (Korean won in millions):

	December 31, 2017			December 31, 2016		
	Before tax	Tax effect	After tax	Before tax	Tax effect	After tax
Loss on valuation of available-for-sale financial assets	₩ (2,533)	₩ 613	₩ (1,920)	₩ -	₩ -	₩ -
Gain (loss) on valuation of derivatives	1,345	(325)	1,020	(3,540)	857	(2,683)
Revaluation surplus	65,233	(15,786)	49,447	55,437	(13,415)	42,022
Remeasurement of net defined benefit liabilities	(18,307)	4,430	(13,877)	(18,077)	4,375	(13,702)
	₩ 45,738	₩ (11,068)	₩ 34,670	₩ 33,820	₩ (8,183)	₩ 25,637

A reconciliation of income tax expense and accounting income before income tax expense for the years ended December 31, 2017 and 2016, is as follows (Korean won in millions):

	2017	2016
Profit before income tax expense	₩ 252,739	₩ 154,297
Tax at domestic tax rates applicable to profits	60,701	36,878
Adjustments:		
Non-temporary difference	(13,526)	(33,357)
Temporary difference not recognized as deferred income tax	3,098	487
Tax credits	(4,862)	(3,994)
Additional income tax paid(refunded) for prior periods	620	(512)
Others	1,607	993
Income tax expense	₩ 47,638	₩ 495
Effective tax rate (Income tax expense/Profit before income tax expense)	18.85%	0.32%

29. Earnings per share

Earnings per share for the years ended December 31, 2017 and 2016, are computed as follows (Korean won, except for share data):

29.1 Basic earnings per share

Basic earnings per share for the years ended December 31, 2017 and 2016, are as follows (Korean won):

	2017	2016
Basic earnings per ordinary share	₩ 10,426	₩ 7,800
Basic earnings per old-type preferred share (*1)	10,475	7,850

(*1) The Company calculated earnings per share for old-type preferred share due to the nature of the share, which does not have preferred right on dividends and liquidation; therefore, the share is considered as ordinary share, based on KIFRS 1033 '*Earnings per share*.'

29. Earnings per share (cont'd)

Profit attributable to ordinary shares is as follows (Korean won):

	2017	2016
Profit attributable to the equity holders	₩ 205,100,275,058	₩ 153,802,056,181
(-)Expected dividends on new-type preferred shares	4,760,559,300	4,760,559,300
(-)Expected residual income attributable to new-type preferred shares	4,970,618,918	2,520,280,121
(-)Expected profit attributable to old-type preferred shares	39,703,136,338	29,753,491,819
Profit attributable to ordinary shares	₩ 155,665,960,502	₩ 116,767,724,941

The weighted-average number of ordinary shares and old-type preferred shares outstanding used in the basic earnings per share calculation is as follows (in shares):

	2017		2016	
	Ordinary shares	Old-type preferred shares	Ordinary shares	Old-type preferred shares
Beginning outstanding shares	14,930,433	3,790,262	15,280,760	3,790,262
Exercise of stock options	638	-	-	-
Change in treasury shares	-	-	(310,506)	-
Weighted-average number of ordinary shares outstanding	14,931,071	3,790,262	14,970,254	3,790,262

29.2 Diluted earnings per share

Diluted earnings per share for the years ended December 31, 2017 and 2016, are as follows (Korean won):

	2017	2016
Diluted earnings per share	₩ 10,425	₩ 7,800
Diluted earnings per old-type preferred share	10,475	7,850

Diluted profit attributable to ordinary shares is as follows (Korean won):

	2017	2016
Profit attributable to ordinary shares	₩ 155,665,960,502	₩ 116,767,724,941
Share-based expense (after tax)	-	-
Diluted profit attributable to ordinary shares	₩ 155,665,960,502	₩ 116,767,724,941

The weighted-average number of ordinary shares outstanding used in the diluted earnings per share calculation is as follows (in shares):

	2017	2016
Weighted-average number of ordinary shares outstanding	14,931,071	14,970,254
Effect of stock option exercise	371	314
Adjusted weighted-average number of ordinary shares outstanding	14,931,442	14,970,568

As there are no potential ordinary shares for old-type preferred share, diluted earnings per share for old-type preferred share are equal to basic earnings per share for old-type preferred share.

29. Earnings per share (cont'd)

Conditions for preferred shares dividends (Korean won, except for share data):

	Face value	Number of shares issued
Old-type preferred share (*1)	₩ 5,000	4,411,074
New-type preferred share (*2)	5,000	985,685

(*1) The Company should distribute cash dividend available to ordinary shares +1%.
(*2) The Company should distribute 2% of face value of preferred share annually. In case the dividend rate of ordinary share exceeds that of preferred share, preferred share is participated in dividend for the exceeded dividend.

30. Contingencies and commitments

30.1 Notes, bills and checks offered in security

The Company pledged a blank notes to Korea Defense Industry Association as collateral for long-term borrowings and performance guarantee agreements.

30.2 Loan ceiling

As at December 31, 2017, loan ceilings of the Company are as follows (foreign currency in thousands and Korean won in millions):

	Financial institutions	Limitation	
Overdraft	Woori Bank and others	KRW	10,000
General loans	Shinhan Bank and others	KRW	615,000
Facility fund loans and others	Korea Exim Bank and others	KRW	99,465
		USD	46,000
L/C payment guarantee	KDB and others	USD	133,303
		KRW	724,465
		USD	179,303

30.3 Transferred trade receivables

Outstanding trade receivables sold with recourse by the Company are in the amount of ₩2,436 million and ₩4,306 million as at December 31, 2017 and 2016, respectively. Because the Company retains some level of risks and rewards relating to trade receivables, the Company has recognized its book amount of it and cash receipt from transfer as short-term borrowings in separate statements of financial position (see Note 15).

30.4 Litigation in progress

The Company is involved in pending lawsuits as a defendant with claims exposure of ₩17,830 million as at December 31, 2017. The ultimate outcome of such pending lawsuits cannot presently be determined.

30.5 Technical contract

The Company has technical license agreements for the purpose of manufacturing specific products with Nabtesco, Horstman and others for the year ended December 31, 2017, and the Company paid ₩661 million as license fee.

30 Contingencies and commitments (cont'd)

30.6 Payment guarantees

As at December 31, 2017, details of payment guarantees provided by the Company for third parties are as follows (foreign currency in thousands and Korean won in millions):

Provided to	Amount		Description
Subsidiaries:			
Doosan Mottrol (Jiangyin) Co., Ltd.	USD	7,000	An on-site certification of payment
	CNY	95,000	An on-site certification of payment
Doosan Electro Materials (Changshu) Co., Ltd	USD	45,000	An on-site certification of payment
Doosan Electro-Materials Luxembourg Sarl	USD	17,000	An on-site certification of payment
Circuit Foil Luxembourg Sarl	EUR	14,500	An on-site certification of payment
Doosan Industrial Vehicle U.K	GBP	29,400	An on-site certification of payment
Doosan Industrial Vehicle Yantai Co., Ltd.	USD	10,000	An on-site certification of payment
Doosan Fuel Cell America, Inc.	USD	154,456	An on-site certification of payment
	KRW	2,285	An on-site certification of payment
Doosan Energy Solutions America, Inc.	USD	61,092	An on-site certification of payment
General:			
Korea Duty Free Shops Association	KRW	740	Performance guarantees
	USD	294,547	
	CNY	95,000	
	GBP	29,400	
	EUR	14,500	
	KRW	3,025	

As at December 31, 2017, details of payment guarantees received from third parties are as follows (foreign currency in thousands and Korean won in millions):

Provided to	Amount		Description
Seoul Guarantee Insurance	KRW	86,275	Performance guarantee
Korea Defense Industry Association and others	KRW	58,679	Performance guarantee
Machinery Financial Cooperative	KRW	35,467	Performance guarantee
Korea Software Financial Cooperative(*1)	KRW	2,567	Performance guarantee
Shinhan Bank	JPY	43,000	Performance guarantee
KDB	USD	39,060	Performance guarantee
Woori Bank and others	USD	34,556	L/C payment guarantee
	KRW	182,987	
	JPY	43,000	
	USD	73,616	

(*1) Equity investments are pledged as collaterals.

30.7 Ordinary wages

The Company may have to pay additional wages, if regular bonuses and other salaries fall under the category of ordinary wages. But, the Company sees the possibility of the likeliness of having to pay related amounts to be low, based on the Supreme Court decision.

30. Contingencies and commitments (cont'd)

30.8 Agreement with shareholders

During the year ended December 31, 2017, the Company entered into an agreement with the preferred stock investor regarding the issuance of preferred stock of the following subsidiary.

	Doosan Cuvex Co., Ltd.	DLI Corporation
Put option of buyer	On October 24, 2019, the investor may make a purchase request to the Company or a third party designated by the Company for the whole or a part of the redeemable convertible preferred stock held by the investor, plus an amount equal to the amount of the issuance.	On June 26, 2020, the investor may make a purchase request to the Company or a third party designated by the Company for the whole or a part of the redeemable convertible preferred stock held by the investor, plus an amount equal to the amount of the issuance.
Early put option	The investor may request the buyer to make a purchase before a redemption date in the event of a certain reason, and the calculation method of the settled amount is the same as above.	The investor may request the buyer to make a purchase before a redemption date in the event of a certain reason, and the calculation method of the settled amount is the same as above.
Call option	On October 24, 2019, the Company may sell all or part of the redeemable convertible preferred stock held by the investor to a third party designated by the Company or the Company in an amount equal to the amount of the issuance plus a certain amount of accrual.	On June 26, 2020, the Company may sell all or part of the redeemable convertible preferred stock held by the investor to a third party designated by the Company or the Company in an amount equal to the amount of the issuance plus a certain amount of accrual.

As at the reporting date, the Company has accounted for the fair value of the contracts with shareholders as derivatives (Note 9).

31. Pledged assets

The Company pledged certain assets as collaterals for its financial liabilities as at December 31, 2017, which are as follows (foreign currency in thousands and Korean won in millions):

Institution	Asset	Related account	Financial liabilities		Collateralized value	
KDB	Jeung-pyeong, Ik-san plant and Chang-won plant and others	Property, plant and equipment	KRW	90,000	KRW	217,490
			USD	350	USD	30,377
Woori Bank	Anmyeondo land and others	Investment Properties	KRW	53,000	KRW	132,000
Shinhan Bank	Incheon plant		KRW	40,000	KRW	40,000

Pledged assets provided for third parties

As at December 31, 2017, the Company has established the right of pledge on the real estate beneficiary rights in the Company's land and buildings (pledged amount of ₩14,413 million) for the loan arrangement of the subsidiary, DLI Corporation. As at December 31, 2017, the remaining balance of the borrowings is ₩16,000 million.

32. Related party transactions

The related parties of the Company and nature of their relationship with the Company as at December 31, 2017, are as follows:

Relationship with the Company	Company name
Subsidiaries	Doosan Heavy Industries & Construction Co., Ltd. ("DHC")
	Doosan Infracore Co., Ltd. ("DI") and subsidiaries
	Doosan Engineering & Construction Co., Ltd. ("DEC")
	Doosan Engine Co., Ltd. ("DE") and subsidiaries
	Oricom Inc
	DIP Holdings Co., Ltd and subsidiaries
	Dootamall Co., Ltd.
	Doosan Bears Inc.
	DLI Corporation
	Doosan Cuvex Co., Ltd.
	DBC Co., Ltd
	Doosan Information and Communications America, LLC
	Doosan Information and Communications China Co., Ltd.
	Doosan Information and Communications Europe Ltd.
	Doosan Mottrol (Jiangyin) Co., Ltd.
	Doosan (Hong Kong) Ltd. and subsidiaries
	Doosan Electro-Materials Singapore Pte. Ltd.
	Doosan (Shanghai) Chemical Materials Co., Ltd.
	Doosan Electro-Materials (Changshu) Co., Ltd.
	Doosan Electro-Materials America, LLC
	Doosan Electro-Materials Luxembourg Sarl and subsidiaries,
	Doosan Industrial Vehicle Europe N.A.
	Doosan Industrial Vehicle U.K. Ltd. and subsidiaries
	Doosan Logistics Europe GmbH
	Doosan Industrial Vehicle America Corp.
	Doosan Industrial Vehicle Yantai Co., Ltd.
	Doosan Fuel Cell America, Inc.
	Doosan Energy Solutions America, Inc.
	and others
Associates	Presto lite Asia Co., Ltd.
Joint venture	Sichuan Kelun-Doosan Biotechnology Company Limited
Other related parties(*1)	Neo Trans
	Yeongang Foundation
	Doosan Credit Union
	Chung-Ang University
	and others

(*1) Other related parties include entities which belong to a large enterprise group in accordance with the *Monopoly Regulation and Fair Trade Act*, although the entities are not the related party of the Company in accordance with KIFRS 1024.

32. Related party transactions (cont'd)

Significant transactions for the years ended December 31, 2017 and 2016, between the Company and related parties are as follows (Korean won in millions):

		2017					
	Name of entity	Sales	Other income	Others (Disposal of assets and others)	Purchases	Other expenses	Others (Acquisition of assets and others)
Subsidiaries	DHC and subsidiaries	₩ 76,863	₩ 3,559	₩ 29,675	₩ 32	₩ 2,865	₩ 5
	DI and subsidiaries	142,704	512	-	56,184	3,280	-
	DEC and subsidiaries	13,160	237	-	2,448	58	3,606
	DE and subsidiaries	10,007	-	-	-	2,615	-
	Overseas subsidiaries for industrial vehicles (Doosan Industrial Vehicle UK, America, Yantai and others)	227,157	512	-	35,680	606	-
	DIP Holdings Co., Ltd.	4,612	-	34	13	1	-
	Others	229,571	863	213	223,468	25,458	1,479
		704,074	5,683	29,922	317,825	34,883	5,090
Associates		-	-	-	6,126	-	-
Joint venture		-	-	-	-	-	-
Other related parties		8,896	-	-	-	7,890	1
		₩ 712,970	₩ 5,683	₩ 29,922	₩ 323,951	₩ 42,773	₩ 5,091

32. Related party transactions (cont'd)

	2016						
	Name of entity	Sales	Other income	Others (Disposal of assets and others)	Purchases	Other expenses	Others (Acquisition of assets and others)
Subsidiaries	DHC and subsidiaries	₩ 80,299	₩ 2,240	₩ 21,290	₩ -	₩ 182	₩ -
	DI and subsidiaries	124,713	821	-	47,634	4,616	23,618
	DEC and subsidiaries	18,498	518	-	-	170	43,447
	DE and subsidiaries	10,593	-	-	-	2,708	-
	Overseas subsidiaries for industrial vehicles (Doosan Industrial Vehicle UK, America, Yantai and others)	171,928	510	-	29,351	383	-
	DIP Holdings Co., Ltd.	10,991	-	-	-	3	-
	Others	150,703	3,087	53,100	21,111	124,783	12,292
		567,725	7,176	74,390	98,096	132,845	79,357
Associates		12,290	-	-	5,322	725	-
Joint venture		571	-	-	-	-	-
Other related parties		2,094	-	-	-	9,533	35
		₩ 582,680	₩ 7,176	₩ 74,390	₩ 103,418	₩ 143,103	₩ 79,392

32. Related party transactions (cont'd)

As at December 31, 2017 and 2016, significant balances related to the transactions between the Company and related parties are as follows (Korean won in millions):

	December 31, 2017				
	Name of entity	Trade receivables	Other receivables	Trade payables	Other payables
Subsidiaries	DHC and subsidiaries	₩ 13,104	₩ 134,390	₩ 207	₩ 1,045
	DI and subsidiaries	12,992	3,331	19,879	692
	DEC and subsidiaries	4,299	4,831	1,381	7
	DE and subsidiaries	1,771	1,626	-	17
	Overseas subsidiaries for industrial vehicles (Doosan Industrial Vehicle UK, America, Yantai and others)	70,039	2,190	12,272	558
	DIP Holdings Co., Ltd.	907	32	-	-
	Others	68,274	86,406	29,765	3,516
		171,386	232,806	63,504	5,835
Associates		-	-	1,465	-
Joint venture		-	-	-	-
Other related parties		303	1,516	-	868
		₩ 171,689	₩ 234,322	₩ 64,969	₩ 6,703

	December 31, 2016				
	Name of entity	Trade receivables	Other receivables	Trade payables	Other payables
Subsidiaries	DHC and subsidiaries	₩ 11,595	₩ 74,466	₩ 23	₩ 987
	DI and subsidiaries	18,981	21,388	4,225	581
	DEC and subsidiaries	5,611	6,719	273	3,147
	DE and subsidiaries	2,043	1,601	-	-
	Overseas subsidiaries for industrial vehicles (Doosan Industrial Vehicle UK, America, Yantai and others)	56,469	980	9,452	797
	DIP Holdings Co., Ltd.	76	-	-	-
	Others	67,761	86,391	27,658	15,175
		162,536	191,545	41,631	20,687
Associates		942	4,855	265	10
Joint venture		-	582	-	-
Other related parties		174	1,797	15	598
		₩ 163,652	₩ 198,779	₩ 41,911	₩ 21,295

32. Related party transactions (cont'd)

Fund and equity transactions for the years ended December 31, 2017 and 2016, between the Company and related parties are as follows (Korean won in millions):

	2017							
	Borrowings		Contribution and others		Dividend		Loans	
Name of entity	Borrowing	Repayment	Received	Provided	Income	Paid	Loan	Recovery
Subsidiaries								
DHC(*1)	₩ -	₩ -	₩ -	₩ 92,043	₩ 24,170	₩ -	₩ -	₩ -
DBC Co., Ltd.	-	-	-	49,181	-	-	-	-
Doosan Cuvex Co., Ltd.	-	-	-	14,815	-	-	-	-
Doosan Electro-Materials Luxembourg Sarl	14,107	14,107	-	-	-	-	-	-
Doosan Fuel Cell America, Inc.	-	-	-	-	-	-	-	6,989
DIP Holdings Co., Ltd.	-	-	-	-	60,000	-	-	-
Others	-	-	-	12,100	8,758	-	-	-
	14,107	14,107	-	168,139	92,928	-	-	6,989
Associates	-	-	-	-	47	-	-	-
Joint ventures	-	-	-	-	1,285	-	-	-
Others	-	-	-	-	-	9,245	-	-
	₩ 14,107	₩ 14,107	₩ -	₩ 168,139	₩ 94,260	₩ 9,245	₩ -	₩ 6,989

(*1) The Company acquired bonds with warrants issued by Doosan Heavy Industries & Construction (Note 6).

32. Related party transactions (cont'd)

	2016							
	Borrowings		Contribution and others		Dividend		Loans	
Name of entity	Borrowing	Repayment	Received	Provided	Income	Paid	Loan	Recovery
Subsidiaries								
DHC	₩ -	₩ -	₩ -	₩ -	₩ 37,354	₩ -	₩ -	₩ -
Doosan Cuvex Co., Ltd. (*1)	-	-	-	33,217	-	-	-	-
DIP Holdings Co., Ltd.	-	-	-	-	100,000	-	-	-
Doosan Fuel Cell America, Inc.	-	-	-	-	60,000	-	48,917	-
Others	-	-	-	4,000	40,876	-	-	-
	-	-	-	37,217	178,230	-	48,917	-
Associates	-	-	-	- -	619	-	-	-
Joint ventures	-	-	-	- -	485	-	-	-
Others	-	-	-	- -	-	8,252	-	-
	₩ -	₩ -	₩ -	₩ 37,217	₩ 179,334	₩ 8,252	₩ 48,917	₩ -

(*1) Purchased it from Doosan Engineering & Construction Co., Ltd.

The Company provided guarantee to related parties as at December 31, 2017 (see Note 30).

The Company defines key management personnel as registered officer and non-registered officer (including outside director) who have the authority and responsibility for planning, operation and control and are in charge of business or division unit. Compensation to key management personnel of the Company for the years ended December 31, 2017 and 2016, is as follows (Korean won in millions):

	2017	2016
Short-term employee benefits	₩ 33,417	₩ 29,682
Post-employment benefits	2,148	2,068
Share-based payments	-	177
	₩ 35,565	₩ 31,927

33. Cash generated from (used in) operations

The adjustments and changes in operating assets and liabilities in the separate statements of cash flows for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Adjustments for:		
Interest expense	₩ 42,336	₩ 38,164
Income tax expense	47,638	495
Loss on foreign currency translation	10,963	17,087
Loss on valuation of derivatives	1,843	104
Loss on disposal of trade receivables	5,161	2,819
Loss on disposal of investments in subsidiaries, associates	362	-
Loss on redemption of bond	126	-
Depreciation	47,231	42,198
Amortization	11,757	13,392
Loss on disposal of property, plant and equipment	3,090	5,216
Impairment loss on property, plant and equipment	2,562	11,384
Loss on disposal of intangible assets	45	142
Impairment loss on intangible assets	1,243	-
Loss on disposal of investment properties	-	1,025
Losses on valuation of investment properties	105	2,327
Post-employment benefits	22,308	21,968
Impairment loss	19	1,543
Other impairment loss (reversal)	(488)	(24)
Provisions (reversal)	700	(1,462)
Loss on valuation of inventories (reversal)	1,611	(144)
Share-based payment	-	177
Impairment loss on non-current assets held for sale	183	-
Interest income	6,654	6,692
Dividend income	94,284	179,359
Gain on foreign currency translation	12,660	12,211
Gain on valuation of derivatives	-	260
Gain on disposal of investments in subsidiaries, associates	18,079	-
Gain on disposal of property, plant and equipment	374	971
Reversal of impairment loss on property, plant and equipment	157	-
Gain on disposal of intangible asset	792	112
Gain on disposal of investment properties	333	235
Gain on valuation of investment properties	16,348	934
Financial guarantee income	1,272	1,588
Gain on transfer of business	7,805	-
	₩ 40,037	₩ (45,951)

33. Cash generated from (used in) operations (cont'd)

	2017	2016
Changes in operating assets and liabilities:		
Increase in trade receivables	₩ (113,090)	₩ (12,190)
Decrease (increase) in other receivables	68	(5,950)
Increase in inventories	(170,112)	(62,408)
Decrease (increase) in derivative assets	134	(13)
Decrease (increase) in other current assets	(13,660)	4,083
Increase in long-term other receivables	(344)	(22,736)
Decrease (increase) in long-term non-current assets	1,067	(7,036)
Increase in trade payables	103,417	84,694
Increase in other payables	57,209	7,894
Increase in provisions	-	(103)
Increase (decrease) in other current liabilities	61,248	(9,724)
Increase in long-term other payables	2,352	2,345
Benefit payments	(5,290)	(4,009)
Post-employment benefits transferred from affiliated companies	(754)	638
Increase in plan assets	(17,074)	(25,360)
	₩ (94,829)	₩ (49,875)

Significant non-cash transactions for the years ended December 31, 2017 and 2016, are as follows (Korean won in millions):

	2017	2016
Reclassification of investments in subsidiaries to treasury share	₩ 26,625	₩ 59,457
Non-trade receivables for disposal of investment properties	-	18,787
Non-trade payables related to acquisition of property, plant and equipment	-	21,999
Reclassification of advance payments related to acquisition of intangible assets	-	2,700
Reclassification of construction in progress to property, plant and equipment and others	(16,821)	(55,601)
Reclassification of bonds	235,000	20,000
Reclassification of long-term debts	207,321	85,301
Retirement of treasury share	61,480	63,546
Investment in kind	13,766	-

33. Cash generated from (used in) operations (cont'd)

Changes in liabilities arising from financial activities for the year ended December 31, 2017, is as follows (Korean won in millions):

	Beginning balance	Financing activities	Fluctuation of foreign exchange rate	Reclassification	Others	Ending balance
Current						
Short-term borrowings	₩ 453,579	₩ (317,680)	₩ (463)	₩ -	₩ -	₩ 135,436
Current portion of long-term borrowings	85,301	(115,742)	441	207,321	-	177,321
Current portion of bonds	19,986	19,874	-	235,000	(240)	274,620
	558,866	(413,548)	(22)	442,321	(240)	587,377
Non-current						
Long-term borrowings	210,532	70,000	(6,307)	(207,321)	19	66,923
Bonds	314,032	220,000	-	(235,000)	98	299,130
Financial lease liabilities	15,587	(9,610)	-	-	11,244	17,221
	540,151	280,390	(6,307)	(442,321)	11,361	383,274
	₩ 1,099,017	₩ (133,158)	₩ (6,329)	₩ -	₩ 11,121	₩ 970,651

34. Business transfer

Details of business transfer for the year ended December 31, 2017 are as follows:

	Description
Type of business	FM business(building and facility management) BS business(salary/ benefits/ general affairs)
Transfer date	2017.9.30
Transfer method	Investment in kind
Company transferred	Doosan Cuvex Co., Ltd.
Consideration transferred	Doosan Cuvex Co., Ltd.'s stocks (₩14,815 million)

The calculation of gain on business transfer is as follows (Korean won in millions):

	(+)Consideration transferred	Business transfer			Gain on transfer
		Assets	Liabilities	Net asset	
FM / BS business	₩ 14,815	₩ 12,651	₩ 5,640	₩ 7,011	₩ 7,804

Gain on transfer of business was not classified as discontinued operation due to the small percentage of the business in the Company's operating income.

Net cash inflows and outflows due to business transfer are as follows (Korean won in millions):

	2017
(+) Consideration transferred received in cash	₩ -
(-) Transferred cash equivalents	1,047
	₩ (1,047)

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Internal Accounting Control System ("IACS") Review Report

(English Translation of a Report Originally Issued in Korean)

To the Representative Director of
Doosan Corporation:

We have reviewed the accompanying Report on the Management's Assessment of IACS (the "Management's Report") of Doosan Corporation (the "Company") as at December 31, 2017. The Management's Report and the design and operation of IACS are the responsibilities of the Company's management. Our responsibility is to review the Management's Report and issue a review report, based on our procedures. The Company's management stated in the accompanying Management's Report that "based on the assessment of the IACS as at December 31, 2017, the Company's IACS has been appropriately designed and is operating effectively as at December 31, 2017, in all material respects, in accordance with the IACS framework established by the Korea Listed Companies Association."

We conducted our review in accordance with the IACS Review Standards established by the Korean Institute of Certified Public Accountants. Those standards require that we plan and perform a review, objective of which is to obtain a lower level of assurance than an audit of the Management's Report, in all material respects. A review includes obtaining an understanding of a company's IACS and making inquiries regarding the Management's Report and, when deemed necessary, performing a limited inspection of underlying documents and other limited procedures.

The Company's IACS represents internal accounting policies and a system to manage and operate such policies to provide reasonable assurance regarding the reliability of financial statements prepared, in accordance with Korean International Financial Reporting Standards, for the purpose of preparing and disclosing reliable accounting information. Because of its inherent limitations, IACS may not prevent or detect a material misstatement of the financial statements. Also, projections of any evaluation of effectiveness of IACS 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.

Based on our review, nothing has come to our attention that causes us to believe that the Management's Report referred to above is not fairly stated, in all material respects, in accordance with the IACS Framework established by the Korea Listed Companies Association.

Our review is based on the Company's IACS as at December 31, 2017, and we did not review its IACS subsequent to December 31, 2017. This report has been prepared pursuant to the Acts on External Audit for Stock Companies in the Republic of Korea and may not be appropriate for other purposes or for other users.

Ernst & Young Han Young

March 19, 2018

Report on the Assessment of Internal Accounting control System ("IACS")

To the Board of Directors and auditor (Audit Committee) of Doosan Corporation.

Ⅰ. As the Internal Accounting Control Officer("IACO") of Doosan Corporation ("the Company"), assessed the status of the design and operation of the Company's IACS for the year ended December 31, 2017.

The Company's management including IACO is responsible for designing and operating IACS.

Ⅰ. As the IACO, assessed whether the IACS has been appropriately designed and is effectively operating to prevent and detect any error or fraud which may cause any misstatement of the financial statements, for the purpose of preparing and disclosing reliable financial statement.

Ⅰ. As the IACO, applied the IACS Framework established by KOREA Listed Companies Association for the assessment of design and operation of the IACS.

Based on assessment of the IACS, the Company's IACS has been appropriately designed and is operating effectively as of December 31, 2017, in all material respect, in accordance with the IACS Framework.

Mar , 5 , 2018

Internal Accounting control officer **Park Wan-seok**

Chief Executive Officer **Lee Jae-kyoung**